



LONG-RANGE TRANSPORTATION  
 PLAN OF THE BOSTON REGION  
 METROPOLITAN  
 PLANNING  
 ORGANIZATION

Volume I

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The Boston Region Metropolitan Planning Organization (MPO) is composed of:

Massachusetts Department of Transportation Office of Planning and Programming

Massachusetts Department of Transportation Highway Division

Federal Highway Administration

City of Boston

Federal Transit Administration

Town of Braintree

Massachusetts Bay Transportation Authority

City of Newton

Massachusetts Bay Transportation Authority Advisory Board

City of Somerville

Massachusetts Port Authority

Town of Bedford

Regional Transportation Advisory Council

Town of Framingham

Metropolitan Area Planning Council

Town of Hopkinton

Prepared by the MPO's Central Transportation Planning Staff

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## THE PURPOSE OF THE LONG-RANGE TRANSPORTATION PLAN

*Paths to a Sustainable Region*, the Long-Range Transportation Plan of the Boston Region Metropolitan Planning Organization (referred to as the LRTP), is the long-range, comprehensive transportation planning document for the Boston region. The region encompasses 101 cities and towns from Ipswich to Duxbury and Boston to Marlborough (see Figure 1-1). This is the area in which transportation planning is the responsibility of the Boston Region Metropolitan Planning Organization (MPO), as will be explained in this chapter. Covering 1,405 square miles, the MPO region makes up about 18 percent of the state’s land area; however, with more than three million residents, it has 48 percent of the state’s population.

The LRTP defines transportation visions for the future of the region, establishes goals and policies that will lead to the achievement of the visions, and allocates projected revenue to transportation programs and projects that implement those goals and policies. Fundamentally, the LRTP is about making choices for the future of the metropolitan area—choices about local and regional land use, choices about where to allocate limited transportation resources, and choices about the type of future we wish to see for our region and, by extension, the commonwealth of Massachusetts. In accordance with applicable federal planning regulations, the LRTP addresses surface transportation issues only.

The LRTP’s 23-year scope (2012 to 2035) allows the MPO to consider the transportation network’s future from a broad perspective. Only projects funded with federal dollars designated as “regionally significant” and “major investment” projects are specifically listed by name in the LRTP. The term “regionally significant” refers to projects required by federal regulations to be included in the travel demand model (a computer model) for air quality conformity purposes—generally, any project that adds capacity to the regional transportation network. Major investment projects are projects that cost over \$10 million.



FIGURE 1-1

THE BOSTON REGION MPO'S MUNICIPALITIES



For a more detailed explanation of the types of projects that must be included in the model, see Chapter 10, Air Quality Conformity Determination. Many of the transportation projects and programs that will be funded with federal dollars in the next 23 years do not add capacity to the transportation system and are, therefore, not specifically identified in the LRTP. The function of these projects will be primarily to maintain and operate the existing system. Nevertheless, when it comes time to select projects for funding in the Transportation Improvement Program, selection will be based upon how well they implement the goals and policies adopted in the LRTP.

## THE BOSTON REGION MPO STRUCTURE

The Boston Region MPO is responsible for the development of the LRTP. It conducts transportation planning in its region for a variety of transportation modes and facilities, including highway, transit, nonmotorized, and freight. By bringing together representatives from local, regional, state, and federal entities and a public advisory council, and engaging with members of the public, MPO decision making is sensitive to the diverse range of interests and concerns that exist in the Boston region.

Federal law establishes requirements and guidelines for transportation planning in urbanized areas with populations of more than 200,000. In order to be eligible for federal transportation funding, an area must maintain a continuing, cooperative, and comprehensive (3C) transportation planning process. The Boston Region MPO is responsible for carrying out the 3C process in its area.

The MPO is a cooperative board of 14 voting members:<sup>1</sup>

- Massachusetts Department of Transportation (MassDOT) – three members, including the MassDOT Highway Division
- Massachusetts Bay Transportation Authority (MBTA)
- Massachusetts Bay Transportation Authority Advisory Board
- Massachusetts Port Authority (Massport)
- Metropolitan Area Planning Council (MAPC)
- City of Boston
- Six elected municipalities (three cities and three towns) from the Boston region, currently:
  - o City of Somerville
  - o City of Newton
  - o Town of Braintree (city form of government)
  - o Town of Bedford
  - o Town of Framingham
  - o Town of Hopkinton

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<sup>1</sup> The Boston Region MPO has revised its Memorandum of Understanding (MOU) and organizational structure. It will become effective November 1, 2011. The new structure can be reviewed at [www.bostonmpo.org](http://www.bostonmpo.org) in the fall of 2011.



The Federal Highway Administration (FHWA), the Federal Transit Administration (FTA), and the Regional Transportation Advisory Council (the Advisory Council), which is the MPO's official advisory group, also participate on the MPO, in a nonvoting capacity.

## THE RELATIONSHIP TO OTHER PLANNING DOCUMENTS

In addition to the LRTP, the Boston Region MPO is required to develop other documents and programs as part of the 3C transportation planning process. These include:

- The Unified Planning Work Program (UPWP)
- The Congestion Management Process (CMP)
- The Transportation Improvement Program (TIP)



The UPWP and the CMP are used in the development of the LRTP. Along with the TIP, they help to implement the visions and objectives of the LRTP. Other documents or initiatives considered in the development of the LRTP are:

- The MBTA Program for Mass Transportation (PMT)
- Legal commitments of the Commonwealth of Massachusetts

Brief descriptions of all of the above and their relationship to the LRTP are provided below.

### The Unified Planning Work Program

The annual Unified Planning Work Program (UPWP) describes transportation planning studies to be undertaken by the MPO and other entities in the Boston region during a given federal fiscal year. The UPWP is intended to serve two purposes. The first is to provide information to federal and state government officials, municipalities, regional organizations and interest groups, and the general public about all of the transportation planning studies that are expected to be undertaken in the region. The second is to provide complete budget information to federal and state officials about the expenditure of federal funds for planning studies that will be carried out by the MPO.

The planning studies in the UPWP are an important source of ideas and information that may help in project selection for the LRTP and TIP and also may evolve into projects that will eventually be included in the LRTP, and ideas received during the public outreach process for the LRTP sometimes lead to studies included in the UPWP.

## The Congestion Management Process

The MPO's Congestion Management Process (CMP) is an ongoing program for monitoring mobility in the region, providing the MPO and transportation planners with timely information about transportation system performance, and making recommendations in the areas where mobility deficiencies are found. The CMP program includes the systematic measurement and analysis of mobility problems in the region. The MPO staff then provides decision makers with information about transportation system performance and with strategies and recommendations for addressing identified problems and improving mobility. Information from the CMP and associated planning studies funded through the UPWP are used in the selection of projects for the LRTP and the TIP.

## The Transportation Improvement Program

The Transportation Improvement Program (TIP) is a multimodal program that sets forth a detailed list of transportation projects that are programmed to receive federal funding during the four-year horizon of the document. The projects advanced in the TIP are consistent with the policies and goals of the LRTP. The TIP describes the transportation projects that are expected to be implemented during this four-year period and provides information about how they have been prioritized. It also includes a financial plan showing the revenue source or sources, current or proposed, for each project. In order to be eligible to receive federal funds, a project must be programmed in the current federal fiscal year's TIP. In addition to the federally funded projects, most highway projects funded with state transportation money are also included in the TIP in the Boston region. In order for any regionally significant project to be included in the TIP, it must be included in the LRTP. One function of the TIP is to serve as the implementation arm for the LRTP.

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## The MBTA Program for Mass Transportation

The MBTA Program for Mass Transportation (PMT) is the long-range, fiscally unconstrained, 25-year capital program of the MBTA. The objective of the PMT is to identify and prioritize projects that will result in a cost-effective mass transit system that serves the greatest number of passengers while furthering environmental, economic development, and environmental justice goals. The MBTA adopted the current PMT in December 2009. The MPO uses it to prioritize transit projects for inclusion in the LRTP.

## Legal Commitments

Several transportation projects are legal commitments that MassDOT or other transportation agencies in Massachusetts must complete within a certain time frame. The legal commitments that have the greatest impact on planning in the Boston region are those pertaining to the State Implementation Plan (SIP) and the Central Artery/Tunnel project.

The federal Clean Air Act requires states with one or more MPO regions that do not meet federal air quality standards, such as Massachusetts, to produce a SIP. A SIP describes the efforts that a state has made, or proposes to make, to reduce levels of pollutants, such as ozone and carbon monoxide. Massachusetts was required to produce a SIP, and MassDOT and other transportation agencies, including the MBTA and

Massport, are required to implement the transportation projects and policies that are included in the SIP.

In the SIP, the Central Artery/Tunnel (CA/T) project commitments are the result of an agreement entered into by the state's Department of Environmental Protection (DEP) and the former Executive Office of Transportation (EOT, now MassDOT) during the approval process for the CA/T project. This agreement was updated, with revised implementation schedules, in an Administrative Consent Order between DEP and EOT in 2000. In 2004, EOT and DEP began a process, completed in July 2008, of reevaluating the projects in the original SIP commitments. This process was undertaken to ensure that any further investments fund the best regionally significant projects that meet air quality goals and requirements.

As a matter of policy, the MPO includes all legal commitments related to the SIP and the Consent Order in the LRTP.

## THE LRTP DEVELOPMENT PROCESS

Federal metropolitan planning regulations require MPOs to develop a regional transportation plan every four years. This section outlines the process that was followed in the development of the new LRTP, *Paths to a Sustainable Region*.

### Public Outreach for the LRTP

#### Process and Activities

The MPO's Public Participation Program is designed to provide opportunities for members of the public, interest groups, other stakeholders, and elected officials to be involved in MPO decision making, including the development of the LRTP, the UPWP, and TIP; the program also supports the ongoing work of the Regional Transportation Advisory Council (the Advisory Council) and the MPO's Transportation Equity Program. The MPO adopted its current Public Participation Program in June 2007 and amended it in April 2010. The activities identified in the program are designed to meet federal planning rules that require the MPO to maintain a continuing, cooperative, and comprehensive (3C) transportation planning process and also reflect the MPO's commitment to providing opportunities for substantive public involvement. The MPO followed and expanded on the Public Participation Program as it developed a specific Public Involvement Plan for *Paths to a Sustainable Region*, which was approved by the MPO in February 2010.

In developing *Paths to a Sustainable Region*, the MPO conducted a variety of outreach



activities, beginning in the spring of 2010, inviting the involvement of participants that included the Regional Transportation Advisory Council; area residents; municipal, state, and federal officials; businesses; transportation interest groups; environmental groups; transportation providers; persons with disabilities; low-income and minority communities; the elderly; and persons with limited English proficiency. Methods for eliciting public input included the following:

- **The Advisory Council**, the main avenue for public involvement for the MPO. It serves the MPO as its official advisory group. Composed of transportation advocacy and other interest groups, municipal officials, and state agencies, it is charged with creating a forum for the ongoing and robust discussion of pertinent regional transportation topics and for generating diverse views to be considered by the MPO. MPO staff often discussed *Paths to a Sustainable Region* with the Advisory Council and its LRTP subcommittee during the course of the LRTP development. The Advisory Council submitted several letters and reports to the MPO, expressing its views and providing guidance to the MPO.
- **Open houses** that informed the public about the transportation planning process and about studies and projects underway, and that offered a forum for discussion and an exchange of ideas. Open houses were held periodically from the adoption of the last LRTP in 2009 through the summer of 2011, and focused on LRTP topics such as policies, modeling, transportation equity, transportation projects, and land use planning.
- **Public workshops** held in July 2010, February 2011, and August/September 2011 to hear the views of members of the public, and to provide information on the LRTP and TIP. The February 2011 workshops were held to generate feedback on the draft transportation needs assessment, and the August/September 2011 workshops were held to discuss the draft LRTP and seek more comments.
- **A Transportation Equity Forum** held in February 2011 at the Boston Public Library for professionals working in organizations serving environmental justice neighborhoods and for members of the public, to discuss the transportation needs of low-income and minority persons living in these neighborhoods.
- **“Invite Us Over” sessions**, where MPO staff visited, when requested, organizations with an interest in transportation planning, to present information and discuss ideas for the LRTP.
- **MAPC subregion meetings**, where MPO staff met periodically with MAPC subregional groups to keep these local officials informed of the LRTP process and progress and to gather feedback on the visions and policies, the transportation needs assessment, and information on projects under consideration for inclusion in the LRTP.





- Environmental Consultation, held in July 2011, where staff discussed the environmental facets of long-range transportation issues and solutions with state agencies responsible for environmental matters.

## Communicating with the Public

The MPO uses several means to keep members of the public informed about MPO news, activities, and events, and to encourage public participation in the transportation planning process.

### Email Distribution Lists: MPOinfo and MPOmedia

As an ongoing part of the planning process, the MPO prepares press releases, flyers, and other notices for distribution to a broad network of interested parties. These materials are distributed via the MPO's one-way email list, MPOinfo, which includes more than 1,700 contacts, including municipal officials, planners, transportation equity contacts, special interest groups, members of the general public, legislators, environmental agencies and interest groups, and freight and transportation providers. Press releases and informational flyers are also distributed to more than 200 media outlets, including local Spanish-language publications (which receive Spanish-language text). Outreach materials are also distributed to the Access Advisory Committee to the MBTA (AACT), which works with the MBTA to ensure that the public transportation system in the region is accessible to the elderly and people with disabilities.

The MPO has expanded its email contacts so that its messages reach councils on aging; commissions on disability; community development corporations; chambers of commerce; economic development, Main Street districts, and transportation committees; and conservation, youth, historical, and natural resource commissions.

## TRANSREPORT

The MPO's monthly newsletter, TRANSREPORT, is an important means of providing information on various aspects of the entire MPO planning process, including announcements of public participation opportunities and outreach activities. Each issue provides information on upcoming transportation-related public meetings and events, MPO studies completed or underway, other MPO activities, and ways to contact MPO staff with ideas and questions. Special inserts on important LRTP topics are included to provide detailed information and encourage public comment.

TRANSREPORT is sent to approximately 3,000 recipients, including over 100 state legislators and their staffs, numerous local officials, and members of the general public in each municipality in the region.

TRANSREPORT issues are posted each month on the MPO's website, which also has an archive of past issues.



## Website

The MPO's website has pages designated for the LRTP and each of the other certification documents. These pages are updated frequently. Basic information on *Paths to a Sustainable Region* has been posted at [www.bostonmpo.org/2035plan](http://www.bostonmpo.org/2035plan) since the planning process for the current LRTP was launched. Draft documents were posted as they became available, at [www.bostonmpo.org/2035input](http://www.bostonmpo.org/2035input). These Web pages were promoted through the website's home page, by email messages to MPOinfo, and on postcards that were distributed at public meetings.

A new Web feature developed for *Paths to a Sustainable Region* allows visitors to easily submit feedback. Under each draft document, a "Provide Feedback" button was posted. By clicking on this button, a visitor to the website could provide feedback on any draft material at any time. The feedback was organized by topic and presented to the MPO.

## Social Media

The MPO launched a Twitter account (@BostonRegionMPO) in March 2010. Social media sites are among the most visited websites on the Internet and allow the MPO to reach a broad audience and attract people to the MPO's website to learn more about the MPO's work. Announcements about *Paths to a Sustainable Region*, such as the availability of draft documents and public meeting information, are transmitted through Twitter. The MPO also uses YouTube to explain transportation planning issues and will produce a video summary of the LRTP. The use of social media is also consistent with the MPO's Public Participation Program, which calls for utilizing new avenues of communication.

## Public Comments

As a result of the outreach, the MPO received numerous comments on the LRTP from municipalities, regional entities, interest groups, and members of the public. The MPO reviewed and considered all comments during the decision-making process. A summary of written and oral comments relating to the development of the LRTP is included in Appendix A. In addition, the MPO responded to comments received during the formal comment period for the draft LRTP (August/September 2011). The comments received during the formal comment period, along with the MPO actions taken, are also included in Appendix A, in a separate table.



## Environmental Justice

Environmental justice was an important factor in the development of *Paths to a Sustainable Region*. MPO policies promote the equitable sharing of the benefits and burdens of the region's transportation system, as well as participation in decision making. In addition to the public outreach program described above, the MPO also has a transportation equity program to identify transportation needs of minority and low-income populations and to provide information about the planning process in order to encourage public involvement.

The MPO's transportation equity program is composed of three key elements: outreach, analysis, and the MPO's evaluation of environmental justice issues (see Chapter 6, Transportation Equity, for more information). After one-on-one meetings, surveys, and interviews, the MPO provides feedback to community organizations by classifying their needs and concerns as they relate to the LRTP, TIP, UPWP, transit service planning, or another agency. The information is then directed to the agency or entity that can best address each need.

In selecting projects for the LRTP, the potential impact of a proposed project on environmental justice areas is a criterion in the project ranking processes, as discussed in the section, Use of the MPO's Visions and Policies in the Selection of Projects, below. The MPO staff gives positive ratings to projects that are estimated to benefit environmental justice areas.

As part of the LRTP process, the MPO performed a systemwide environmental justice analysis on the set of projects that are currently funded by the MPO (for 2035 conditions if no new projects were funded and constructed) and the set of projects recommended in this LRTP (2035 build conditions). The analysis focuses on the mobility, accessibility, and emissions for communities with a high proportion of low-income or minority residents (see Chapter 9, Environmental Justice Assessment, for more information).



## Consultations on Environmental Issues

The MPO has responded to the *Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users* (SAFETEA-LU) directives by consulting with agencies responsible for land management, natural resources, historic preservation, and environmental protection and conservation, as related to transportation initiatives. SAFETEA-LU is the federal government's legislation for reauthorization of funding for the nation's surface transportation program. Natural, environmental, and historic resources were mapped for the Boston region using information from the Commonwealth's Office of Geographic and Environmental Information Systems (MassGIS). The information included Areas of Critical Environmental Concern,

flood hazard areas, wetlands, water supply and wellhead protection areas, protected open space, and Natural Heritage and Endangered Species Priority Habitats, and was used in evaluating the projects. This was done by corridor in the needs assessment by overlaying the projects on the maps to determine where environmental issues could potentially arise.

The MPO staff consulted with MassDOT's and the MBTA's environmental divisions to determine their processes for environmental review of project designs. The Massachusetts Environmental Policy Act (MEPA) unit of the Executive Office of Energy and Environmental Affairs was also consulted. The MEPA unit oversees the Massachusetts Environmental Policy Act, which requires project proponents to study the environmental consequences of their actions and to take all feasible measures to avoid, minimize, and mitigate damage to the environment. In addition, the MPO held an environmental consultation meeting in July 2011 to discuss the environmental facets of long-range transportation issues in the region. The Executive Office of Energy and Environmental Affairs and the Department of Environmental Protection attended the meeting along with MassDOT.

Through this consultation, it was determined that the MPO was taking into consideration the appropriate areas of environmental concern. In the Boston region, environmental reviews for projects are conducted by the proponent transportation agency or municipality, not the MPO. The environmental reviews occur when each of the projects is in the design phase and prior to being funded for construction. However, the MPO is willing to consider performing further review and consultation on environmental issues, effects, and mitigation as part of the ongoing 3C process.

## **Development of MPO Visions and Policies**

The first step in developing the LRTP was articulating the MPO's visions for the future of the region and spelling out the policies for achieving that end state. This work was completed in the spring of 2010, with the MPO adopting the LRTP's visions and policies. These are used to guide MPO work and, in particular, as the basis for evaluation criteria and decision making for the LRTP, UPWP, and TIP.

A complete list of the visions and policies guiding the development of the LRTP is provided in Chapter 2, The MPO's Visions and Policies.

## **Selection of Projects**

One of the primary components of this LRTP is a list of major capital expansion projects for implementation over the next 23 years. To select these projects, the MPO first performed a needs assessment for the region to help in determining priorities for the region. This allowed the MPO to prioritize projects from a Universe of Projects and Programs, which is a list of all possible projects for consideration.

## **Needs Assessment for the Region**

The Regional Needs Assessment (included as Volume II of this document) was an initial step in the development of the LRTP. The needs assessment gathered, organized, and analyzed information about the state of the region's transportation system. The needs assessment is a critical component of the LRTP because the region's transportation needs must be inventoried before decisions are made on how problems should be addressed within the constraints of anticipated future funding.



The existing conditions of the various components of the transportation system, their current use, and their projected use in the future are all described in the needs assessment. In addition to issues related to the effective functioning of the transportation system, this needs assessment includes issues related to how the transportation system interacts with the region's current and projected land use conditions, the environment, and low-income and minority populations. The needs assessment was developed at a corridor level using six radial corridors, two circumferential corridors, and a central area. This helped to make the transportation needs of a complex region easier to comprehend.

The needs were prioritized for each of these corridors by five of the MPO's visions – system preservation, mobility, safety, the environment, and transportation equity. It was estimated that the needs of all of the corridors will exceed the financial resources that can be anticipated between now and 2035. Therefore, the region's needs, which were prioritized to guide investment decisions, are summarized in Chapter 3, The Region's Corridors, of this document (Volume I), and in Chapter 10, Regionwide Needs Assessment of Volume II, The Regional Needs Assessment.



### ***Universe of Highway Projects and Programs***

The highway Universe of Projects and Programs is composed of projects that were included in a previously adopted Long-Range Transportation Plan; projects identified through the MPO's Congestion Management Process; projects previously studied or currently being studied; projects included in comments received during the public outreach process for the 2000–25 and 2004–25 LRTPs and JOURNEY TO 2030; projects over \$10 million that are in the current TIP; and projects over \$10 million included in the FFYs 2011–14 TIP Universe of Projects. The

highway Universe of Projects and Programs (Appendix B) lists projects by the corridors identified in the Needs Assessment, along with information on each project's status:

- Identified through a corridor study
- Currently in MassDOT's environmental review or design process
- Included in the JOURNEY TO 2030 LRTP (as a recommended or illustrative project)
- Included in the current TIP
- Identified through public comment
- Meets a need identified in the Needs Assessment

### ***Universe of Transit Projects and Programs***

The MBTA adopted its current Program for Mass Transportation (PMT) in December 2009. The PMT defines a long-range vision for regional mass transportation with

respect to infrastructure improvements. The planning approach taken in this PMT reflects the MBTA's priority of maintaining the existing system with MassDOT and the Commonwealth playing a major role in prioritizing and paying for transit expansions. Past versions of the PMT have placed emphasis on identification and evaluation of potential expansion projects. The current PMT continues to include transit expansion and capacity improvements as important elements for achieving its long-range vision.

The transit Universe of Projects and Programs was derived from this PMT as well as from the MBTA Capital Investment Program (CIP), the MBTA's five-year fiscally constrained plan for investing in the transit system, which currently includes only maintenance projects. The transit Universe of Projects and Programs (Appendix B) lists projects by the corridors identified in the Needs Assessment, along with information on each project's status:

- Included in the current PMT
- Included in the current CIP
- Transit projects recommended as part of the MPO's Congestion Management Process
- Included in the JOURNEY TO 2030 LRTP (as a recommended or illustrative project)
- Identified through public comment
- Meets a need identified in the Needs Assessment

### ***Investment Categories***

The Universe of Projects and Programs was then organized by investment categories to better understand the degree to which different project types advance the MPO's visions and policies. Staff conducted an evaluation to determine whether a project's primary or secondary purposes supported the various MPO policies. The investment categories are:

- State of Good Repair and Maintenance – transit and roadway
- Multimodal Traffic Management and Modernization – transit and roadway
- Management and Operations – transit and roadway
- Expansion – transit, roadway, freight, and shared-use paths (which include MassDOT Bay State Greenway 100 paths)
- Clean Air and Mobility



### ***The Use of the MPO's Visions and Policies in the Selection of Projects***

The MPO used its visions and policies, in the project selection process of the LRTP, as the basis for the project evaluation criteria and for the organization of the MPO's investment categories discussed above.

For those highway and transit projects included in the Universe of Projects and Programs that met a need identified in the Needs Assessment, a very preliminary evaluation was done to determine which of the MPO's vision topics it addressed. This information is included in Appendix B.

The next step was to evaluate how well the projects and programs advanced the MPO's policies within each vision as well as within the investment categories listed above. All projects that were included in the JOURNEY TO 2030 LRTP, were evaluated, and projects and programs that are not included in the JOURNEY TO 2030 that staff felt would advance the visions of the region were all evaluated in order to show how well their primary and secondary purposes advance the MPO's visions and policies. This information was prepared to help the MPO select a strategy that will help to achieve its visions while adhering to its policies. This information is provided at [www.bostonmpo.org/2035plan](http://www.bostonmpo.org/2035plan).

### ***The Availability of Funding for Projects in the LRTP***

MassDOT provided estimates of highway funding for the Boston Region's LRTP in five-year time bands from 2011 through 2035. The estimates include the following funding categories:

- Major Infrastructure Projects
- Regional Discretionary Funding
- Federal-Aid Bridge Projects
- National Highway System/Interstate Maintenance Projects
- Statewide Maintenance

The first two categories – Major Infrastructure Projects and Regional Discretionary Funding – are the categories in which the MPO was given responsibility for project selection. The MPO used this information in developing its financially constrained LRTP.

In addition to the consideration of the various funding categories, the MPO also discussed the amount of allocation of funding to listed projects (projects that either added capacity to the system or that cost over \$10 million) in relation to the amount of funding left unassigned for projects and programs that would maintain or modernize the transportation system.

The MPO agreed with the assumptions in the PMT that all transit funding would go to the MBTA's priority of maintaining the existing system, with MassDOT and the Commonwealth prioritizing and paying for transit expansions. If the MPO were to fund additional transit projects not funded through the Commonwealth, they would do so by using highway funding flexed to transit projects.

## The Development of Investment Strategies for the LRTP

MPO staff prepared three investment strategies, described below, which were designed to provide options highlighting various examples of funding possibilities for consideration. In the development of this LRTP, the MPO is facing serious funding shortfalls and severe maintenance and state-of-good-repair needs. These strategies offered the MPO several choices for working within these constraints, while still maintaining the existing system, improving mobility in all modes, achieving greenhouse gas reductions, and moving toward the other forward-looking visions and policies the MPO embraces.

- Strategy 1 – Current Approach: This strategy proposed that current programming trends continue and that the projects listed in JOURNEY TO 2030 would continue to be funded with highway discretionary and major infrastructure funding in *Paths to a Sustainable Region*.
- Strategy 2 – Current LRTP with a Regional Needs-Based Focus: This strategy proposed highlighting from the JOURNEY TO 2030 the large-scale regional solutions to identified regional needs. It focused mainly on large-scale highway projects from the JOURNEY TO 2030 that address the greatest regional needs.
- Strategy 3 – New Mix of Projects and Programs – Lower Cost/More Flexibility: This strategy was developed to pull into the LRTP a more diverse set of projects and a more varied set of programs, based on identified needs. It was guided by the premise that in times of fiscal constraint, focusing on lower-cost projects would provide the flexibility to address mobility and other needs in many geographic areas of the MPO region, rather than focusing investments in only a few areas.

The MPO focused their discussions around these strategies and the investment categories discussed above. A detailed discussion on the final recommended set of projects is included in Chapter 8, The Recommended Plan.

## Development of Demographic Projections

As part of the LRTP process, land use projections for the year 2035 were used to forecast travel demand. MAPC developed the demographic forecasts using MetroFuture, its long-range plan for land use, housing, economic development, and environmental preservation in the Boston region. It includes both a vision for the region's future and a set of strategies for achieving that future. The MPO adopted the MetroFuture projections for the 101 municipalities in the Boston Region MPO in April 2008. At the same time, the MPO agreed to use the forecasts from the neighboring regional planning agencies for the 63 municipalities that are in the modeled area but that are outside of the Boston Region MPO area. This land use is referred to as the Regional Planning Agency (RPA) Hybrid Scenario, which is used as an input into the MPO's travel demand model, discussed below.

## Travel Demand Forecasts

In developing *Paths to a Sustainable Region*, the MPO conceptualized the region's transportation needs over the next 23 years. Land use patterns, growth in employment and population, and trends in travel patterns differ in how they affect demands on the region's transportation system. In order to estimate future demands on the system for

this LRTP, the MPO utilized a regional travel-demand forecast model. The model is a planning tool used to evaluate the impacts of transportation alternatives given varying assumptions with regard to population, employment, land use, and traveler behavior. The model is used to assess potential projects in terms of air quality benefits, travel-time savings, and congestion reduction.

### **Illustrative Projects**

Illustrative projects are defined as projects that could significantly contribute toward the MPO visions, but which are not included in the recommended list of projects because there is not sufficient revenue to fund them. During the development of this document, the MPO decided not to include illustrative projects in the LRTP. Since there is a significant backlog of maintenance and state-of-good repair work to be done on the highway and transit system, the MPO did not want to highlight specific unprogrammed infrastructure projects that it would select if additional funding were to become available. As described above, under the Universe of Highway and Transit Projects and Programs, projects that were included as illustrative projects in the last LRTP – JOURNEY TO 2030, are shown in Appendix B.

### **Looking Forward**

The MPO views the LRTP as a living document. Implementing this plan will be an integral part of the ongoing planning process. The needs assessment will be updated in an ongoing manner, as new information and analysis are available. Performance measures for the region will be developed and applied. Input from public involvement will be added to information surfacing from these two initiatives to help the MPO assess its progress toward its visions.






## INTRODUCTION AND CENTRAL VISION STATEMENT

The MPO has a vision for the region. This vision both anticipates the future and responds to current needs. It has guided the development of this long range transportation plan, *Paths to a Sustainable Region*, and all the other work the MPO conducts as part of its metropolitan transportation planning process. The vision draws a picture of the desired, future end-state for the region and its transportation network in 2035.

The timing for the development of *Paths to a Sustainable Region* is fortuitous. The science and art of metropolitan transportation planning is evolving. The challenges we face – limited fiscal resources; climate change; the pursuit of energy independence and of greater economic stability and prosperity; mobility needs; an aging population and aging infrastructure; cultural and environmental resources at risk – cannot be addressed without changes in how we view and grow our communities and our built environment and infrastructures. The challenges require that transportation planning truly incorporate additional perspectives. Land use planning, public health information, environmental protection measures, human services needs, and operations and maintenance approaches must be brought to the table and be integrally woven into metropolitan planning. In this way, the MPO can make investment decisions that are effective in addressing the region’s challenges.

This vision has evolved over the span of many years of engagement in metropolitan transportation planning. This planning includes technical analysis and other studies of transportation needs in the region. It also involves listening to the public’s views. It is founded on the federal planning factors as most recently laid out in one of the nation’s key transportation laws, the *Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users* (SAFETEA-LU), and on other, more contemporary federal guidance. The vision also takes into consideration statewide planning and policy initiatives. Another key element is the current land use and demographic planning conducted by the region’s comprehensive planning agency. Finally, this vision builds on



the MPO's longstanding priorities for transportation improvements, as detailed in its preceding long-range transportation plan (LRTP), JOURNEY TO 2030.

The following reflects the MPO's aspirations for the 2035 future end-state of the region.

### Central Vision Statement

*The Boston region will continue to be a major economic, educational, and cultural hub of New England. It will maintain its high quality of life due to its lively commercial and business enterprises, the strength of its institutions, and its healthy and pleasant environment, all supported by its well-maintained transportation system. Notably, there will be an ongoing transformation taking place in the region's communities. They will, more and more, be places in which people can have access to safe, healthy, efficient, and varied transportation options and find jobs and services within easy reach of affordable housing. The transportation options will include the transit, bicycle, and pedestrian modes, among others, and will reduce environmental impacts, improving air and environmental quality. The role of the region's transportation system in making the envisioned future possible will be a result of attentive maintenance, cost-effective management, and strategic investments in the system by the Boston Region MPO.*

The next sections of this chapter describe the foundations of the MPO's vision for the region, spell out the vision and translate it into policies, which will set MPO priorities and guide MPO planning and decision making. These policies are further developed in later chapters of this LRTP into sets of steps the MPO will take in order to turn the policies into outcomes and to bring the vision to reality.

## FOUNDATION OF VISIONS AND POLICIES

The MPO developed its visions and policies within the context of the following regulations, guidance, and planning activities.

### Federal Framework

#### SAFETEA-LU Planning Factors

Over the years, the federal government has established specific guidance and standards for MPOs to use as they conduct metropolitan transportation planning in their regions. The federal planning factors are a product of this practice. The current planning factors were articulated in the most recent comprehensive federal re-authorization, the *Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for Users* (SAFETEA-LU). In this legislation, the federal government authorized the federal surface-transportation programs for highways, highway safety, and transit for the five-year period 2005–09. Funding authorization was extended through continuing resolutions passed by Congress. In addition, SAFETEA-LU specified eight planning factors, listed below, that should be considered in all aspects of metropolitan transportation planning, including the development of visions, policies, objectives, performance measures, and evaluation criteria. The MPO has incorporated the planning factors in the development of its visions and policies. They are:

- Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.
- Increase the safety of the transportation system for all motorized and nonmotorized users.
- Increase the ability of the transportation system to support homeland security and to safeguard the personal security of all motorized and nonmotorized users.
- Increase accessibility and mobility of people and freight.
- Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and state and local planned growth and economic development patterns.
- Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.
- Promote efficient system management and operation.
- Emphasize the preservation of the existing transportation system.

### ***SAFETEA-LU Focus on Multimodal Operational Efficiency***

Federal guidelines, again promulgated in SAFETEA-LU, promote planning toward a desired system performance outcome rather than just responding to problems with a project-based approach. The tool for this paradigm shift is an objective-driven, performance-based approach. MPOs are asked to use objectives to focus attention on identified needs. MPOs are then to use performance measures to define success for an action considered to address those needs and to track the outcome.

In addition, management and operations strategies must be considered when identifying alternative actions to meet the identified needs. These strategies typically involve making better use of the existing, multimodal transportation network and are an effective and value-added way to improve mobility, safety, access to transit, and intermodal connections while reducing congestion for all modes in the region. They are typically a less costly “first line of defense” for improving system efficiency. These strategies do not rely on constructing new projects or expanding the transportation system and are likely to be more easily implemented.

### ***Sustainable Communities Partnership***

Additionally, President Obama has set a federal policy directive – the Sustainable Communities Partnership – for three federal agencies, the Department of Transportation, the Environmental Protection Agency, and the Department of Housing and Urban Development, to work together to promote and implement policies and programs that help address climate change and protect the environment while advancing the federal goals for transportation and housing. This partnership is a recognition that solving problems in any one of the three areas is related to and dependent on policies and actions in the other two. In other words, improving transportation relates directly to, and requires consideration of, both issues pertaining to housing and urban and economic development, and issues pertaining to the environment. Another overarching concern,





shared by the three agencies and requiring coordinated planning, is the need to continue taking steps to address and prepare for climate change.

For these reasons, the Sustainable Communities Partnership is promoting a set of livability principles to generate and support the kinds of planning and investments needed to evolve transportation and housing patterns that improve access to affordable housing and transportation options. MPOs are asked to use the livability principles listed below to guide the development of their regional vision.

### Livability Principles

- Provide more transportation choices.
- Promote equitable, affordable housing.
- Enhance economic competitiveness.
- Target resources to existing communities.
- Coordinate and leverage federal policies and investment.
- Value unique characteristics of communities, no matter their size.

The goal is the integration of planning for housing, land use, and transportation, resulting in:

- Transportation options that include access to public transit and nonmotorized transportation facilities and infrastructure
- Affordable housing choices
- Environmental quality, including clean air, scenic, aesthetic, environmental, and historical resources
- Energy efficiency

### Massachusetts Statewide Initiatives and Perspectives

The state transportation-reform legislation signed in June 2009 and implemented on November 1, 2009, created the Massachusetts Department of Transportation (MassDOT). The legislation restructured the state transportation agencies under MassDOT in order to improve operation, accountability, and efficiency in transportation. MassDOT is engaged in the following initiatives that add to the Boston region's transportation planning framework.

#### *youMove Massachusetts*

youMove Massachusetts is a statewide program undertaken by MassDOT to solicit feedback and views from users of the transportation system, particularly to provide insight into mobility gaps and challenges faced by people using the transportation system. This outreach work began in the fall of 2008 and is still underway. Public comments have been in the forms of letters, email messages, telephone calls, comments at public meetings, and messages through the program's interactive website.

Initially, MassDOT conducted numerous public workshops around the state, and more than 300 people participated. Since then, the website continues the outreach and is

currently the primary avenue for input in this program. The website allows participants to point out specific locations of transportation issues needing attention. More than 700 comments have been received through the website.

The comments can be organized into 10 core themes:

- Improve transportation system reliability.
- Focus more attention on maintaining our transportation system.
- Design transportation systems better.
- Encourage shared use of infrastructure.
- Increase capacity by expanding existing facilities and services.
- Create a more user-friendly transportation system.
- Broaden the transportation system to serve more people.
- Provide adequate transportation funding and collect revenue equitably.
- Minimize environmental impact.
- Improve access to our transportation system.

### ***Massachusetts Healthy Transportation Compact***

The transportation reform legislation established the Healthy Transportation Compact. The Compact is an interagency group convened to address transportation needs, including mobility, while supporting communities by promoting public health and a clean environment. The Compact is led by the Secretaries of Transportation and of Health and Human Services, and includes the Secretary of Energy and Environmental Affairs, two senior transportation staff, and the commissioner of public health.

Relative to the work of this Compact, the Massachusetts Department of Transportation (MassDOT) has articulated its vision as: "...a strong commitment to pedestrian and bicycle access. Walking and bicycling move people out of single-occupant vehicles, reduce traffic congestion, and promote healthy lifestyles and a cleaner environment." In addition, the Compact's goals include:

- Promoting interagency cooperation on healthy transportation policy
- Increasing access to healthy transportation alternatives; these will reduce greenhouse gas emissions, increase opportunities for physical activity, and improve access to transportation services for persons with disabilities



- Increasing bicycle and pedestrian travel; advancing the Bay State Greenway Network
- Supporting implementation of “complete streets” in construction projects
- Developing and using health impact assessments to understand the impact of transportation projects
- Facilitating access to appropriate, cost-effective transportation services for individuals with disabilities
- Expanding the Safe Routes to Schools program

### **MassDOT Performance Management and Innovation**



Commonwealth of Massachusetts legislative requirements established an Office of Performance Management and Innovation within MassDOT to report on the progress of transportation reform implementation and facilitate:

- Developing strategic plans for agencies’ program activities and performance goals
- Establishing program goals and measuring performance (including service delivery) against goals
- Publishing an annual performance “Score Card” on all modes of transportation
- Creating a website to document performance measures and results achieved
- Providing municipalities with access to MassDOT’s project information system

Part of the work plan of the Office of Performance Management and Innovation is to meet with MassDOT division administrators to select measures and develop strategies.

### **Limited Fiscal Resources: The Massachusetts Transportation Finance Commission Report and the D’Alessandro Report**

#### **Transportation Finance in Massachusetts: An Unsustainable System: Findings of the Massachusetts Transportation Finance Commission, March 28, 2007**

The Massachusetts Legislature convened a Transportation Finance Commission in order to develop a long-term transportation finance plan for the Commonwealth. It was charged with identifying the:

- Transportation system’s capital and operating needs, for all modes
- Future state and federal funds likely to be available
- Funding shortfall
- Recommendations for meeting funding needs

The report identified extensive maintenance needs for both the roadway and transit systems that must be addressed. It also found that there was an approximate \$15 billion to \$19 billion shortfall between the funding available over the next 20 years and the cost of undertaking this maintenance. This estimate leaves no funds available for needed expansion or enhancement programs and projects.

Since this report, Governor Patrick and the Massachusetts Legislature have provided additional funding in two major areas: the Accelerated Bridge Program, a statewide program to strategically invest \$3 billion to achieve an important reduction in the number of structurally deficient bridges in the state, in 2008, and maintenance of Massachusetts Bay Transportation Authority (MBTA) transit services, in 2009. In addition, the reorganization of the transportation agencies resulting from the state transportation reform legislation is delivering more efficient operations and cost savings in transportation agencies and services. New fiscal management resulting from the reorganization is also resulting in cost savings.

### The MBTA Review, November 1, 2009 (D'Alessandro Report)

The purpose of this report was to provide an independent review of the MBTA covering its finances, operations, and organization. The findings of the report were:


- The MBTA's finances are crippled by its structural operating deficit from its longstanding gap between expenses and revenues. The resulting debt and debt restructuring to balance the annual budget have left the MBTA with growing deficits.
- There are significant maintenance needs for the MBTA's aging infrastructure, and addressing them, to avoid safety and service problems, will add to the finance and deficit problems.

### Prevalent Land Use Practices and Initiatives

Smart growth principles for land use are becoming more established in the Boston Region MPO area. Smart growth is a statewide policy that encourages compact, mixed-use development. This is important because the result is development decisions that yield efficiencies such as making better use of our existing infrastructures (water, sewer, under-used buildings, roadways, and transit) and creating conditions that favor increased non-single-occupant-vehicle transportation, such as transit, and active transportation, such as bicycling and pedestrian travel. Expected outcomes of smart growth development enhance the existing built environment and result in minimized environmental impacts, air quality improvements, and more energy efficiency, economic activity, and use of transit and the active transportation modes. The result is currently described as improved "sustainability."

This planning environment is the result of numerous executive orders, legislative actions, agency policies, and grant programs. Examples of those that are widely used across the region are:



- 
- Executive Order 385 of 1996, which directs that development and economic activity not contribute to sprawl. It gives assistance to regional and municipal planners, encouraging development where there is adequate infrastructure and where environmental resources are protected and impacts minimized.
  - The Transit-Oriented Development (TOD) Infrastructure and Housing Support Program (TOD Bond Program), which promotes TOD by providing funding for pedestrian, bicycle, and parking facilities in mixed-use developments that are near a transit station and meet affordability criteria.
  - The Chapter 40-R of 2004 Smart Growth Zoning Incentive Program, which provides incentives for municipalities to adopt zoning bylaws (smart growth zoning districts) that encourage smart growth, including development near transit services, municipal and commercial centers, and under-used properties. The associated Chapter 40-S Smart Growth School Cost Reimbursement provides for reimbursement to cover some public school cost increases (minus related increased revenues) incurred as a result of smart growth development
  - Programs undertaken by state agencies such as the MBTA, the Executive Office of Energy and Environmental Affairs, the Department of Housing and Community Development, and the Executive Office of Housing and Economic Development.

### **Regional Framework: MetroFuture**

The Metropolitan Area Planning Council (MAPC) is the regional land use planning agency for the Boston Region MPO. MAPC works to advance contemporary planning practice and to achieve smart growth results through implementation of its land use plan for the region, MetroFuture.

MetroFuture lays out 65 goals for the future, covering topics such as sustainable growth, housing choices, community vitality, regional prosperity, transportation choices, and a healthy environment. There are 11 transportation goals:

- Expanding the transit system in both urban and suburban areas
- Increasing the transit travel mode share
- Providing options to avoid congestion
- More bicycling and walking for short trips
- Reduced vehicle miles traveled
- Prevention of additional congestion
- Improved accessibility for persons with disabilities
- Linking land use and transportation
- Providing adequate funding for transportation needs
- Bringing the infrastructure into a state of good repair
- Expanding access to the global marketplace through efficient freight transportation



To support this work, MAPC is implementing a \$4 million federal grant to fund a portion of its Metro Boston Consortium for Sustainable Communities. This consortium is an organization of more than 55 municipalities, 50 community-based organizations, state agencies, and numerous advocacy groups and institutions, including the Boston Region MPO. The goal is to implement smart growth in the Boston region and to move the region toward real sustainability. This program will accomplish this through several sets of activities, including: intensive local planning and zoning work in a few, varied types of communities; introducing new tools and models for planning; and supporting regional and state policies that foster sustainability. It will also promote its goal through education and advocacy.

The MetroFuture transportation and land use goals and the MPO's visions and policies are consistent and mutually supportive.

### **JOURNEY to 2030 Visions and Policies**

In JOURNEY to 2030, this LRTP's predecessor, visions and policies were organized into eight topics:

- System preservation, modernization, and efficiency
- Mobility
- Environment
- Safety and security
- Regional equity
- Land use and economic development
- Public participation
- Finance

The visions and policies of JOURNEY to 2030 are the foundation of the MPO's new visions and policies for Paths to a Sustainable Region. However, in the new set, the structure of topics (listed in the following section) is slightly different in three ways.

First, climate change has been made a topic of its own. Second, to reflect current practice, the JOURNEY to 2030 topic of land use and economic development has been incorporated into the new topic of livability. Land use and economic development are among the cornerstones of livability and are prominent in the livability vision and policies.

Finally, public participation and finance are no longer singled out as individual topics. These activities are more closely related to operations than to policy. The MPO adopted a comprehensive public participation program in June 2007 and updated it in April 2010. It details how the MPO will maintain communication with and provide involvement for interested parties and members of the public, and it reflects input gathered during the development of JOURNEY to 2030. This program is integral to the MPO's day-to-day operations. MPO activities seek to provide opportunities for all residents and interests (including business, environmental, community, development, and transportation interests) to participate in the region's transportation planning.



The MPO works cooperatively with municipalities and other interested parties in the region to find solutions for the region's transportation issues. It reviews and updates its processes and tools for outreach in order to improve and expand these opportunities for participation. The document that sets forth the program is available on the MPO website at [www.bostonmpo.org](http://www.bostonmpo.org).

Finance is no longer singled out as a vision and policy topic. Fiscal constraint, planning in an environment of limited financial resources, and financial responsibility are basic principles of MPO operations. Efficiently and effectively applying financial resources to meet the region's transportation needs is the rule for programming. The MPO must match investments with identified regional needs and must fund the services, programs, and projects that are most effective and financially feasible for addressing those needs. In



addition, the MPO works with implementing agencies and municipal project proponents to better estimate and contain project costs as well as considers the cost of the transportation system's maintenance and operations when selecting projects.

In the new set of vision and policy topics, "transportation equity" is a new term for the topic "regional equity," not a new topic. Transportation equity is the MPO's ongoing work focused on understanding the transportation needs of minorities, individuals with low incomes, those of limited English proficiency, the elderly, youth, and persons with disabilities in the region. The MPO conducts outreach to gather information on these needs and considers them in its planning and programming.

## **VISIONS AND POLICIES FOR PATHS TO A SUSTAINABLE REGION, AND THE POLICIES FOR ATTAINING THEM: AN APPROACH EMPHASIZING A SUSTAINABLE TRANSPORTATION SYSTEM AND A HEALTHY REGION**

*Paths to a Sustainable Region* has been developed within the planning framework and context discussed above. Particular challenges in the region include limited fiscal resources, climate change, energy conservation, the pursuit of greater economic prosperity, mobility needs, improving access to destinations, an aging population, an aging infrastructure, and cultural and environmental resources at risk.

Areas for new or additional emphasis in MPO planning are:

- Linking land use planning and transportation planning
- Working with limited financial resources

- Using a management and operations approach
- Protecting air quality and the environment
- Preserving and maintaining the transportation system
- Increasing transit and other “healthy transportation” mode shares
- Helping build sustainable communities

This LRTP is an opportunity to grapple with these challenges. The first step was to articulate a vision for 2035 for the region’s transportation network and its communities. In this LRTP, the visions are descriptions of the end state resulting over time from the MPO’s current and future actions.

The policies were derived from the visions. They are specific statements to guide transportation decision making in order to reach the envisioned future.

The MPO has established seven basic visions and seven correlating sets of policies to implement them. The visions and policies pertain to the following topics:

- System preservation, modernization, and efficiency
- Livability
- Mobility
- Environment
- Transportation equity
- Climate change
- Safety and security

### System Preservation, Modernization, and Efficiency

**Vision:** The regional transportation system will be maintained to a state of good repair and will operate with maximum efficiency. It will be reliable and modern and will provide improved mobility regionwide. Automobile dependency will be reduced, and the transit system will serve more people. Modernization of the existing system will provide access and accessibility throughout for all; additions to the transportation system will also be fully accessible for persons of all abilities.

Efficiencies and operational improvements will come through ongoing system preservation, use of intelligent transportation systems (ITS) and other technologies, management and operations strategies, and a balanced program of strategic investments.





Innovative approaches will reduce auto dependency and actively promote other modes of transportation.

Expansion of the system will come through strategic investments.

**Policies:** Maximizing efficiency, reliability, mobility, and accessibility with our existing infrastructure and within current and ongoing fiscal constraints will require following a program of strategic, needs-based investments. To accomplish this, the MPO will put a priority on programs, services, and projects that:

- Develop low-cost strategies; pursue alternative funding sources and mechanisms
- Use ITS, new technologies, transportation systems management, and management and operations; turn to technology before expansion
- Bring all elements of the transportation network into a state of good repair and maintain them at that level; set funding levels to make this possible
- Maintain bridges and roads
- Support the increase of Chapter 90 (the grant program to fund municipalities' highway capital improvements) funding so that local road maintenance can remain focused on that program

These policies relate directly to the following federal planning factors:

- Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.
- Promote efficient system management and operation.
- Emphasize the preservation of the existing transportation system.



## Livability

**Vision:** All residents will have the capability of moving affordably between where they live, work, get services, and play using healthy transportation options that promote a healthy lifestyle. Multimodal transportation will serve business, residential, and mixed-use centers. Transportation investments will focus on existing activity centers, including sites of economic activity and adequate public infrastructure, where density will be encouraged. These centers of community activity will grow in population density and diversity of uses. This density and mixed-use activity will better support new and increased transit services. Investments in bicycle and pedestrian facilities and in accessibility improvements will support

healthy lifestyle choices and increase mobility for everyone, including people with disabilities. Community centers will thrive with the implementation of “complete streets” and context-sensitive design principles; urban design changes in community centers will create more human-scale and aesthetically pleasing community environments. The design of the transportation network will protect cultural, historical, and scenic resources, community cohesiveness, and quality of life.

The transportation network will play its part as a foundation for economic vitality. Energy use will be managed efficiently and alternative energy sources used.

**Policies:** To make livability a hallmark of communities in the MPO region and to achieve mobility, foster sustainable communities, and expand economic opportunities and prosperity, the MPO will put a priority on programs, services, and projects that:

- Are consistent with MetroFuture land use planning; this means supporting transportation projects serving: already-developed locations of residential or commercial/industrial activity; locations with adequate sewer and water infrastructure; areas identified for economic development by state, regional, and local planning; and areas with a relatively high density of development
- Support health-promoting transportation options, such as bicycle and pedestrian modes, and activities that reduce single-occupant-vehicle use and overall vehicle-miles traveled
- Expand, and close gaps in, the bicycle and pedestrian network; promote a “complete streets” philosophy
- Support transportation design and reasonably priced enhancements that protect community cohesiveness, identity, and quality of life



These policies relate directly to the following federal planning factors:

- Support the economic vitality of the metropolitan area, especially enabling global competitiveness, productivity, and efficiency.
- Increase accessibility and mobility of people and freight.
- Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and state and local planned growth and economic development patterns.
- Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.



## Mobility

**Vision:** People in most areas of all corridors in the region will have access to transportation to jobs, education and training, health services, and social and recreational opportunities. This includes persons with disabilities, the elderly, youth, minorities, and persons with low incomes or with limited English proficiency. More communities will have more transportation options, both motorized and nonmotorized. The transportation infrastructure will accommodate freight and commercial

activity as well as passenger needs. Freight will be moved efficiently by all freight modes.

The transportation system and services will be reliable. Delays, congestion, and travel time will be reduced. Transit ridership and use of sustainable options will be increased. The system will meet people's needs; funding decisions will be guided by attention to customer service. Existing transit, bicycle, and pedestrian facilities will be linked in a network.

**Policies:** To improve mobility for people and freight, the MPO will put a priority on programs, services, and projects that:

- Strengthen existing and create new connections within and between modes
- Improve access to transit by all persons and the accessibility of transit for persons with disabilities
- Improve the frequency, span, and reliability of transit services
- Expand the transit, bicycle, and pedestrian networks while focusing bicycle investments (lanes and paths) on moving people between activity centers and linking with transit
- Integrate payment methods for fares and parking across modes
- Support transportation demand management, Transportation Management Associations, shuttles, and carpooling
- Address capacity constraints and bottlenecks in the existing roadway system using low-cost approaches (transportation system management strategies, management and operations strategies, ITS, and new technologies) before expansion

These policies relate directly to the following federal planning factors:

- Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.
- Increase accessibility and mobility of people and freight.
- Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.



- Promote efficient system management and operation.

## Environment

**Vision:** Human and environmental health will be considered in transportation decision making. With transportation investments targeted to areas of existing development, many greenfields will be preserved, many brownfields will be restored and reused, and water and sewer infrastructure and other utilities will be more cost-effectively maintained. Air quality will be improved as the full range of regulated vehicle emissions (carbon monoxide, nitrogen oxides, volatile organic compounds, and particulates) and carbon dioxide are reduced to required and/or targeted levels. The transportation project design process will avoid or minimize negative impacts to wetlands, soil, water, and other environmental resources. Context-sensitive design principles will be implemented to protect communities' cultural, historical, and scenic resources, community cohesiveness, quality of life, and aesthetic environments.



**Policies:** To protect the environment and minimize impacts from transportation, the MPO will put a priority on programs, services, and projects that:

- Improve transportation in areas of existing development, which will reduce pressure to develop greenfields and possibly support development that will clean up brownfields for productive use
- Promote energy conservation, fleet management and modernization, and high-occupancy travel options to reduce fuel consumption and emissions of pollutants
- Protect community character and cultural resources
- Protect natural resources by planning early to avoid or mitigate impacts on stormwater or groundwater and on other resources
- Protect public health by reducing air pollutants, including fine particulates; avoid funding projects that increase exposure of at-risk populations to ultrafine particulates
- Lower lifecycle costs from construction to operation
- Increase mode share for transit and nonmotorized modes
- Promote energy conservation and use of alternative energy sources
- Promote a context-sensitive design philosophy, consistent with the MassDOT Highway Division design guidelines

Transportation agencies will work with environmental and cultural resource agencies to achieve these ends.

These policies relate directly to the following federal planning factor:

- Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and state and local planned growth and economic development patterns.



### Transportation Equity

**Vision:** Low-income and minority residents, as well as the elderly, youth, and persons for whom English is a second language (ESL populations), will enjoy, on a level equitable with others, mobility and access to affordable transportation options that connect them with jobs, educational institutions, and services. Environmental burdens from transportation facilities and services (existing and future) will be minimized for these persons; low-income and minority persons will not be inequitably burdened. Expansion projects will address regional needs.

**Policies:** To provide for the equitable sharing of the benefits and burdens of transportation investments among all residents of the region,

the MPO will put a priority on programs, services, and projects that:

- Continue outreach to low-income and minority residents and expand data collection and analysis that include the elderly, youth, and ESL populations in order to identify these residents' transportation needs
- Continue to monitor system performance
- Address identified transportation equity issues and needs related to service and to removing or minimizing burdens (air pollution, unsafe conditions, community impacts)
- Track implementing agencies' actions responding to transportation needs identified in MPO outreach and analysis related to transportation equity; encourage action to address needs
- Strengthen avenues for involvement of low-income and minority persons in decision making
- Reduce trip times for low-income and minority neighborhood residents and increase transit service capacity
- Give priority to heavily used transit services over new, yet-to-be-proven services



These policies relate directly to the following federal planning factors:

- Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.
- Increase accessibility and mobility of people and freight.
- Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.

## Climate Change

**Vision:** The production of greenhouse gas (GHG) emissions by the transportation sector in this region will be reduced to levels that contribute appropriately to the statewide targets set by the Massachusetts Global Warming Solutions Act. The MPO region will have joined with other entities in Massachusetts and the Northeast to slow and perhaps prevent the onset of serious climate change effects. The MPO, in consultation and cooperation with state and federal agencies planning action on GHG reduction, will have adopted GHG reduction goals and taken the steps necessary to meet them. Critical elements of the region's transportation infrastructure that may be vulnerable to the impacts of climate change will have been identified and protected.

**Policies:** To meet the targets for reducing GHG emissions, the MPO will put a priority on programs, services, and projects that:

- Implement action to meet defined targets for reducing vehicle-miles traveled (VMT); tie transportation funding to VMT reduction
- Support stronger land use and smart growth strategies
- Increase transit, bicycle, and pedestrian options
- Invest in adaptations that protect critical infrastructure from effects resulting from climate change
- Encourage strategies that utilize transportation demand management
- Promote fleet management and modernization, idling reduction, and alternative fuel use
- Contribute to reduced energy use in the region; energy use will be part of the environmental impact analysis of all projects



These policies relate directly to the following federal planning factor:

- Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and state and local planned growth and economic development patterns.



## Safety and Security

**Vision:** All modes of the transportation network, passenger and freight, will provide transportation that is safe, personally and operationally, to the maximum feasible degree. The number and severity of crashes will have been reduced. State-of-the-practice ITS measures and surveillance communication systems will have been deployed on the transit system to minimize vulnerability to security breaches. Transit malfunctions will have been reduced.

Steps will have been taken to protect the viability of transportation infrastructure critical to emergency response and evacuations necessitated by natural hazards and man-made threats.

**Policies:** To provide for maximum transportation safety and to support security in the region, the MPO will put a priority on programs, services, and projects that:

- Implement actions stemming from all-hazards planning
- Maintain the transportation system in a state of good repair
- Use state-of-the-practice safety elements; address roadway safety deficiencies (after safety audits) in order to reduce crashes; and address transit safety (this will include following federal mandates)
- Support incident management programs and ITS
- Protect critical transportation infrastructure from both natural hazards and human threats; address transit security vulnerabilities; upgrade key transportation infrastructure to a “hardened” design standard
- Improve safety for pedestrians and cyclists; ensure that safety provisions are incorporated into shared-use corridors
- Reduce the severity of crashes, especially via measures that improve safety for all
- Promote safety through supporting the reduction of base speed limits (in municipalities) to 25 miles per hour and through education about and enforcement of rules of the road, for all modes that use the roadways
- Improve the transportation infrastructure to better support emergency response and evacuations

All-hazards planning will continue, with MPO participation, and the MPO will take appropriate action on the recommendations of that work.

These policies relate directly to the following federal planning factors:

- Increase the safety of the transportation system for all motorized and nonmotorized users.
- Increase the ability of the transportation system to support homeland security and to safeguard the personal security of all motorized and nonmotorized users.

## **NEXT STEPS: OBJECTIVES AND PERFORMANCE MEASURES**

Guided by its visions and policies, and by the needs identified in the region, the MPO will begin developing objectives for the roadway and transit components of the region's transportation system. The Congestion Management Process and other studies and data will be used to identify transportation needs for the roadway system, which also serves the bus transit, bicycle, and pedestrian modes. These needs and other technical knowledge will be used for the identification of objectives and performance measures for the region's roadways and bicycle and pedestrian system. Input for transit needs will come from the MBTA's December 2009 Program for Mass Transportation and the Authority's ongoing program of monitoring its performance. This ongoing program is based on the MBTA Service Delivery Policy, which establishes transit service objectives and standards. The MPO transit objectives and performance measures will be derived from all of these MBTA sources.

## **USE OF THE VISIONS AND POLICIES IN DECISION MAKING**

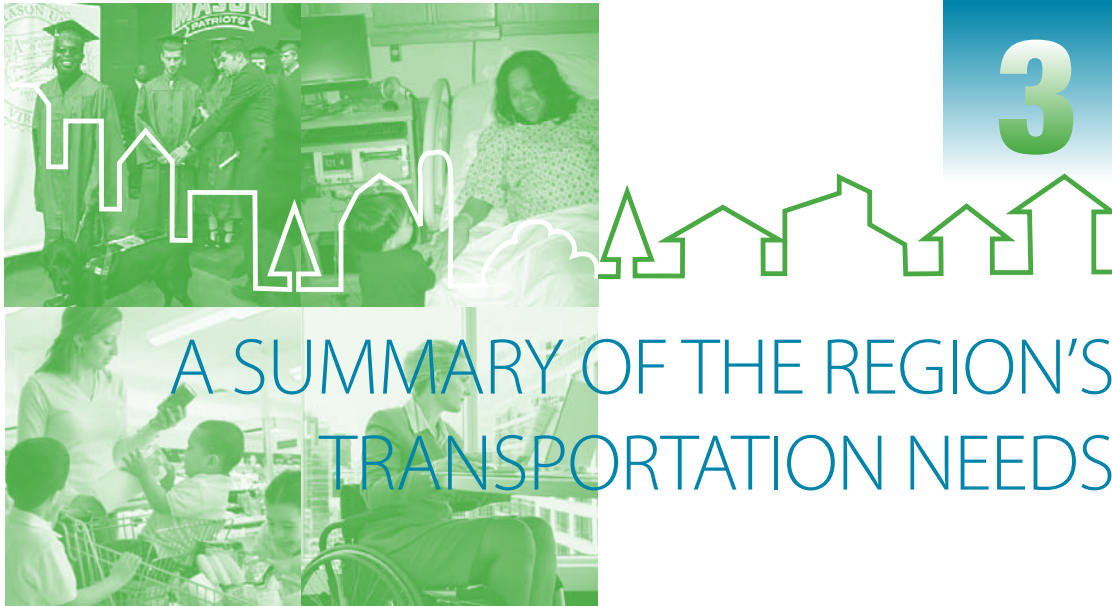
The visions and policies, in addition to having guided the selection of the projects and programs in this LRTP, will be integrated into the MPO's ongoing planning process, providing direction for MPO strategies and work, including technical support, studies, programs, and other improvements. Because the MPO adopted the visions and policies early in the LRTP-development process, it began applying them to its work even before this LRTP was completed. The LRTP begins the discussion of objectives and of the performance measures that will be used to track progress toward them.

The MPO is using the visions and policies to guide two of its other key planning documents. It has applied them in updating its Transportation Improvement Program (TIP) project evaluation criteria for use in the development of the FFYs 2012–15 TIP and subsequent TIPs. The visions and policies are guiding development of the annual Unified Planning Work Program (UPWP), as well, which lists the studies and programs that the MPO undertakes.

Current programs in operation at the MPO that advance the visions are:

- Transportation Equity Program, which gathers information on the transportation needs of low-income, minority, elderly, ESL, youth and elderly persons
- Coordinated Human Services Transportation planning, which identifies needs for transportation supporting human services
- Bicycle and pedestrian planning, which includes conducting bike counts and other studies and providing technical assistance to municipalities and organizations seeking to improve these facilities

- Clean Air and Mobility Program, which funds locally developed and implemented projects pertaining to infrastructure, to transportation systems management/ transportation demand management, or to transit and using funds in the federal Congestion Mitigation and Air Quality Improvement funding category
- Livable Community Workshops, which provide information and technical resources to municipalities and organizations seeking to improve the sustainability and livability of their neighborhoods
- Coordinated Local Assistance, which provides technical assistance and ideas for low-cost solutions to municipalities seeking to solve locally identified problems



## 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.



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

## THE CORRIDORS

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.

### 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.



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.

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)

### 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

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.



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**

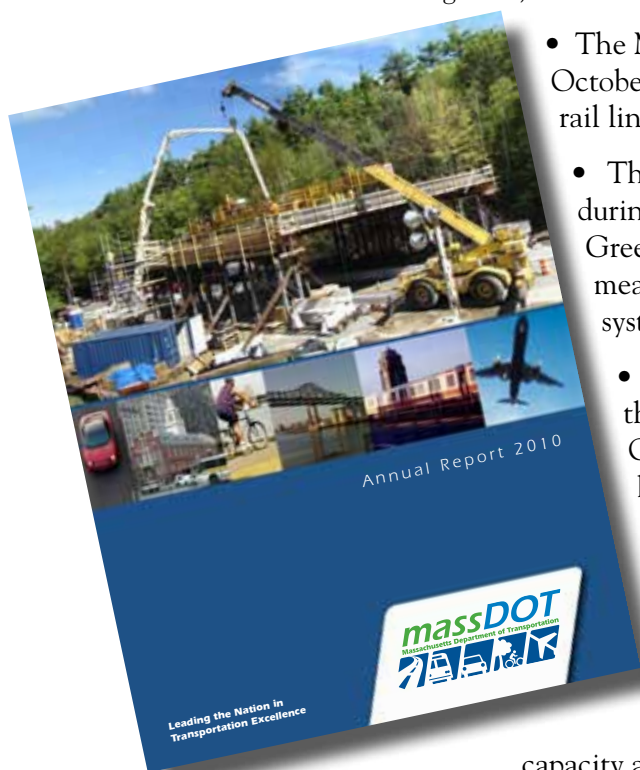
The maintenance projects described in the preceding section will also improve mobility in the region. Achieving and maintaining a state of good repair will ensure that functional vehicles and infrastructure are available when and where they are needed to provide safe and reliable service that meets demand. 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)

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

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

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.

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

- 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.
- 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.

### 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.

- **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)

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

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

- **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.





## INTRODUCTION

The Boston Region MPO's Central Vision states that the region's transportation system will be a result of attentive maintenance, cost-effective management, and strategic investments in the existing system by the MPO. This can be accomplished through a strong management and operations plan for an improved transportation system. For the Boston MPO's LRTP, management and operations covers three of the MPO's vision topic areas – System Preservation, Modernization, and Efficiency; Mobility; and Safety and Security, all of which will all be addressed in this chapter.

System preservation, modernization, and efficiency are a guiding vision for this LRTP. Due to regional transportation needs, historical investment in the transportation system has been on system expansion. The infrastructure, however, is aging. In addition, it has become clear that the demands placed on highway and transit facilities have been taxing to the point that routine maintenance is insufficient to keep up with maintenance needs. As a result, there is a significant backlog of maintenance and state-of-good-repair work to be done on the highway and transit system, including bridges, roadway pavement, transit rolling stock, and traffic and transit control equipment. Under these circumstances, the concept of preservation, modernization, and efficiency has become ever more important. The region's transportation funds are limited. Attention to the maintenance needs must be applied within a system of priority setting that addresses both the most serious and the most effective investments in order to provide maximum current and future benefits.

The MPO is also concerned about mobility in the region. In pursuit of the MPO's Mobility vision, the MPO and its member transportation agencies will need to implement measures that move the Boston region toward the multimodal, coordinated mix of transportation options that will be convenient, reliable, affordable, accessible, and increasingly sustainable. This means taking steps to relieve congestion and providing for a more efficient use of the roadway and transit networks. Some of these measures

The MPO strives to support projects that will improve safety and security for all users of the transportation system... and reduce the number and severity of crashes.

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 this chapter.

The MPO strives to support projects that will improve safety and security for all users of the transportation system – motorists, transit riders, bicyclists, pedestrians, and persons using other nonmotorized modes – and reduce the number and severity of crashes. It also seeks to protect and maintain the viability of transportation infrastructure that is important for conducting emergency response and for enabling the evacuation of populations that may be necessary in response to natural disasters or disasters caused by human activity. The MPO recognizes that the transit and highway systems play a vital role in moving people safely in the region – including in times of crisis – and that investments in state-of-the-practice intelligent transportation systems (ITS), communication systems, and other elements of the infrastructure are important for providing dependable and safe transportation.

The following sections provide further detail on these three topic areas. They identify the MPO’s visions and policies, and discuss MPO actions to move the transportation system toward these goals. Finally, a section on the development of performance measures outlines the next steps that the MPO will take to track how the region is moving toward its visions.

## SYSTEM PRESERVATION, MODERNIZATION, AND EFFICIENCY

### The Boston Region MPO’s Vision for System Preservation, Modernization, and Efficiency

**Vision:** The aspirational end state of this vision is a regional transportation system that will be maintained to a state of good repair and will operate with maximum efficiency. It will be reliable and modern and will provide improved mobility regionwide. Automobile dependency will be reduced, and the transit system will serve more people. Modernization of the existing system will provide access and accessibility for all; additions to the transportation system will also be fully accessible for persons of all abilities.

Efficiencies and operational improvements will come through ongoing system preservation, use of intelligent transportation systems (ITS) and other technologies, management and operations strategies, and a balanced program of strategic investments. Innovative approaches will reduce auto dependency and actively promote other modes of transportation.

Expansion of the system will come through strategic investments, based on regional needs assessments.

**Policies:** To accomplish this, the MPO will put a priority on programs, services, and projects that:

- Develop low-cost strategies and pursue alternative funding sources and mechanisms

- Use ITS, new technologies, transportation systems management, and management and operations; embrace technology before expansion
- Bring all elements of the transportation network into a state of good repair and maintain them at that level; set funding levels to make this possible
- Maintain bridges, roads, and the existing transit system
- Support the increase of Chapter 90 (described below) funding so that local road maintenance can remain focused on that program



## MPO Actions to Achieve the System Preservation, Modernization, and Efficiency Vision

*Paths to a Sustainable Region* envisions a highway system that is well maintained and has less congestion. The MPO and its member agencies have implemented numerous measures that are moving the region towards realizing the vision by helping to achieve a state of good repair of the roadway and transit network.

### Highway

#### Interstate Highway Maintenance

The Massachusetts Department of Transportation (MassDOT) oversees the interstate maintenance program and ensures that the system of interstate highways within the region is maintained to an acceptable standard. Work under this category includes reconstruction, resurfacing, signing, striping, and other routine or periodic maintenance. MassDOT's Capital Investment Program states that \$128 million would be needed annually for maintenance of the interstate system in order to achieve a pavement serviceability rating of excellent. MassDOT is expected to commit approximately \$70 million per year over the next five years for this program.

#### Pavement Management of Federal-Aid Roadways

The Boston Region MPO's roadway network includes 3,463 centerline miles of federal-aid-eligible roadways. Of the total, 694 centerline miles are maintained by MassDOT and 2,769 centerline miles, are maintained by the municipalities with Chapter 90 funds (see below).

Presently, the MPO does not maintain an independent pavement management tool that would enable it to identify needs and estimate maintenance costs and priorities for the resurfacing of its federal-aid-eligible roadways. It has been the policy of the MPO not to fund resurfacing-only projects in the Transportation Improvement Program (TIP). However, the MPO does make funding decisions for roadway reconstruction projects that include resurfacing, usually deep reconstruction, in addition to other design elements.



In 2009, the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) recommended that the MPOs undertake a study to establish the cost of maintaining the roadway systems in the cities and towns that make up their regions. The interstate and the National Highway System arterials in each region have their own dedicated federal funding source and are largely the responsibility of MassDOT. The remaining miles of arterials as well as the urban collectors in the regions are the responsibility of the cities and towns working in cooperation with the MPOs. As such, the MPOs need to know the cost of maintaining these roadways, and more importantly, need

to ensure that their maintenance is accounted for.

In response to the FHWA and FTA recommendation, the Boston MPO included a study of “Maintenance Costs of Municipally Controlled Roadways” in its Fiscal Year (FY)2011 Unified Planning Work Program (UPWP). As part of that study, the Boston MPO worked with the Massachusetts Association of Regional Planning Agencies (MARPA) and the MassDOT Office of Transportation Planning to form a Pavement Management/Maintenance Subcommittee, which included representatives from most of the 13 regional planning agencies/MPOs in Massachusetts. The subcommittee’s goal was to assist those regional planning agencies/MPOs that do not maintain a pavement management system (PMS) with determining the cost of maintaining the federal-aid eligible-local roadway system and to ensure that priority is given to the maintenance of that system.

The subcommittee met several times in the spring and summer of 2010. The discussion topics included:

- Existing methods and priorities of measuring pavement condition, maintenance, and level of investment
- Current pavement management practices
- Results and usage of existing PMSs, and what are the conditions and costs of maintaining the system
- Potential for prioritizing repairs by roadway type, and identifying funding sources
- Opportunities for consistent methodologies, repair strategies, pavement management software, etc.

Some of the findings from the committee meetings included the following. The Boston MPO has available MassDOT pavement condition information for a sample of 936 centerline miles (34 percent). According to the sample, 57 centerline miles (6 percent) are in excellent condition; 275 centerline miles (29 percent) are in good condition; 284 centerline miles (30 percent) are in fair condition and 319 centerline miles (34 percent)



are in poor condition. Since this sample likely pertains to pavement information for roadways approximating the function and maintenance standard of MassDOT-maintained roadways, it is unlikely that it closely represents the pavement conditions of the municipality-maintained roadways in the MPO. Based on a recent staff analysis, the actual condition distribution may be closer to 20 percent excellent, 29 percent good, 25 percent fair, and 26 percent poor.

Recently, the MPO has taken two actions toward estimating maintenance costs for the 2,769 centerline miles of the federal-aid-eligible road network in the MPO: first, staff was asked to make an estimate of the maintenance needs for federal fiscal years 2010 to 2014 by applying various assumptions from neighboring regional planning agencies that maintain a PMS (a rough estimate was calculated that would bring the condition of all roadways to excellent condition); second, the MPO initiated a study to help set the parameters for the establishment of a pavement management system for the Boston Region MPO.

Following the results of the study, the MPO will be considering how to monitor pavement conditions for the federal-aid system. Through funding in its FY2012 UPWP, the MPO will develop a PMS that would set goals for percentages of roadway within each of the above-mentioned condition categories. These goals will likely be based on cost-effectiveness, safety, and the needs of a preventive maintenance program. Various pavement management scenarios would then be developed and discussed to guide spending for resurfacing in the region.

### Chapter 90 Program

The Chapter 90 program (named for Chapter 90 of the Massachusetts General Laws), which is administered by MassDOT, contributes to the Commonwealth's strategy of preserving existing transportation facilities. This program supports the construction and maintenance of roadways classified as local; that work is performed by the cities and towns of the commonwealth.

Typically, the majority of Chapter 90 allocations (60 percent) are used for road resurfacing, with another 32 percent for reconstruction. The remaining funding goes toward engineering and equipment. These funds are reimbursed to communities based on certified expenditure reports submitted to MassDOT. This program helps communities maintain and preserve locally owned roadways.

### Highway Bridges

Over the next 20 years, the MPO will need to continue to fund the maintenance and rehabilitation of the region's bridges, which includes replacing bridge decks and reconstructing bridges. With the goal of optimizing the allocation of limited resources, MassDOT and the Massachusetts Bay Transportation Authority (MBTA)





implemented PONTIS, a bridge management software tool for recording, organizing, and analyzing bridge inventory and inspection data. PONTIS is used to guide the statewide bridge program, which prioritizes resources for preservation, as well as for repair and replacement.

The statewide Accelerated Bridge Program (ABP) is designed to invest on bridge reconstruction that has an urgent construction schedule. This program will spend nearly \$3 billion over eight years to reduce the number of structurally deficient bridges in the state system. According to MassDOT, as of February 2011, ABP had advertised 132 construction projects with a combined construction budget valued at \$795.9 million. In this program, bridges are given priority based on a variety of factors, including cost savings from early action on bridge repairs.

One important asset management initiative is the municipal bridge maintenance agreements between MassDOT and many local communities. Under these agreements, MassDOT reconstructs bridges under local jurisdiction. In return for bridge reconstruction, municipalities agree to be responsible for maintenance and repair of minor deficiencies of the new bridge. The preservation agreements specify the types of maintenance required and provide for routine inspections by MassDOT. Together with the bridge evaluation criteria, these preservation agreements are an important part of a unified system for prioritizing and addressing the needs of all bridges, regardless of ownership.

Another issue that the MPO is aware of concerns the Department of Conservation and Recreation (DCR) facilities in the Boston Region MPO area. With the creation of MassDOT, some of these assets are being addressed, such as the Longfellow Bridge. The MPO will continue to work with other stakeholders on addressing the needs of the DCR transportation system.

### **Transit**

The MBTA is working to ensure that its assets are managed, maintained, and operated to preserve their useful life, thereby reducing the need for more costly, capital-intensive replacements or solutions. Various initiatives have been implemented to support these efforts, which are described below:



### **Transit Bridges**

Over the next 20 years, the MPO will need to continue to program funding for the maintenance and rehabilitation of the region's bridges, which includes replacing bridge decks and reconstructing bridges. The MBTA bridge inspection program is tailored to ensure that bridge repairs are prioritized and that all of the bridges receive adequate attention. In the MBTA's 2012–16 Capital Investment Program (CIP), 13.9 percent of the overall funding is allocated to the bridge program.

## Vehicles

The revenue vehicle fleet is one of the most visible and important components of the MBTA service network. These are the trains, buses, and other vehicles that passengers board every day. The MBTA's revenue fleet is composed of approximately 2,500 vehicles. Scheduled major overhauls, maintenance, and planned retirements allow the fleet to reach their useful life, and prevent the unwarranted consumption of resources to maintain their reliability. The revenue vehicle program is 19.7 percent of the MBTA's total 2012–16 CIP, the largest share of any program area. Almost half of the revenue vehicle program is dedicated



to reinvestment in the commuter rail fleet, primarily for the purchase of new coaches and locomotives. Subway investments will focus primarily on overhauls and upgrades to existing fleets. Although funding has been programmed for design and engineering for new Red and Orange Line vehicles, funding for the purchase of the vehicles has not yet been identified. The MBTA is investigating several options for addressing their subway vehicle needs. In addition, the MBTA will invest in 480 new buses as the current fleets turn over, and will complete a thorough overhaul of the remaining fleets. Non-revenue vehicles and equipment support the entire range of MBTA operations. The non-revenue vehicle program is 0.4 percent of the overall 2012–16 CIP.

## Stations

MBTA stations are one of the most visible components of the transit system, and provide access to rapid transit, light rail, commuter rail, and Silver Line service in the MBTA transit system. There are also over 8,000 bus stops, 675 of which have bus shelters of various kinds. The majority of the funding for stations is devoted to the renovation of subway stations and systemwide replacement of escalators and elevators. The total investment in stations is 4.8 percent of the 2012–16 CIP. Station improvement projects driven by accessibility concerns and the Key Station Plan, which may include other modernization work in addition to accessibility, are described in the Mobility section of this chapter.

## Track and Signals

The MBTA rapid transit system operates on 191 miles of track, and the commuter rail system operates on 650 miles of track. Several types of track construction can be found throughout these systems. The right-of-way for heavy rail rapid transit track often includes an electrified third rail through which subway cars receive the traction power needed to move. Systemwide track maintenance is 3.4 percent of the 2012–16 CIP.

The primary responsibility of the MBTA signal system is to control trains for efficient spacing and run times, making it an integral part of the transit system. The signal system's goal is to maintain train separation while attempting to minimize headways and

run times. Because the signal systems are crucial for supporting the safe and efficient operation of trains systemwide, 3.9 percent of the total capital program in the 2012–16 CIP is allocated to the signal program.

### Communications

The MBTA Communications Department’s responsibilities include maintaining an inventory of equipment and overseeing contract services for the Wide Area Network, two-way radio systems, microwave links, emergency intercoms, public address systems, light-emitting-diode (LED) message signs, fire alarm systems, security systems, and the supervisory control and data acquisition system. The department manages the MBTA’s Operations Control Center (OCC), which consists of technology that allows for real-time monitoring and supervisory control of the signal and communication systems for the rapid transit and bus systems. Current investments include completion of the system radio project, which will upgrade the MBTA’s radio communication with new state-of-the-art digital technology. The communications program is 0.2 percent of the 2012–16 CIP.

### Maintenance Facilities (Yards and Shops)

Maintenance facilities, or yards and shops, are the sites for regularly scheduled maintenance and emergency repairs on all MBTA vehicles. Each facility generally includes a building with a mechanical plant and shop equipment. The arrival of large fleets of vehicles equipped with new technologies will place additional demands on the personnel and facilities that maintain, repair, refuel, and service the vehicles. Additional fueling and engine equipment designed for CNG buses, along with maintenance and support equipment for additional 60-foot articulated buses, will be needed. Low-floor technologies on Green Line subway cars and new bus fleets also have special maintenance needs. As a result of the higher infrastructure costs of special facilities for CNG buses, a large portion of the funding for maintenance facilities in the 2012–16 CIP is



devoted to new construction or renovation of existing bus facilities to serve CNG buses. The total maintenance facilities program is 1.4 percent of the 2012–16 CIP.

### Supporting Infrastructure

Supporting infrastructure includes facilities and power. Facilities include administrative buildings, vent buildings, storage buildings, noise walls, retaining walls, culverts, parking garages and parking lots, layover facilities, and fencing (which prevents trespassers from gaining access to tracks and fast-moving trains). The facilities program represents 2.8 percent of the total 2012–16 CIP spending.

While power for the MBTA’s network is supplied by an outside utility, the MBTA transforms and distributes electricity over its own system to power the entire network

of subway, trackless trolley, and light-rail lines. The capital equipment in this power program is essential to operations: it supplies electricity to subway trains and trolleys for the traction power they need to move; to the signal systems for the power needed to control the trains; and to stations to operate their lights, elevators, and escalators, and other equipment. The MBTA's power program, arguably one of the least visible elements to passengers, is one of the most complex, important, far-reaching, and expensive systems for the MBTA to maintain. As such, investment in power programs is 6.4 percent of the 2012–16 CIP.

## Freight

The MPO and the Commonwealth must continue to work to manage, maintain, and operate the transportation system in a way that preserves the freight system's useful life. The MPO will continue to consider truck freight movements in the prioritization of system preservation projects included in the TIP. Various issues that must also be addressed to achieve a state of good repair are described below:

### Weight-Restricted Roadway Bridges

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. Trucks exceeding a bridge's weight restrictions must find alternate routes, increasing the trip distance and travel time.

### Weight-Restricted Rail

Rail lines are rated by the maximum weight of a rail car that can be accommodated on the rail line. The rail industry standard is 286,000 pounds for an individual rail car. However, most of the tracks in the Boston region are limited to 263,000-pound rail cars. This restriction increases the cost for shippers and can delay shipments, since the rail cars might need to be reconfigured before entering tracks rated below the industry standard.

Much of the rail network in Eastern Massachusetts is limited to 263,000-pound rail cars as a matter of policy. As was stated in the 2010 State Freight Plan, track conveyed by private railroads to the MBTA in the 1970s was transferred with the 263,000-pound rail car limit, and the MBTA is only required to maintain the rail to levels it was deemed at that time. The MBTA has rebuilt much of the track, however, the 263,000-pound weight limit remains. Due to financial constraint, it was not a priority of the MBTA to increase the weight limit, which could increase maintenance costs. The State Freight Plan states that the increase in maintenance costs could be addressed through new levels of fees for the freight carriers.

### Dredging

One of the most important issues for the Port of Boston is the need to dredge 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 identified a deep-draft navigational project that is necessary to improve the competitive position of the Port of Boston. An Army Corps of Engineers feasibility study that evaluated alternatives recommended a deeper, 48-foot navigational channel to access Conley Terminal and a 50-foot depth in the entrance channel. Additionally, the channel leading to the Port of Gloucester is currently dredged to 24 feet, but further dredging is planned for the future. The State Freight Plan also recommended dredging Chelsea Creek to 40 feet to allow larger oil tankers to access sites along the Creek.

## MOBILITY

### The Boston Region MPO's Vision for Mobility

**Vision:** People in most areas of all corridors in the region will have access to transportation to jobs, education and training, health services, and social and recreational opportunities. This includes persons with disabilities, the elderly, youth, minorities, and persons with low incomes or with limited English-language proficiency. More communities will have more transportation options, both motorized and nonmotorized. The transportation infrastructure will accommodate freight and commercial activity, as well as passenger needs. Freight will be moved efficiently by all freight modes.

The transportation system and services will be reliable. Delays, congestion, and travel time will be reduced. Transit ridership and the use of sustainable options will be increased. The system will meet people's needs; funding decisions will be guided by attention to customer service. Existing transit, bicycle, and pedestrian facilities will be linked in a network.

**Policies:** To improve mobility for people and freight, the MPO will put a priority on programs, services, and projects that:

- Strengthen existing connections within and between modes and create new ones
- Improve access to transit by all persons and the accessibility of transit for persons with disabilities
- Improve the frequency, span, and reliability of transit services
- Expand the transit, bicycle, and pedestrian networks while focusing bicycle investments (lanes and paths) on moving people between activity centers and linking with transit
- Integrate payment methods for fares and parking across modes
- Support transportation demand management, Transportation Management Associations, shuttles, and carpooling



- Address capacity constraints and bottlenecks in the existing roadway system using low-cost approaches (transportation system management strategies, management and operations strategies, ITS, and new technologies) before expansion

## MPO Actions to Achieve the Mobility Vision

### Highway

The MPO and its member agencies have implemented numerous measures that are moving the region toward realizing the vision by helping to relieve congestion and allowing for a more efficient use of the roadway and transit network.

### Congestion Management Process

The Boston Region MPO's Congestion Management Process (CMP) 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 website, which is updated regularly.

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

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 CMP provide support for the programs and initiatives that the MPO and its member agencies are undertaking to improve mobility in the region:

- 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, the number of





vehicle-miles traveled (VMT) and traffic delay are also expected to grow. Since 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.

- Travel demand management can be part of the integrated solution of reducing congestion and improving 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 for managing urban growth and design can reduce congestion. Development is occurring more quickly in outlying communities in the region than in the inner core. 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 the Safety and Security section of this chapter.

### 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. The programs for improving roadway are discussed below.

#### *Intelligent Transportation*

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. The Boston Metropolitan area was one of the first areas in the country to complete a metropolitan area Early Deployment Planning Program for ITS, sponsored by the Federal Highway Administration (FHWA), in 1993.

MassDOT developed a regional ITS architecture for metropolitan Boston in 2005, with a more recent update in 2011, 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.

In 2010, MassDOT developed a draft ITS Strategic Plan, and MassDOT, with its partner state transportation agencies, developed a Regional Transportation Operations Strategy for the Boston metropolitan region. The Boston Region MPO participated in the latter as a stakeholder. These documents contain information about the status of implementing ITS projects in the region and what the priorities are for additional implementation.

MassDOT 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. MassDOT operates numerous variable-message signs. MassDOT's Regional Operations Center dispatches emergency Commerce CaresVan patrol vans, a fleet of more than 20 vehicles that provides roadside assistance to stranded motorists, thereby improving highway safety and reducing congestion. Coordination with the MBTA's existing automatic vehicle location (AVL) capability is planned. The City of Boston's Traffic Management Center allows 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 pre-established 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 E-ZPass, 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.

The Federal Communications Commission designated 511 as a traffic information telephone number on July 21, 2000. The Mass511 service, provided by a no cost public-private partnership with Sendza, gives traffic and travel information on Massachusetts roads. The 511 service provides real-time traffic updates for major Massachusetts roadways. The system can be personalized by individual travelers.

### *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 the total congestion. The Commonwealth of Massachusetts outlines an incident management program in its Regional ITS Architecture for Metropolitan Boston report and the two draft documents produced in 2010 referenced above (the ITS Strategic Plan and the Regional Transportation Operations Strategy for the Boston metropolitan region). The program, which includes MassDOT's Commerce CaresVan patrol vans and numerous surveillance and detection equipment installed along highways, promotes the sharing between agencies of information and data about emergencies in order to facilitate the access of emergency vehicles and to reduce the 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. MassDOT, the City of Boston, and various municipalities already operate signal-coordination and closed-loop traffic signal systems. The MPO supports the monitoring of existing coordination plans and studying the region's roadways to determine which additional locations could benefit from signal coordination. Inventories in the CMP revealed that many MPO arterials could benefit from traffic signal coordination. If traffic-signal timing is rarely reviewed, it can result in outdated timing patterns that do not reflect current traffic and pedestrian needs. Signals that lack coordination or are inadequately coordinated force motorists to stop at multiple adjacent signals, resulting in significant travel delays. As part of a program of periodic reviews of corridor signal-timing plans for improved operations and coordination, the MPO is currently studying arterial traffic-signal improvements and coordination. Priority is being given to high-volume and high-crash-rate arterials.

### *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, while local roadways experience delays mostly 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. The MPO recently conducted a Low-Cost Improvements to Bottlenecks Study. In Phase I, the MPO identified the three worst bottlenecks in the



region and studied low-cost countermeasures. In a second phase of the study, the MPO will identify two more bottlenecks that are among the worst in the region and identify low-cost countermeasures.

### 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 10 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*

MassDOT's travel options program, MassRIDES, 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. MassDOT staff works closely with other community groups to improve mobility and expand travel choices and provides developers and employers with resources to create work-site commuter initiatives. These services include:

- Training and technical support for corporate transportation coordinators
- Ridematching for carpools and vanpools using 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.



### *NuRide*

MassDOT has partnered with NuRide, the nation's largest commuter rewards program, to encourage healthier and more sustainable modes of travel while reducing traffic and emissions throughout the commonwealth. NuRide is a free service supported by sponsors who provide special offers to NuRide members for

taking greener trips, such as walking, biking, carpooling, vanpooling, and public transportation, or for telecommuting, thus reducing global warming, traffic congestion, and energy consumption. The NuRide service is available to anyone who lives or works in Massachusetts.

NuRide is offered by MassDOT through MassRIDES and MassCommute, the statewide coalition of Transportation Management Associations.

### *Clean Air and Mobility Program*

In 2010, the MPO launched the Clean Air and Mobility Program in order to fund a wider variety of projects that improve air quality and mobility and that reduce congestion in the region using federal Congestion Mitigation and Air Quality (CMAQ) funds. This program expands on three previously existing programs: the Suburban Mobility, Transportation Demand Management (TDM), and Regional Bike Parking programs. The activities covered by the previous programs are still eligible for funds in the Clean Air and Mobility Program; however, the program broadens the scope of possible projects.

In addition to the funding program, the MPO has conducted several studies on suburban transit opportunities in the region.

- Suburban Transit Opportunities Study: Phase I 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.
- Regionwide Suburban Transit Opportunities: Phase II 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.
- Regionwide Suburban Transit Opportunities Study: Phase III investigated the

potential for demand-responsive service as a way to improve suburban mobility and accessibility.

### *Safe Routes to School*

MassDOT's 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 Interstate 93/Southeast Expressway between downtown Boston and the Braintree Split interchange
- A southbound, buffer-separated lane on Interstate 93 North that approaches Boston from the north
- A lane linking Interstate 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 Interstate 93 corridor, as well as to and from the Ted Williams Tunnel (Interstate 90).

### *Reverse Commuting*

Most of the reverse-commute destinations of 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 Interstate 495 are not served directly by commuter rail, and few have feeder buses to existing commuter rail and rapid transit stations. However, the study identified opportunities for pilot programs that warrant further exploration.



## TRANSIT

Improving access to transit and other alternative modes of transportation, including access for the elderly, low-income populations, and persons with disabilities, increases mobility in the region. Various initiatives have been implemented to support efforts to increase access, which are described below:

### MBTA Service Evaluation Process

The MBTA regularly evaluates the performance of its services through an ongoing service planning process. The primary objective of this process is to continually evaluate

and improve service, while ensuring that the MBTA uses available resources in the most effective manner. The service planning process varies somewhat by mode and is affected by whether or not the service is operated directly by the MBTA (bus and rapid transit) or is operated for the MBTA by a contractor (commuter rail and boat).



For bus service, the service planning process occurs on two levels. One is the ongoing evaluation and implementation of incremental service changes that occur on a quarterly basis to make minor corrections to the system. In addition, every two years, the MBTA Service Planning Department conducts a comprehensive planning process through which major changes can be made, such

as the restructuring of existing bus routes and the addition of new bus services. Rapid transit services are also evaluated through the biennial service plan, and changes proposed, as necessary.

A key component of the biennial service planning process is an evaluation of the performance of existing services, as measured using the service standards found in the MBTA's Service Delivery Policy. These service standards, which generally vary by mode and by time of day, include: service coverage, span of service, frequency of service, scheduled headway, vehicle load, and net cost per passenger. Also included in the planning process for the biennial Service Plan is an analysis of the impact of the proposed service changes on environmental justice populations.

For commuter rail, the MBTA Railroad Operations Department, together with the operating company, makes service adjustments as needed to best meet the needs of the riding public with the resources available.

### Park-and-Ride Facilities

The MPO is committed to increasing available parking capacity at various commuter rail and rapid transit stations throughout the region. Additional parking facilities will be constructed at transit stations over the lifetime of this LRTP based on prioritization in the Program for Mass Transportation and through other opportunities where funding may become available through third party partnerships.

There are 124 park-and-ride facilities in the MPO region (see the Volume II - Needs Assessment for more details about these facilities). 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. 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.

### 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 utilizes 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. The MBTA has recently initiated a Key Bus Route program through which it is making improvements to the 15 most heavily used bus routes in the system. As part of this program, MPO staff are studying the potential for implementation of signal priority at intersections on bus Routes 1, 15, 66, and 111. Buses that operate on the MBTA’s Silver Line Washington Street service are equipped with technology that can request signal priority through short-range communication with roadside traffic-control equipment that has been installed at some intersections. This capability is currently used when a vehicle is running behind schedule.

### Intelligent Transportation Systems (ITS)

In addition to traffic signal priority, 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 system (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 all buses through information on the web and smart-time applications with additional information provided for the Silver Line Washington Street at kiosk locations.

The MBTA provides travel information services in a variety of ways. On the MBTA’s website, 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 website, 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 has 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 website. 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.

Developers have recently built many Web, cell phone, and smartphone applications that give information about the MBTA system. Some applications are free; others have to be purchased. The applications include:

- Delivering real-time bus and subway arrival information
- Displaying real-time position data for the Orange, Red, and Blue lines
- Providing bus arrival times at a particular stop
- Finding a nearby bus route
- Giving automated email and text message reminders for a given bus route



### Bicycle Access on the MBTA

Rapid transit customers are allowed to take bicycles aboard Orange, Red, and Blue Line trains (up to two bicycles per car) 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 High-Speed Line, or Silver Line. However, folding bicycles are allowed on all MBTA vehicles, including the subway, Green Line, commuter rail, and ferries and buses, at any time, when folded.

Bike "Pedal & Park" facilities (which are enclosed and equipped with video cameras and controlled door access for safety and security) are now located at Alewife and Forest Hills stations, and others are being planned. Bike CharlieCards, which are provided for free, provide access to these locked facilities. Over 95 percent of MBTA stations now have bicycle racks, and 50 covered bike ports will be installed by the summer of 2011 to provide protection from the elements. The MBTA has also installed bike racks on over 70 percent of its buses.



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). However, bicycles can be taken on commuter boats and ferries at any time.

### Key Station Plan

The federal Americans with Disabilities Act (ADA) mandates improvements to facilities and infrastructure to ensure that they are accessible to persons with disabilities. 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.

### Access for the Elderly, Low-Income Populations, and Persons with Disabilities

Residents who are elderly, in low-income households, or who have disabilities often have fewer transportation options than others in the region. The over-55 population is projected to increase by almost 50 percent by 2035 and will represent over one-third of the population. The transportation needs of these populations will 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. The MPO's website provides a table listing senior transportation services provided by councils on aging and other providers.



Recognizing that the elderly population is growing, Governor Patrick signed an executive order in April 2011, to establish a commission to examine paratransit services provided by THE RIDE, regional transit authorities, and the Executive Office of Health and Human Resources.

#### *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 plan. MassDOT administers this initiative. The MPO has developed a Coordinated Public Transit Human Services Transportation Plan for the Boston Region MPO area and requests proposals for the two programs that are not solicited by the state: Job Access and Reverse Commute program and New Freedom program.

- 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.

## Freight

Of all freight transported in Massachusetts, over 90 percent is now carried by truck. Trucks will continue to be a vital part of the distribution system, therefore maintaining and improving mobility on the roadways trucks use is important to freight. However, encouraging the use of other options would help realize the vision of reducing some of the harmful effects of trucking such as roadway wear and tear, emissions, and trucks' contribution to congestion. The MPO will continue to work with MassDOT in implementing its State Freight Plan and will consider freight movements in the prioritization of projects included in the LRTP and Transportation Improvement Program (TIP). Various issues that the MPO and the Commonwealth must address are described below:



### Truck

#### *Congestion on Major Routes*

Trucks rarely account for more than 15 percent of the vehicles on the roadways of the Boston region. However, they contribute disproportionately to congestion because of their size and acceleration and deceleration capabilities. The presence of large numbers of trucks causes concern because of the congestion present on most of the region's freeway network. Truck volume on arterial roadways is also

a concern in many places, but freeways carry far more large trucks (defined as trucks with six tires or more) on both an absolute and percentage basis than arterial roadways.

One freeway particularly affected by trucking is Interstate 495, which has been identified by the Boston Region MPO's ongoing freight work and the State Freight Plan as a major truck route. This is due, in part, to its role in connecting northern and southern New England. Along with Interstate 495, the following locations on the freeway system in the Boston Region MPO area have high volumes of large trucks on a typical weekday. These will continue to be considered as major thoroughfares for freight movement and considered during project selection for funding in the LRTP and TIP:

- 20,000 or more large trucks per day: Interstate 495, between Routes 2 and 3 in Littleton
- 15,000–20,000 large trucks per day: Interstate 495, south of Interstate 90 in Hopkinton
- 10,000–15,000 large trucks per day:
  - Interstate 95, south of Route 20 in Weston
  - Interstate 93, between Routes 24 and 28 in Randolph
  - Interstate 95, north of Route 140 in Foxborough
  - Interstate 93, south of Interstate 95 in Woburn
  - Interstate 90, entering the MPO area (the volume of large trucks declines by more than 30 percent east of Interstate 495 and by more than 60 percent east of Interstate 95)

### *Bottlenecks*

Eight highway freight bottlenecks in the Boston region were identified in the State Freight Plan. They are:

- Interstate 93 southbound at Routes 3 and 128
- Route 24 at Interstate 93 in Randolph
- Interstate 95 at Route 9 in Wellesley
- Interstate 93 at Interstate 95 in Woburn, Stoneham, and Reading
- Route 1 at Route 60 (A project to alleviate this bottleneck is included in this LRTP.)
- Interstate 90 at Interstate 495 In Hopkinton
- Interstate 290 at Interstate 495 in Marlborough
- Route 16 from Route 1 to Interstate 93 in Medford, Everett, and Chelsea
- Route 99 from Sullivan Square to Route 16 in Boston and Everett



### *Hazardous Cargo*

There is a long-standing prohibition against trucks carrying hazardous cargo traveling in tunnels. The expressway segments impacted by this prohibition include:

- Interstate 90 – Ted Williams Tunnel under Boston Harbor
- Interstate 93 – Central Artery in downtown Boston
- Interstate 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

The process of establishing alternate routes involves federal, state, and municipal regulations, and a proposed 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. Restrictions have an impact on regional trucking patterns.

### *Overweight-Truck Routes*

Many containers arriving at the Port of Boston exceed the highway weight limits of Massachusetts and local jurisdictions. These containers must be reconfigured to a lower weight in order to be transported over roads to inland distribution centers. The State Freight Plan found that additional or more appropriate overweight-truck routes serving the Port of Boston would improve freight mobility and reduce the number of trucks needed to move containers from the Port to distribution centers.



#### *“The Last Mile”*

Trucks accessing the ports of Boston, Salem, and Gloucester have difficulty getting freight from the docks to their local highway system over “the last mile” which in most cases consists of local or residential streets. 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 been improved by the construction 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 seafood businesses, there

is a need for additional overweight-truck routes in the area. The State Freight Plan recommended port access improvements in South Boston, including a Conley Terminal freight bypass road. This project is included in this LRTP.



## Rail

### *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. More than 80 percent of the bridges over rails in the Boston Region MPO area do not meet the desired clearance of 20 feet and 8 inches. The Massachusetts Department of Transportation has an agreement with the freight railroad CSX to relocate and consolidate the Beacon Park intermodal yard from Allston to Worcester, in conjunction with plans to provide 20 feet and 8 inches of double-stack clearance from the New York state line to Westborough. In addition, the Commonwealth has agreed to reconstruct highway bridges over the CSX and Pan Am rail lines that are programmed for other repairs in the future to the agreed-upon double-stack standard.



### *Shared Use*

Passenger and freight trains share most of the rail network in Eastern Massachusetts. This can create problems for the scheduling and dispatching of trains, which can affect the mobility of freight. Some of the tracks in the region are used exclusively by freight railroads. The sections of the railroad network used by freight operators along with those shared with passenger trains are shown in Figure 4-1.

### *Capacity Constraint*

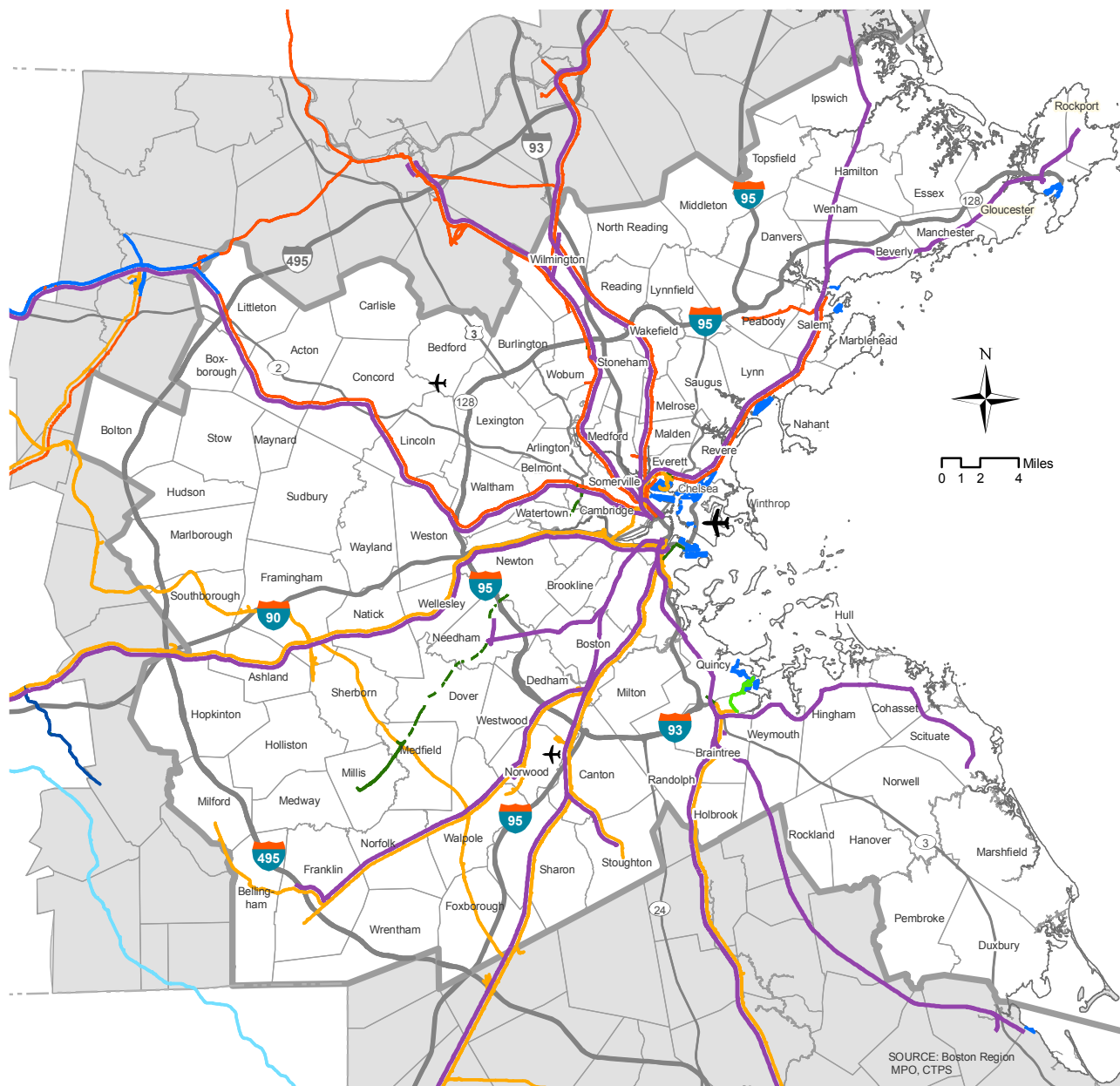
The State Freight Plan also identified major main line capacity constraints in the freight rail system that are not related to vertical clearance or weight restrictions. These are:

- Mansfield Freight Connections – Freight moving from the CSX Boston Line to the South Coast must cross the Northeast Corridor (rail), which constrains the movement of freight.
- Beacon Park Yard to South Boston – Passenger services into South Station, and a reconfiguration of the tracks in this area, restrict access to South Boston freight facilities, such as the Boston Marine Industrial Park, via rail.

### *“The Last Mile”*

Freight trains, like trucks, also lack direct access to most ports in Eastern Massachusetts. The lack of access requires freight to be moved to rail terminals by truck, and limits the ability for Massachusetts ports to compete for more freight traffic with ports that have good on-dock rail service. The State Freight Plan recommended improvements and extensions to the state-owned Track 61, which has the potential to provide on-dock rail service in South Boston at the Marine Industrial Park. The project would provide on-dock rail access to a planned bulk cargo facility at the North Jetty.

FIGURE 4-1  
SHARED USE RAIL INFRASTRUCTURE



**Freight Service Operators**

- Bay Colony Railroad
- CSX Transportation
- Fore River Transportation
- Grafton & Upton
- Providence & Worcester
- Pan Am Railways
- Pan Am Southern LLC
- Freight out of service

**Passenger Service**

- Amtrak/MBTA
- Seaport

## Air

### *Landside Access*

The Ted Williams Tunnel improved freight access to Logan International Airport, but landside congestion still threatens to restrict air freight. This is important because air freight is critical to the Massachusetts economy, which features many high-value manufacturers in the areas of biotechnology, pharmaceuticals, and information technology.

### **Freight Land Use Issues**

#### Industrial Rail Access Program

Businesses along rail lines often need to build or upgrade rail sidings in order to have access to freight rail service. Because construction of this infrastructure is generally much more expensive than highway connections, companies often choose to limit this infrastructure construction, thus decreasing the opportunities to ship by rail. Development pressures on land adjacent to rail have reduced the potential pool of rail-served businesses. The State Freight Plan recommends an Industrial Rail Access Program (IRAP) to address this problem. An IRAP would utilize public, private, and railroad funds to facilitate rail use, and reduce the growth in truck freight that is consuming the dwindling capacity of existing highways. The IRAP 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 in the future.

#### Beacon Park Yards Relocation

The freight railroad company CSX plans to move its terminal facility from Allston to Worcester, which will change some regional trucking patterns. Meanwhile, the movement will allow for improved passenger rail service between Worcester and Boston, since the state will own the tracks between the cities. This movement is occurring in conjunction with state and CSX projects that will allow double-stack capability between Worcester and the New York state border.



#### Warehousing and Freight Forwarding near Airports

Warehousing and freight forwarding facilities near Logan International Airport are important for the air cargo industry. Preserving land that can be used to support the air cargo industry on Routes 1 and 1A is critical to the movement of freight to and from the airport.

### **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, MassDOT, and FHWA, and is administered by the Metropolitan Area Planning Council (MAPC). All MPO communities are eligible to participate. To date, 69 communities have ordered a total of 9,258 bicycle parking spaces.

### 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

MassDOT updated the Statewide Bicycle Plan in 2008, building upon the 1998 Massachusetts Bicycle Transportation Plan. The updated plan focuses on developing a prioritized plan of on- and off-road bicycling improvements in order to implement a statewide bicycle network. MassDOT's “Baystate Greenway 100 Program” originated from the Statewide Bicycle Plan and lists the commonwealth's priority shared-use path projects.



### Walkable Community Workshop

In August 2002, the Boston Region MPO applied for a grant from the National Center for Bicycling and Walking to hold Walkable Community Workshops. National experts came in and hosted a series of eight workshops in March 2003. 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.

These workshops have become an ongoing program for the Boston Region MPO. Recently, the Walkable Community Workshop program has been incorporated into a new Livability Program established by the MPO (see Chapter 5 for more details). As part of the workshops, additional elements of livability have been included to address bicycling, transit, land use, parking, the environment, health, and economic development issues.

## SAFETY AND SECURITY

The MPO strives to support projects that will improve safety for all users of the transportation system – motorists, transit riders, freight operators, bicyclists, and pedestrians – and reduce the number and severity of collisions. In the Boston region, the major problems associated with providing a safe and secure roadway system have to do with eliminating highway bottlenecks and the associated congestion that increases the likelihood of collisions occurring, addressing unsafe roadway conditions, and improving the system for moving freight in the region by addressing the need to add truck-stop rest facilities, designate haul roads to remove trucks from local streets, and improve safety at rail crossings. Improving safety and security on the transit system requires addressing the pressing need to bring the transit system into a state of good repair, reduce gaps in service, solve infrastructure constraints that limit the capacity of the transit system, and install collision-avoidance systems.

The MPO also seeks to protect and maintain the viability of transportation infrastructure that is important for conducting emergency response and for enabling the evacuation of populations that may be necessary in response to natural or disasters caused by human action. The MPO recognizes that the transit and highway systems play a vital role in moving people and goods safely in the region – including in times of crisis – and that investments in state-of-the-practice ITS and communication systems are important for providing dependable service.

### The Boston Region MPO's Vision for Safety and Security

**Vision:** All modes of the transportation network, passenger and freight, will provide transportation that is safe, personally and operationally, to the maximum feasible degree. The number and severity of crashes will have been reduced. State-of-the practice ITS measures and surveillance communication systems will have been deployed on the transit system to minimize vulnerability to security breaches. Transit malfunctions will have been reduced. Steps will have been taken to protect the viability of transportation infrastructure critical to emergency response and evacuations necessitated by natural hazards and threats and hazards caused by human action.

**Policies:** To provide for maximum transportation safety and to support security in the region, the MPO will put a priority on programs, services, and projects that:

- Implement actions stemming from all-hazards planning
- Maintain the transportation system in a state of good repair

The MPO recognizes that the transit and highway systems play a vital role in moving people and goods safely in the region.

- Use state-of-the-practice safety elements; address roadway safety deficiencies (after safety audits) in order to reduce crashes; and address transit safety (this will include following federal mandates)
- Support incident management programs and ITS
- Protect critical transportation infrastructure from both natural hazards and human threats; address transit security vulnerabilities; upgrade key transportation infrastructure to a “hardened” design standard
- Improve safety for pedestrians and cyclists; ensure that safety provisions are incorporated into shared-use corridors
- Reduce the severity of crashes, especially via measures that improve safety for all
- Promote safety through supporting the reduction of base speed limits (in municipalities) to 25 miles per hour and through education about and enforcement of rules of the road, for all modes that use the roadways
- Improve the transportation infrastructure to better support emergency response and evacuations

All-hazards planning will continue, with MPO participation, and the MPO will take appropriate action on the recommendations of that work.

### **MPO Actions to Achieve the Safety and Security Vision**

As it strives to attain these visions, the MPO supports projects and programs that enhance safe and secure travel for all users of the transportation systems—motorists and nonmotorists – and participates in regional planning for safety and security initiatives.

#### **Highway**

##### **Improving Highway Safety**

The MPO works to improve highway safety by identifying high-crash locations, conducting safety analyses and audits of problematic locations, providing technical assistance to communities, and implementing safety projects. Its work supports state and federal initiatives aimed at reducing crashes.

Through its CMP, the MPO identifies roadway locations in the region that are in need of infrastructure improvements. The CMP is a tool that allows for prioritizing safety needs at intersections and for determining operational strategies that can be used to address safety problems at intersections and on arterials. The locations in the region that experience the most severe crashes are identified by using the Equivalent Property Damage Only (EPDO) index, which measures the amount of fatalities, injuries, and property damage that occur on roadways.

Each year, the MPO conducts safety-related studies, funded through its Unified Planning Work Program, which produce recommendations for addressing safety problems in the study areas. The MPO staff also conducts road safety audits with MassDOT and municipal stakeholders to identify measures that can be taken to improve specific safety problems. Technical assistance is provided to municipalities that wish to remedy these problems.

Transportation safety projects are implemented through the MPO's TIP. When selecting projects to receive federal funding, the MPO assesses whether proposed project designs would address safety needs (including the needs of bicyclists and pedestrians) and reduce crashes. Projects that receive funding through the federal Highway Safety Improvement Program (HSIP) are programmed in the TIP.

The MPO's safety work supports the goals and objectives of the Massachusetts Strategic Highway Safety Plan (SHSP), which seeks to reduce traffic-related fatalities and injuries. The MPO's safety work coincides with several emphasis areas defined in the SHSP. These emphasis areas include a focus on reducing traffic-related fatalities and injuries (specifically from intersection and lane-departure crashes), expediting safety-related infrastructure projects, reducing risks to bicyclists and pedestrians, and improving data systems of traffic records.

The MPO also participates in state-sponsored initiatives focused on improving transportation operations strategies, ITS systems, traffic incident management procedures, and the quality, completeness, and accessibility of traffic data.

### Protecting the Transportation System

The operability of a region's highway and transit systems is vital for the ability to respond to emergencies and for the well-being of people who depend upon those systems to travel to safety in times of emergency, whether due to natural disasters, intentional attacks, or other disruptions.

As it strives to make investments that protect the region's critical transportation infrastructure, the MPO participates in all-hazards planning, the federal guidelines outlined by the U.S. Department of Homeland Security for planning for and responding to threats to the public and to the nation's infrastructure. In line with this guidance, the MPO considers security concerns to include both natural and human threats that warrant action to protect life, property, the environment, and public health or safety, and to minimize disruptions of government, social, or economic activities.

The MPO evaluates proposed transportation projects, prior to selecting projects to receive federal funding, to determine whether they would enhance the security of the transportation system. The evaluation considers the impact a project would have in terms of enhancing the ability of a facility to withstand and function in extreme weather conditions and the function it would serve in an emergency, such as in providing a means of evacuation and facilitating the movement of emergency responders.

Through its UPWP, the MPO conducts a GIS-mapping program to identify transportation infrastructure that may be susceptible to extreme weather and other natural disasters—including flooding, hurricane storm surges, earthquakes, and potential sea-level rise—and to document the location of evacuation routes and emergency support locations for which good access must be maintained.

A key component of transportation security involves enhancing and maintaining the ITS systems that keep the transit and highway systems functioning efficiently and that help preserve public safety on the system. These systems provide functions ranging from traffic signalization to interagency communications to surveillance. The MPO recognizes the importance of these systems for improving safety and security on roads and rail, and

The MPO evaluates proposed transportation projects, to determine whether they would enhance the security of the transportation system.



for maximizing the potential of the system to move people under normal conditions as well as during emergencies.

The MPO supports ITS projects, such as those that enhance fiber-optic networks between the state's transportation divisions and public safety agencies, and improve the ability of those agencies to share video and data for public safety purposes.

The MPO participates as a stakeholder in workshops and meetings, sponsored by MassDOT and other MPO member agencies, aimed at updating or improving the region's ITS architecture and traffic incident management and transportation operations strategies.

It also participates in regional security planning groups that include personnel from state-level transportation, public safety, and law enforcement, and federal partners.

### **Transit**

Due to the intertwined nature of safety and security on transit systems, many safety initiatives of the MBTA and the region's regional transit authorities (RTAs) integrate security considerations. The reverse relationship is, of course, true as well. Security cameras, as an example, could also be called safety cameras, because they provide for the well-being of patrons who may have slipped and fallen in an isolated area of a train station, as well as providing security from a would-be assailant or terrorist on a train platform or a bus.

#### **MBTA Police Department**

The MBTA Police Department's primary mission is to maintain safety within the MBTA transit system. The department's approximately 250 uniformed and plainclothes police officers accomplish this through mobile, foot, and canine patrol teams on both scheduled and random patrols, all of which serve to maintain a high degree of visibility within the system. The Blue, Green, Orange, and Red lines are served by 115 police officers, 4 police substations, and 15 police kiosks, while additional surface patrols provide support to buses and commuter rail.

The three primary components of the department's safety operations are:

- Community Policing Patrol Plan
- Investigation and prosecution (arrests and trials)
- Police/community relations (public outreach)

In addition, to enhance security on the system, the MBTA Transit Police Department has a Special Operations Team (SOT), which is the MBTA's version of a SWAT (Special Weapons and Tactics) team. The SOT has eight specialty vehicles, which include an SOT rapid-response vehicle, a bomb-disposal truck, radar units, and an incident command vehicle.



## MBTA Safety Department

The primary role of the MBTA Safety Department is to ensure the safety of the MBTA's employees, its customers, and members of the general public throughout the MBTA system. In order to accomplish this, the MBTA Safety Department designs, implements, supports, and monitors safe work practices for and among its employees, whether they are working in MBTA vehicles and facilities or on other MBTA property and rights-of-way. These safe practices are outlined in the MBTA's System Safety Program Plan and in its Safety Policies and Procedures Manual.

Examples of the types of activities conducted by the MBTA Safety Department include:

- Right-of-way safety training
- Incident tracking
- Operation Lifesaver
- Safety audits
- Safety hazard correction
- Safety drills

## Secure Stations Initiative

In accordance with the State Homeland Security Strategy, the MBTA is improving its communications and security systems to enhance safety and security systemwide. The transit system is equipped with a wide range of infrastructure to collect and disseminate information in the event of an emergency:

- Wide-scale deployment of closed-circuit television (CCTV) systems
- Public address (PA) and signage systems
- Security intrusion detection and alarm systems
- Fire alarm systems
- Police/public call boxes
- Silver Line Phase II Security Program

All new construction, particularly station reconstruction and maintenance facility upgrade projects, involves the complete overhaul or reinstallation of security and fire alarm systems, police call boxes, and communications and public address systems.

The rapid transit stations' public-address systems currently provide travel information. A recorded security message educates transit passengers about their role in maintaining system security; passengers are urged, "If you see something, say something."

## Communications Interoperability

One of the issues facing the MBTA in its emergency-response planning is that of interoperability. Interoperability is defined as the ability of radio equipment belonging to one organization's first responders in an emergency to communicate with that of another organization's first responders. Currently, radio coverage inside MBTA subway system

The MBTA is improving its communications and security systems to enhance safety and security systemwide.

tunnels does not meet these operational standards. This affects the response capabilities of the MBTA Police Department, the Boston and Cambridge fire departments, and both cities' police departments and emergency medical services. Interoperability affects nearly every community in the commonwealth. The MBTA is working with other members of the State Interoperability Committee to explore this issue and develop ways to improve radio communications.

### MBTA Surveillance Cameras

The MBTA will increase the number of surveillance cameras on the rapid transit system by 186, bringing the total number operating in the rapid transit system to 488. This will provide a security camera in every rapid transit station in the entire system. The MBTA surveillance cameras are monitored from a number of different locations, including the MBTA Operations Control Center, the MBTA Police Department, and the Massachusetts Emergency Operations Center, in Framingham.

In addition, the MBTA has embarked upon a program of installing surveillance cameras in new buses. There is also a strong surveillance component to the MBTA's Station Management Program, which includes the Automated Fare-Collection System Project, the Hub Stations Project, and the Wide Area Network Project. The Hub Stations and Wide Area Network Projects' surveillance components consist of closed-circuit television cameras and the fiber-optic cable required to connect them to their monitors.



### Grade-Crossing Redesign

Improving grade-crossing safety has long been one of the top priorities of the Federal Railroad Administration. From 1995 to 2004, the number of grade crossing collisions in the U.S. declined by 3 percent, the frequency of such collisions per million train-miles decreased by 42 percent, and the number of fatalities fell by 36 percent. During the first 11 months of 2005, grade-crossing collisions were down 5.1 percent and fatalities declined 5.3 percent compared to the same period of 2004. In Massachusetts, there is funding under the Section 130 Program of MGL Chapter 160 for the upgrading and improving of railroad crossings.

### Advance Warning Techniques

The Commonwealth of Massachusetts, the MBTA, and a majority of those in the railroad industry agree that the use of locomotive horns helps to promote safety at highway-rail grade crossings. Although Massachusetts law requires trains to blow their horns at highway-rail grade crossings, horn bans have been created by the state Legislature for many communities. The MBTA complies with these bans within those communities. In August 2006, the Federal Railroad Administration amended the June 2005 locomotive horn rule to create six different quiet-zone categories. These quiet zones, within which each grade crossing must have flashing lights and gates, are defined in conjunction with state agencies and railroads.

Meanwhile, the MBTA has taken steps to improve safety at its 200 public highway–rail grade crossings. Included among these steps is an investment in automatic warning systems, such as crossing gates, flashing lights, and warning bells, to be installed on almost all of the public grade crossings used by the MBTA.

### Operation Lifesaver

Operation Lifesaver is an educational program created to stop deaths, injuries, and crashes at railroad grade crossings and along railroad rights-of-way. Crashes between trains and trucks are especially harmful, as they typically result in many casualties. Much of the hazardous material transported in the U. S. is moved by truck: the reduction of grade-crossing collisions with trucks is especially important.

Operation Lifesaver Inc., an international, nonprofit organization, was established in 1972 to conduct this program. The program is a joint venture of U.S. railroads, highway safety agencies and organizations, and local, state, and federal government public safety agencies. In Massachusetts, as in all other states, certified volunteer speakers conduct free railroad safety briefings for people of all ages in order to assist them in making the proper decisions when near railroad tracks.

### MBTA Parking Facilities

Due to their proximity to operating subway and commuter rail stations, parking garages, such as the ones at the Red Line’s Alewife and Quincy Adams stations and the Route 128 Amtrak and commuter rail station, present additional security concerns to the MBTA over and above the ones already presented at a typical station. Special attention is paid to these facilities by the MBTA Transit Police Department. In addition, parking facilities receive scrutiny under the Secure Stations Initiative through the installation of closed-circuit television cameras, security intrusion detection, alarms, and police-call-box systems.

### MBTA Operations Control Center

The MBTA operates and maintains an operations control center (OCC) in Boston for rapid transit operations that uses proven state-of-the-art computer-based technology that allows real-time monitoring and supervisory control of the signal and communications systems for all four transit lines. This facility is located in a theater-style room with a wall-sized display board that can be viewed by the operations supervisor, emergency control personnel, and OCC staff, who centrally control rail traffic.

A separate part of the OCC is for bus operations. MBTA buses provide automatic vehicle location (AVL) information, via Global Positioning System (GPS) units, to dispatchers at the Bus Operations Control Center. Using the bus radio system network, dispatchers can ensure proper spacing between vehicles and better on-time performance.



The OCC interfaces and shares information with the Highway Division's Traffic Operations Center, the Central Artery/Tunnel Project's Operations Control Center, the Boston Transportation Department's Traffic Management Center, the Massachusetts Interagency Video Information System, and the Commonwealth Fusion Center.

### Amtrak Police

Amtrak provides regional transit security and law enforcement through the Amtrak Police. The Amtrak Police's 342 police officers, most of whom are stationed within the Northeast Corridor, Amtrak's busiest corridor, provide security at Boston's South and Back Bay stations and Westwood's Route 128 Station. The Amtrak Police are also responsible for security on 300 trains per day serving approximately 540 stations and operating on more than 22,000 miles of rail in 46 states.

### Regional Transit Security Working Group

Any transit agency wishing to receive funding through the federal Transit Security Grant Program is required to participate in a Regional Transit Security Working Group (RTSWG). The primary purpose of the RTSWG is to develop a Regional Transit Security Strategy, the development of which is also required to receive funding under the Transit Security Grant Program. In early 2007, the United States Department of Homeland Security granted the MBTA \$24.37 million, the largest award the MBTA has ever received, to enhance the security of its trains and buses. The MBTA will use the money to improve video surveillance, start a pilot program to expand its biological, nuclear, radiological, and explosive-material detection systems, and add additional surveillance cameras.

The Executive Office of Public Safety chairs the RTSWG, and the MBTA and the MPO are members. The MPO brings a regional-planning perspective to the work of the group and will also be called upon to participate in the funding of regional transit-security initiatives and processes.

### NEXT STEPS – THE DEVELOPMENT OF PERFORMANCE MEASURES

Management and Operations initiatives at the federal, state, regional, and local levels have increased the efficient and safe transportation options in the Boston region by promoting initiatives and actions that continue to improve the performance and safety of the existing transportation system, as well as increasing service and access.

To ensure that the MPO continues to move towards the visions outlined in *Paths to a Sustainable Region*, it is necessary to develop performance measures. The Needs Assessment documents the existing condition of the transportation system, and it may be utilized as a baseline for initial performance measures. The development of performance measures is likely to include some measures that do not have the necessary data for analysis. Addressing these gaps will require future data collection and analysis at the municipal, corridor, and regionwide level. These activities can become components of the ongoing Congestion Management Process or future Unified Planning Work Program studies. The MPO's performance measures will not adhere to defined targets, but they will have the potential to effectively communicate the needs of the region and reinforce the value of investment decisions.

The MPO's performance measures will have the potential to effectively communicate the needs of the region and reinforce the value of investment decisions.



Some of the management and operations performance measures that may be utilized to track infrastructure improvements and performance of the system include:

GOAL	FACTOR	PERFORMANCE MEASURES
Achieve efficiency through ITS and management & operations, and via implementation of technology and state of good repair, before expansion	Improved incident management (highway and transit)	Decrease in incident detection time
		Decrease in incident clearance time
	Achievement of state of good repair	Increase in the % of miles of federal-aid roadway that are in fair or better pavement condition
		Decrease in the % of bridges which are "structurally deficient"
		Decrease in the % of bridges which are "functionally obsolete"
		Reduction in the MBTA backlog of state-of-good-repair projects
	Integrated corridor management	Number of intersections with LOS D or better
		Increase in the % of bus trips by route with % of trips on time greater than X
		Increase in the number of bus routes with traffic signal priority systems
		Increase in the number of transit stations that have been treated for pedestrian and bicycle access
	Enhanced traveler information	Increase in the number of 511 calls
		Increase in the number of visits to MPO and MassDOT websites
Improve mobility in the region for all modes	Strengthened connections between modes; closing of gaps in the existing system	Investment in those projects which close gaps
	Improved access to transit	Improvement in the bicycle and pedestrian network within 1/2 mile of transit stations
		Increase in the number of parking spaces provided at transit stations
	Improved transportation accessibility	Increase in the number of ADA-compliant stations
		Increase in the number of ADA-compliant intersections
	Increased transit frequency	Reduction in the mean miles between breakdowns (MMBB)
Reduction in the mean miles between failures (MMBF)		
Improve the safety and security of transportation-related projects throughout the region	Improved safety at the region's intersections	Reduction in the number of accidents in the region
		Reduction in the average crash rate in the region
	Improved transit safety in the region	Reduction in the mean miles between breakdowns (MMBB)

## SUMMARY

The MPO is committed to employing management and operations improvements that will lead to increased mobility, safety, and security. An integral vision of *Paths to a Sustainable Region* is to succeed at preserving, modernizing, and improving the operational efficiency of the transportation system. Investments with this focus will help the MPO achieve its vision for 2035.



## LIVABILITY AND ENVIRONMENT

### INTRODUCTION

The Boston Region MPO's Central Vision states that the region will work to maintain its high quality of life in part due to its healthy and pleasant environment that includes transit, bicycle, and pedestrian modes to reduce environmental impacts and to improve air and environmental quality.

This chapter will address how the MPO will be moving toward this central vision through three of its major vision topic areas – Climate Change, the Environment, and Livability.

Climate Change is a new emphasis area in the MPO planning process and will be presented first because it is a larger-scale issue that is affecting not only the MPO but the Commonwealth, the nation, and the world as a whole. The International Panel on Climate Change states, "Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice and rising global average sea level."<sup>1</sup> The United States Department of Transportation emphasizes that MPOs shall consider projects and strategies that protect and enhance the environment, promote energy conservation, and improve the quality of life. The MPO recognizes that climate change will likely have significant impacts on the Boston region if climate trends continue as projected.

The environment is presented next and continues to be an area of emphasis; outlining the major environmental issues that the MPO must consider when selecting its projects and programs for inclusion in the LRTP, and, ultimately, in the Transportation Improvement Program (TIP). The impacts on air quality are the major environmental factor that the MPO addresses; however, the MPO also reviews a project's impacts on other environmental factors, such as wetlands and protected open space.

<sup>1</sup> Climate Change 2007: Synthesis Report, Summary for Policymakers, International Panel on Climate Change, p. 2, [www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4\\_syr\\_spm.pdf](http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf), November 2007.

Of all the fossil fuels consumed by humanity overall, we have consumed half in the last two decades.

Finally, livability is also a new emphasis area in the MPO planning process and outlines programs that will help in promoting livable communities that provide its residents with convenient access to opportunities and resources. Affordable housing, access to services, employment opportunities, and shopping in close proximity all contribute to the livability of a community, as do safe, affordable, and healthy options for getting around.

The following sections provide further detail on the three topic areas by identifying major issues, the MPO's visions and policies, and describing MPO actions taken to address those issues. Finally, a section on the development of performance measures outlines the next steps that the MPO will take to ensure that the region is moving toward its visions.

## CLIMATE CHANGE

### What is climate change?

Climate change refers to any significant change in measures of climate, such as changes in temperature, precipitation, or wind, lasting for an extended period of time. Increases in certain gases – carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), fluorocarbons, and water vapor) – are causing a greenhouse effect, which is the trapping and build-up of heat in the atmosphere near the earth's surface. The term greenhouse gas (GHG) is used because the same effect occurs in greenhouses: the glass allows sunrays in, but much of the heat from those rays is trapped inside the structure. If the atmospheric concentrations of GHGs rise, the average temperature of the lower atmosphere will gradually increase.

Atmospheric GHGs are necessary for our survival. Without them, all of the heat generated from the earth would be released. The average temperature of our planet would not be just under 60°F, as it is now, but about 10°F.<sup>2</sup> These gases act like an earthly blanket, or like a greenhouse, and, until recently, were retaining just enough heat but not too much.

The balanced transfer of heat to the earth and back out to space is undermined by the current and increasing overabundance of these GHGs. Carbon dioxide and certain other gases hold heat and increase the temperature of the atmosphere. The heated atmosphere not only heats the land and the ocean, but also is able to hold more moisture, or water vapor, increasing the GHG effect.

Although global warming can occur as a result of a variety of natural causes, humans are having a major effect on the climate. While we emitted CO<sub>2</sub> in past decades through industrial and mobile sources, the amount of CO<sub>2</sub> that we put into the atmosphere in the early years of the past century is dwarfed by what we are emitting today. Of all the fossil fuels consumed by humanity overall, we have consumed half in the last two decades.<sup>3</sup>

<sup>2</sup> National Oceanic and Atmospheric Administration, National Climatic Data Center: Global Surface Temperature Anomalies, [www.ncdc.noaa.gov/cmb-faq/anomalies.html](http://www.ncdc.noaa.gov/cmb-faq/anomalies.html), accessed May 5, 2011. The time of human habitation, a million years, represents about 0.02 percent of the life of the earth. If the time of the earth were represented as a day, humans would occupy the last two minutes.

<sup>3</sup> Geology.com, [geology.com/nasa/human-carbon-dioxide/](http://geology.com/nasa/human-carbon-dioxide/), Human Carbon Dioxide: Understanding the Sources of Rising Carbon Dioxide. NASA news release from January 13, 2009.

## The Transportation System's Share of GHGs

For the year 2009, about 38 percent of the GHGs produced in the United States came from electricity production and 29 percent came from buildings – residential, commercial, and industrial, with 27 percent from the transportation sector.<sup>4</sup> Light-duty vehicles (passenger cars and light trucks) accounted for nearly three-fifths of that total.<sup>5</sup> In Massachusetts, transportation also accounts for about a third of GHGs, up slightly from 31 percent of 1990 emissions and estimated to rise to 38 percent by 2020.<sup>6</sup>

## Impacts of Climate Change

There are many effects, collectively referred to as climate change, from an increase in atmospheric carbon. Three effects that particularly have an impact on transportation infrastructure and services in our region are discussed here: sea level rise, flooding, and hurricane impacts.

Our region is confronted with the question of what to do about the facilities that appear at risk for flooding and other weather impacts. In order to minimize the losses, the MPO can take steps to decrease our carbon footprint and to simultaneously adapt our transportation system to minimize damage.

### Flooding

As discussed above, one of the impacts of climate change is an increase in temperatures. Warmer air can hold more moisture, so storms can carry more precipitation. The most recent flood zone data and maps were obtained from the Federal Emergency Management Agency (FEMA). FEMA revised the flood information for Suffolk and Middlesex counties in 2010, but the information for the other counties in the region dates from the 1990s.

FEMA flood zones are based on rainfall data. Areas at high risk for 100-year and 500-year floods are shown on the maps. A 100-year flood is an event that has a 1.0 percent chance of being equaled or exceeded in any given year, and a 500-year flood has a 0.2 percent chance of being equaled or exceeded in any given year. Figure 5-1 shows the 100-year and 500-year flood zones along with major transportation infrastructure located in these areas that could be affected.

In Massachusetts, transportation also accounts for about a third of GHGs, up slightly from 31 percent of 1990 emissions and estimated to rise to 38 percent by 2020.

<sup>4</sup> U.S. Energy Information Administration, *What are the major sources and users of energy in the United States?* [www.eia.doe.gov/energy\\_in\\_brief/major\\_energy\\_sources\\_and\\_users.cfm](http://www.eia.doe.gov/energy_in_brief/major_energy_sources_and_users.cfm), June 28, 2011.

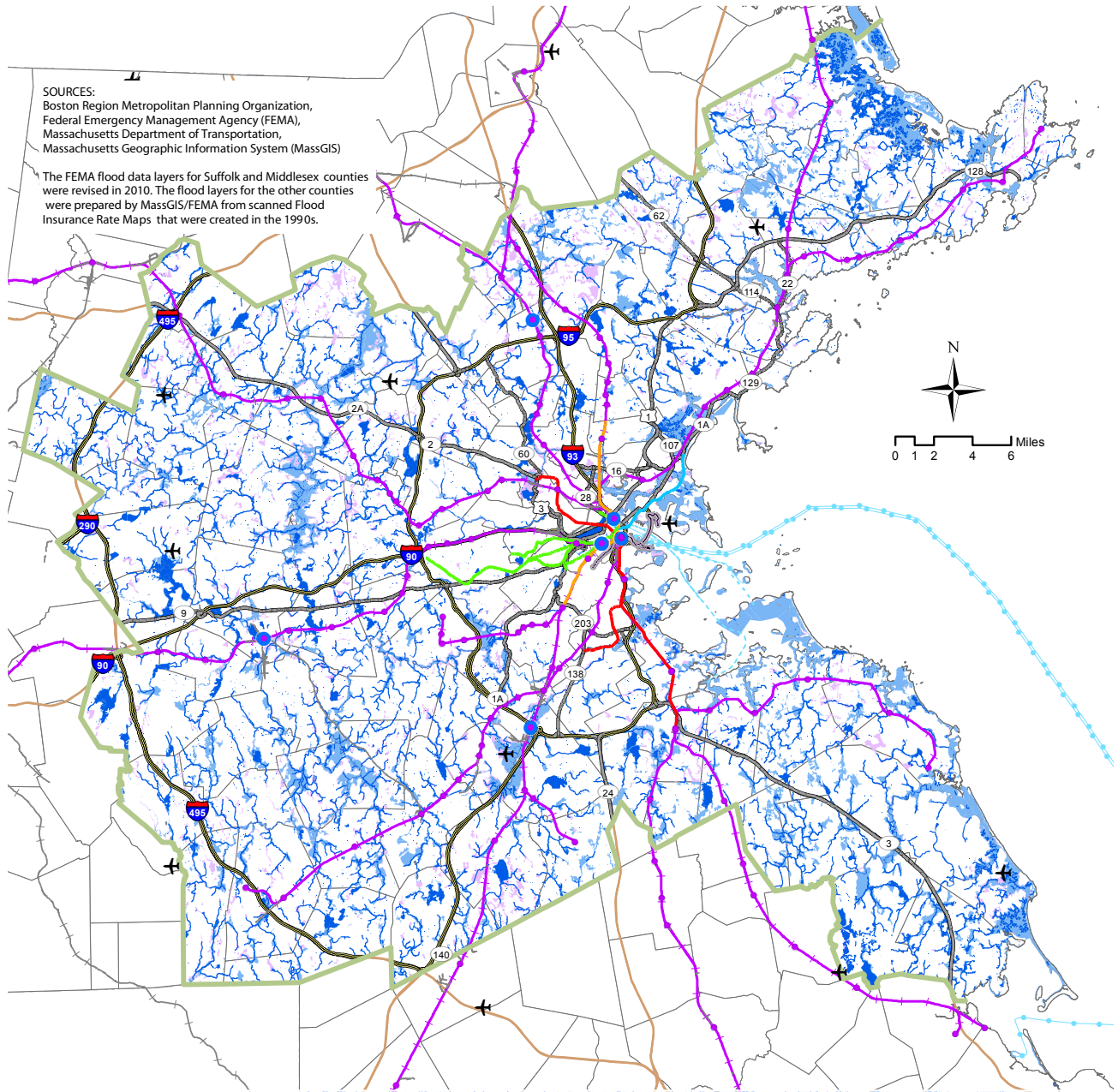
<sup>5</sup> *Reducing Greenhouse Gas Emissions from U.S. Transportation*, prepared for the Pew Center on Climate Change, January 2011, p. vii.

<sup>6</sup> Massachusetts Department of Transportation, *Reducing Transportation Greenhouse Gas Emissions Through the GreenDOT Policy*, [www.eot.state.ma.us/downloads/90\\_DayReport/GreenDOT\\_070710.pdf](http://www.eot.state.ma.us/downloads/90_DayReport/GreenDOT_070710.pdf), July 7, 2010.



FIGURE 5-1

FLOOD HAZARD AREAS



SOURCES:  
Boston Region Metropolitan Planning Organization,  
Federal Emergency Management Agency (FEMA),  
Massachusetts Department of Transportation,  
Massachusetts Geographic Information System (MassGIS)

The FEMA flood data layers for Suffolk and Middlesex counties were revised in 2010. The flood layers for the other counties were prepared by MassGIS/FEMA from scanned Flood Insurance Rate Maps that were created in the 1990s.

**Ponds**

■ Pond within normal banks

**Flood Zones**

- Areas at high risk for 100-year flood (1% annual chance of being equaled or exceeded in any given year)
- Areas at high risk for 500-year flood (0.2% annual chance of being equaled or exceeded in any given year)

## Sea Level Rise

In the Boston region, sea level has increased just under 0.3 meters (one foot) over the past century. Data from the Boston tide gauge station show that the sea level in Boston Harbor rose an average of 2.4 millimeters (0.09 inches) per year from 1921 to 2007, with an overall increase of 26 centimeters (10 inches) during those years.<sup>7</sup>

Climate models offer varying estimates of sea level rise, some projecting a sea level rise as high as 2 meters (6.5 feet) by the end of this century. The Intergovernmental Panel on Climate Change (IPCC)<sup>8</sup> predicts that there could be a global average sea level rise of 0.18 to 0.59 meters (0.6 to 1.9 feet) by 2100.<sup>9</sup> These estimates are not the upper bounds of a potential sea level rise, however, because they do not factor in the possibility of increased flows from ice sheets and glaciers. A higher-end estimate projects a sea level rise of 0.75 to 1.9 meters (2.5 to 6.2 feet) for the period 1990 to 2100.<sup>10</sup>

The red shading on Figures 5-2 through 5-4 defines the land areas that are within 2 meters (6.5 feet) of elevation from the shoreline as a hazard zone for sea level rise during this century along with major transportation infrastructure that are located in these areas. Half-meter increments up to the 2-meter mark (the higher-end estimate for sea level rise) are delineated to show where the sea level rise may occur based on the range of levels predicted.

According to the IPCC, it is very likely that heavy precipitation events will be more frequent in high latitudes, and likely that tropical cyclones (hurricanes in the Atlantic Ocean) will become more intense.<sup>11</sup> In either case, coastal areas can expect more severe and frequent flooding events. For that reason, these maps also show the high-risk areas for 100-year and 500-year floods.

Heavy precipitation events will be more frequent in high latitudes, and likely that tropical cyclones (hurricanes in the Atlantic Ocean) will become more intense.

<sup>7</sup> National Oceanic and Atmospheric Administration, "Permanent Service for Mean Sea Level," [www.pol.ac.uk/psmsl](http://www.pol.ac.uk/psmsl), and Sea Levels Online. , <http://tidesandcurrents.noaa.gov/sltrends>, accessed May 3, 2011.

<sup>8</sup> The IPCC was established by the United Nations Environment Programme and the World Meteorological Organization.

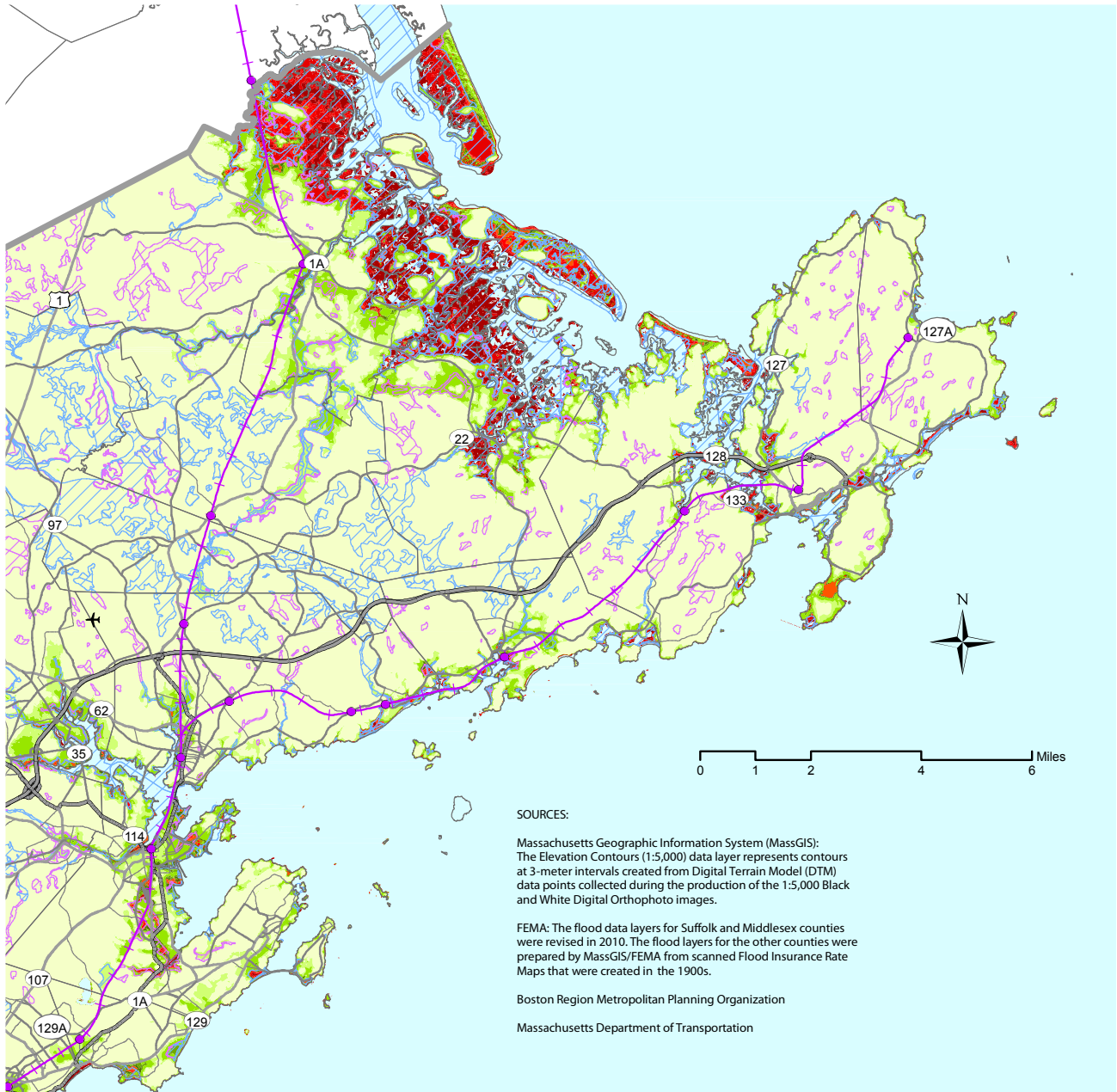
<sup>9</sup> Intergovernmental Panel on Climate Change, *Climate Change 2007: Synthesis Report*, 2007.

<sup>10</sup> Martin Vermeer and Stefan Rahmstorf, *Global Sea Level Linked to Global Temperature*, 2009.



<sup>11</sup> Intergovernmental Panel on Climate Change, *Climate Change 2007: Synthesis Report*, 2007.

FIGURE 5-2











COASTAL VULNERABILITY TO SEA LEVEL RISE – NORTH SHORE



**FEMA Flood Hazard Areas**

-  Areas at high risk for 100-year flood (1% annual chance of being equaled or exceeded in any given year)
-  Areas at high risk for 500-year flood (0.2% annual chance of being equaled or exceeded in any given year)

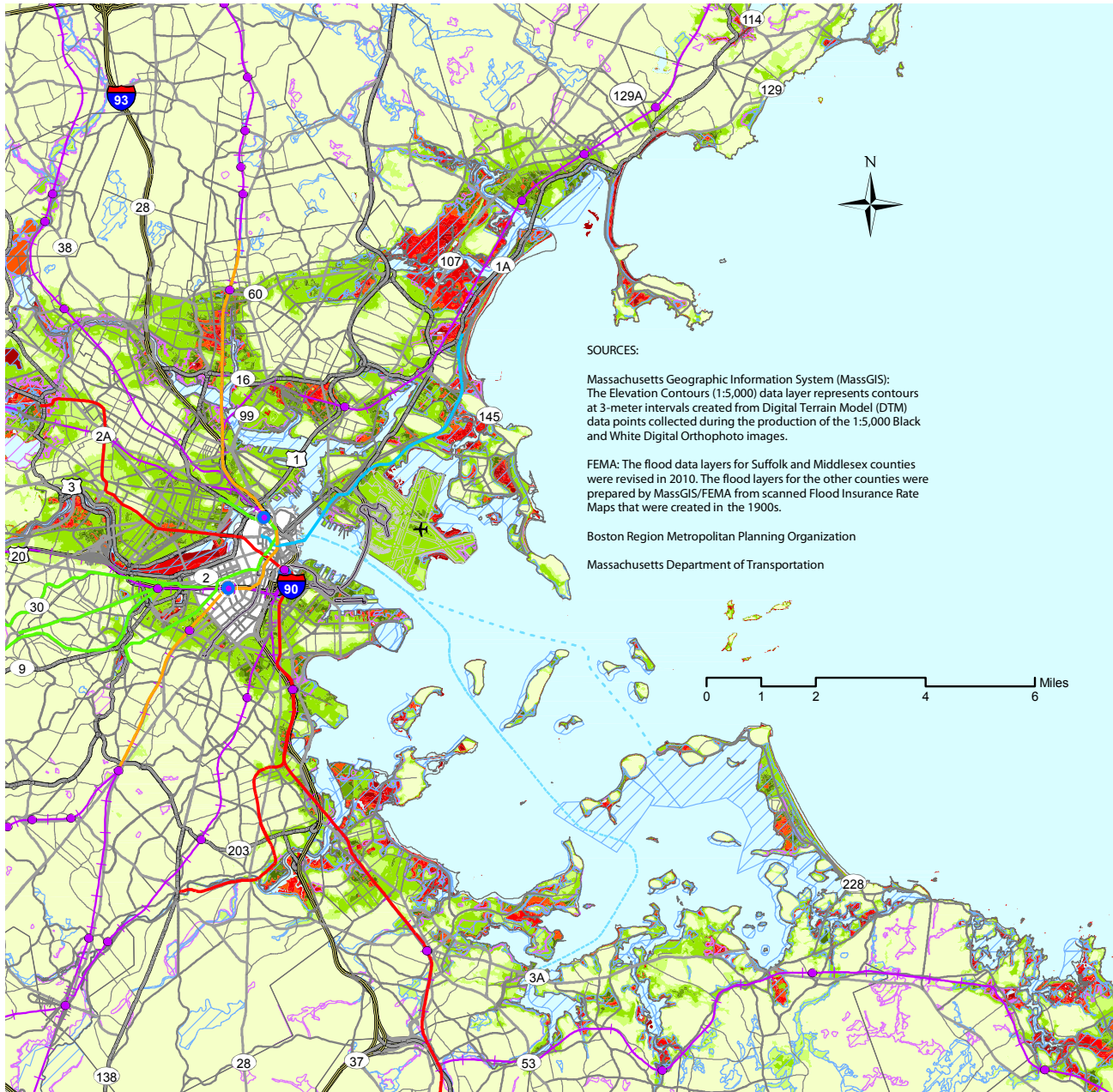
**Elevation**

-  0 meter or (seaLevel)
-  0.1 to 0.5 meter (0.3 to 1.6 feet)
-  0.6 to 1 meter (1.7 to 3.3 feet)
-  1.1 to 1.5 meters (3.4 to 4.9 feet)
-  1.6 to 2 meters (5.0 to 6.5 feet)
-  2.1 to 2.5 meters (6.6 to 8.2 feet)
-  2.6 to 3 meters (8.3 to 9.8 feet)
-  4 to 6 meters (10 to 19 feet)
-  7 to 9 meters (20 to 30 feet)
-  10 to 289 meters (31 to 948 feet)



**FIGURE 5-3**

**COASTAL VULNERABILITY TO SEA LEVEL RISE – CENTRAL COASTAL AREA**



**SOURCES:**


Massachusetts Geographic Information System (MassGIS): The Elevation Contours (1:5,000) data layer represents contours at 3-meter intervals created from Digital Terrain Model (DTM) data points collected during the production of the 1:5,000 Black and White Digital Orthophoto images.


FEMA: The flood data layers for Suffolk and Middlesex counties were revised in 2010. The flood layers for the other counties were prepared by MassGIS/FEMA from scanned Flood Insurance Rate Maps that were created in the 1900s.

Boston Region Metropolitan Planning Organization


Massachusetts Department of Transportation


**FEMA Flood Hazard Areas**

 Areas at high risk for 100-year flood (1% annual chance of being equaled or exceeded in any given year)

 Areas at high risk for 500-year flood (0.2% annual chance of being equaled or exceeded in any given year)

**Elevation**

 0 meter or (seaLevel)

 0.1 to 0.5 meter (0.3 to 1.6 feet)

 0.6 to 1 meter (1.7 to 3.3 feet)


 1.1 to 1.5 meters (3.4 to 4.9 feet)

 1.6 to 2 meters (5.0 to 6.5 feet)

 2.1 to 2.5 meters (6.6 to 8.2 feet)

 2.6 to 3 meters (8.3 to 9.8 feet)

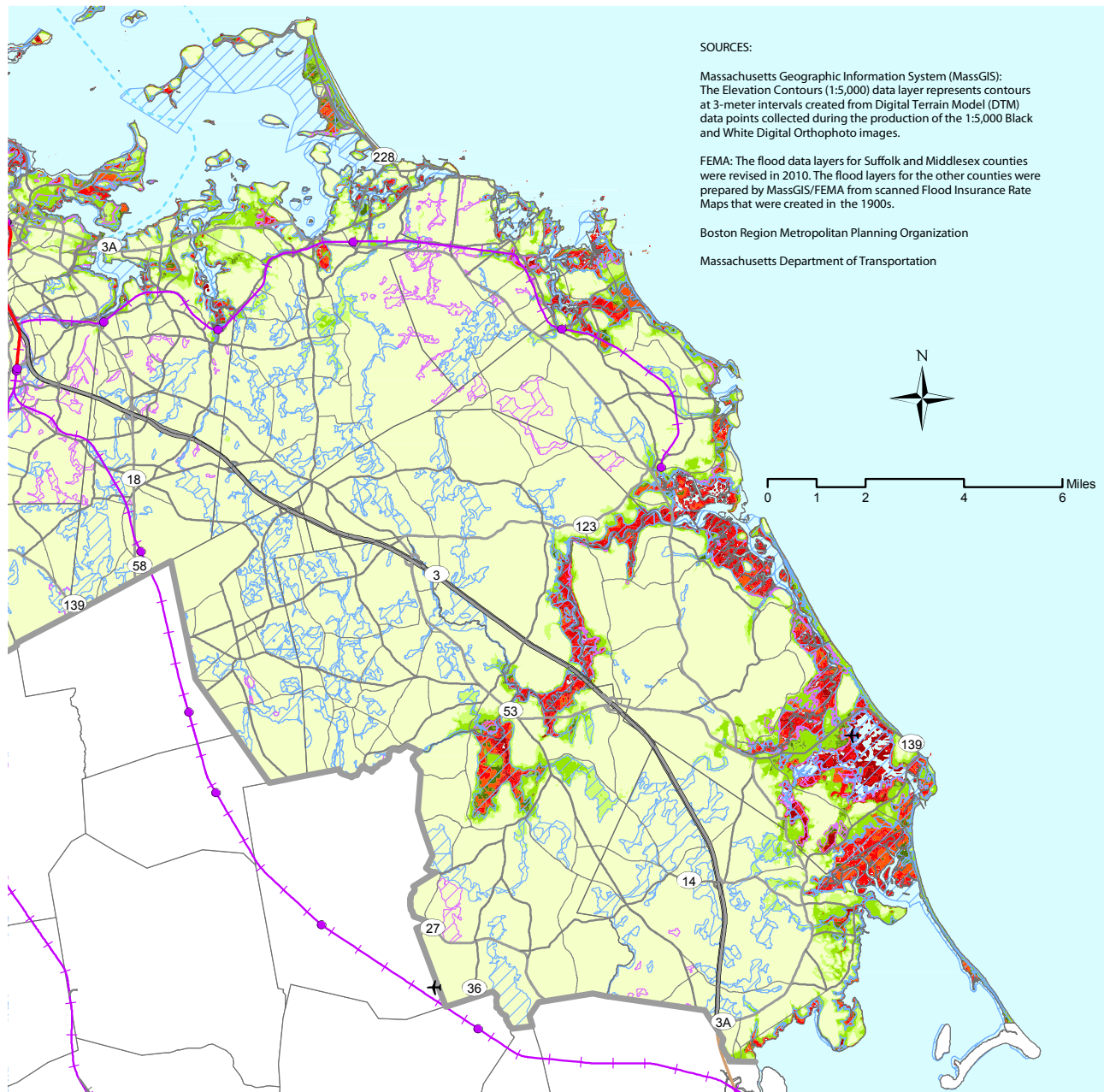
 4 to 6 meters (10 to 19 feet)

 7 to 9 meters (20 to 30 feet)

 10 to 289 meters (31 to 948 feet)



**FIGURE 5-4**

**COASTAL VULNERABILITY TO SEA LEVEL RISE – SOUTH SHORE**













**SOURCES:**  
 Massachusetts Geographic Information System (MassGIS): The Elevation Contours (1:5,000) data layer represents contours at 3-meter intervals created from Digital Terrain Model (DTM) data points collected during the production of the 1:5,000 Black and White Digital Orthophoto images.  
 FEMA: The flood data layers for Suffolk and Middlesex counties were revised in 2010. The flood layers for the other counties were prepared by MassGIS/FEMA from scanned Flood Insurance Rate Maps that were created in the 1900s.  
 Boston Region Metropolitan Planning Organization  
 Massachusetts Department of Transportation

**FEMA Flood Hazard Areas**

-  Areas at high risk for 100-year flood (1% annual chance of being equaled or exceeded in any given year)
-  Areas at high risk for 500-year flood (0.2% annual chance of being equaled or exceeded in any given year)

**Elevation**

-  0 meter or (seaLevel)
-  0.1 to 0.5 meter (0.3 to 1.6 feet)
-  0.6 to 1 meter (1.7 to 3.3 feet)
-  1.1 to 1.5 meters (3.4 to 4.9 feet)
-  1.6 to 2 meters (5.0 to 6.5 feet)
-  2.1 to 2.5 meters (6.6 to 8.2 feet)
-  2.6 to 3 meters (8.3 to 9.8 feet)
-  4 to 6 meters (10 to 19 feet)
-  7 to 9 meters (20 to 30 feet)
-  10 to 289 meters (31 to 948 feet)



## Hurricane Impacts

Climate change introduces two major factors into our weather system: imbalance and strengthened force. A warmer ocean temperature allows larger hurricanes and tropical storms to form. Increased storm strength, coupled with increased sea levels, means areas once immune from storm surges will be affected, and damage will be intensified in areas that are already flood-prone.

Hurricane damage could be substantial, from destroyed infrastructure and equipment to fallen trees blocking rail lines and highways. Figures 5-5 through 5-7 are hurricane surge maps showing the areas and infrastructure at risk for seawater inundation during Category 1 through Category 4 hurricanes. This information was obtained from the U.S. Army Corps of Engineers, which provides data from the National Weather Service's SLOSH (Sea, Lake, and Overland Surges from Hurricanes) model. The SLOSH model provides estimates of potential maximum storm-surge inundation for various categories of hurricanes.

## The Boston Region MPO's Vision for Climate Change

**Vision:** The production of GHG emissions by the transportation sector in this region will be reduced to levels that contribute appropriately to the statewide targets set by the Massachusetts Global Warming Solutions Act. The MPO region will have joined with other entities in Massachusetts and the Northeast to slow and perhaps prevent the onset of serious climate change effects. The MPO, in consultation and cooperation with state and federal agencies planning action on GHG reduction, will have adopted GHG reduction goals and taken the steps necessary to meet them. Critical elements of the region's transportation infrastructure that may be vulnerable to the impacts of climate change will have been identified and protected.

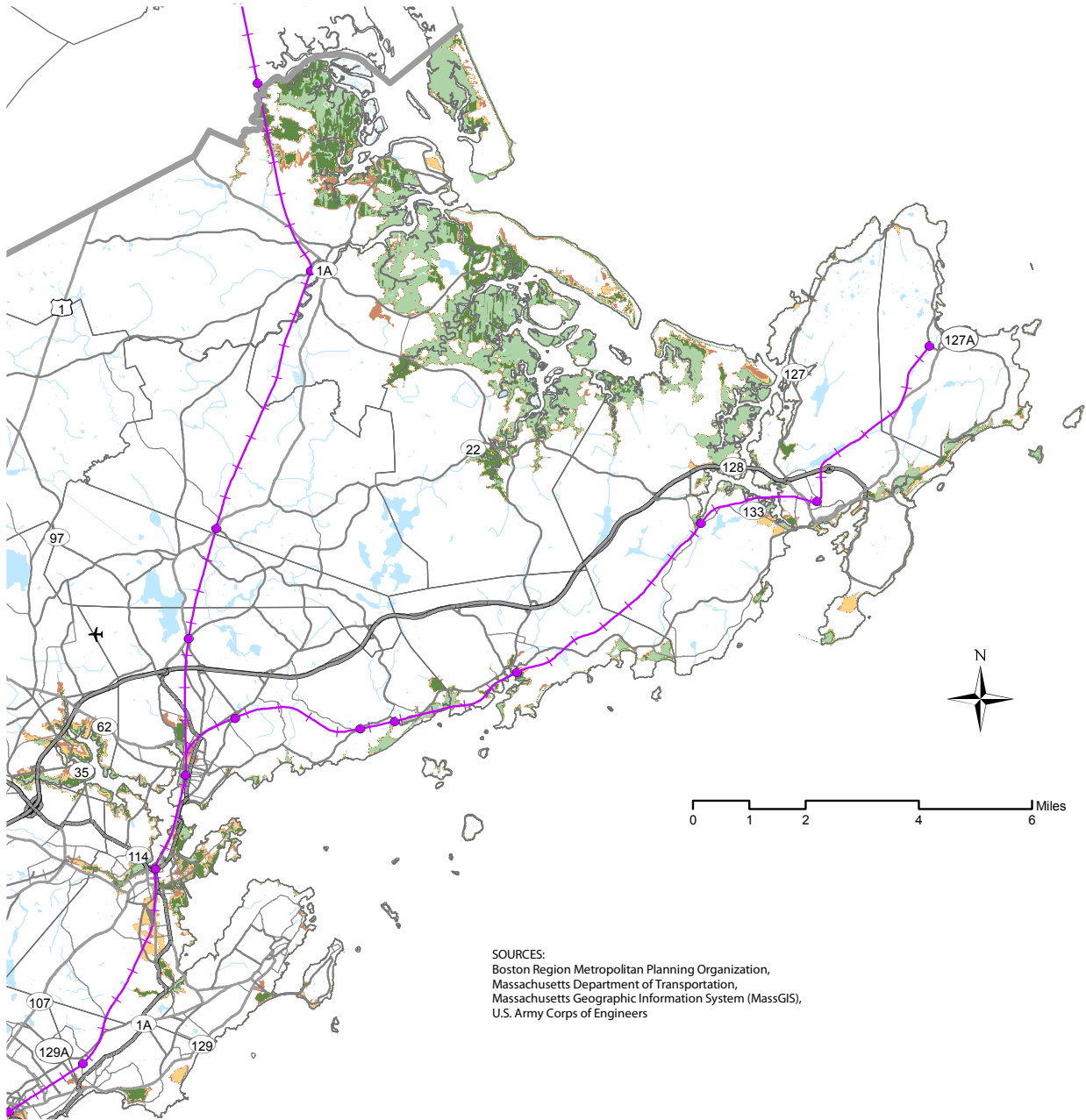
**Policies:** To meet the targets for reducing GHG emissions, the MPO will put a priority on programs, services, and projects that:

- Implement action to meet defined targets for reducing vehicle-miles traveled (VMT) by tying transportation funding to VMT reduction
- Support stronger land use and smart growth strategies
- Increase transit, bicycle, and pedestrian options
- Invest in adaptations that protect critical infrastructure from effects resulting from climate change
- Encourage strategies that utilize transportation demand management
- Promote fleet management and modernization, idling reduction, and alternative-fuel use
- Contribute to reduced energy use in the region; energy use will be part of the environmental impact analysis of all projects

Increased storm strength, coupled with increased sea levels, means areas once immune from storm surges will be affected, and damage will be intensified in areas that are already flood-prone.

FIGURE 5-5

HURRICANE SURGE INUNDATION – NORTH SHORE

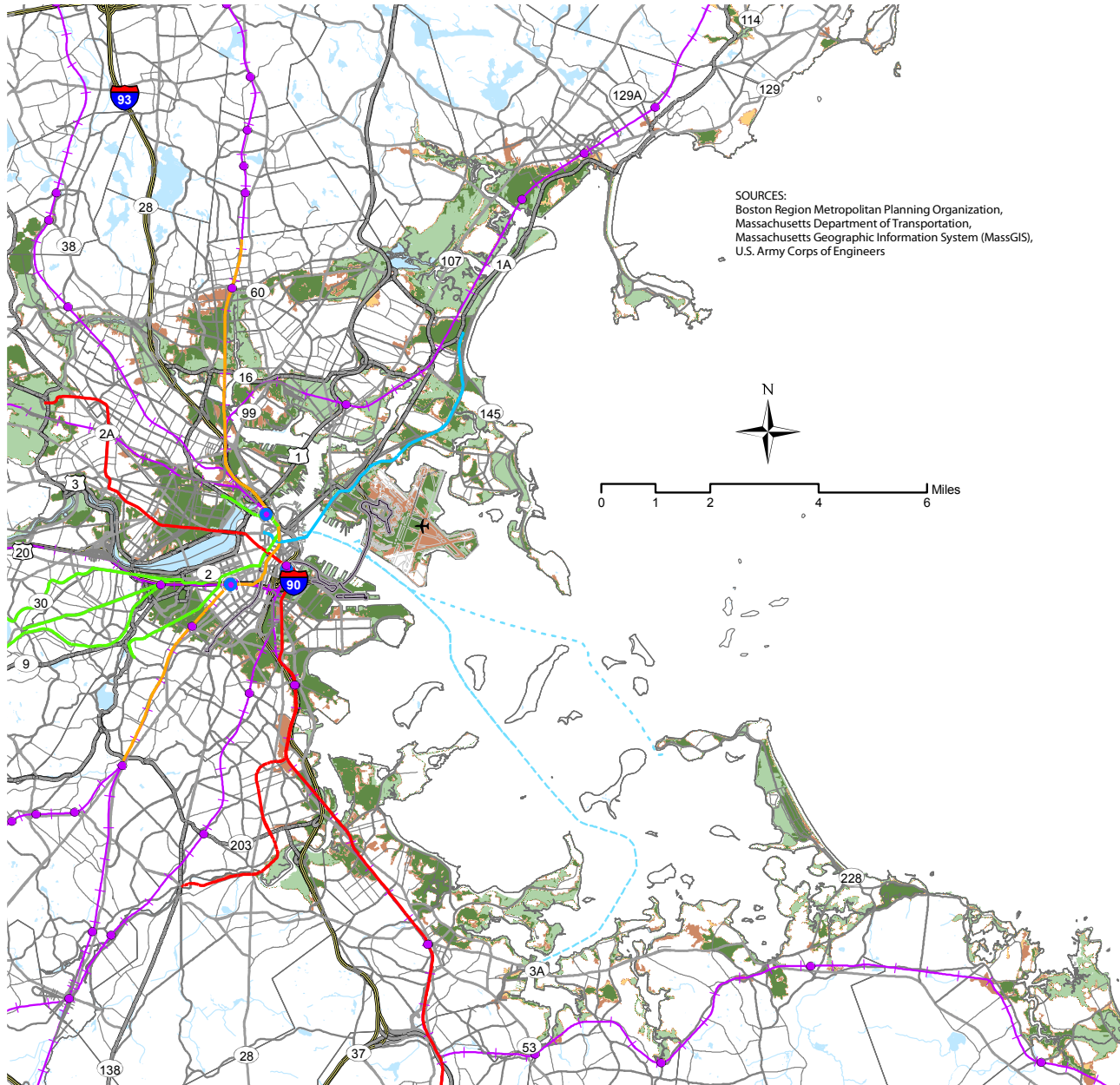


**Hurricane Surge Inundation in Massachusetts  
(Worst case flooding by hurricane category)**

- Category 1
- Category 2
- Category 3
- Category 4

FIGURE 5-6

HURRICANE SURGE INUNDATION – CENTRAL COASTAL AREA



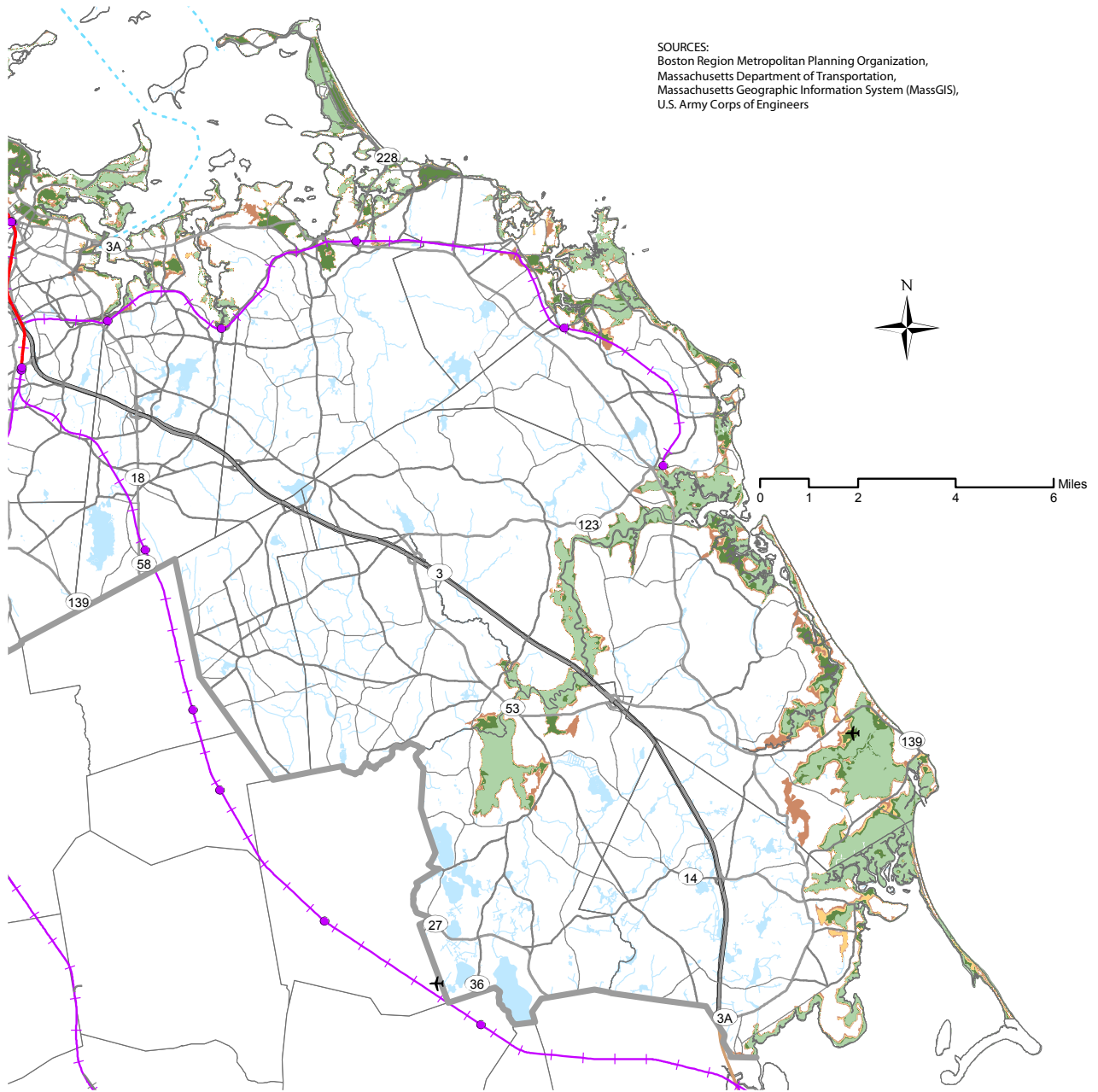
SOURCES:  
Boston Region Metropolitan Planning Organization,  
Massachusetts Department of Transportation,  
Massachusetts Geographic Information System (MassGIS),  
U.S. Army Corps of Engineers

**Hurricane Surge Inundation in Massachusetts  
(Worst case flooding by hurricane category)**

- Category 1
- Category 2
- Category 3
- Category 4

FIGURE 5-7

HURRICANE SURGE INUNDATION – SOUTH SHORE



**Hurricane Surge Inundation in Massachusetts  
(Worst case flooding by hurricane category)**

- Category 1
- Category 2
- Category 3
- Category 4



## The MPO's Actions to Achieve Climate Change Vision

Governor Patrick signed the Global Warming Solutions Act (formally called the Climate Protection and Green Economy Act) in August 2008. The Act requires reductions of GHG emissions below 1990 levels between 10 to 25 percent by 2020, and 80 percent reduction by 2050. As part of the Global Warming Solutions Act (GWSA), the Executive Office of Energy and Environmental Affairs developed the Massachusetts Clean Energy and Climate Plan for 2020 that outlines programs to attain 25 percent reduction by 2020. In that plan, a 7.6 percent reduction will be attributed to state transportation programs. One of the programs in the Massachusetts Clean Energy and Climate Plan is MassDOT's sustainability initiative, also known as GreenDOT. The GreenDOT Policy directive was developed in accordance with the GWSA. Its three goals are:



1. To reduce GHG emissions by reducing emissions from construction and operations, using more efficient fleets, implementing travel demand management programs, encouraging eco-driving, and providing mitigation for development projects.
2. To promote healthy transportation modes by improving pedestrian, bicycle, and public transit infrastructure and operations.
3. To support smart growth development by making transportation investments that enable denser, smart growth development patterns that can support reduced GHG emissions.

The Boston Region MPO will be involved in helping to achieve the GreenDOT goals. The MPO will be most directly involved in helping to achieve reductions through prioritizing and programming an appropriate balance of roadway, transit, bicycle, and pedestrian investments, and will assist in the third goal – supporting smart growth development patterns through the creation of a balanced multimodal transportation system. Two of its visions – climate change and livability – will help in selecting projects to further the GreenDOT goals and reduce GHG emissions.

The MPO is contributing to the statewide implementation of GreenDOT in a number of other ways:

- Alternative Modes of Travel – The MPO funds projects that provide people with transportation options other than single-occupancy vehicles (SOVs). Alternative modes to SOVs include transit, bicycling, walking, and carpooling.
- Reduction of Vehicle-Miles of Travel and Roadway Congestion – The MPO funds projects that reduce the need to drive and ease roadway congestion, therefore reducing emissions.

- Alternative Fuel Sources – The MPO funds the use of alternative fuel sources, which can release less GHG emissions than traditional fossil fuels.
- Smart Growth Policies – The MPO promotes Smart Growth Policies through its project selection criteria.
- Public Outreach – The MPO can also help by educating the public through its many avenues of outreach and by supporting future federal and state programs that reduce GHG emissions.

## Alternative Modes of Travel

### Transit

One person living in the United States using mass transit for an entire year, instead of driving to work, can keep an average of over 5,000 pounds of CO<sub>2</sub> from being discharged into the air. One full, 40-foot bus takes 58 cars off the road.<sup>12</sup> A 10 percent nationwide increase in transit ridership would save 135 million gallons of gasoline a year and prevent 2.7 billion pounds of CO<sub>2</sub> from being added to the atmosphere (one gallon of gasoline creates 20 pounds of CO<sub>2</sub>).<sup>13,14</sup>

The Massachusetts Bay Transportation Authority (MBTA) is a significant part of the Boston region's transportation system, operating buses, subways, trains, ferries, and maintenance and operations vehicles throughout the region. It is also a significant element of the MPO's approach to reducing GHGs; the system provides people with an alternative to SOV travel. The MPO allocates approximately \$285 million of formula funding to transit projects annually through its Transportation Improvement Programs and LRTP. This funding is used to maintain, improve, and expand the existing transit system. The MPO also allocates Congestion Mitigation and Air Quality (CMAQ) and transit funds for cleaner transit vehicles.

68 percent of us live within two miles of a transit station; and 31 percent of us live within one mile of a shared-use path.

### Bicycle and Pedestrian Projects

Nonmotorized (bicycle and pedestrian) transportation produces no emissions. According to the Regional Bicycle Plan, 66 percent of the trips in the MPO region, by any mode of transportation, are less than five miles; 68 percent of us live within two miles of a transit station; and 31 percent of us live within one mile of a shared-use path.<sup>15</sup> Despite these relatively short distances, bicycling remains a marginal transportation choice for work and errands, comprising less than 1 percent of trips in our region.<sup>16</sup>

The MPO allocates funding for bicycle and pedestrian projects in the region to make the use of these modes of transportation safer, more attractive, and more viable as a mode choice. The MPO also funds a bicycle parking program and conducts studies and workshops to improve bicycling and walking conditions throughout the region in an effort to get more people to use these modes for traveling to work and running errands.

Massachusetts requires state agencies to accommodate bicyclists and pedestrians

<sup>12</sup> National Safety Council, "Auto Emissions Fact Sheet," [www.nsc.org/ehc/mobile/mse\\_fs.htm](http://www.nsc.org/ehc/mobile/mse_fs.htm), accessed: April 16, 2007.

<sup>13</sup> Ibid.

<sup>14</sup> United States Department of Energy and the U.S. Environmental Protection Agency, "How can a gallon of gasoline produce 20 pounds of carbon dioxide?" [www.fueleconomy.gov/feg/co2.shtml](http://www.fueleconomy.gov/feg/co2.shtml), April 2007.

<sup>15</sup> Metropolitan Area Planning Council and Boston Region MPO, "Regional Bicycle Plan." March 2007: 90 pages.

<sup>16</sup> Ibid.

into the design and construction of every project. This requirement is reflected in MassDOT's Project Development and Design Guide (2006). The design guide provides for the accommodation of pedestrians and bicyclists in line with Chapter 87 of the Commonwealth's Acts of 1996. By integrating these guidelines into their design, new roadway projects will accommodate both bicyclists and pedestrians.

MassDOT recently released its Bay State Greenway 100 implementation plan that identifies priority shared-use paths (or segments of paths) that make additional connections to urban centers, extend existing paths, and maximize the transportation utility of the network. The MPO will consider improvements to this bicycle and pedestrian network as well as to other portions of the network it identifies in its bicycle and pedestrian studies. The MPO's mobility policies include the intention to both close gaps in the existing networks and expand the bicycle and pedestrian network.

### **Reduction of Vehicle-Miles of Travel and Roadway Congestion**

Through its Clean Air and Mobility program, the MPO funds projects that help improve air quality and reduce traffic congestion. Projects eligible for funding under this program include public transportation improvements, traffic flow improvements (usually at intersections and interchanges), travel demand management, bicycle and pedestrian projects, inspection and maintenance programs, intermodal freight transportation, public education and outreach, idle-reduction technology, and intelligent transportation systems. Two examples of this type of project recently funded in the program are the construction of sidewalks linking housing and commercial activity centers to commuter rail stations in a suburban municipality, and a study to update signal timing in congested high-traffic intersections in a densely populated municipality near Boston.

Additional smart growth would make it easier for households and businesses to decrease the number and distance of vehicle trips.

### **Alternative Fuel Sources**

The MPO's Clean Air and Mobility Program also funds projects that support the use of alternative fuel sources. The Cambridge Clean Cabs project received funds to cover the incremental cost of upgrading cab fleets to hybrid vehicles. This investment helps reduce greenhouse gas emissions that are associated with climate change. In summer 2011, Massachusetts Energy and Environmental Affairs awarded 105 electric vehicle charging stations to 25 cities and towns throughout the Commonwealth. Municipalities within the Boston Region that received stations include Boston, Brookline, Cambridge, Hanover, Hopkinton, Lexington, Newton, and Salem. The estimated cost is \$2,500 for a single charging station and \$3,000 for a multi-car charging station, and a full charge allows vehicles to drive between 80 and 100 miles. This state initiative will facilitate the use of alternative sources by providing the infrastructure needed to make electric cars a viable option here in Massachusetts.

### **Smart-Growth Policy Packages**

Additional smart growth would make it easier for households and businesses to decrease the number and distance of vehicle trips, thus reducing vehicle-miles traveled (VMT) and the associated emissions. Massachusetts already has several policies promoting smart growth. The Metropolitan Area Planning Council has taken the lead in advancing smart growth, through MetroFuture, its current long-range plan for land use, housing, economic development, and environmental preservation in the Boston region.

MetroFuture comprises both a vision for the region’s future and a set of strategies to achieve that future. The MPO has adopted the MetroFuture land use plan assumptions and associated socioeconomic projections, which are used in the MPO’s travel demand model. MetroFuture seeks to create a more sustainable future for the region by focusing growth in areas where it already exists, in order to make better use of existing infrastructure and reduce the need for new highways, interchanges, and other infrastructure.

**Documenting the MPO’s GHG-Emissions Reduction for GreenDOT Implementation**

The Boston Region MPO and MassDOT, using the Boston MPO and the statewide travel demand models, have estimated CO<sub>2</sub> emissions resulting from the collective list of all recommended projects in all of the Massachusetts MPO’s LRTPs combined. Emissions are estimated in the same way as the criteria pollutants (volatile organic compounds, nitrogen oxides, and carbon monoxide) whose reduction is required for the air quality conformity determination, which is described in Chapter 10. However, the CO<sub>2</sub> emissions shown here are part of an effort separate from the conformity analysis and are not part of those federal standards and reporting requirements.

The Massachusetts Global Warming Solutions Act (GWSA) legislation requires reductions by 2020 and further reductions by 2050, relative to the 1990 baseline. The project mix from this LRTP (and all other LRTPs) was modeled for both 2020 and 2035 using a Build vs. No-Build analysis to determine the CO<sub>2</sub> emissions attributed to the MPO’s mix of projects and smart-growth land use assumptions. The estimates of the modeled CO<sub>2</sub> emissions are provided below:

**TABLE 5-1**  
**MASSACHUSETTS STATEWIDE CO<sub>2</sub> EMISSIONS ESTIMATES**  
 (ALL EMISSIONS IN TONS PER SUMMER DAY)

YEAR	CO <sub>2</sub> BUILD EMISSIONS	CO <sub>2</sub> NO-BUILD EMISSIONS	DIFFERENCE (ACTION MINUS BASE)
2010	101,514.4	101,514.4	n/a
2020	105,747.5	105,856.4	-108.9
2035	115,034.1	115,028.0	6.1

As shown above, collectively, all the projects in the LRTPs in the 2020 Build scenario provide a statewide reduction of nearly 109 tons of CO<sub>2</sub> per day compared to the base case. However, the 2035 Build scenario estimates an increase of about 6 tons of CO<sub>2</sub> emissions compared to the No-build case. It should be noted that this current analysis measures only projects that are included in the travel demand model. Many other types of projects that cannot be accounted for in the model (such as bicycle and pedestrian facilities, shuttle services, intersection improvements, etc.) will be further analyzed for CO<sub>2</sub> reductions in the next Transportation Improvement Program development cycle. This information will be updated and reported at that time.

Working closely with MassDOT, the Boston Region MPO will continue to report on its actions to comply with the GWSA and to help meet the GHG reductions targets. As part of this activity, the MPO will provide further public information on the topic and will advocate for steps needed to accomplish the MPO’s and state’s goals for greenhouse gas reductions.



The MPO also acknowledges the importance of adaptation measures to moderate potential damage from climate change impacts. Two of its visions – climate change and safety and security – will help in selecting projects that improve the ability of the transportation system to withstand extreme conditions. Projects that improve an evacuation route or an access route to an emergency support location earn higher ratings in the project evaluation process. Similarly, the evaluation process rewards projects that address sea level rise and flooding, meet current seismic design standards, or protect critical infrastructure. These criteria will help identify future transportation investments to address the impacts of climate change.

## ENVIRONMENT

### The Boston Region MPO's Vision for the Environment

**Vision:** Human and environmental health are considered in transportation decision-making. With transportation investments targeted to areas of existing development, many greenfields will be preserved, many brownfields will be restored and reused, and water and sewer infrastructure and other utilities will be more cost-effectively maintained. Air quality will be improved as the full range of regulated vehicle emissions (carbon monoxide, nitrogen oxides, volatile organic compounds, and particulates) and carbon dioxide are reduced to required and/or targeted levels. The transportation project design process will avoid or minimize negative impacts to wetlands, soil, water, and other environmental resources. Context-sensitive design principles will be implemented to protect communities' cultural, historic, and scenic resources, community cohesiveness, quality of life, and aesthetic environments.

**Policies:** To protect the environment and minimize impacts from transportation, the MPO will put a priority on programs, services, and projects that:

- Improve transportation in areas of existing development, which will reduce pressure to develop greenfields and possibly support development that will clean up brownfields for productive use
- Promote energy conservation, fleet management and modernization, and high-occupancy travel options to reduce fuel consumption and emissions of pollutants
- Protect community character and cultural resources
- Protect natural resources by planning early to avoid or mitigate impacts on stormwater or groundwater and on other resources
- Protect public health by reducing air pollutants, including fine particulates; avoid funding projects that increase exposure of at-risk populations to ultrafine particulates
- Lower life-cycle costs from construction to operation.
- Increase mode share for transit and nonmotorized modes
- Promote energy conservation and use of alternative energy sources
- Promote a context-sensitive design philosophy, consistent with the MassDOT Highway Division's design guidelines

Transportation agencies will work with environmental and cultural resource agencies to achieve these ends.

### **MPO Actions to Achieve Visions**

The MPO's policies determine which projects of regional significance are programmed in the LRTP. Guided by the nine policies described above, the MPO considers environmental effects as it assigns ratings to potential projects, with the goal of favoring projects that either maintain or improve the environmental status.

In *Paths to a Sustainable Region*, a project's environmental effects are assessed at the macro level for the LRTP. The detailed study and review of a project's specific effects on the environment occur during the design phase and prior to the project's being programmed in the TIP. Environmental oversight is conducted by others, including agencies, municipalities, and other project proponents, and occurs at the federal, state, and local levels. The National Environmental Policy Act (NEPA) guides federal oversight.<sup>17</sup> Conservation commissions provide local guidance and permitting.

The primary mechanism for state environmental review is the Massachusetts Environmental Policy Act (MEPA) process. The level of analysis required for a given project is determined by a series of triggers, some of which are directly related to transportation.<sup>18</sup> If a project meets certain criteria, for example, an environmental impact report (EIR) is required. A transportation project, however, may trigger MEPA review in other ways, related to wetland impacts, for example. Findings may result in the identifying the need for mitigation of environmental impacts. Examples of mitigation measures to minimize impacts on adjacent areas are narrowing a roadway or increasing a slope. A trail might be built on a boardwalk to minimize impacts on wetlands or wildlife, or additional land might be set aside to replace an impacted floodplain.

In the Boston region, environmental reviews for projects are conducted by the proponent transportation agency or municipality, not the MPO. The MPO signatory operating agencies, MassDOT, the MBTA, and Massport, have procedures for environmental reviews. The MassDOT Highway Design Guide contains a very detailed description of the MEPA process.<sup>19</sup> While this description applies specifically to Highway Division projects, it gives an excellent overview of the procedures and requirements involved in the environmental review process for all projects in Massachusetts.

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<sup>17</sup> The National Environmental Policy Act of 1969, as amended (Pub. L.91-190, 42 U.S.C. 4321-4347, January 1, 1970, as amended by Pub.L.94-52, July 3, 1975, Pub. L. 94-83, August 9, 1975, and Pub. L. 97-258 §4(b), Sept. 13, 1982).<sup>18</sup> The National Environmental Policy Act of 1969, as amended (Pub. L.91-190, 42 U.S.C. 4321-4347, January 1, 1970, as amended by Pub.L.94-52, July 3, 1975, Pub. L. 94-83, August 9, 1975, and Pub. L. 97-258 §4(b), Sept. 13, 1982).

<sup>18</sup> Major transportation projects such as new interchanges, new rapid transit lines, new airports, or new runways trigger an Environmental Notification Form (ENF) and a mandatory Environmental Impact Review (EIR). Other triggers in this category include the generation of 3,000 or more new average-daily-traffic volumes at a single location or construction of 1,000 or more new parking at a single location.

An ENF would be required for a new airport taxiway, new roadways at least one-quarter mile long, widening of a roadway by four feet or more for one-half mile or more, cutting of five or more public shade trees of 14 or more inches in diameter at breast height, eliminating 300 or more feet of stonewall, etc.

<sup>19</sup> Massachusetts Highway Department Project Development and Design Guide, 2006. See especially Chapter 2, "Project Development."

## ***Environmental Factors Addressed by the MPO***

The environmental factors (other than air-related factors) that the MPO reviews during its project selection process include the following:

- 1) Areas of Critical Environmental Concern (ACEC) – 28 Areas of Critical Environmental Concern (ACECs) in Massachusetts are recognized for their unique, significant natural and cultural resources. Individual communities nominate candidates for ACEC designation, and the Secretary of Energy and Environmental Affairs determines whether to designate the area as an ACEC. The ACEC designation helps to ensure that any activities undertaken in or near the ACEC have minimal negative impacts. Statewide, the 28 ACECs, located in 73 towns, cover almost a quarter of a million acres; 12 of these areas are located at least partially in the Boston Region MPO area.
- 2) Special flood hazard areas (FEMA Q3 floodplains) – A simplified definition of these areas is that they are within 100-year floodplains. There are 20 FEMA classifications, 13 of which are included in the Special Flood Hazard category. An example of a classification is Base Flood Elevation Determinations (BFEDs). BFEDs are the computed elevations to which floodwater is anticipated to rise during the base flood. Federal, state, and local policies direct proponents of most transportation projects to minimize construction and implement mitigation measures in areas categorized as being within a 100-year floodplain.
- 3) Wetlands – Wetlands fall into the following categories: marsh/bog, wooded marsh, cranberry bog, salt marsh, open water, reservoir (with Public Water System Identification), tidal flats, and beach/dune.
- 4) Water supply and wellhead protection areas – These are surface water protection areas, as well as those associated with wells. The three categories for surface water protection refer to proximity to water: zone A is closest, zone B is farther, and zone C is farther still, but somewhere within the watershed. The wellhead protection areas include the recharge areas for wells.
- 5) Protected open space – There are four levels of protection: perpetuity, limited, term-limited, and none. The first category, perpetuity, means that the parcel can never be developed. No protection means that the land is available for development. The middle two categories are not as clearly defined. In general, limited protection implies that there are extra impediments to development. The level and type of extra protection varies. Term-limited protection means the land is protected now, but not necessarily in the future. This includes term conservation restrictions and term deed restrictions.
- 6) Natural Heritage and Endangered Species Program Priority Habitats – Three categories are presented: NHESP Certified Vernal Pools, NHESP Estimated Habitats of Rare Wildlife, and NHESP Priority Habitats of Rare Species. Priority Habitats of Rare Species are the habitats of state-listed rare species, both plants and animals. Estimated Habitats of Rare Wildlife is a subset of Priority Habitats that shows habitats for state-listed rare wildlife, but not those for plants.

Although vehicles and fuels are getting cleaner, people are driving more, which is counteracting some of the progress towards attaining clean air that could be achieved through technology.

Vernal pools, also defined by NHESP, are not permanent bodies of water. Because they are devoid of fish, they provide safe breeding grounds for many amphibians and invertebrates. A vernal pool typically fills in the autumn and is completely dry by mid- or late summer. Some may not dry up every year, but often enough to prevent fish habitats from developing.

- 7) Air quality – Reducing air pollutants is a goal for the MPO in its selection of transportation projects and programs. In addition to the criteria pollutants (volatile organic compounds, nitrogen oxides, and carbon monoxide) that are required to be addressed through the federal Clean Air Act, two additional pollutants, particulate matter and carbon dioxide, are of concern to the MPO. The MPO has begun to focus on ways it can help in reducing these two pollutants and will continue to do so throughout the time frame of this LRTP.

Particulate matter is a mixture of microscopic solids and liquid droplets suspended in air. Fine particulates can be emitted directly or formed in the atmosphere from mobile-source emissions. These particles can get deep in the lungs, and some may even get into the bloodstream. Recent research suggests that individuals—particularly the elderly, children, or those with diabetes or preexisting cardiac or pulmonary disease—living in close proximity to major roads face a significantly higher risk of cardiopulmonary problems than those with less exposure to vehicle emissions.

In particular, emissions of particulate matter from motor vehicles are receiving increased attention as a potential public health risk. One initiative underway in Massachusetts is the school bus retrofit project sponsored by the state Department of Environmental Protection, which is being undertaken and funded as a Congestion Mitigation and Air Quality program. This project will retrofit the state’s school bus fleet, significantly reducing particulates, hydrocarbons, and carbon monoxide. In addition, if more of the freight currently moved by truck could be carried by freight rail in the region, the resulting reductions in both congestion and truck emissions could have a positive air quality impact. Although vehicles and fuels are getting cleaner, people are driving more, which is counteracting some of the progress towards attaining clean air that could be achieved through technology. Policy and planning steps are necessary to address the threat to public health, since technology alone cannot resolve this issue.

The MPO is also concerned with carbon dioxide (CO<sub>2</sub>) as discussed in the previous Climate Change section.

- 8) Brownfield and Superfund Sites – Brownfields are properties that may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties protects the environment, reduces blight, and takes development pressures off green spaces and working agricultural lands. A superfund site is an uncontrolled or abandoned place where hazardous waste is located, possibly affecting local ecosystems or people. Some common hazardous-waste sites include abandoned warehouses, manufacturing facilities, processing plants, and landfills. According to the Environmental Protection Agency (EPA), EnviroMapper, an online mapping tool that provides



information about environmental activities that may affect air, water, and land, there are over 180 brownfield sites and more than 130 Superfund sites in the Boston region. These data and more can be accessed through EPA's EnviroMapper at [www.epa.gov/emefdata/em4ef.home](http://www.epa.gov/emefdata/em4ef.home).<sup>20</sup>

Projects that have been recommended in this LRTP are listed in Table 5-1 and included on Figures 5-8 through 5-14 that display the environmental factors described above.

**TABLE 5-2**

**LIST OF RECOMMENDED PROJECTS**

KEY # ON FIGURES	HIGHWAY PROJECTS
1	Bedford, Billerica & Burlington: Middlesex Turnpike Improvements Phase III
2	Belmont: Trapelo Road
3	Boston: Conley Haul Road
4	Boston: Sullivan Square/Rutherford Avenue
5	Braintree: Braintree Split
6	Canton: Interstate 95/Interstate 93 Interchange
7	Canton: I-95 Northbound/Dedham Street Corridor
8	Framingham: Route 126/135 Grade Separation
9	Concord to Westford: Bruce Freeman Rail Trail
10	Hanover: Route 53 Final Phase
11	Hudson to Acton: Assabet River Rail Trail
12	Malden, Revere, & Saugus: Route 1 Improvements
13	Needham & Newton: Needham Street/Highland Avenue
14	Reading & Woburn: I-93/I-95 Interchange
15	Salem: Bridge Street
16	Weymouth: Route 18 Capacity Improvements Project
17	Woburn: Montvale Avenue
18	Woburn: New Boston Street Bridge
	<b>TRANSIT PROJECTS</b>
19	Boston: Ferry Expansion: Russia Wharf Ferry Terminal
20	Somerville: Green Line Lechmere to Medford Hillside (College Avenue) / Union Square
21	Somerville: Green Line Medford Hillside (College Avenue) to Mystic Valley Parkway (Route 16)
22	Boston: Red-Blue Connector
23	Beverly: Additional Parking Spaces
24	Salem: Additional Parking Spaces

<sup>20</sup> U.S. Environmental Protection Agency's (U.S. EPA) Envirofacts Warehouse, EnviroMapper layers for Brownfield facilities and Superfund sites, [www.epa.gov/emefdata/em4ef.home](http://www.epa.gov/emefdata/em4ef.home), accessed on 6/3/11.

FIGURE 5-8

AREAS OF CRITICAL ENVIRONMENTAL CONCERN

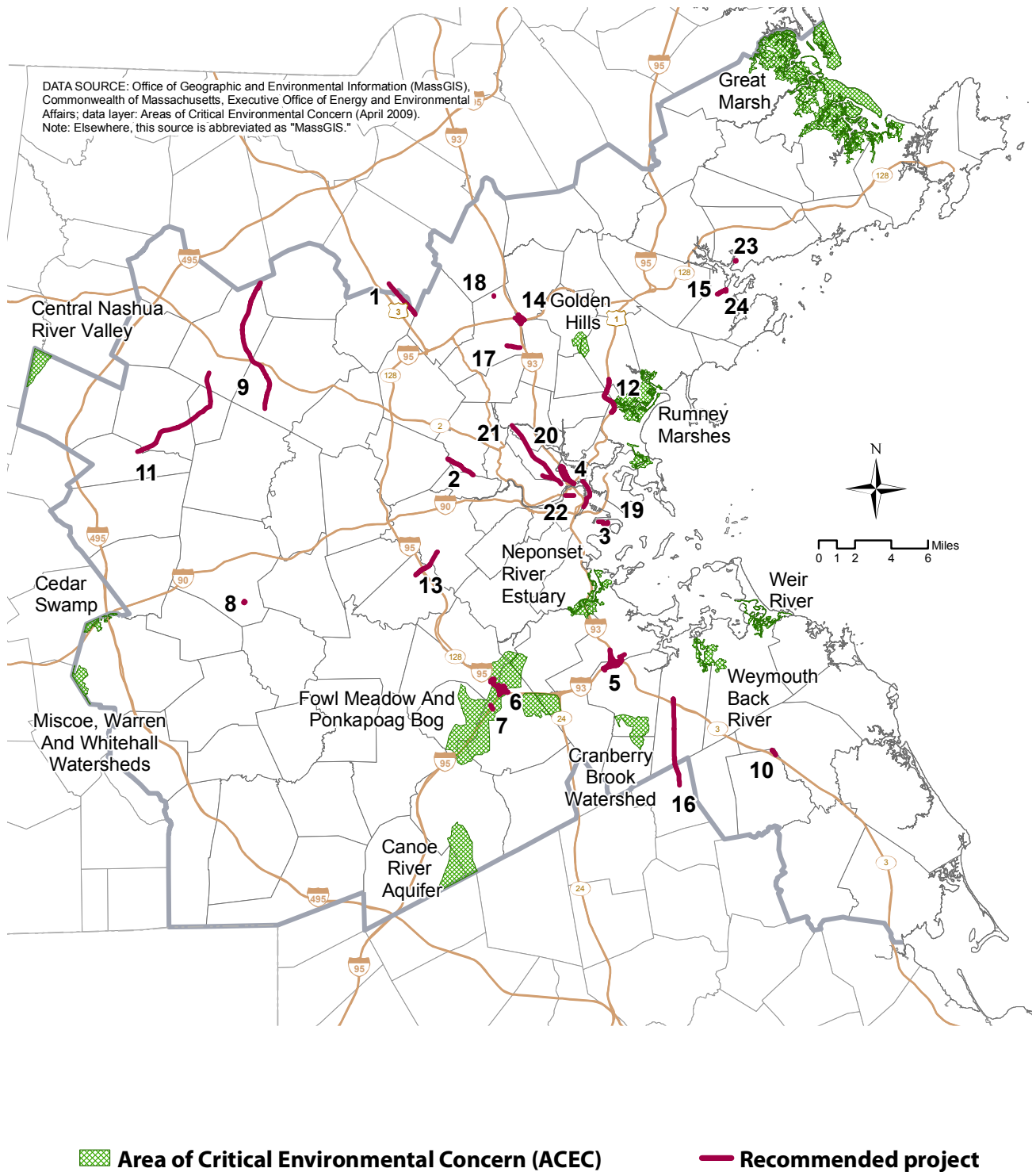
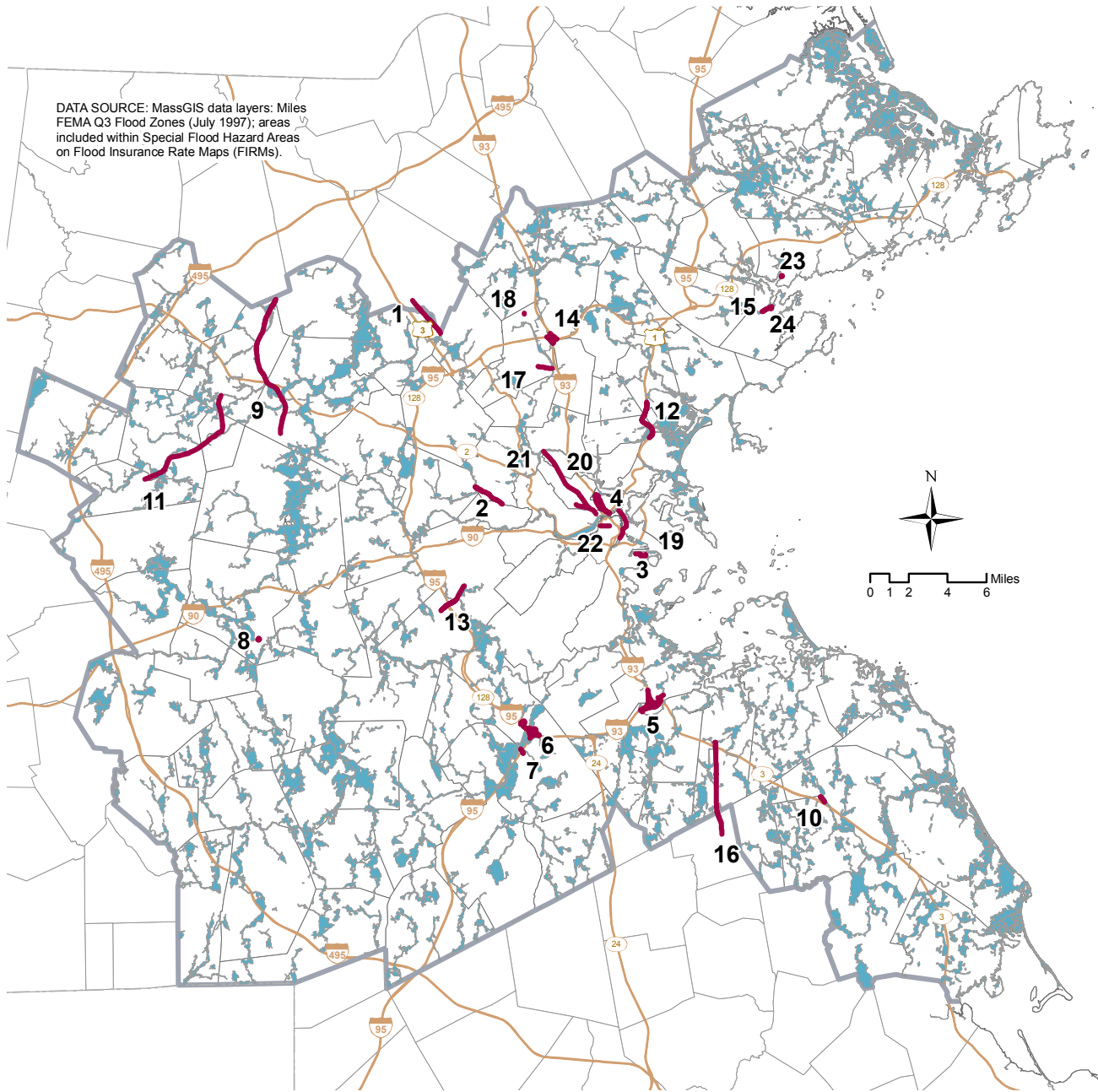


FIGURE 5-9

FEMA Q3 SPECIAL FLOOD HAZARD AREAS



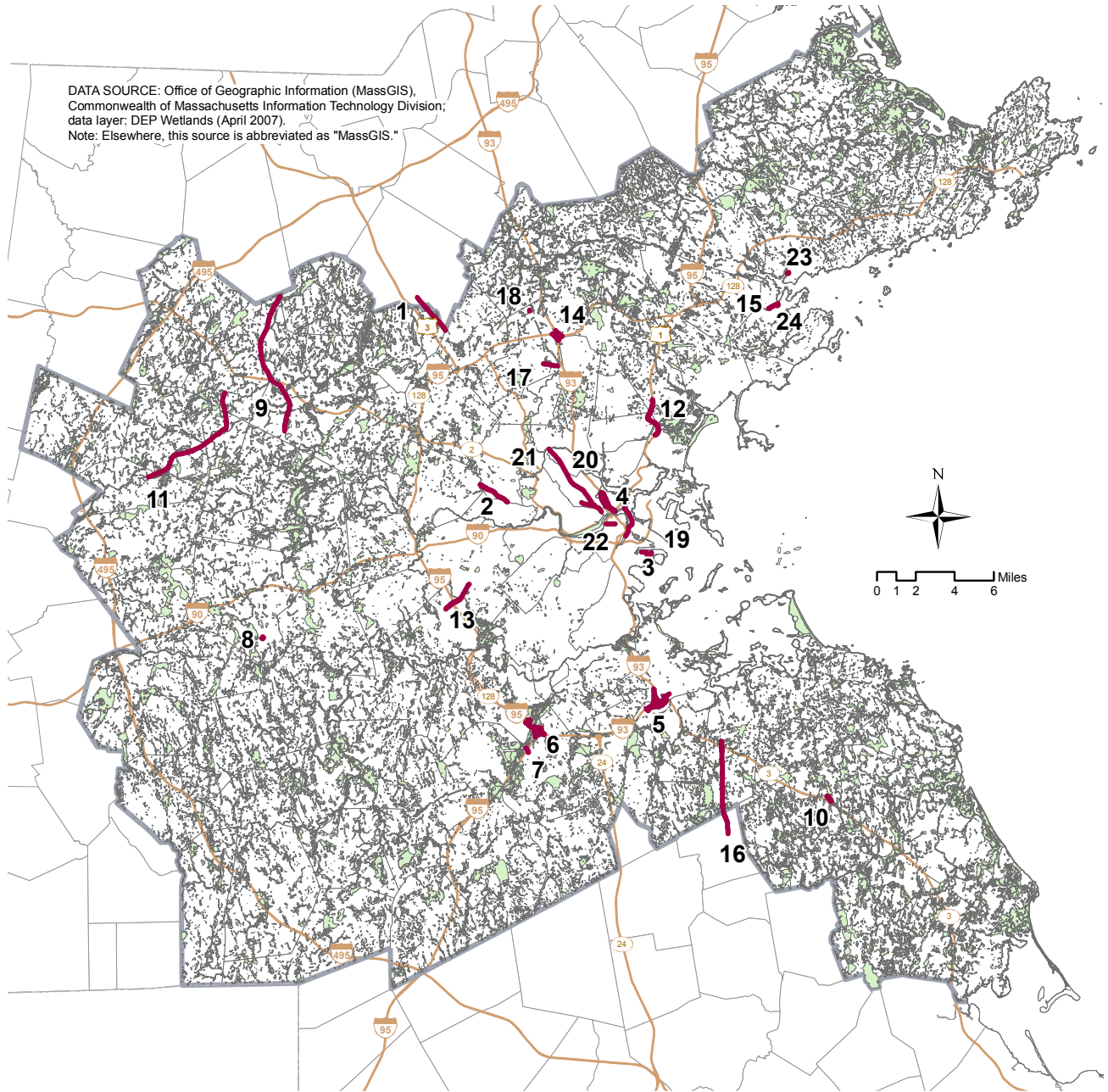
**FEMA Q3 Flood Zones**  
Special Flood Hazard Area

**Recommended project**

Special Flood Hazard Areas (SFHAs) are areas subject to inundation by a flood having a 1% or greater probability of being equaled or exceeded during any given year. This flood, which is referred to as the 1% annual chance flood (or base flood), is the national standard on which the floodplain management and insurance requirements of the National Flood Insurance Program are based.

FIGURE 5-10

WETLANDS



**DEP Wetlands**

All categories

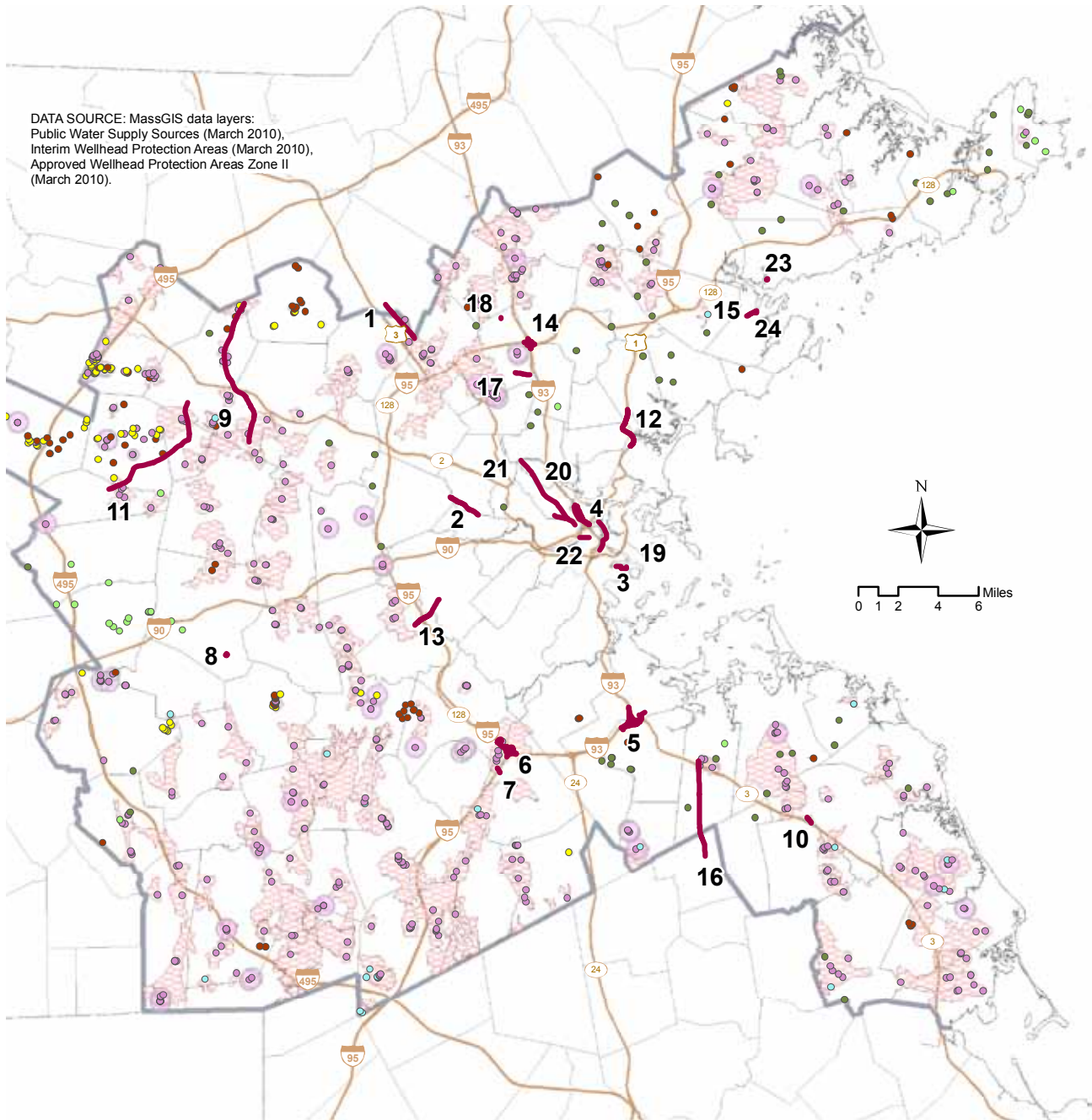
Massachusetts Department of Environmental Protection (DEP), Wetlands Conservancy Program

**Recommended project**

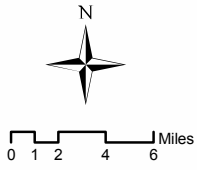


**FIGURE 5-11**

**PUBLIC WATER SUPPLIES**



DATA SOURCE: MassGIS data layers:  
 Public Water Supply Sources (March 2010),  
 Interim Wellhead Protection Areas (March 2010),  
 Approved Wellhead Protection Areas Zone II  
 (March 2010).



**Public Water Supplies**

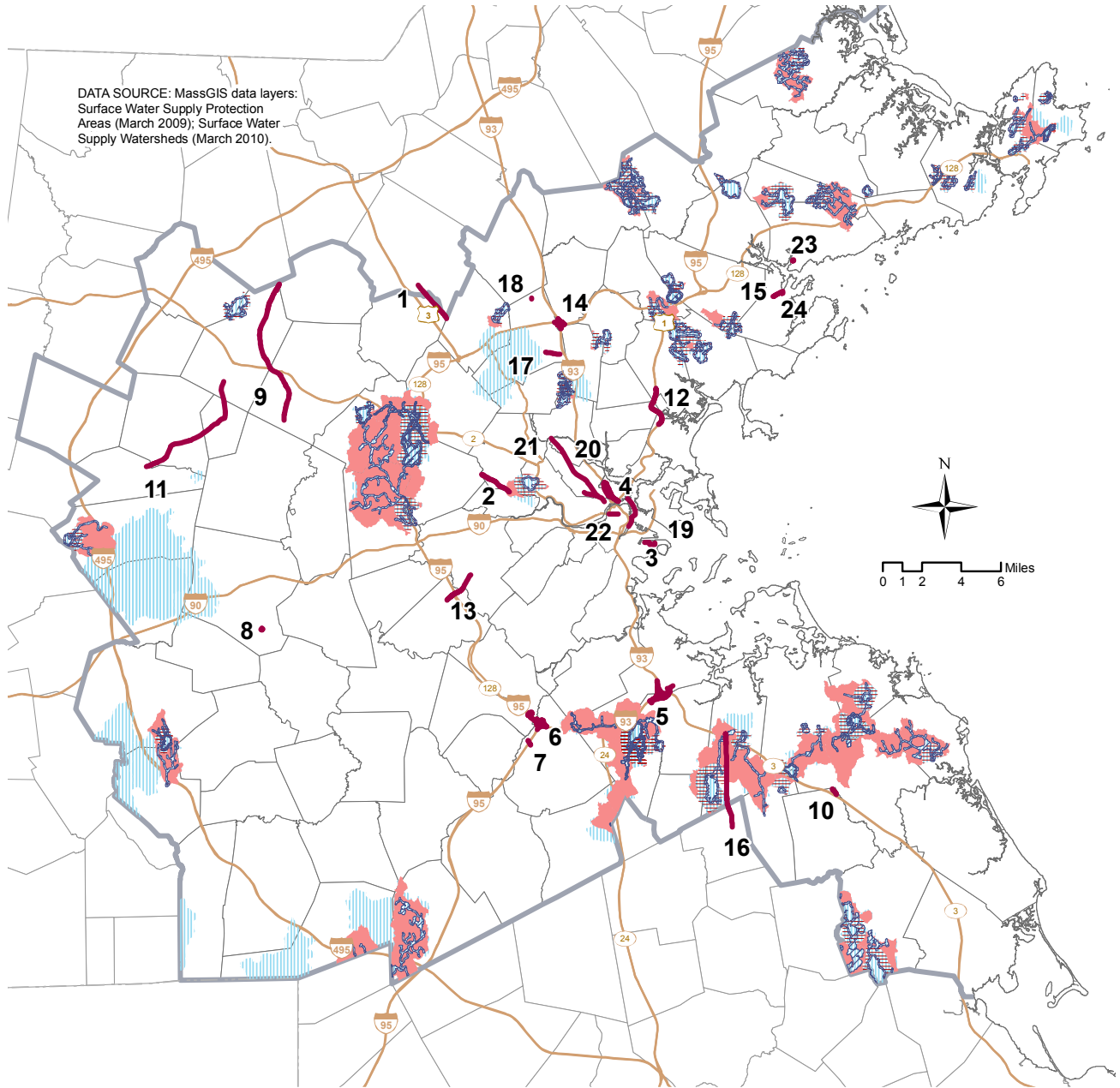
- Groundwater
- Transient noncommunity
- Nontransient noncommunity
- Surface water
- Emergency surface water
- Proposed well
- Wellhead protection area Zone II

**Recommended project**



FIGURE 5-12

SURFACE WATER PROTECTION AREAS



**Surface Water Protection Areas**

- Zone A
- Zone B
- Zone C

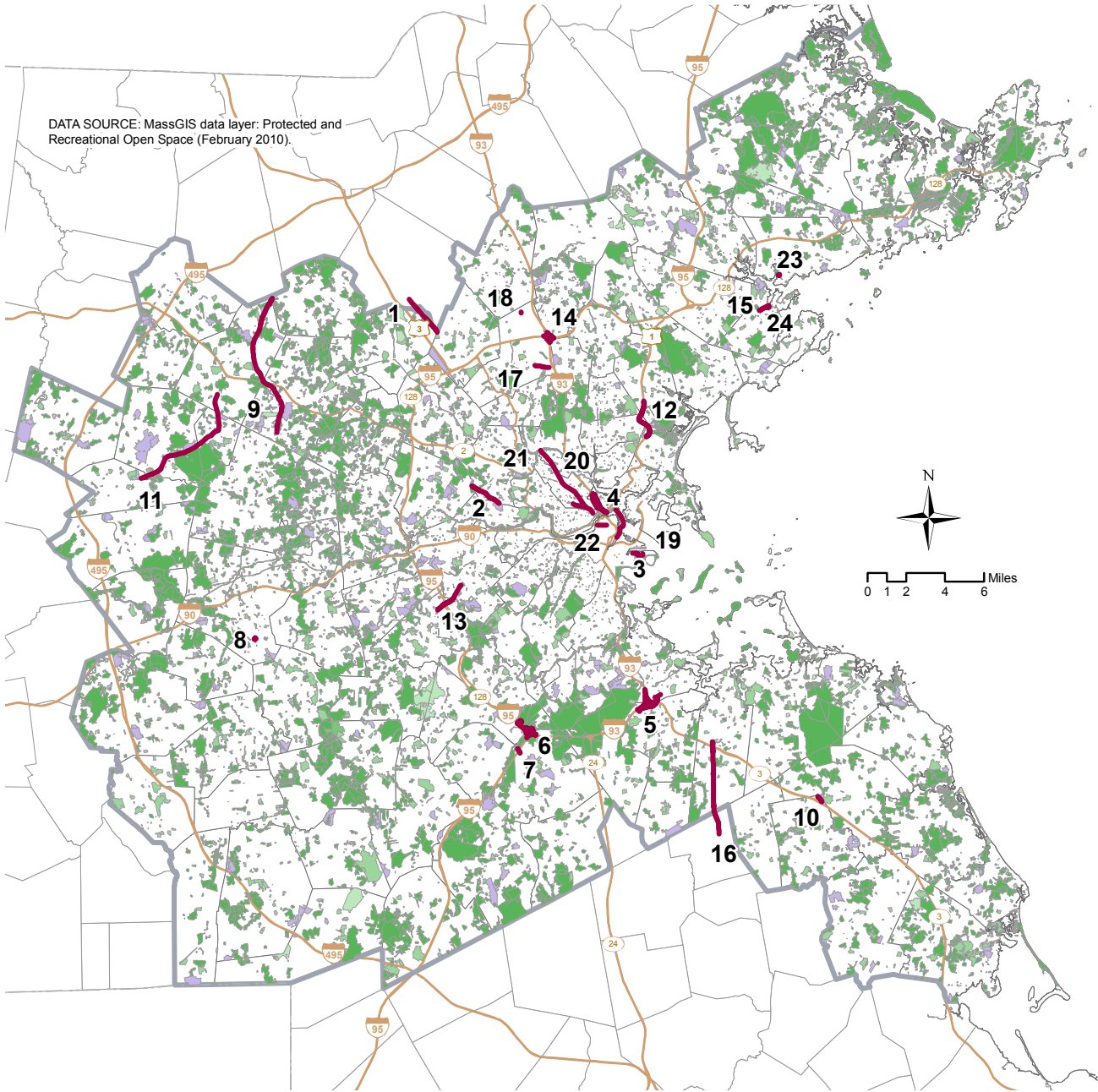
**Surface Water Supply**

- Watershed area

**Recommended project**

FIGURE 5-13

PROTECTED OPEN SPACE



**Protected Open Space**

Level of Protection

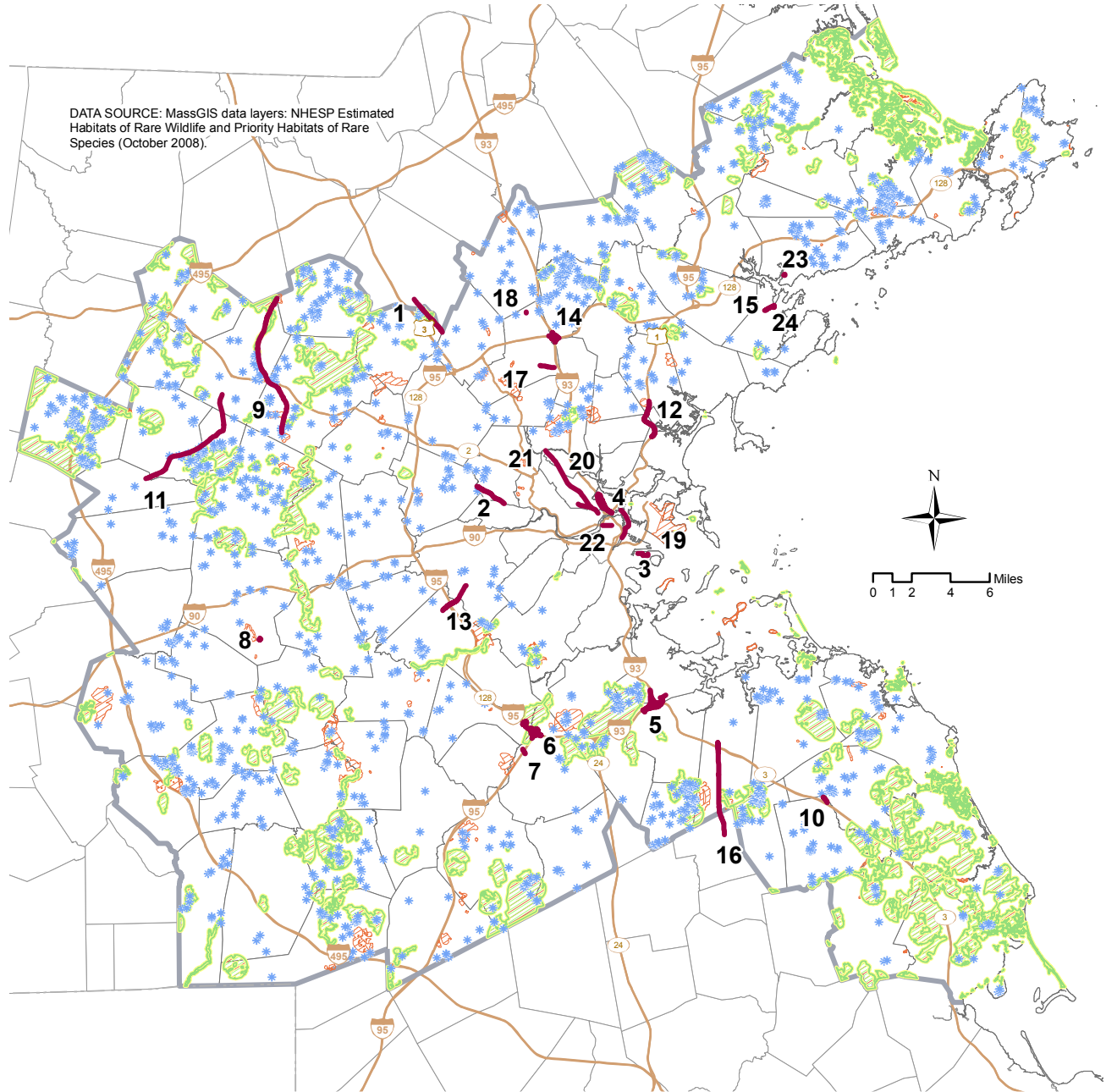
- In perpetuity
- Temporary
- Limited
- Unknown
- None

**— Recommended project**



FIGURE 5-14

NATURAL HERITAGE AND ENDANGERED SPECIES PROGRAM PRIORITY HABITATS



DATA SOURCE: MassGIS data layers: NHESP Estimated Habitats of Rare Wildlife and Priority Habitats of Rare Species (October 2008).

**NHESP Priority Habitats**

- \* Certified vernal pool
- Estimated habitat of rare wildlife
- Rare species habitat

Natural Heritage and Endangered Species Program (NHESP) is a part of the Massachusetts Division of Fish and Wildlife.

**Recommended project**



## LIVABILITY

### What Is Livability?

A livable community is one that provides its residents with convenient access to opportunities and resources. Affordable housing, varied-level schools, nearby employment opportunities, community resources, healthy and affordable food options and entertainment in close proximity all contribute to the livability of a community, as do safe, affordable, and healthy options for getting around.

Extensive highway transportation investments have enabled most individuals with an automobile to maintain access to a variety of opportunities, including housing, schools, jobs, medical facilities, and shopping centers. Advancements in automobiles coupled with substantial investments in highway transportation infrastructure continue to allow us to travel farther and faster, and in less time, and have supported sprawling development patterns. Automobile transportation is often the fastest and most convenient mode of travel from any origin to any destination. However, this pattern of travel is not without some significant trade-offs. Although infrastructure investments and automobile improvements have allowed people greater flexibility in where they live, work, play, learn, and shop, it has come at the expense of affordability, health, and safety.

### Livability Challenges and Gaps

#### Affordability

Auto ownership and vehicle-miles traveled (VMT) have increased over the past few decades. The automobile remains the primary mode of transport for a majority of the region's residents, as the average person drives over 6,000 miles annually, and driving alone accounts for 67 percent of the region's commute trips. Figure 5-15 compares VMT from 1990–2008 across the U.S., Massachusetts, and the Boston region.<sup>21</sup> It indicates that the typical Boston region resident drives 30–35 percent less than the typical American drives, and 21–23 percent less than the typical Massachusetts resident. The Boston region's notably lower VMT is indicative of its higher density and extensive public transportation system.

Despite lower VMT per capita, the Boston region remains increasingly vulnerable to fluctuations in energy prices. According to the Massachusetts Clean Energy and Climate Action Plan for 2020, the average Massachusetts household spent about \$5,200 on energy costs in 2008, with about \$2,200 devoted to gasoline. Gas prices fluctuated substantially from \$2.60 a gallon in fall 2010 to \$4.00 a gallon in spring 2011, resulting in more than 50 percent higher fuel expenses for the typical Massachusetts household.<sup>22</sup> Gas price increases have a more severe impact on more auto-dependent communities, such as North Reading, Norwell, Wrentham, and Hopkinton, that typically have, respective, daily travel mileages of 75, 86, 89, and 93 miles per household. In addition, the vulnerability of these communities is further exacerbated by the state's heavy reliance on imported energy.

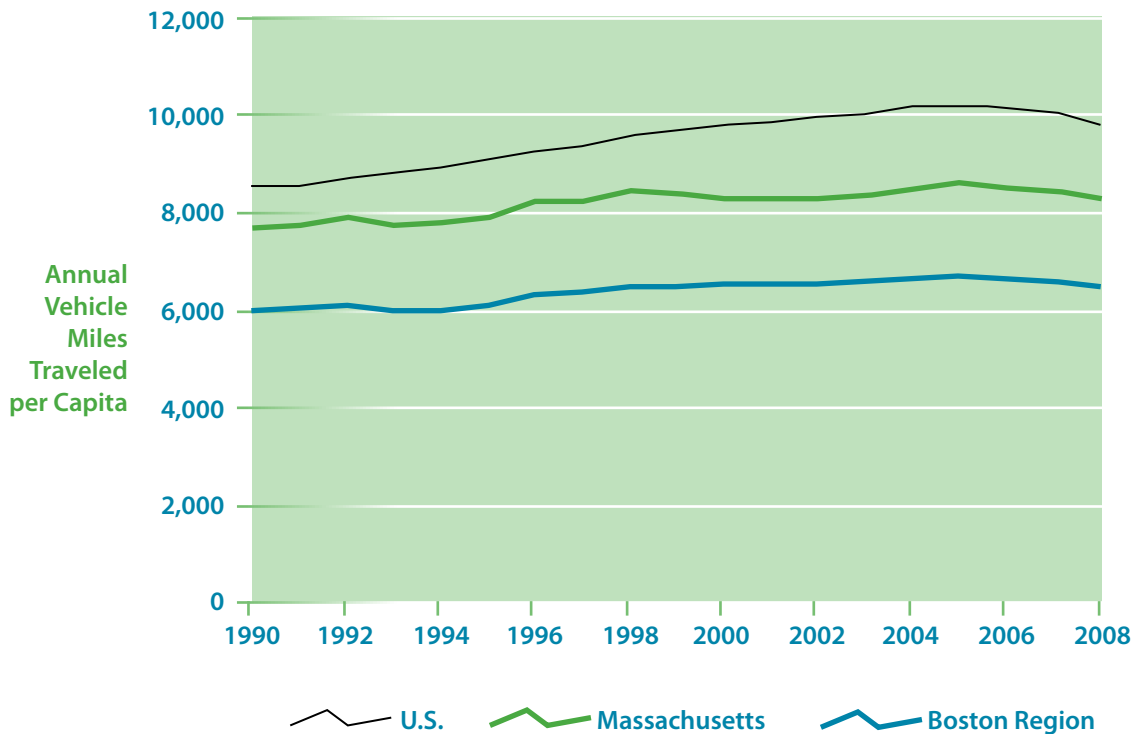
Gas prices fluctuated substantially from \$2.60 a gallon in fall 2010 to \$4.00 a gallon in spring 2011, resulting in more than 50 percent higher fuel expenses for the typical Massachusetts household.

<sup>21</sup> MassDOT Highway Performance Monitoring System for Daily VMT and FHWA (VM-2) Highway Statistics Report, BTS 2009. Boston Region VMT estimates based on percentage of annual statewide VMT.

<sup>22</sup> U.S. Energy Information Administration website, <http://www.eia.gov/oog/info/gdu/gasdiesel.asp>, "Gasoline and Diesel Fuel Update," accessed on 5/25/11.

FIGURE 5-15

ANNUAL VEHICLE MILES TRAVELED PER CAPITA (1990-2008)



While none of the region's communities had drive-alone commute shares above 78 percent in 1980, there were 55 communities above 78 percent by 2000.

The Clean Energy and Climate Action Plan acknowledges that all of the state's fossil-based energy sources, including oil, natural gas, and coal, come from other regions of the country and other parts of the world, which demonstrates the region's susceptibility to fluctuations in the global market. Given the threat that automobile dependency poses to transportation affordability, more affordable transportation options need to become feasible. In addition to the cost of fuel, automobile ownership entails other costs, including maintenance, insurance, registration, and parking expenses. According to the American Automobile Association (AAA), the annual costs for the average driver of a typical medium-sized sedan that logs 15,000 miles per year is more than \$8,500, or 57 cents per mile.<sup>23</sup>

**Health**

The region's existing travel patterns have also had tremendous impact on our population's health, especially in regard to physical activity and air quality. The typical household utilizes the car for a majority of trips, including the work trip, which accounts for nearly 30 percent of total VMT. In addition, an increasing percentage of the region's commuters drive alone to work. While none of the region's communities had drive-alone commute shares above 78 percent in 1980, there were 55 communities above 78 percent by 2000.<sup>24</sup> Yet, the preference for the automobile has compromised other travel options and diminished opportunities to engage in physical activity.

<sup>23</sup> American Automobile Association, "Your Driving Costs," 2011 Edition.

<sup>24</sup> U.S. Census Bureau, Journey-to-Work data, 1980-2000.

One notable decline is evident in how children travel to and from school. According to MassRIDES' Safe Routes to School Program, roughly 42 percent of students bicycled or walked to school in 1969, compared to less than 16 percent of children today. Similarly, fewer adults incorporate physical activity into their commute, as walking and bicycling only account for 6.3 percent of the region's transportation mode split, and half of Massachusetts adults do not participate in regular physical activity. As opportunities for physical activity within daily travel are minimized, the health of the region suffers. According to the Massachusetts Executive Office of Health and Human Services (EOHHS), more than half of the adults and a quarter of the high school students in Massachusetts are overweight or obese. In addition to effects on personal health, the economic impacts are significant: health care costs associated with obesity totaled approximately \$1.8 billion statewide in 2003.<sup>25</sup>



The transportation sector has also contributed to health impacts associated with air quality. The transportation sector is largely responsible for increases in emissions statewide, and its heavy reliance on fossil fuels has local and regional impacts on air quality. “The Clean Energy and Climate Action Plan notes that exposure to ozone (O<sub>3</sub>) emissions can irritate the respiratory system and aggravate asthma, and exposure to fine particulate matter (PM) is associated with aggravation of respiratory and cardiovascular disease.” These linkages between transportation and health are difficult to ignore as asthma becomes more common in the commonwealth. According to EOHHS, the prevalence of asthma is higher in Massachusetts than in most other states, and the number of adults with asthma increased by 16 percent between 2000 and 2007. Approximately 10 percent of the state’s residents have asthma, and statewide asthma expenses total over \$690 million annually.<sup>26</sup>

### Safety

According to the Massachusetts Department of Public Health (DPH), motor vehicle crashes are the second leading cause of injury death in Massachusetts. DPH also notes that in 2005, motor vehicle crashes in Massachusetts were the third leading cause of hospitalizations, and caused the death of 446 people and injury to nearly 90,000. In addition to the human costs, the economic implications are substantial, as costs

According to EOHHS, the prevalence of asthma is higher in Massachusetts than in most other states, and the number of adults with asthma increased by 16 percent between 2000 and 2007.

<sup>25</sup> Massachusetts Department of Public Health: Mass In Motion, *Health of Massachusetts: Impact of Overweight and Obesity*, (1998-2007), 2009.

<sup>26</sup> Rosanna Coffey, Karen Ho, David Adamson, Trudi Matthews, and Jenny Sewell, *Asthma Care Quality Improvement: A Resource Guide for State Action*, updated October, 2009, Table 1-3.

A pedestrian has a 95 percent chance of surviving a crash with a vehicle traveling 20 mph, but the likelihood of surviving a crash with a vehicle traveling 40 mph is only 15 percent.

associated with motor vehicle crashes in Massachusetts were estimated at over \$6.4 billion in 2005.<sup>27</sup>

These safety impacts are widespread, but they disproportionately impact pedestrians and young motorists. Massachusetts crash data indicate that the 75 pedestrian fatalities in 2008 accounted for 20 percent of all traffic-related fatalities, which is highly disproportionate to the percentage of trips made by pedestrians.<sup>28</sup> Automobile speed has a significant impact on crash severity for pedestrians. According to the Federal Highway Administration (FHWA), a pedestrian has a 95 percent chance of surviving a crash with a vehicle traveling 20 mph, but the likelihood of surviving a crash with a vehicle traveling 40 mph is only 15 percent.<sup>29</sup>

Similarly, young drivers also account for a higher proportion of motor vehicle crashes than older drivers. According to the DPH, drivers 20–24 years old had the highest rates of motor vehicle traffic deaths, and motor vehicle crashes accounted for more fatalities among young adults ages 15–24 than any other cause. There are also safety factors such as higher speeds that affect all motorists. According to the FHWA, the severity of injuries from a crash increase exponentially with vehicle speed. For example, a 30 percent increase in speed results in a 69 percent increase in the kinetic energy of a vehicle.<sup>30</sup> The overwhelming majority of evidence suggests that reductions in speed limits reduce vehicle speeds and crashes.

### Livability Potential

The Boston region possesses a strong foundation to promote livability. The region's higher density and extensive public transportation system provide options in many places to take transit, walk, and bike. The livable places in the Boston region effectively link land use and transportation, and exist in various settings. In the urban setting, examples include Harvard Square in Cambridge, Coolidge Corner in Brookline, Centre Street in Jamaica Plain, Roslindale Village, downtown Salem, and Davis Square in Somerville. In the inner suburbs, Winchester Center, Newton Centre, and Wellesley Square provide livable environments. Livable places are also located in outer suburbs, and include downtown Franklin, and Main Street in the communities of Concord, Milford, and Gloucester. In addition to transportation choices, these livable places tend to have mixed-use neighborhoods, community resources, jobs, and sometimes, affordable housing.

Figure 5-16 shows the transit coverage (rapid transit and bus) in relation to population density. Figure 5-16 demonstrates that some of the conditions associated with livable places (identified above) are higher population density and good transit access.

In addition, livable places also are generally associated with good sidewalk coverage, and often associated with good bicycle coverage. Table 5-2 shows the relationship between

<sup>27</sup> Massachusetts Executive Office of Health and Human Services (EOHHS) website, [http://www.mass.gov/?pageID=eohhs2terminal&L=5&LO=Home&L1=Consumer&L2=Prevention+and+Wellness&L3=Injury+Prevention&L4=Transportation+Safety&sid=Eeohhs2&b=terminalcontent&f=dph\\_com\\_health\\_injury\\_c\\_transportation\\_traffic&csid=Eeohhs2](http://www.mass.gov/?pageID=eohhs2terminal&L=5&LO=Home&L1=Consumer&L2=Prevention+and+Wellness&L3=Injury+Prevention&L4=Transportation+Safety&sid=Eeohhs2&b=terminalcontent&f=dph_com_health_injury_c_transportation_traffic&csid=Eeohhs2), "Traffic and Motor Vehicle Safety," accessed on 5/20/11. This information is provided by the Injury Prevention and Control Program within the Department of Public Health. This figure only accounts for acute medical care and does not include rehabilitation costs.

<sup>28</sup> Massachusetts Executive Office of Public Safety and Security (EOPSS) website, [http://www.mass.gov/?pageID=eopsterminal&L=3&LO=Home&L1=Crime+Prevention+%26+Personal+Safety&L2=Traffic+Safety&sid=Eeops&b=terminalcontent&f=programs\\_ghsb\\_2006\\_2008\\_crash\\_statistics&csid=Eeops](http://www.mass.gov/?pageID=eopsterminal&L=3&LO=Home&L1=Crime+Prevention+%26+Personal+Safety&L2=Traffic+Safety&sid=Eeops&b=terminalcontent&f=programs_ghsb_2006_2008_crash_statistics&csid=Eeops), "2006-2008 Massachusetts Crash Statistics," accessed on 5/20/11.

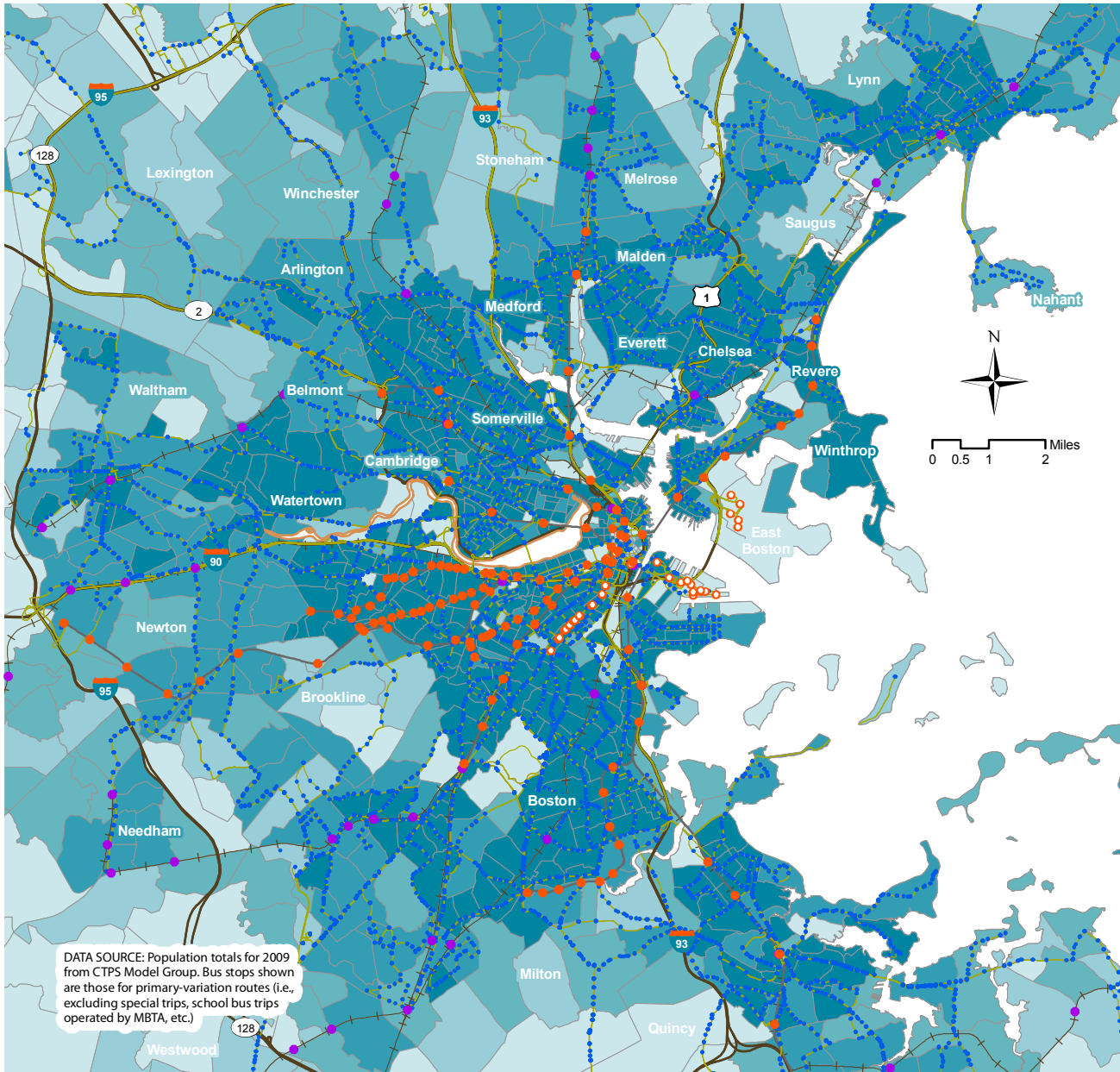
<sup>29</sup> Federal Highway Administration (FHWA), *Speed Concepts: Informational Guide*, September 2009.

<sup>30</sup> Ibid.



FIGURE 5-16

TRANSIT COVERAGE IN RELATION TO POPULATION DENSITY BY CENSUS TRACT



**Existing Transit Services and Catchment Areas**

- Rapid transit station
- Silver Line stop
- Commuter rail station
- MBTA bus stop

**2009 Population per Sq. Mi.**

- Less than 1,000
- 1,001 - 2,000
- 2,001 - 4,000
- 4,001 - 8,000
- More than 8,000

livability indicators (measures associated with livability) across different community types. Table 5-2 indicates that there is significant variation of livability indicators within community types, and that higher population density tends to be associated with higher sidewalk coverage, lower automobile ownership, and lower daily vehicle-miles traveled.

**TABLE 5-3**

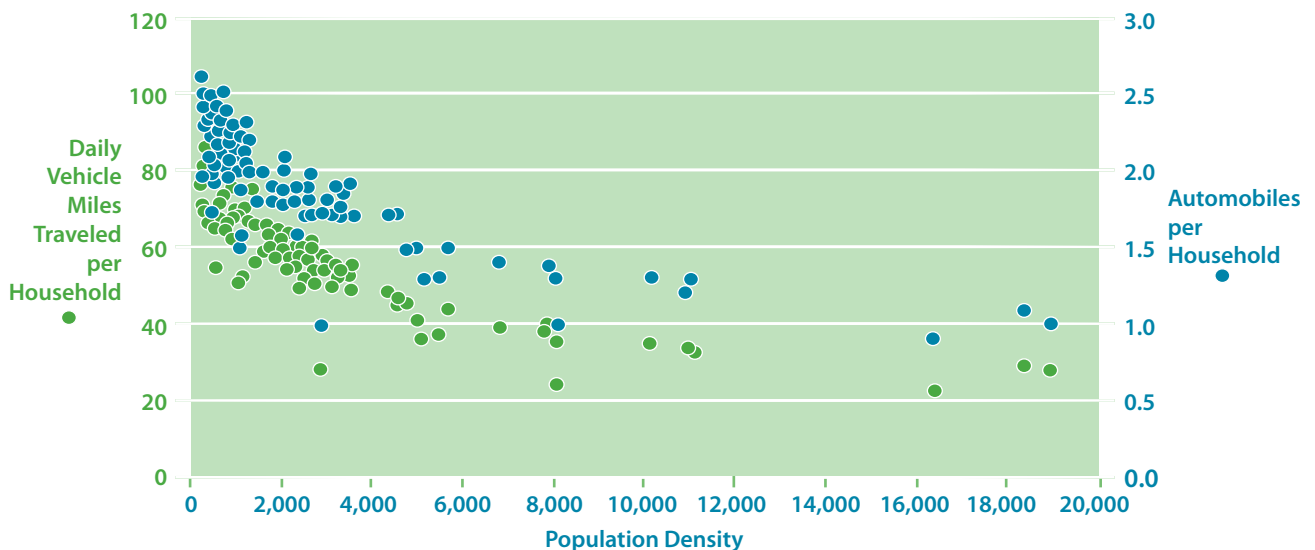
**INDICATORS OF LIVABILITY ACROSS COMMUNITY TYPES**

COMMUNITY TYPE	COMMUNITY	POPULATION DENSITY	EMPLOYMENT DENSITY	SIDEWALK COVERAGE	BICYCLE COVERAGE	AUTOS PER HH	DAILY VMT PER HH
Inner Core	Somerville	18,436	5,027	90%	3.5%	1.1	29
	Melrose	5,690	1,349	70%	0.9%	1.5	44
Regional Urban Center	Salem	5,091	2,290	77%	2.2%	1.3	36
	Framingham	2,583	1,761	49%	3.0%	1.7	53
Maturing Suburb	Stoneham	3,492	1,274	58%	1.7%	1.7	49
	Burlington	2,115	3,181	22%	0.0%	2.1	64
Developing Suburb	Hudson	1,703	862	45%	2.1%	2.0	66
	Bellingham	859	294	32%	2.2%	2.2	80

One notable trend across the community types is the variation in automobile usage. Figure 5-17 shows the relationship between population density and daily vehicle-miles traveled and automobiles per household across the MPO region’s 101 cities and towns. Figure 5-17 indicates that as population density increases, automobile usage generally declines. A household in the Town of Bolton (with a population density of 227 per square mile) typically drives over 100 miles per day and typically owns more than two automobiles, while a household in the City of Cambridge (population density of 16,425) typically drives less than 25 miles per day and tends to own less than one car.

**FIGURE 5-17**

**CAR USAGE BY POPULATION DENSITY BY 101 CITIES AND TOWNS**

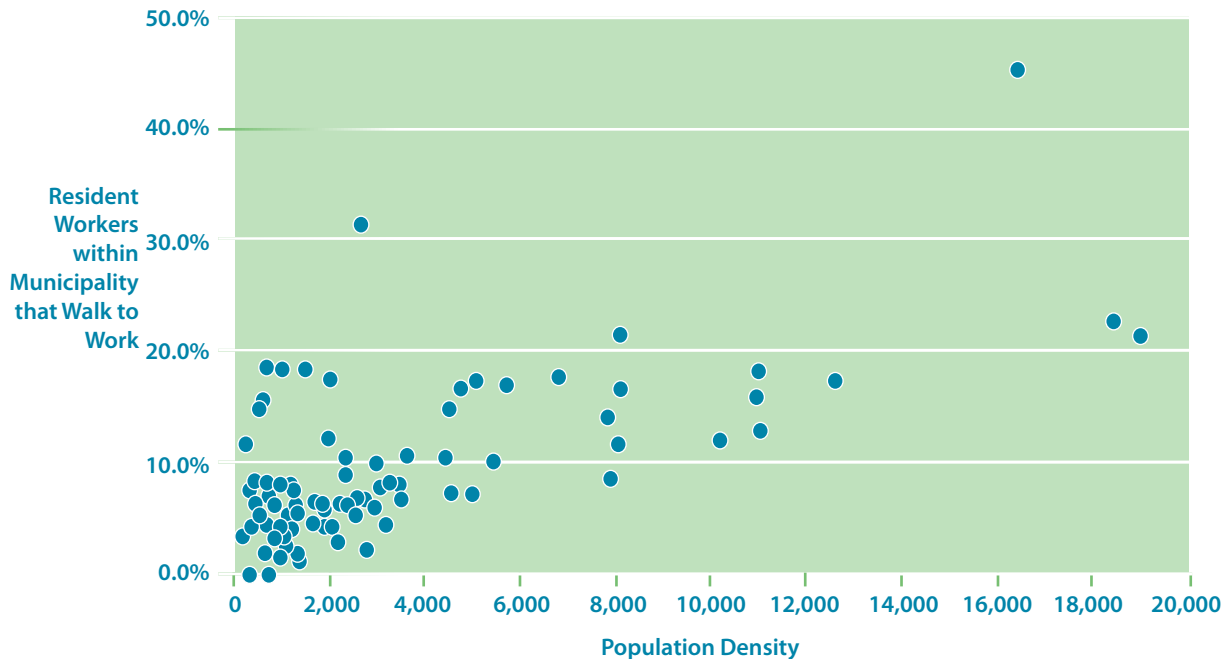


These trends are supported by the Center for Neighborhood Technology’s Housing and Transportation Affordability Index, a tool that provides a more accurate cost of housing based on its location.<sup>31</sup> According to the Center for Neighborhood Technology, places that cluster schools, parks, shopping, and transit are able to create location efficiencies that lower transportation costs. In the Boston region, these benefits are realized by residents of Cambridge, Boston, Somerville, Brookline, and other places with location efficiency that have lower annual transportation costs than the regional average. For example, the annual household transportation costs for residents in Somerville are \$3,850 less than those in Braintree, which demonstrates that compact communities can provide cost savings for residents.

Because of the sprawling development patterns that are more prevalent outside the urban core, residents who live there are more reliant on automotive travel, but this also limits the impact of bicycle and pedestrian travel. Figure 5-18 show the relationship between population density and resident workers that walk to work by the 101 municipalities in the region. This figure indicates that communities with higher population density are associated with higher resident worker walk shares. Poor connectivity of the bicycle and pedestrian network with transit service, and the possible absence of these bicycle and pedestrian infrastructure, prevent some bicyclists and pedestrians from safely traveling between their origins and destinations, and greater trip distances that favor driving over bicycling or walking.

FIGURE 5-18

RESIDENT WORKER WALK SHARE BY POPULATION DENSITY BY 101 MUNICIPALITIES



<sup>31</sup> Center for Neighborhood Technology: Housing and Transportation Affordability Index, <http://htaindex.cnt.org>, accessed on 5/31/11.

## The Boston Region MPO's Vision for Livability

**Vision:** All residents will have the capability of moving affordably between where they live, work, get services, and play using healthy transportation options that promote a healthy lifestyle. Multimodal transportation will serve business, residential, and mixed-use centers. Transportation investments will focus on existing activity centers, including sites of economic activity and adequate public infrastructure, where density will be encouraged. These centers of community activity will grow in population density and diversity of uses. This density and mixed-use activity will better support new and increased transit services. Investments in bicycle and pedestrian facilities and in accessibility improvements will support healthy lifestyle choices and increased mobility for everyone, including people with disabilities. Community centers will thrive with the implementation of “complete streets” and context-sensitive design principles; urban design changes in community centers will create more human-scale and aesthetically pleasing community environments. The design of the transportation network will protect cultural, historical, and scenic resources, community cohesiveness, and quality of life.

The transportation network will play its part as a foundation for economic vitality. Energy use will be managed efficiently and alternative energy sources used.

**Policies:** To make livability a hallmark of communities in the MPO region and to achieve mobility, foster sustainable communities, and expand economic opportunities and prosperity, the MPO will put a priority on programs, services, and projects that:

- Are consistent with MetroFuture land use planning; this means supporting transportation projects serving the following: already-developed locations of residential or commercial/industrial activity; locations with adequate sewer and water infrastructure; areas identified for economic development by state, regional, and local planning agencies and departments; and areas with a relatively high density of development
- Support health-promoting transportation options, such as bicycle and pedestrian modes, and activities that reduce single-occupant-vehicle use and overall vehicle-miles traveled
- Expand, and close gaps in, the bicycle and pedestrian network; promote a complete-streets philosophy
- Support transportation design and reasonably priced enhancements that protect community cohesiveness, identity, and quality of life

The MPO has been working over the past several years to advance livability principles through a variety of its programs, projects, and studies. MPO planning activities range from conducting studies and providing technical assistance to municipalities, to advancing awareness of transportation issues vital to the livability of a community. Other initiatives provide funding for projects and programs that improve livability. These initiatives are described below.



## MPO Actions to Achieve Livability Vision

### MPO Planning Activities

- **Livability Program** – In federal fiscal year 2011, this program was established to support livability throughout the region by way of three components: regional forums, workshops, and a website of resources. The forums allow for in-depth discussions on various aspects of livability and allow input from a broad range of participants. The workshops provide an opportunity to focus on issues at the level of a particular neighborhood or community. The website provides a variety of resources and an online database to serve as a source of information on livability for all, from state, regional and municipal staff members to individual residents. This program builds on the MPO's popular Walkable Community Workshop program that supports local pedestrian mode planning and improved walking conditions. Similarly, the Livability Program hosts community workshops, and incorporates additional elements of livability to include bicycling, transit, land use, parking, environment, health, and economic-development issues.
- **Support to the MPO and its Subcommittees** – This ongoing program consists of gathering information and initiating discussions with the MPO and members of the public on livability through the various channels that include meetings, workshops, and information published in the MPO's newsletter, TRANSREPORT and posted on the MPO's website.
- **Bicycle and Pedestrian Support Activities** – This program allows staff to study and assist cities and towns in improving bicycle and pedestrian conditions in the region. These activities include conducting studies on how to improve access to transit and within downtown centers in both urban and suburban settings. Other studies focus on the feasibility of potential rail trails. Staff also coordinates, conducts, and analyzes bicycle and pedestrian counts at key locations in the region that are available on the MPO's count database and available for viewing on the MPO's website. These planning activities promote livability throughout the region by improving and expanding opportunities to use nonmotorized modes of transportation.
- **Community Technical Assistance Program** – This program allows MPO staff engineers and planners to provide technical assistance to municipalities seeking advice about local transportation issues. Issues often relate to traffic flow, traffic calming, parking, and walking and bicycling, and almost all of staff's recommendations incorporate opportunities to improve safety or expand access for nonmotorized modes.



- **Transit Service Planning** – The Transit Service Planning Group identifies efficient, cost-effective, and equitable transit service to support the MPO’s efforts to address the mobility and accessibility needs of those who live or work in the region and those who visit. The group monitors the performance of existing services operated by transit providers in the Boston Region MPO service area, identifies areas that are unserved or underserved by transit, evaluates potential improvements, and develops plans for their implementation.
- **Disability Access Support** – The MPO provides support services for the MBTA Access Advisory Committee to the MBTA, and focuses on accessibility of the transit system for persons with disabilities.
- **Transportation Equity Program** –The MPO conducts outreach to low-income, minority, and elderly populations, and populations for whom English is a second language. This work often highlights transportation and accessibility needs and impediments to transportation access within communities.
- **Land Use Development Project Reviews** – The MPO funds Metropolitan Area Planning Council (MAPC) reviews of significant development projects. The MAPC staff reviews these proposals for their impacts on the transportation system, as well as consistency with MetroFuture, the Commonwealth’s sustainable-development principles, and smart-growth principles.
- **Alternative-Mode Planning and Coordination** – The MPO funds MAPC work to advance bicycle and pedestrian planning and to encourage the use of transit. Two recent products are the MPO’s Regional Bicycle Plan, in 2007, and the Regional Pedestrian Plan, in 2010. It also supports technical assistance to municipalities for closing gaps in the regional bicycle network. The MPO funds project review and technical assistance work in the Transportation Enhancement Program. This project has also produced several tool kits that support livability principles and practices: sustainable mobility (which provides guidelines and best practices for sustainable methods for getting around), local parking, and development mitigation. A complete-streets tool kit is in development.



### **MPO Infrastructure Investments**

- **Clean Air and Mobility Program** – In 2010, the MPO established a dedicated funding stream for transit, infrastructure, and transportation demand management and transportation systems management projects that improve air quality and mobility and that reduce congestion in the region using federal Congestion Mitigation and Air Quality (CMAQ) funds. Projects funded in 2010 include Cambridge Clean Cabs, which supports hybrid cab fleets, MetroWest RTA bus routes, which provide suburban transit service, MBTA Bikes on Buses, which strengthens transit connections for bicyclists, and Hubway, Boston’s Bike Share

to make 600 rental bikes available at 61 stations around the city. Projects programmed for future funding include the Cochituate Rail Trail in Framingham to implement sidewalks, fences, benches, landscaping, and other trail amenities, and sidewalk installation and improvements in Scituate to provide pedestrian access to the commuter rail station. These projects promote livability in the communities they serve by improving mobility and promoting alternative modes of transportation.

- **MBTA Accessibility Programs** – The MBTA funds ongoing programs to improve accessibility to and at transit stations. These programs include the MBTA Station Rehabilitation, Station Accessibility, Elevator Replacement and Rehabilitation, and Enhancement programs. These programs are responsible for improved transit access and accessibility at Winchester Station on the Lowell Commuter Rail Line, Arlington Station on the Green Line, and Maverick Station on the Blue Line. The MBTA has also made tremendous strides in expanding bicycle parking at stations. Ninety-five percent of MBTA stations now have bicycle racks, and secure bicycle parking facilities, known as Pedal-and-Park stations, exist at Alewife in Cambridge, Forest Hills in Jamaica Plain, and South Station in downtown Boston. In addition, five more facilities are planned for Davis Square in Somerville, Ashmont in Dorchester, Quincy Center, Braintree Station, and Oak Grove in Malden.



- **LRTP and TIP Livability Criteria** – In 2011, the MPO updated the TIP project selection criteria to include a livability scoring category that evaluated each project on its ability to provide complete streets, provide multimodal access to an activity center, reduce auto dependency, serve a targeted redevelopment site, provide for development consistent with the compact-growth strategies of MetroFuture, and improve the quality of life. The MPO also evaluated the LRTP's Universe of Projects based on the established livability visions to determine each project's ability to address livability goals in the project selection process. These criteria will help ensure that future transportation investments continue to incorporate livability.
- **Livability Projects** – Recent transportation capital investments that support livability include the North Bank Bridge in Cambridge and Charlestown, bicycle facilities in Belmont, Cambridge, and Somerville, and improvements to North Green in Ipswich.
  - The North Bank Bridge will provide a bicycle and pedestrian connection over commuter rail tracks that links East Cambridge to City Square in Charlestown along the Charles River waterfront.

- o The Bikeway Construction at Alewife Station will construct a bicycle path from Somerville to Belmont to link the Somerville Community Path to the Minuteman Commuter Bikeway, at Alewife Station in Cambridge, to other paths in the vicinity. This facility will also extend to Brighton Road in Belmont by crossing over a new bridge over the Alewife Brook.
- o Improvements to North Green in Ipswich will provide enhancements to the Meeting House Green Historic area through improved roadways, sidewalks, landscaping, and streetscape elements.

The MPO's visions and policies to advance livability in the region will build on past and ongoing livability initiatives and policies at the federal, state, and local levels of government.

### ***Federal Livability Initiatives***

The HUD-DOT-EPA Sustainable Communities Partnership is a federal policy directive that unites the Department of Transportation, the Environmental Protection Agency, and the Department of Housing and Urban Development to work together to promote and implement policies and programs that help address climate change and protect the environment while advancing the federal goals for transportation and housing. This partnership recognizes that solving problems in any one of those three areas is related to and dependent on policies and actions in the other two. The partnership also promotes a set of livability principles to their constituencies to generate and support the kinds of planning and investments needed for our transportation and housing patterns to evolve in a way that improves access to affordable housing and transportation options. The partnership's planning and investment programs already underway include:

- **HUD Sustainable Communities Regional Planning Grant Program** – Provides grants for projects that support metropolitan and multijurisdictional planning efforts that integrate housing, land use, economic and workforce development, transportation, and infrastructure investments. MAPC received a \$4 million grant through this program and has formed the Metro Boston Consortium for Sustainable Communities to implement the grant's planning work.
- **EPA Sustainable Communities Building Blocks Program** – Provides quick, targeted technical assistance to communities using a variety of tools to implement development approaches that protect the environment, improve public health, create jobs, expand economic opportunity, and improve overall quality of life.
- **HUD Community Challenge Planning Grants** – Awards \$40 million in grants to foster reform and reduce barriers to achieving affordable, economically vital, and sustainable communities. The City of Somerville received a \$1.8 million Community Challenge Planning Grant to plan for new development around its new Green Line T stations, prepare new citywide zoning ordinances, and streamline the city's permitting process. It will also provide funds for an affordable housing land bank.
- **FTA Bus and Urban Circulator Livability Programs** – Provides grants to support livability through investments in projects that provide a transportation option that connects urban destinations and fosters the redevelopment of urban spaces into walkable mixed-use, high-density environments. Hubway, a new bike share program



throughout the Boston metropolitan area received a grant of over \$3 million. It will make thousands of bicycles available throughout the Boston metropolitan area with the swipe of a card.

- **DOT Transportation Investments Generating Economic Recovery (TIGER) II** – Provides \$600 million in grants for TIGER II capital investment in surface transportation projects, of which \$267.5 million is for projects that focus on livability and sustainability improvements. The first round of TIGER, awarded in February 2009, granted \$1.5 billion for 50 innovative transportation projects across the country, including 22 projects that improve communities’ quality of life while advancing broader transportation goals.
- **EPA Brownfields Area-Wide Planning Grants** – Provides assistance to 23 communities to facilitate community involvement in developing an area-wide plan for brownfields assessment, cleanup and subsequent reuse.

### **State Livability Initiatives**

- **GreenDOT** – MassDOT’s comprehensive environmental responsibility and sustainability initiative that will make MassDOT a national leader in “greening” the state transportation system. GreenDOT will be driven by three primary goals: to reduce GHG emissions, to promote the healthy transportation options of walking, bicycling, and public transit, and to support smart-growth development.
- **Healthy Transportation Compact** – Coordination of the Secretaries of Transportation, Health and Human Services, and Energy and Environmental Affairs, and the MassDOT Highway Administrator, MassDOT Rail & Transit Administrator, and Commissioner of Public Health, to facilitate transportation decisions that balance the needs of all transportation users, expand mobility, improve public health, support a cleaner environment, and create stronger communities.
- **Global Warming Solutions Act (GWSA)** – Comprehensive regulatory program to address climate change by requiring the Executive Office of Energy and Environmental Affairs (EOEEA), in consultation with other state agencies and the public, to set economy-wide GHG emissions reduction goals for Massachusetts. These goals expect to achieve reductions of 25 percent below the statewide 1990 GHG emission levels by 2020, and 80 percent below the statewide 1990 GHG emission levels by 2050. To ensure that these goals will be met, the GWSA requires the Commonwealth to:
  - Establish regulations requiring the reporting of GHG emissions
  - Establish a baseline assessment of statewide GHG emissions in 1990
  - Develop a projection of the likely statewide GHG emissions for 2020
  - Establish target emission reductions that must be achieved by 2020
  - Analyze strategies and make recommendations for adapting to climate change

- **Mass In Motion** – A multifaceted approach to promote wellness and to prevent obesity in Massachusetts with a particular focus on the importance of healthy eating and physical activity. The program awards grants to cities and towns to make wellness initiatives a priority at the community level. Recipients of communities within the region include Everett, Gloucester, Revere, and Weymouth.

### **Local Livability Initiatives**

- **Boston Complete Streets** – New initiative that aims to improve the quality of life in Boston by creating streets that are both great public spaces and sustainable transportation networks. It embraces innovation to address climate change and promote healthy living. The objective is to ensure that Boston’s streets put pedestrians, bicyclists, and transit users on an equal footing with motor-vehicle drivers.
- **Boston Bikes** – Initiative launched three years ago with the goal of transforming Boston into a world-class bicycling city. The City has made tremendous gains since 2007 by improving its ranking from worst cycling city, according to Bicycling Magazine, to one of the leading bike-friendly cities in the country, with the 10th-highest ridership levels of the 70 largest U.S. cities.
- **City of Cambridge** – The city is a leader in creating programs to support and encourage walking, bicycling, and using transit to improve the quality of life in the city; to meet climate and environmental goals; and to preserve the limited roadway capacity and parking supply. Figure 5-19 shows Cambridge’s bicycle network, which consists of 16 miles of bicycle lanes and another 16 miles of bike paths. The number of people bicycling in the city more than doubled between 2002 and 2008.<sup>32</sup>
- **City of Somerville** – Recent investments by the City have a strong focus on livability by enhancing transit, bicycle, and pedestrian options for its residents. In May 2011, the League of American Bicyclists recognized the City’s efforts by naming them a bronze-level Bicycle Friendly Community.

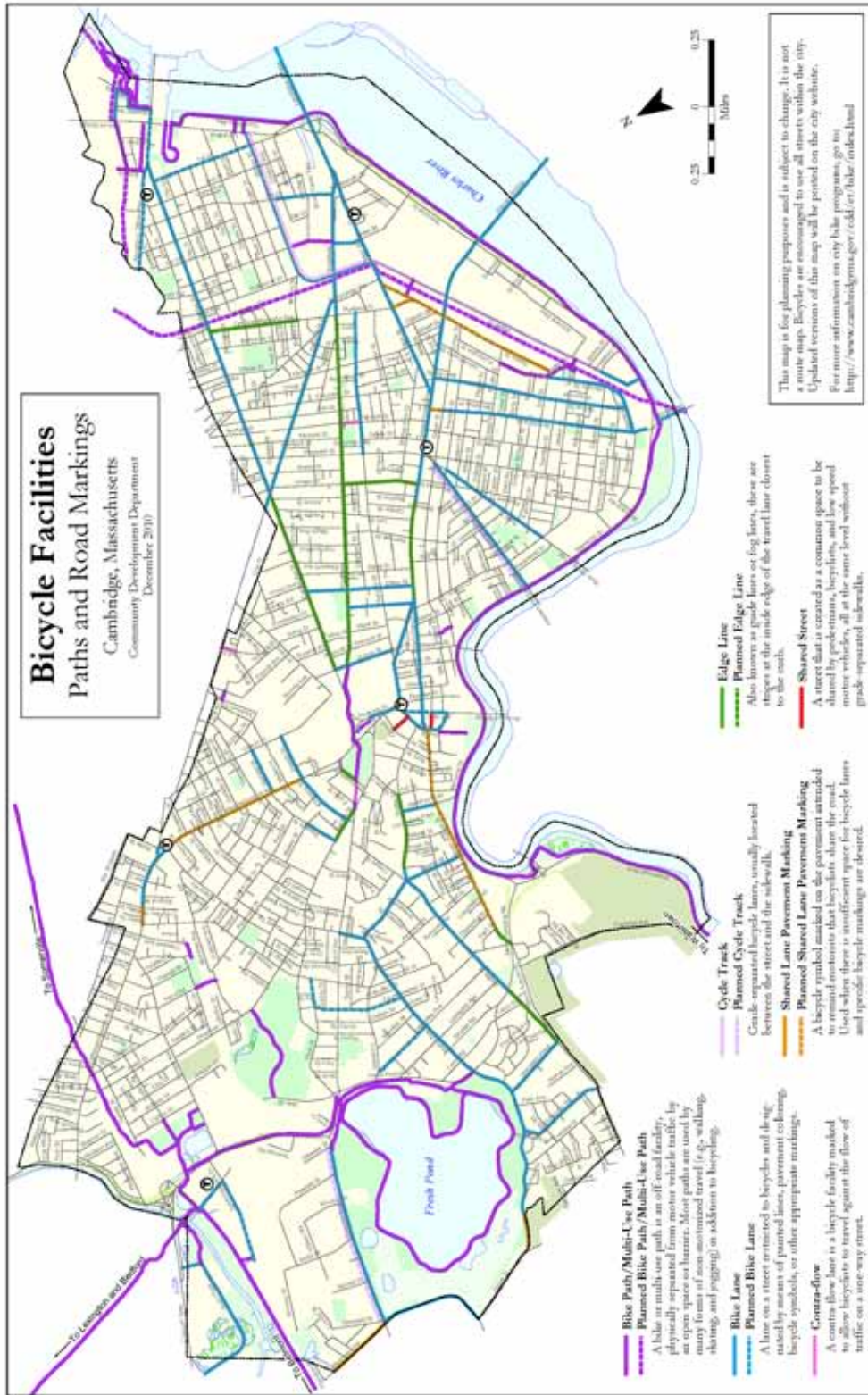
### **Limitations to Livability Implementation**

These initiatives demonstrate the progress that has been made regarding livability in the Boston region; however, ongoing obstacles and limitations remain. The conditions necessary for livable communities are sometimes challenging and possess marginal community support. Some of the obstacles and limitations include:

- Low-density land use patterns require users to travel longer distances, which is less conducive to nonmotorized trips such as walking and bicycling.
- More affordable housing opportunities tend to be found on the outskirts of the region in communities with low-density land use and few public transportation options.
- A majority of Americans prefer to live in single-family, detached housing that requires low-density land use.
- Livability-focused projects often have to compete with large-scale highway

<sup>32</sup> Cambridge Community Development Department, “Bicycle Trends in Cambridge,” April 2010.

FIGURE 5-19  
CITY OF CAMBRIDGE BICYCLE NETWORK



Ongoing documentation of the region's transportation investments and its impact on the system are necessary to track progress toward the MPO's goals as well as inform future decisions.

investments for limited funding. In the FFYs 2011-14 TIP, the Massachusetts Avenue project in Arlington competes with the Route 128 Add-A-Lane project in Dedham, Needham, Wellesley, and Westwood for MPO discretionary funds.

- The current bicycle network does not provide safe and continuous access for a majority of the population. On-road bicycle accommodations, such as bicycle lanes, shoulders, and shared-use lanes indicated by “sharrows” (markings on a road indicating that bikes and motor vehicles need to share the road), only provide enough comfort to attract 1–5 percent of the population to bicycling regularly. The multi-use path network in the region is limited, and may not be utilized for all of a trip.
- Local residents may prioritize improved motor-vehicle traffic conditions over improved bicycle and pedestrian facilities.

## NEXT STEPS – THE DEVELOPMENT OF PERFORMANCE MEASURES

The MPO will continue to work with state agencies to advance the goals of reducing GHG emissions to lessen the impacts of climate change. Environmental issues will continue to be considered in the MPO project selection process. Livability initiatives at the federal, state, regional, and local levels have expanded safe, affordable, and healthy transportation options in the Boston region by increasing the number of miles of bicycle facilities, enhancing pedestrian accommodations, and improving transit service and access.

The MPO's visions and policies will continue to guide UPWP studies and programs aimed at advancing climate change, environment, and livability objectives. In addition, the MPO's TIP and LRTP project selection criteria will implement the projects and programs needed to achieve these goals. Ongoing documentation of the region's transportation investments and its impact on the system are necessary to track progress toward the MPO's goals as well as inform future decisions. To conduct this monitoring requires the development of performance measures that can indicate how well objectives are being addressed.

The MPO will develop performance measures to guide investments toward the desired outcomes. The Needs Assessment of the LRTP documents the existing condition of the transportation system, and it may be utilized as a baseline for initial performance measures. Yet, in the development of performance measures, there are likely to be some measures that do not yet have the necessary data to conduct analysis. Addressing these data gaps will require future data collection and analysis at the municipal, corridor, and regionwide level. These activities will become components of the ongoing Congestion Management Process or future Unified Planning Work Program studies. The MPO's performance measures have the potential to adhere to defined targets, and possess the ability to effectively communicate the needs of the region and reinforce the value of



investment decisions.

Climate change, environment, and livability performance measures to advance MPO visions and policies may include:

CLIMATE CHANGE		
GOAL	FACTOR	PERFORMANCE MEASURES
Reduce GHG emissions to Global Warming Solution Act levels	GHG emissions	GHG emissions (regionwide)
	Vehicle Miles Traveled	VMT (per capita, per household, regionwide)
	Fleet modernization	MBTA fleet within useful lifespan (mode, systemwide)
	Transit/TDM/Bike/Ped options	Mode share split (community type, regionwide)
Protect transportation infrastructure	MetroFuture land use	Transportation investments and MetroFuture targeted growth areas (map)
	Critical infrastructure	TIP projects that improve response to extreme conditions

ENVIRONMENT		
GOAL	FACTOR	PERFORMANCE MEASURES
Preserve greenfields and facilitate brownfield development	Greenfield development	Transportation investments that facilitate greenfield development (regionwide)
	Brownfield facility development	Transportation investments within 1/2 mile of brownfield development (regionwide)
Promote energy conservation	Fleet modernization	MBTA fleet within useful lifespan (mode, systemwide)
	HOV travel	HOV lane miles, HOV V/C ratio
	Transit/TDM/Bike/Ped options	Mode share split (community type, regionwide)
	Air quality	CO <sub>2</sub> (regionwide)
	GHG emissions	GHG emissions (regionwide)
Minimize or avoid impacts to wetlands, soil, water, and other environmental resources	Wetlands	Transportation investments within wetlands (regionwide)
	Water supply and well head protection areas	Transportation investments within water supply and well head protection areas (regionwide)
	Areas of Critical Environmental Concern (ACEC)	Transportation investments within ACEC (regionwide)
	Special flood hazard areas	Transportation investments within special flood hazard areas (regionwide)

LIVABILITY		
GOAL	FACTOR	PERFORMANCE MEASURES
Reduce energy use	Vehicle Miles Traveled	VMT (per capita, per household, regionwide)
	GHG emissions	GHG emissions (regionwide)
	Air quality	CO2 (regionwide)
Increase alternative energy use	Electric charging stations	Electric charging stations (regionwide)
	Hybrid and electric vehicle	Hybrid and electric vehicle (regionwide)
Improve accessibility for persons with disabilities	ADA compliant transit stations	ADA compliant transit stations (regionwide)
	ADA compliant intersections	ADA compliant intersections (regionwide)
Implement complete streets and context-sensitive design	Complete street coverage	Walk, bike, and transit coverage (regionwide)
	Bicyclist crash rate	Bicyclist crash rate (per capita, corridor, regionwide)
	Pedestrian crash rate	Pedestrian crash rate (per capita, corridor, regionwide)
Increase economic vitality by effectively moving goods and people	Transit accessibility	Accessible essential destinations within 40 minutes by transit
	Transit reliability	MBTA Scorecard performance metrics (by mode, by route)
	Roadway traffic congestion	Vehicle hours of delay (by route, regionwide)
	Travel time	Average commute time (motor vehicle, transit, bike, walk)
Improve multimodal access between existing activity centers and transportation facilities	Connectivity of the bike/ped network	Gaps closed
	Access to transit	Bicycle and pedestrian LOS within 1/2 mile of transit station
	Park and ride lot utilization	Percentage of spaces occupied
	HOV coverage and utilization	HOV lane miles, HOV V/C ratio
Link transportation and land use to facilitate healthy and affordable options	Implementation of MetroFuture	Map projects funded and MetroFuture targeted growth areas
	Transportation affordability	Annual transportation costs (municipal, corridor, regionwide)
Support smart growth development	Transit access	Population and employment within 1/2 mile of transit station
	Mode split	Percentage of trips by mode
	Housing affordability	Affordable housing units within 1/2 mile of transit station



6

## TRANSPORTATION EQUITY

### WHAT IS TRANSPORTATION EQUITY?

The Boston Region MPO's transportation equity policies are rooted in its definition of environmental justice (EJ), below:

*Environmental justice requires the MPO to examine the allocation of benefits and burdens, historically and currently, and planned for the future; to ensure that minority and low-income communities are treated equitably in the provision of transportation services and projects; and to provide full participation for minority and low-income communities to advise the MPO during its planning and decision-making process.*


### Environmental Justice Areas

The MPO's transportation model is composed of 2,727 transportation analysis zones (TAZs). A TAZ is an aggregation of census geography based on demographic information and numbers of trips produced, and attracted within, its borders. Each zone contains population, employment, and housing information. The average TAZ has approximately 1,800 people. The TAZ is the geographic unit for the analysis used to define environmental justice areas.

The MPO defines an environmental justice area as follows:

A TAZ will be considered an environmental justice area if it is over 50 percent minority or has a median household income at or below 60 percent of the region's median. [As of the 2000 U.S. Census, 60% of the region's median household income of \$55,800 is \$33,480.<sup>1</sup>]

<sup>1</sup> The MPO used the 2000 U.S. census to define environmental justice areas. Though the 2010 census minority population data at the tract level was released on March 22, 2011, the household income data have yet to be released at the tract level. MPO staff have determined that the 2005–2009 American Community Survey (ACS) sample data have high margins of error at the tract level for minority population and did not want to use it as the source. Environmental justice areas will be redefined when complete new data are available.



The MPO adopted this income threshold from a United States Department of Housing and Urban Development’s definition of low-income households, which is “60 percent of area median income.”<sup>2</sup> This definition resulted in 28 environmental justice areas. The environmental justice areas, composed of single or localized groups of TAZs, are in the following Boston neighborhoods and municipalities. (The number of environmental justice area TAZs compared to the total number of TAZs in a neighborhood or municipality is indicated in parentheses.)

The Boston neighborhoods of:

- Allston-Brighton (16 of 39 TAZs)
- Charlestown (1 of 9 TAZs)
- Chinatown (12 of 19 TAZs)
- Dorchester (23 of 37 TAZs)
- East Boston (14 of 18 TAZs)
- Fenway (23 of 29 TAZs)
- Hyde Park (9 of 14 TAZs)
- Jamaica Plain (9 of 22 TAZs)
- Mattapan (19 of 20 TAZs)
- Roxbury (26 of 27 TAZs)
- South Boston (4 of 19 TAZs)
- South End (12 of 22 TAZs)
- Roslindale (5 of 11 TAZs)

The municipalities of:

- Cambridge (14 of 88 TAZs)
- Chelsea (18 of 19 TAZs)
- Everett (4 of 18 TAZs)
- Framingham (6 of 32 TAZs)
- Lynn (16 of 39 TAZs)
- Malden (3 of 28 TAZs)
- Medford (2 of 26 TAZs)
- Milford (2 of 18 TAZs)

<sup>2</sup> The full definition is: “60 percent of area median income. Used as low income for the low-income housing tax credit and HOME programs.” Office of Policy Development and Research of the U.S. Department of Housing and Urban Development, Rental Housing Assistance – the Worsening Crisis: A Report to Congress on Worst Case Housing Needs, March 2000.



- Peabody (2 of 23 TAZs)
- Quincy (5 of 50 TAZs)
- Randolph (1 of 15 TAZs)
- Revere (7 of 24 TAZs)
- Salem (1 of 19 TAZs)
- Somerville (7 of 41 TAZs)
- Waltham (1 of 32 TAZs)

These 28 environmental justice areas are the focus of the outreach and analysis components of the MPO's Transportation Equity Program. Table 6-1 shows the total population, minority population, and percent of the MPO's median household income for all of the TAZs within a municipality or neighborhood that meet the low-income or minority threshold. Figures 6-1 and 6-2 show the location of the environmental justice areas in the region and urban core, respectively.

**TABLE 6-1**

**ENVIRONMENTAL JUSTICE AREA DEMOGRAPHICS**

LOCATION OF ENVIRONMENTAL JUSTICE AREA (EJA)	TOTAL POPULATION OF MUNICIPALITY/ NEIGHBORHOOD	TOTAL POPULATION OF EJA	MINORITY POPULATION OF EJA	PERCENT OF EJA POPULATION THAT IS MINORITY	EJA'S MEDIAN HOUSEHOLD INCOME AS A PERCENT OF THE REGION'S MEDIAN HOUSEHOLD INCOME
Allston/Brighton	69,600	27,932	11,073	40%	47%
Cambridge	101,355	22,921	14,195	62%	60%
Charlestown	15,100	3,627	2,593	71%	27%
Chelsea	35,080	34,535	21,492	62%	54%
Chinatown	10,100	7,429	4,736	64%	30%
Dorchester	76,550	53,596	42,157	79%	67%
East Boston	38,300	30,241	17,011	56%	52%
Everett	38,037	2,956	978	33%	52%
Fenway	38,217	33,565	10,924	33%	43%
Framingham	66,910	11,247	6,121	54%	50%
Hyde Park	36,796	23,214	17,403	75%	70%
Jamaica Plain	36,282	13,547	10,106	75%	47%
Lynn	89,050	38,004	23,042	61%	46%
Malden	56,340	2,387	920	39%	56%
Mattapan	51,204	50,966	48,779	96%	60%
Medford	55,765	6,109	2,247	37%	78%
Milford	26,799	2,977	516	17%	56%
Peabody	48,129	3,141	682	22%	43%
Quincy	88,025	7,745	2,131	28%	49%
Randolph	30,963	1,622	876	54%	88%

**TABLE 6-1 (CONT.)**

**ENVIRONMENTAL JUSTICE AREA DEMOGRAPHICS**

LOCATION OF ENVIRONMENTAL JUSTICE AREA (EJA)	TOTAL POPULATION OF MUNICIPALITY/ NEIGHBORHOOD	TOTAL POPULATION OF EJA	MINORITY POPULATION OF EJA	PERCENT OF EJA POPULATION THAT IS MINORITY	EJA'S MEDIAN HOUSEHOLD INCOME AS A PERCENT OF THE REGION'S MEDIAN HOUSEHOLD INCOME
Revere	47,283	11,959	4,213	35%	51%
Roslindale	29,030	12,344	8,477	69%	62%
Roxbury	56,220	55,747	52,296	94%	50%
Salem	40,407	2,921	2,173	74%	47%
Somerville	77,478	7,224	3,189	44%	52%
South Boston	31,130	8,500	3,756	44%	31%
South End	29,911	16,306	12,441	76%	42%
Waltham	59,226	1,788	919	51%	78%
<b>TOTAL</b>	<b>1,379,287</b>	<b>494,550</b>	<b>325,446</b>	<b>66%</b>	

Source: 2000 US Census

**PROBLEMS AND ISSUES**

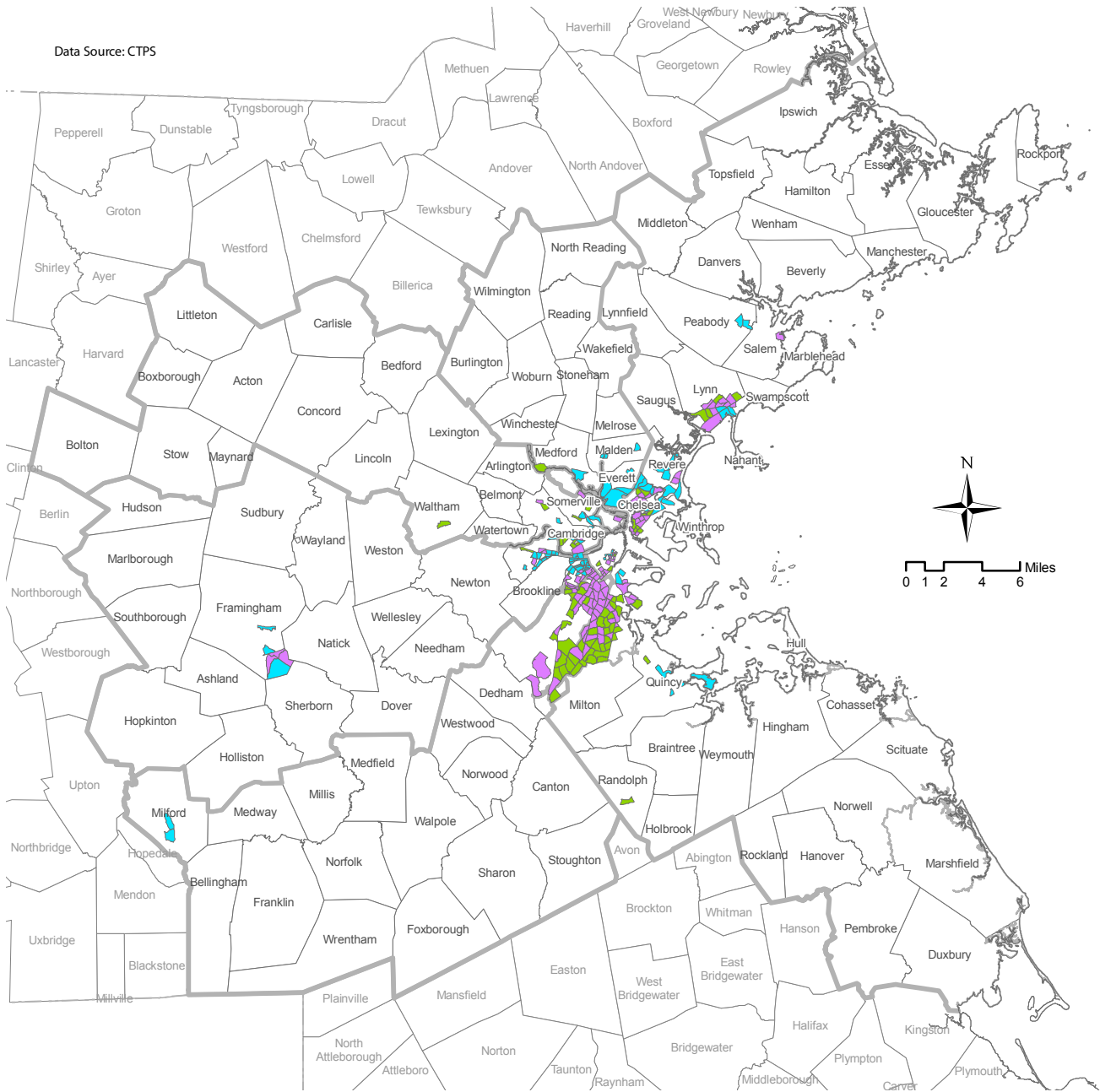
Transportation equity problems and issues are identified with the help of residents of the environmental justice communities and the community-based organizations that serve those communities. Information about the transportation needs of minority and low-income populations, the elderly, residents with limited English proficiency, and youth is gathered as part of the MPO's ongoing Transportation Equity Program and through other MPO outreach activities. Both the program and other MPO activities are discussed in the section MPO Actions to Achieve Visions, below.

Staff reviewed all of the feedback it received through outreach to environmental justice communities and its transportation equity contacts and summarized it in the needs assessment that was conducted for this LRTP. Chapter 10 of Volume II of the LRTP–Needs Assessment, summarized the more detailed needs that were identified by contacts in the environmental justice areas of the MPO and are also summarized below.

- Traffic speeds in many low-income and minority neighborhoods are too high, making streets dangerous for pedestrians and bicyclists. Traffic calming and complete-streets design principles will create a safer environment.
- Circumferential transit service is poor in the Central Area.
- There is no connection between the Red and Blue lines.
- 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 and from Boston, and can be inadequate for travel within communities outside the Central Area.

**FIGURE 6-1**

**BOSTON MPO REGION ENVIRONMENTAL JUSTICE AREAS**



Data Source: CTPS

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

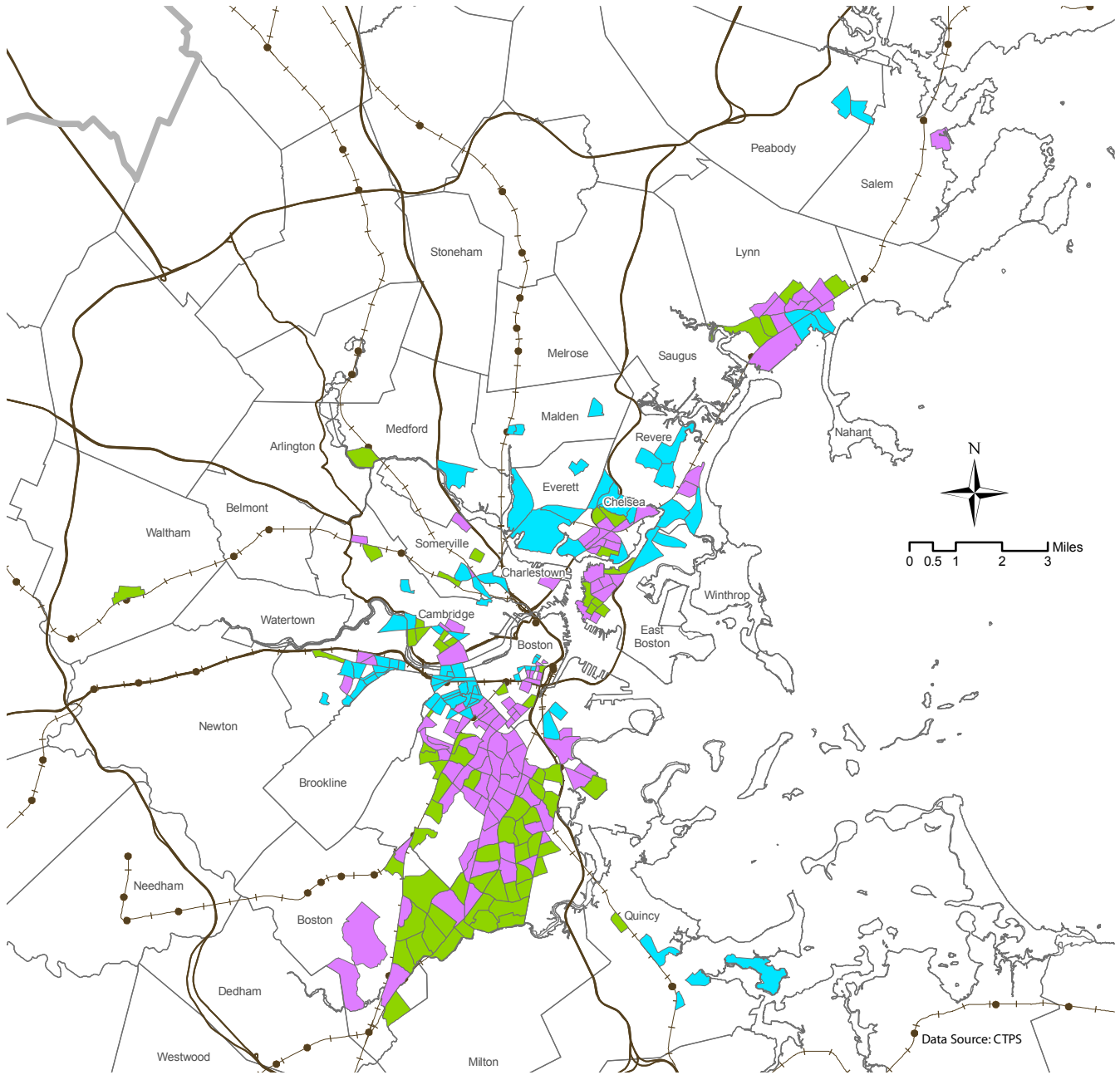
- Meets income criterion
- Meets minority criterion
- Meets both criteria

**\*MPO Criteria for Environmental Justice Areas**

A TAZ in which the median household income in 1999 was equal to or less than 60% of the MPO median of \$55,800 (\$33,480) or in which the 2000 population was more than 50% minority.

FIGURE 6-2

BOSTON MPO REGION URBAN CORE ENVIRONMENTAL JUSTICE AREAS



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

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

**\*MPO Criteria for Environmental Justice Areas**

A TAZ in which the median household income in 1999 was equal to or less than 60% of the MPO median of \$55,800 (\$33,480) or in which the 2000 population was more than 50% minority.



- 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 is 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 several environmental justice communities, including Randolph, Milford, and the Hyde Park neighborhood of Boston.
- Commuter rail fares and overnight locomotive idling are burdens.
- The elderly population is expected to grow substantially between now and 2035.



## THE BOSTON REGION MPO'S VISION FOR TRANSPORTATION EQUITY

**Vision:** Low-income and minority residents, the elderly, youth, and persons for whom English is a second language will share equitably with others in the access and mobility benefits of the transportation network. Environmental burdens from existing and future transportation facilities and services will be identified and minimized, and low-income and minority populations will not be inequitably burdened. Expansion projects will address regional needs.

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

- Continue outreach and analysis to identify equity needs and continue to monitor system performance.
- Address identified equity needs related to service and removing or minimizing burdens (air pollution, unsafe conditions, and community impacts).
- Track implementing agencies' actions responding to transportation needs identified in MPO outreach and analysis; encourage action to address those needs.
- Strengthen avenues for involvement of low-income and minority persons in decision making.
- Reduce trip time(s) for low-income and minority neighborhood residents and increase transit service capacity.
- Give priority to heavily used transit services over new, yet-to-be proven services.

## THE MPO'S ACTIONS TO ACHIEVE VISIONS

The Boston Region MPO has taken steps towards achieving its transportation equity vision. The MPO uses its Transportation Equity program to identify transportation needs of minority and low-income populations, the elderly, residents with limited English proficiency, and youth, and to provide awareness of opportunities for involvement in the planning process. This program focuses on direct outreach to social-services organizations and other community-based organizations serving environmental justice areas in the region, including conducting and participating in organized forums. The Boston Region MPO's Transportation Equity program is composed of three key elements: outreach, analysis, and integration of environmental justice into the planning process. These actions influence both how projects are selected for funding, and how the MPO collects and uses information about the concerns and needs of environmental justice communities.



### Outreach

The MPO takes a proactive, grassroots approach to identifying and articulating environmental justice issues in the region. Its approach includes gathering information on the transportation needs of minority and low-income populations and the elderly, residents with limited English proficiency, and youth for consideration in the development of studies and certification documents; identifying, sharing, and connecting new contacts and sources of information for the planning process; meeting new people interested in participating in the planning process; and serving as a conduit for ideas on improving transportation that can be relayed to other agencies.

In carrying out these activities, the MPO identifies social-services and community contacts in the environmental justice areas involved in, and knowledgeable about, the transportation issues and needs of their areas. These contacts include social-services organizations; community development corporations; regional employment boards; civic groups; business and labor organizations; transportation advocates; environmental groups; and environmental justice and civil rights groups.

The Transportation Equity program includes the following outreach activities:

1. One-on-one interviews with community organizations are used to discuss transportation needs and burdens and facilitate participation. The MPO has learned that, in some cases, the people best positioned to speak about the transportation needs of environmental justice areas do not have the time and financial resources to travel to meetings in a central location or to participate in public forums. By visiting community representatives at their offices and facilitating one-on-one or small-group interviews, the MPO is able to obtain valuable information about the transportation

needs of the area that inform the MPO during its transportation decision-making process. These discussions also provide opportunities to inform participants about the MPO and the metropolitan planning process.

2. Standardized surveys are also used to gather data for analysis and presentation to the MPO. An on-line survey is posted on the MPO's web site for community contacts who are unable to schedule time for an interview and for residents and organizations located in environmental justice areas.
3. MPO staff also keep track of forums and meetings planned by community organizations. When relevant, staff attend these meetings to meet additional contacts, gather information, and provide input on questions specific to the MPO planning process as they arise.
4. Summaries of the information gathered and copies of the surveys, maps, and any other notes and information are compiled and presented in briefing books for review by MPO members, and are made available to contacts and interested parties in environmental justice areas. Prior to including this information in the briefing book and in reports to the MPO, MPO staff interpret the needs identified by each community or environmental justice area and classify them in relation to the LRTP, TIP, Unified Planning Work Program (UPWP), service planning, or other planning processes. Pertinent issues are also considered for further examination and study as part of the Transportation Equity program.

Communication is ongoing, as the MPO staff keeps community organizations updated with information and requests for input.

In addition, the staff gathers information during its cycles for certification document development. The MPO holds several open houses and workshops every year on various topics; these events include forums for discussing certification documents and the results of UPWP studies. Environmental justice contacts are encouraged to attend and to provide input at each of these events. The MPO also holds periodic meetings that focus on environmental justice, and it gives presentations on its Transportation Equity program whenever requested by a community organization. Environmental justice contacts are notified of public review periods and are encouraged to provide input. The MPO staff summarizes input from these events and distributes it to MPO members.

## Analysis

The MPO performs a systemwide analysis of the set of projects that are currently funded by the MPO, and the set of projects recommended in this LRTP. The analysis focuses on



The image shows a screenshot of a web browser displaying the "TRANSPORTATION EQUITY SURVEY" form. The browser's address bar shows the URL "http://www.dps.org/apps/4\_survey/0410/default.cfm". The form has a yellow background and includes the following elements:

- Header:** "TRANSPORTATION EQUITY SURVEY" with the MPO logo.
- Introduction:** "Please answer the following questions to help the Boston Region Metropolitan Planning Organization (MPO) understand your community's transportation needs. Click here to learn more about the Boston Region MPO, and click here to learn more about its transportation equity program."
- Form Fields:** "Address (or nearest intersection):" with a text input field, "City/town:" with a dropdown menu, and "Zip code:" with a text input field.
- Instructions:** "Note: There is a limit of 2,000 characters in the reply boxes. To make more extensive comments, please send them by e-mail to [info@bmrpo.org](mailto:info@bmrpo.org)."
- Questions:**
  1. Are there any unmet transportation needs in your community? Please list any below. (Text input box)
  2. Is there any part of your neighborhood negatively affected by the existing transportation system? If so, where are the problems? (Text input box)
  3. How could transportation service be improved in your community? (Text input box)
  4. Does your community need improved transportation system connections to specific destinations and parts of the region? (Radio buttons for Yes/No)

mobility, accessibility, and emissions for communities with a high proportion of low-income and minority residents. Chapter 9 details the results of this analysis.



## Integration with the Planning Process

The MPO integrates environmental justice and transportation equity concerns into the planning process by encouraging and sharing input from its outreach activities, by using environmental justice as a criterion in its planning documents, and by examining environmental justice and transportation equity issues in greater detail in MPO planning work.

The potential impact of a proposed project on an environmental justice area is a criterion in the LRTP and TIP project ranking processes. The MPO now evaluates all projects that seek federal transportation funding through the MPO on the following criteria:

- Improves transit for an EJ population
- Design is consistent with complete-streets policies in an EJ area
- Addresses an MPO-identified EJ transportation issue

Projects that address a transportation issue in an environmental justice neighborhood can score points in the environmental-justice evaluation criteria. The MPO staff gives projects that are estimated to benefit environmental justice areas positive ratings and projects that may burden these areas negative ratings. This gives projects that address transportation equity issues and needs an advantage. The MPO considers these ratings when deciding what projects should be listed in the LRTP or TIP, and which should receive funding.

The MPO staff also continues to collect information, talk to people who live and work in the communities, and shares what it learns with state, regional, and municipal governments. This information is summarized and presented to the MPO for their consideration. Information collected from the MPO's outreach is also shared with the affected municipalities and the relevant implementing agencies.

## NEXT STEPS – THE DEVELOPMENT OF PERFORMANCE MEASURES

There are several ways the MPO can measure progress towards its visions and policies for transportation equity. Examples of performance measures are the following:

- Travel speed for bus routes serving environmental justice neighborhoods



- Volume-to-capacity ratios for bus routes and rapid transit lines serving environmental justice neighborhoods
- Cost of a monthly transit pass relative to median monthly income in environmental justice neighborhoods
- Number of jobs, educational opportunities, and hospitals within a 40-minute transit trip, walking trip, or biking trip, and a 20-minute automobile trip
- Number of people attending and organizations represented at MPO Transportation Equity Forums
- Number of responses to MPO Transportation Equity surveys
- Number of small-group discussions held in environmental justice communities

The MPO has access to all of the above data required to track over time the performance measures listed above. Travel speed and ridership data are collected by the MBTA. The cost of a transit pass relative to neighborhood income can be evaluated using census data. The number of jobs, educational opportunities, and hospitals within close proximity can be measured using the MPO's travel demand model, and is part of the information that is reported when the MPO conducts its environmental justice analysis. Finally, the number of people attending meetings and submitting comments is easily tracked and has been studied and reported in the past by the MPO. Tracking these performance measures can become components of the ongoing Unified Planning Work Program activities. The MPO's performance measures do not adhere to defined targets, but they have the potential to effectively communicate the needs of the region and reinforce the value of certain investment decisions.

## **SUMMARY**

The MPO is committed to its Transportation Equity program and the environmental justice principle of equitable distribution of benefits and burdens in the transportation system. This commitment will produce results through ongoing compliance with its own policies and consideration of environmental justice issues through its evaluations. The MPO will continue to expand its outreach to environmental justice areas and broaden its direct contacts with minority and low-income residents, the elderly, residents with limited English proficiency, and youth in order to maintain the flow of information, and to strengthen communication and its working relationships.





## INTRODUCTION

This Long-Range Transportation Plan (LRTP) is a fiscally constrained document that includes information on costs and revenues to demonstrate the MPO's ability to fund the improvements recommended in this LRTP. The Boston Region MPO's financial plan is limited to the components of the regional transportation system over which the MPO has some funding or programming jurisdiction. These components are the Statewide Road and Bridge Program (including highway funding for alternative modes), the Central Artery/Tunnel project, the Accelerated Bridge Program (ABP), and the regional public transportation system.

The finances demonstrated in this document are indicative of the funding constraints within which the Boston Region MPO must plan during the next 20-plus years. The MPO is working within this financial framework; however, the MPO acknowledges that the transportation capital needs of the region far exceed the anticipated available funds. Many projects that would contribute greatly to achieving the transportation visions and goals of *Paths to a Sustainable Region* cannot be funded with the revenue and funding currently projected to be available.

## THE HIGHWAY TRANSPORTATION SYSTEM

The Massachusetts Department of Transportation (MassDOT) has forecast highway revenues through federal fiscal year (FFY) 2035 for the 13 metropolitan planning organizations (MPOs) in the commonwealth. Highway revenues consist of federal and state funds made available on an annual basis. Federal funding projections are based upon current apportionment levels as constrained by federally imposed obligation limits, while state funds are based upon recent trends in non-Central Artery/Accelerated Bridge Program funding. Funding available for the Statewide Road and Bridge Program is determined after deducting from expected federal and state funding the costs of certain programs. These programs include the Central Artery/Tunnel project (CA/T),

the Accelerated Bridge Program (ABP), metropolitan and statewide planning, cost adjustments, and extra work orders. This available funding represents the amount of funding that can reasonably be expected for the Statewide Road and Bridge Program, from which the MPO's Discretionary Capital Program funds (also called MPO targets) are developed, and represents the upper limit for the LRTP's financial constraint.

The projections for the time period FFYs 2012–15 are the targets provided to the MPO by MassDOT for the Transportation Improvement Programs (TIPs). MassDOT developed these estimates based on estimates of expected federal funding provided by the Federal Highway Administration (FHWA).<sup>1</sup> The funding levels for FFYs 2016 through 2035 are projections from the FFY 2012 obligation authority increased by 3 percent from the previous year's funding.<sup>2</sup>

### The Central Artery and Tunnel project

The Central Artery and Tunnel (CA/T) project was funded through seven sources:

- 1) Federal reimbursements
- 2) Grant Anticipation Notes (GANs)
- 3) Commonwealth Bonds
- 4) Transportation Infrastructure funds
- 5) Massachusetts Port Authority funds
- 6) Massachusetts Turnpike Authority funds
- 7) Insurance Trust revenue

At this time, the only outstanding CA/T funding commitment is the Grant Anticipation Notes (GANs). This repayment is deducted from the State's available Federal Obligation

Authority through FFY 2014. In FFY 2014 the GANs in the amount of \$1.5 billion will be completed.



### The Statewide Road and Bridge System

Reinvestment in the existing system is the top priority of the Boston Region MPO. For roadways, *Paths to a Sustainable Region* includes funding for the maintenance, modernization, and expansion of the transportation system through 2035. Funding for maintenance of the roadways for the Boston Region MPO area is provided through the statewide resurfacing,

<sup>1</sup> Statewide Transportation Improvement Program (STIP), FFYs 2012–15, Appendix B, Guidance Documents and Regional Targets.

<sup>2</sup> An annual increase in obligation authority of 3 percent was applied after 2015. Base obligation authority is taken from Federal Highway Administration (FHWA) guidance received on June 8, 2011.

maintenance, and infrastructure programs, the statewide infrastructure and bridge programs, and state Chapter 90 funds.

### Funding the Highway Capital Program

Major infrastructure and capacity expansion projects and other maintenance and rehabilitation projects not included in the statewide programs are funded through the Boston Region MPO’s share of the Discretionary Capital Program and the Regional Infrastructure Program. MassDOT provided these forecasts to the 13 MPOs in the commonwealth.

This LRTP allocates funding to certain projects that are defined by federal regulations as being regionally significant for air quality purposes (expansion projects) or projects that are major infrastructure projects. A major infrastructure project is any project that costs over \$10 million. An expansion project is any project that adds capacity to the existing system through the addition of a travel lane, the construction of an interchange, the construction of an extension of a commuter rail or rapid transit line, or the procurement of additional (not replacement) public transportation vehicles.

Table 7-1 shows projections of available highway revenue available for capital projects for the Boston Region MPO through FFY 2035, by program. The estimates are summarized by five-year time periods.



**TABLE 7-1**

**PROJECTED SOURCES OF FUNDS FOR CAPITAL PROJECTS IN THE BOSTON REGION MPO HIGHWAY SYSTEM (IN MILLIONS)**

CAPITAL PROGRAM	FFYs 2012-2015	FFYs 2016-2020	FFYs 2021-2025	FFYs 2026-2030	FFYs 2030-2035	TOTAL
Boston share of Discretionary Capital Program	\$244.54	\$475.60	\$673.62	\$844.95	\$979.53	\$3,218.24
Estimated Boston share of regional Major Infrastructure projects	\$69.93	\$93.99	\$141.99	\$173.49	\$201.12	\$666.54
<b>TOTAL</b>	<b>\$300.49</b>	<b>\$569.59</b>	<b>\$815.61</b>	<b>\$1,018.44</b>	<b>\$1,180.665</b>	<b>\$3,884.78</b>

Table 7-2 shows all of the projects and programs funded with highway money that are recommended in this LRTP, as major infrastructure projects, regionally significant projects (expansion) for air quality conformity, projects that are funded using highway money for transit (flex funding), or all three. Table 8-3 (in Chapter 8) lists these projects by the project name, type, and current and future costs.

**TABLE 7-2**

**MAJOR INFRASTRUCTURE PROJECTS, EXPANSION HIGHWAY PROJECTS, AND FLEX-FUNDED TRANSIT PROJECTS  
IN THE RECOMMENDED PLAN**

HIGHWAY PROJECTS	TYPE OF PROJECT	CURRENT COST
Bedford, Billerica, & Burlington: Middlesex Turnpike Improvements, Phase III	Expansion/Major Infrastructure	\$20,800,000
Belmont: Trapelo Road	Major Infrastructure	\$14,592,000
Boston: Conley Haul Road*	Expansion/Major Infrastructure	\$25,000,000
Boston: Sullivan Square/Rutherford Avenue	Major Infrastructure	\$71,000,000
Braintree: Braintree Split	Expansion/Major Infrastructure	\$36,000,000
Canton: Interstate 95/Interstate 93 Interchange	Expansion/Major Infrastructure	\$235,500,000
Canton: I-95 Northbound/Dedham Street Corridor	Expansion/Major Infrastructure	\$35,000,000
Framingham: Route 126/135 Grade Separation	Major Infrastructure	\$58,500,000
Concord to Westford: Bruce Freeman Rail Trail	Expansion/Major Infrastructure	\$18,700,000
Hanover: Route 53, Final Phase	Expansion	\$1,000,000
Hudson to Acton: Assabet River Rail Trail	Expansion/Major Infrastructure	\$18,100,000
Malden, Revere, & Saugus: Route 1 Improvements	Expansion/Major Infrastructure	\$175,196,000
Needham & Newton: Needham Street/Highland Avenue	Major Infrastructure	\$18,400,000
Reading & Woburn: I-93/I-95 Interchange	Expansion/Major Infrastructure	\$276,000,000
Salem: Bridge Street	Expansion	\$11,223,000
Weymouth: Route 18 Capacity Improvements Project	Expansion/Major Infrastructure	\$31,350,000
Woburn: Montvale Avenue	Expansion	\$3,700,000
Woburn: New Boston Street Bridge	Expansion	\$4,900,000
Clean Air and Mobility Program		\$2,000,000/ year
HIGHWAY FUNDING FLEXED TO TRANSIT		
Somerville: Green Line Medford Hillside (College Avenue) to Mystic Valley Parkway (Route 16)	Expansion/Major Infrastructure	\$140,608,000

\* This project will be funded by the Massachusetts Port Authority.

***Funding Highway Maintenance***

Table 7-3 shows projections of highway revenue available for maintenance of the highway system in the Boston Region MPO area through FFY 2035, by program, as provided by MassDOT.

**TABLE 7-3**

**PROJECTED SOURCES OF FUNDS FOR MAINTENANCE OF HIGHWAY SYSTEM IN THE BOSTON REGION MPO REGION  
(IN MILLIONS)**

MAINTENANCE PROGRAM	FFYs 2012-2015	FFYs 2016-2020	FFYs 2021-2025	FFYs 2026-2030	FFYs 2030-2035	TOTAL
National Highway System/ Interstate Maintenance	\$115.08	\$155.93	\$234.05	\$285.67	\$331.17	\$1,152.32
Federal-Aid Bridge	\$154.57	\$213.27	\$319.11	\$389.27	\$451.27	\$1,566.49
Chapter 90 funding	\$252	\$345	\$399	\$463	\$537	\$2,059
Statewide Maintenance Program	\$369.09	\$473.06	\$575.69	\$677.50	\$785.41	\$2,975.42
<b>TOTAL MAINTENANCE PROGRAM</b>	<b>\$890.74</b>	<b>\$1,187.26</b>	<b>\$1,527.85</b>	<b>\$1,815.44</b>	<b>\$2,104.85</b>	<b>\$7,753.23</b>

The condition of the Boston Region MPO’s Federal Aid (FA) road system under the jurisdiction of municipalities (approximately 2,768 centerline miles) is not yet fully documented. The MPO is currently assessing the possibility of implementing a pavement management system (PMS), but in order to inform this LRTP, a rough estimate of the condition of the system is being used. The LRTP’s condition assessment was accomplished by using a sample of 936 centerline miles for which MassDOT collected information. Extrapolating from that sample, the condition of the system is estimated to be 6 percent Excellent, 30 percent Good, 30 percent Fair, and 34 percent Poor. However, MPO staff believes that the condition of the system is closer to: 20 percent Excellent, 29 percent Good, 25 percent Fair, and 26 percent Poor to account for the possibility that the MPO may adopt less strict standards than those used by MassDOT to evaluate pavement conditions.<sup>3</sup>

A final detailed estimate of the amount of expenditure needed to bring the FA road system to the MPO’s target for a state of good repair cannot be made at this time. The condition of the complete system is as yet undocumented, as stated above, and the MPO has not adopted a target strategy to implement for pavement management. Staff have started work on an FFY 2011 Unified Planning Work Program study that will inform the MPO and help it to define a potential Pavement Management System (PMS) and a desired level of expenditure. Inputs to the staff recommendation on this topic will be based on what municipalities presently spend for maintenance using Chapter 90 funds and on information about



<sup>3</sup> Based on the weighted average of the Old Colony Planning Council and Central Massachusetts Regional Planning Commission pavement condition data, used for the purposes of estimation.



funding from other sources combined with data on the current condition of the FA road system. Utilizing preliminary information from this ongoing study, an estimate was made for purposes of this LRTP. Roadway rehabilitation and roadway paving work are included in three of the four funding categories listed above – National Highway System/ Interstate Maintenance, Statewide Maintenance Program, and Chapter 90 funds. Based on preliminary information obtained in the MPO’s study, it was determined that the following percentages of funding are used for pavement management:

- National Highway System/Interstate Maintenance – 90 percent
- Statewide Maintenance Program – 20 percent
- Chapter 90 funds – 50 percent

In addition, after reviewing descriptions of all projects funded through the TIP process, staff estimated that approximately 27 percent of the costs could be attributed to pavement rehabilitation. Table 7-4 shows estimated funds that will be used for pavement management of the highway system in the Boston Region MPO area through FFY 2035, by program.

**TABLE 7-4**

**PROJECTED FUNDING FOR PAVEMENT MANAGEMENT OF THE FEDERAL-AID ROADWAY SYSTEM IN THE BOSTON REGION MPO REGION  
(IN MILLIONS)**

PROGRAM	FFYs 2012–2015	FFYs 2016–2020	FFYs 2021–2025	FFYs 2026–2030	FFYs 2030–2035	TOTAL
National Highway System/ Interstate Maintenance	\$103.57	\$140.34	\$210.65	\$257.10	\$298.05	\$1,037.09
Statewide Maintenance Program	\$73.82	\$94.61	\$115.14	\$135.50	\$157.08	\$595.08
Chapter 90 funding	\$126.50	\$172.50	\$199.50	\$231.50	\$268.50	\$1,029.50
TIP funding	\$101.41	\$153.79	\$220.21	\$274.98	\$318.78	\$1,069.17
<b>TOTAL MAINTENANCE PROGRAM</b>	<b>\$404.80</b>	<b>\$561.24</b>	<b>\$745.50</b>	<b>\$899.08</b>	<b>\$1,042.41</b>	<b>\$3,730.84</b>

**Funding Bridge Maintenance**

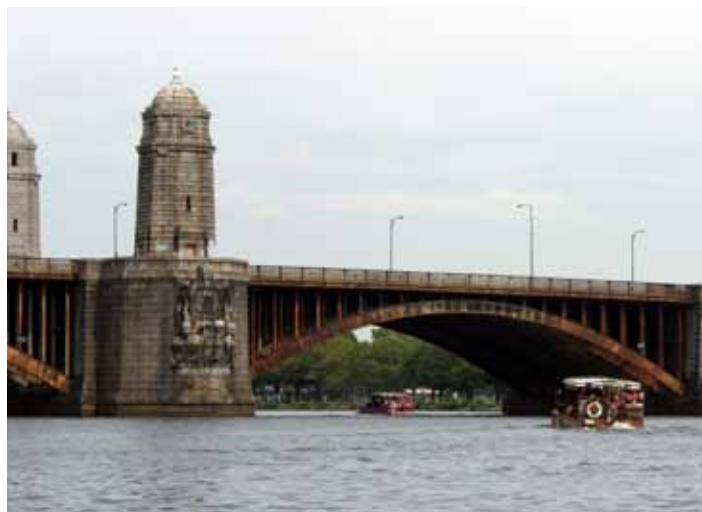
Maintenance of the bridges is provided via the statewide bridge program and the Accelerated Bridge Program.

**The Accelerated Bridge Program**

In 2008, the Patrick-Murray administration secured \$3 billion in bonds and Grant Anticipation Notes (GANs) to fund the Accelerated Bridge Program. The program represents a monumental investment in the maintenance and upgrade of Massachusetts bridges, particularly addressing the needs of large bridges and expensive projects.

As of May 2, 2011, the ABP has completed 51 bridge projects, with another 76 bridge

projects currently in construction, and an additional 47 bridge projects scheduled to start construction within the next year. Over the course of the eight-year program, more than 200 bridges are expected to be replaced or repaired. Since 2008, the number of structurally deficient bridges that were managed by the former MassHighway Department and Department of Conservation and Recreation, which are now managed by MassDOT, has dropped from 543 to 457, a decline of almost 16 percent. This program has allowed some of the more critical bridges in the Boston Region MPO area to be repaired, including the Longfellow Bridge.



Funding for the program is from two sources: a Massachusetts-owned Build America Bond for approximately \$1.9 billion, and approximately \$1.1 billion in Grant Anticipation Notes (GANs). The payback schedule for the GANs is approximately \$150 million a year starting in FFY 2015. The final year, FFY 2022, will be paid at the amount of \$185 million.

### The Statewide Bridge Program

The statewide bridge program is funded with federal aid at an average rate of \$130 million per year for the entire commonwealth. The Boston Region MPO's portion of this funding is shown in Table 7-3. As for the roadway program, the Commonwealth and the MPO are working within this financial framework; however, they acknowledge that the transportation capital needs of the region far exceed the anticipated available funds.

## THE REGIONAL PUBLIC TRANSPORTATION SYSTEM

The Massachusetts Bay Transportation Authority's (MBTA) projections of long-range revenues and expenses are based on the current Green Line Finance Plan (Finance Plan), which was based on the previous Silver Line, Phase III, Revised Finance Plan used for the federal New Starts program application that was submitted to the Federal Transit Administration (FTA) in September 2008. The Finance Plan includes projections through State Fiscal Year (SFY) 2035 and is the basis for the results in this LRTP.

The bonding strategy associated with this plan assumes that the MBTA will issue bonds only to match its federal formula funds. However, this level of bonding falls far short of the identified needs at the MBTA. The MBTA currently projects that it would need to spend \$750 million per year to address its State-of-Good-Repair (SGR) needs. This fact is detailed in the MBTA's pro forma documents and is also signaled in recent versions of the Capital Investment Program (CIP). This plan, therefore demonstrates that the MBTA cannot maintain its existing system, and that bonding to match federal formula funds worsens the MBTA's current bonding status. A summary of MBTA operations and capital investments is provided below.

## Funding MBTA Operations and Maintenance

The MBTA Enabling Act (Chapter 161A of the Massachusetts General Laws), as amended by Section 151 of Chapter 127 of the Acts of 1999, establish the MBTA financing structure, which is commonly referred to as Forward Funding. The advent of Forward Funding, among other changes, included dedicated sources of revenue and mandated the MBTA to operate as an independent, financially self-sustaining public transportation agency.

### Revenues for Funding Operations and Maintenance

Under the Enabling Act, the MBTA receives a dedicated local and state revenue stream consisting of the amounts assessed on cities and towns of the MBTA's service district (local assessments) and revenue from the dedicated sales tax. In addition to these two dedicated revenues, other revenues available for funding MBTA operations and maintenance over the life of this LRTP come from the following sources: fare revenue, non-fare revenue, and federal operating assistance. Table 7-5 lists the MBTA's projected revenues from SFYs 2012 to 2035.

TABLE 7-5

#### PROJECTED OPERATIONS AND MAINTENANCE REVENUES OF THE MBTA TRANSIT SYSTEM (IN MILLIONS)

OPERATING REVENUES	SFYs 2012-2015	SFYs 2016-2020	SFYs 2021-2025	SFYs 2026-2030	SFYs 2030-2035	TOTAL
Tax revenues*	\$4,498	\$6,139	\$7,104	\$8,472	\$10,141	\$36,354
Fare revenues	\$1,835	\$2,395	\$2,517	\$2,645	\$2,780	\$12,173
Non-fare operating revenues	\$275	\$326	\$338	\$384	\$447	\$1,769
Federal operating assistance	\$36	\$20	\$20	\$20	\$20	\$116
<b>TOTAL OPERATING REVENUES</b>	<b>\$6,644</b>	<b>\$8,880</b>	<b>\$9,979</b>	<b>\$11,521</b>	<b>\$13,388</b>	<b>\$50,412</b>

\*Includes sales tax and local assessments.

### Sales Tax

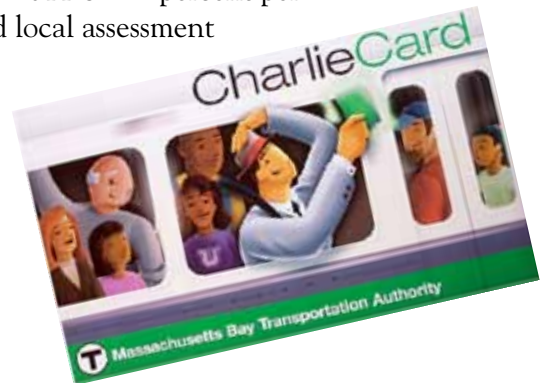
The dedicated income from the statewide sales tax is equal to whichever is greater: the amount raised from 1 percent of the statewide sales tax, which equals 20 percent of the previous statewide 5 percent sales tax, or the base revenue amount, which was \$767 million in SFY 2011. In either case, the funds come from existing sales tax receipts, subject to upward adjustment under certain circumstances set forth in the Enabling Act. Additionally, under legislation (Section 1 of Chapter 35 of the Acts of 2009), beginning August 1, 2009, the MBTA receives \$160 million more annually (subject to annual appropriation) from the legislated sales tax increase, which rose from 5 percent to 6.25 percent. Over the period SFY 2012 to SFY 2035, the projected sales tax revenue was assumed to increase at an average of 4 percent per year, starting at 2 percent and then increasing over time to just over 4 percent. Therefore, the projected sales tax revenue received by the MBTA over the life of this LRTP equals approximately \$31.5 billion.

## Local Assessment

In addition to the sales tax revenue, the MBTA receives funding through local assessments in accordance with a statutory formula. The 175 municipalities within the MBTA's service district pay an assessment to the MBTA on an annual basis. The amount paid by each municipality varies according to the population and the level of service provided. Local assessments were \$150 million in SFY 2011. This LRTP projects that the local assessments will have an average increase after SFY 2011 of 2.2 percent per year through SFY 2035. Over the life of this LRTP, projected local assessment revenue equals approximately \$4.8 billion.

## Fare Revenue

Fare revenue projections from the existing system total \$451 million in SFY 2011 and increase by 1 percent per year to yield \$12.2 billion over the life of the LRTP. The MBTA has recently announced that it is considering fare increases in the future; however, no additional fare increases are assumed in this LRTP.



## Non-Fare Revenue

Non-fare revenue is revenue derived from parking fees, advertising, concessions, rent, interest income, utility reimbursements, and non-operating revenues such as income earned on investments and sale of property. The non-fare revenue in SFY 2011 was \$82 million. Over the life of this LRTP, projected non-fare revenue equals approximately \$1.8 billion.

## Federal Operating Assistance

Federal operating assistance is received from the Federal Transit Administration (FTA) Section 5307 Preventative Maintenance funding. The federal operating assistance revenue in SFY 2011 was \$12 million. After SFY 2015, it is assumed that federal operating assistance will remain at \$4 million per year through SFY 2035. Over the life of this LRTP, projected federal operating assistance equals approximately \$116 million.

## Operations and Maintenance Costs

### Operating Expenses

The MBTA's operating expenses include wages, benefits, payroll taxes, materials, supplies, services, and purchased transportation. Given the data in the Finance Plan, operating expenses for SFY 2011 were \$1.2 billion. The Finance Plan also assumes a variable average annual increase in operating costs of 3 to 7 percent, averaging 4 percent from SFY 2012 to SFY 2035. This percentage is based on trend line analysis of known anticipated need and past operating costs. The total operating expenses over the life of the LRTP are \$49 billion, as shown in Table 7-6.

### Debt-Service Expenses

The MBTA is fully responsible for its finances, thus creating the need for managing operating costs while providing efficient transit service to the region. The 1997 financial reform legislation (Forward Funding) provided the MBTA with the tools necessary to develop a sensible approach to controlling the growth of operating expenses.

MBTA bonds were previously backed by the Commonwealth prior to the enactment of the Forward Funding legislation. Upon the effective date of the Forward Funding legislation, however, contract payments from the state ceased and all outstanding debt became the responsibility of the MBTA. The projected total debt service for new debt and prior-obligation debt over the life of the LRTP equal approximately \$9.7 billion, as shown in Table 7-6.

**TABLE 7-6**

**PROJECTED OPERATIONS AND MAINTENANCE COSTS OF THE MBTA TRANSIT SYSTEM  
(IN MILLIONS)**

OPERATING COSTS	SFYs 2012-2015	SFYs 2016-2020	SFYs 2021-2025	SFYs 2026-2030	SFYs 2030-2035	TOTAL
Operating and maintenance costs	\$5,472	\$8,338	\$9,889	\$11,651	\$13,676	\$49,023
Total debt service	\$1,765	\$2,367	\$2,086	\$1,907	\$1,546	\$9,671
<b>TOTAL OPERATING COSTS</b>	<b>\$7,237</b>	<b>\$10,704</b>	<b>\$11,975</b>	<b>\$13,558</b>	<b>\$15,219</b>	<b>\$58,694</b>

**Summary of Operations and Maintenance Revenues and Costs**

The total revenues and costs of operations and maintenance were described above. Table 7-7 summarizes and compares the total revenues to total costs.

**TABLE 7-7**

**PROJECTED REVENUES AND COSTS FOR OPERATIONS AND MAINTENANCE OF THE MBTA TRANSIT SYSTEM  
(IN MILLIONS)**

OPERATING COSTS	SFYs 2012-2015	SFYs 2016-2020	SFYs 2021-2025	SFYs 2026-2030	SFYs 2030-2035	TOTAL
Total Operations and Maintenance revenues	\$6,644	\$8,880	\$9,979	\$11,521	\$13,388	\$50,412
Total Operations and Maintenance costs	\$7,237	\$10,704	\$11,975	\$13,558	\$15,219	\$58,694
<b>DIFFERENCE</b>	<b>-\$593</b>	<b>-\$1824</b>	<b>-\$1996</b>	<b>-\$2037</b>	<b>-\$1831</b>	<b>-\$8282</b>

As shown in the table, the projected costs are greater than the projected revenues. The MBTA is currently reviewing potential options to close that gap. They are moving forward with a study to review the MBTA fare structure, tariffs, and service to be completed in the spring of 2012. They will continue to explore other options including increasing user- and non-user-generated revenues and changes in service.

**Funding MBTA Capital Investments**

The Boston Region MPO assumes that over time the capital maintenance needs of the MBTA will consume almost 100 percent of all MBTA capital revenues (excluding those from any special state appropriations). MBTA capital maintenance needs include infrastructure projects, such as signal and track upgrades; fleet overhauls



and replacements; system enhancement projects; and accessibility projects, such as improvements necessary for complying with the Americans with Disabilities Act (ADA) Key Station Plan. The MBTA expects that all revenues during the LRTP time period will be used to maintain the system in a state of good repair. The MBTA is not proposing any new expansion projects at this time. The Commonwealth will be providing the funding for all of the SIP commitment projects.

The MBTA’s capital program is primarily funded by two major sources: federal grants and revenue bonds; other sources include project financing and state appropriations.

The MBTA’s goal is to preserve sufficient funding for the operating budget, and therefore it cannot allow debt-service expenses to increase in relation to operating expenses. It is assumed that appropriate additional capital funds for projects required by legal commitments that pre-dated the Forward Funding legislation and for other projects mandated by new legislation will be provided. (See Chapter 161A, Section 18, of the Massachusetts General Laws, as amended, and the following section of this LRTP, for more details.)

The total proceeds from all capital program funding sources from SFY 2012 through SFY 2035 are estimated at \$13.2 billion. Table 7-8 shows the projections of available capital funds.

**TABLE 7-8**

**PROJECTED FUNDS AVAILABLE FOR THE MBTA CAPITAL PROGRAM  
(IN MILLIONS)**

FUNDING SOURCE	SFYs 2012–2015	SFYs 2016–2020	SFYs 2021–2025	SFYs 2026–2030	SFYs 2030–2035	TOTAL
Federal aid: Section 5307 Annual	\$565	\$826	\$958	\$1,110	\$1,287	\$4,746
Federal aid: Section 5307 Carryover	\$225	\$45	\$0	\$0	\$0	\$270
Federal aid: Section 5309 Fixed Guideway	\$400	\$584	\$677	\$785	\$910	\$3,355
Federal Aid: New Starts & Homeland Security	\$802	\$72	\$0	\$0	\$0	\$874
MBTA revenue bonds	\$1,534	\$615	\$327	\$379	\$439	\$3,294
Commonwealth expansion funding	\$629	\$62	\$0	\$0	\$0	\$691
<b>TOTAL CAPITAL FUNDS</b>	<b>\$4,155</b>	<b>\$2,204</b>	<b>\$1,961</b>	<b>\$2,274</b>	<b>\$2,636</b>	<b>\$13,230</b>

**Federal Aid**

The federal appropriations program established under SAFETEA-LU specifies formulas that govern the dispersal of nondiscretionary federal funds. The funding programs assumed in this LRTP include Section 5307 (formula funds), Section 5309 (rail and bus modernization funds), and other federal funding, including American Recovery and Reinvestment Act and Department of Homeland Security funding. A total of \$589 million was appropriated in SFY 2011, with that figure increasing thereafter, at a variable rate, through SFY 2035. This results in a total estimate of \$8.7 billion in federal funds over the life of this LRTP, excluding New Starts program grants.

Currently, federal discretionary New Starts program funds are projected to be secured for two MBTA projects:

1. Fitchburg Line Commuter Rail Improvements: \$73 million (50 percent of total cost) is anticipated in SFY 2012
2. Green Line Extension from Lechmere Station to College Avenue and a Spur to Union Square: \$560 million (50 percent of total costs) is anticipated between SFY 2012 and SFY 2016

The combined total of New Starts funds for these projects over the life of the LRTP would be \$633 million. The total federal aid projected to be available to the MBTA during the life of the LRTP from all such programs combined is \$9.2 billion.



### ***Bond Proceeds***

The MBTA currently issues bonds to pay for the local share of its capital projects. It is assumed that the MBTA will need to issue \$3.3 billion in revenue bonds over the life of this LRTP.

It is the goal of the MBTA to use pay-as-you-go financing in the long-term to fund the capital program. The advent of Forward Funding enabled the MBTA to maintain a modest amount in the Capital Maintenance Fund. This fund was used for the MBTA's State-of-Good-Repair program and addressed the ongoing schedule of maintaining the

equipment and mass transportation facilities of the system. Pay-as-you-go is a method of funding capital projects using cash rather than issuing bonds and incurring additional debt-service expenses. Continuance of a pay-as-you-go financing method requires significant surpluses in the upcoming years, which this LRTP does not include. As a result, pay-as-you-go financing remains a goal of the MBTA but is unachievable in this LRTP.

### ***State Appropriations***

Based upon current assumptions contained in this LRTP, it is estimated that the Commonwealth's capital subsidy for the State Implementation Plan expansion projects contained in this LRTP will be approximately \$691 million. It is understood that efforts to secure additional state funding will require the involvement of MassDOT, the Executive Office of Administration and Finance, and the Legislature, and such additional funding is subject to annual appropriations.

Table 7-9 shows all of the transit projects that are specifically recommended in this LRTP, whether as major infrastructure projects, regionally significant (expansion) projects for air quality, or both. The projects listed below are SIP projects, with the exception of Assembly Square and the additional parking spaces in Beverly and Salem. Assembly Square will be funded with federal and state earmarks and other state, local, and private funds. One additional transit expansion project is being funded in this

LRTP—Green Line Extension from Medford Hillside (College Avenue) to Mystic Valley Parkway; it is being funded with highway funds that are flexed to transit. This project is not part of the Commonwealth’s SIP commitments.

**TABLE 7-9**

**MAJOR INFRASTRUCTURE AND EXPANSION TRANSIT PROJECTS IN THE RECOMMENDED PLAN**

PROJECT	TYPE OF PROJECT*	COST
Fairmount Line Improvements Project**	MI/Exp	\$54,100,000
1,000 Additional Parking Spaces at Transit Facilities (Regionwide)	MI/Exp	\$32,000,000
Assembly Square Orange Line Station (Somerville)	MI/Exp	\$50,000,000
Green Line to Medford Hillside (College Avenue)/ Union Square	MI/Exp	\$1,120,000,000
Red Line–Blue Line Connector Design Only***	MI/Exp	\$49,000,000
Russia Wharf Ferry Terminal	MI/Exp	\$2,200,000
Additional Parking Spaces in Beverly and Salem	MI/Exp	\$50,000,000

\* Exp = Expansion Project – Project adding capacity to the roadway or transit system.  
MI = Major Infrastructure Project – Project costing more than \$25 million.

\*\* The total cost of the Fairmount Line Project was \$125 million. The remaining cost is \$54.1 million.

\*\*\* MassDOT made a formal request on August 1, 2011, to remove this project from the State Implementation Plan regulation. The MPO is continuing to carry this cost until this process is completed.

MassDOT recently announced through its State Implementation Plan – Transit Commitments 2011 Status Report submitted to DEP on July 27, 2011 that they are proposing delays or changes to the SIP projects. In that submission, MassDOT included a Petition to Delay for the Fairmount Line Improvement Project and the 1,000 New Park and Ride Spaces. They also made a formal request to remove the Red Line-Blue Line project and have informed DEP that the Green Line Extension to Medford Hillside (College Avenue)/Union Square will be delayed. MassDOT will work with DEP to set up a process for addressing these changes over the next several months and will continue to keep the Boston Region MPO informed of this process through its monthly reports at their regularly scheduled meetings. The Boston Region MPO will continue to fund these projects in the LRTP until the process has been completed. When the process has been completed, the MPO will amend the LRTP and its conformity determination to include any changes (including any interim projects or programs).

Table 7-10 summarizes how the MBTA anticipates using its capital funds through SFY 2035.

**TABLE 7-10****PROJECTIONS OF THE USE OF TRANSIT CAPITAL FUNDS  
(IN MILLIONS)**

PROJECT TYPE	SFYs 2012-2015	SFYs 2016-2020	SFYs 2021-2025	SFYs 2026-2030	SFYs 2031-2035	TOTAL
CIP projects	\$2,166	\$1,861	\$1,961	\$2,274	\$2,636	\$10,898
New Starts/Small Starts	\$830	\$120	\$0	\$0	\$0	\$950
Other state-funded projects	\$216	\$0	\$0	\$0	\$0	\$216
<b>TOTAL USES OF CAPITAL FUNDS</b>	<b>\$3,212</b>	<b>\$1,981</b>	<b>\$1,961</b>	<b>\$2,274</b>	<b>\$2,636</b>	<b>\$12,064</b>

The MBTA's Capital Investment Program (CIP) is a rolling five-year plan, which outlines its current infrastructure needs and details planned investments. It is used to implement the Program for Mass Transportation, a 25-year plan for future investments in the MBTA.

The CIP focuses mainly on improvements and upgrades to vehicles, stations, tracks, signals, power systems, bridges, tunnels, and maintenance facilities which increase system reliability and safety. Also included are initiatives to enhance customer service and accessibility improvements that will benefit all of our riders. As shown in Table 7-10 and as noted throughout the LRTP, the majority of the MBTA's funding will be dedicated to the state of good repair of the regional transit system. This spending, however, does not meet the true state of good repair needs, which would require over \$1 billion more to be spent through 2020.

New Starts/Small Starts projects include funding for the Fitchburg Commuter Rail, Assembly Square, and Green Line Extension projects. Other state-funded projects include projects such as Beverly Parking Garage and the Salem Parking Garage.



## BACKGROUND

This chapter lists and outlines the recommended projects and programs that represent the Boston Region MPO's priorities through the year 2035. It explains the process used to select these projects for the region and the transportation model results that forecast their overall impacts.

The MPO recognizes the diversity of transportation needs and issues throughout the Boston region and attempts to respond to them in a balanced manner. The MPO set the policies, selected the regionally significant and major infrastructure projects, and identified actions necessary to serve all modes of transportation for persons and freight in this region. In doing so, they attempted to address the issues of system preservation, safety, mobility, congestion, and sprawl while supporting economic vitality and environmental justice.

The region's infrastructure is aging and it has become clear that the demands placed on highway and transit facilities have been taxing to the point that routine maintenance is insufficient to keep up with maintenance needs. As a result, there is a significant backlog of maintenance and state-of-good-repair work to be done on the highway and transit system, including bridges, roadway pavement, transit rolling stock, and traffic and transit control equipment. Under these circumstances, the MPO recognizes that the concept of preservation, modernization, and efficiency has become ever more important. Attention to the maintenance needs must be applied within a system of priority setting that addresses both the most serious problems and the most effective investments in order to provide maximum current and future benefits.

There is also a need to support a transportation system that expands choices for travel within the region. While advocating for a transportation system that adequately supports all modes of travel, the MPO recognizes that many people in the region are, and will continue to be, reliant on the automobile. The members of the MPO expect both the roadway



congestion to worsen and the demand for transit to increase in the future, and recognize that many possibilities exist to reduce our dependence on the single-occupant vehicle.

The Boston Region MPO recognizes that climate change will likely have significant impacts on the Boston region if climate trends continue as projected. In order to minimize the negative impacts, the MPO seeks to take steps to decrease our carbon footprint and to simultaneously adapt our transportation system to minimize damage. The MPO strongly considers projects and strategies that protect and enhance the environment, promote energy conservation, and improve the quality of life in the region. Transportation investments also support livability by providing residents of the region with convenient access to opportunities and resources. Affordable housing, access to services, employment opportunities, and shopping in close proximity all contribute to the livability of a community, as do safe, affordable, and healthy options for getting around.

The MPO seeks to provide access to transportation services on an equitable basis across the region.

The MPO seeks to provide access to transportation services on an equitable basis across the region. This includes, but is not limited to, providing transportation options for low-income and minority communities for travel to jobs, services, and other important destinations.

Finally, the MPO recognizes that the transportation system plays a critical role in the continued economic health of the region. Many sectors of the regional economy depend heavily on the safe and efficient movement of goods and services by truck, rail, air, and water.

## PROJECT SELECTION

Chapter 1, Introduction and Plan Process, describes the full MPO process used in selecting the recommended set of projects and programs included in this long-range transportation plan (LRTP). Given the fiscal constraint requirement of the LRTP, the Boston Region MPO had to identify the region's top priority projects as candidates for funding. The final selection of highway and transit projects was based on the informed judgment of MPO members after they reviewed many sources of information, including:

- Conclusions from the Regional Needs Assessment (Volume II of the LRTP)
- Results from the regional travel demand model
- Information available on projects through feasibility studies, project-specific modeling work, and environmental impact reports
- A matrix examining each individual highway and transit project for conformity with the MPO's transportation policies and recommendations and prioritizations of transit projects as set forth in the MBTA's Program for Mass Transportation
- Recommendations from the Regional Transportation Advisory Council, the MPO's advisory group
- MPO members' knowledge of proposed projects
- Feedback from the public through the MPO's outreach process

The Boston Region MPO recognized the diversity of transportation needs and issues in the region as identified through the Regional Needs Assessment. With the needs in mind, the MPO considered three separate strategies for investments (described in

Chapter 1). These strategies provided various scenarios for sharing the region’s financial resources among maintenance and state-of-good-repair, modernization, expansion, traffic management and operations, and other projects or programs. The MPO’s discussions involved weighing and balancing many difficult and sometimes conflicting issues. These included the limited available funding, prior funding commitments from the previous LRTP, the backlog of maintenance projects, demand for modernization and safety improvements, new initiatives such as livability, and the high cost of addressing regional needs. The MPO also sought to fund projects across transportation modes to support a transportation system that expands travel options within the region.

The MPO sought to fund projects across transportation modes to support a transportation system that expands travel options within the region.

Given the funding constraints, maintenance challenges, and capacity issues, there was consensus that no additional regionally significant projects should be selected in the new LRTP and that the LRTP should honor its previous project commitments. The MPO therefore decided to approve a slightly modified version of the “Current Approach” strategy. This decision allows the MPO to continue to fund prior commitments, achieve a modal split among roadways, strategic transit, bicycle and pedestrian projects, and to leave approximately 41 percent of LRTP funds unassigned to fund lower-cost, non-regionally significant projects addressing other maintenance, modernization, safety, operations, and efficiency needs in the region through the Transportation Improvement Program (TIP). The set of projects and programs selected allocates funds by the following investment categories:

- Roadway Modernization – 45 percent
- Roadway Expansion – 42 percent
- Transit Expansion – 8 percent
- Bicycle/Pedestrian Expansion – 2 percent
- Clean Air and Mobility Program – 3 percent

This set of projects and programs addresses a variety of transportation needs and issues, including highway interchanges, corridor improvements, regional rail trails, and extension of light rail transit service, and is generally consistent with MetroFuture, the land use plan for the Boston region, and with the sustainable-development principles of the Commonwealth.

## **RECOMMENDED LIST OF PLANNED MAJOR INFRASTRUCTURE AND EXPANSION PROJECTS**

This LRTP includes funding for both maintenance and expansion of the transportation system. Funding for much of the maintenance of the roadways for the Boston Region MPO area is provided through the statewide resurfacing, maintenance, and infrastructure programs. Maintenance of the bridges is provided through the statewide bridge program and the Accelerated Bridge Program.

In the Boston region, the highway network’s major infrastructure and capacity expansion projects and other maintenance and rehabilitation projects not included in the statewide programs are funded through the Boston Region MPO’s share of the Discretionary Capital Program and the Regional Infrastructure Program. In this LRTP, for the transit

The MPO has allocated all of the MBTA's future transit capital funding to system infrastructure maintenance, accessibility improvements, and system enhancements.

network, the MPO has allocated all of the MBTA's future transit capital funding to system infrastructure maintenance, accessibility improvements, and system enhancements. It also demonstrates the MPO's commitment to the State Implementation Plan (SIP) projects by programming and funding those new projects. The Commonwealth has made a commitment to fund the SIP commitment transit projects.

The major infrastructure and capacity expansion program is used to fund projects currently underway and also projects that fall into the definition of a major infrastructure or expansion project. A major infrastructure project is any project that costs over \$10 million. An expansion project is any project that adds capacity to the existing system through the addition of a travel lane, the construction of an interchange, the construction of an extension of a commuter rail or rapid transit line, or the procurement of additional (not replacement) public transportation vehicles.

The following ongoing No-Build major infrastructure and expansion projects are funded in this LRTP:

- The Central Artery Tunnel project: The total budget for this project is approximately \$14.625 billion, and the costs funded are \$686 million for the repayment of Grant Anticipation Notes.
- The Accelerated Bridge Program: This program repairs structurally deficient bridges across the Commonwealth. The total budget for this project is approximately \$3 billion, and the costs funded are \$1.108 billion for the repayment of Grant Anticipation Notes.
- Route 128 Additional Lanes (Randolph to Wellesley): The total budget for this project is approximately \$381.4 million, and the remaining costs funded are \$168 million. The completion date of this project is projected to be 2016.
- Crosby's Corner: The total budget for this project is \$65 million, all of which is funded in this LRTP.
- Fairmount Line Improvements: This is a State Implementation Plan project. The Commonwealth committed \$125 million for this project. The remaining cost, funded under this LRTP, is \$54.1 million. The completion date is projected to be the end of calendar year 2013.
- 1000 Additional Park-and-Ride Spaces: This is a State Implementation Plan project. The Commonwealth has committed to fund this project. The remaining cost funded under this LRTP, is \$32 million. The completion date is projected to be the spring of 2012.

After accounting for the costs of these ongoing projects, the remaining funds are available for major infrastructure and capacity expansion or set aside for low-cost, non-capacity-adding projects that advance the MPO's visions and policies. Table 8-1 lists the projects funded under the major infrastructure and capacity expansion program, the current cost, and the type of project—major infrastructure project, or expansion project, or both. Figure 8-1 shows the locations of these projects.

As shown in Table 8-1, the Recommended Plan allocates the majority of highway funding for highway projects. However, it also provides for flexing \$185 million in

**TABLE 8-1**

**MAJOR INFRASTRUCTURE AND EXPANSION PROJECTS IN THE RECOMMENDED PLAN**

PROJECT	INVESTMENT CATEGORY*	CURRENT COST
Middlesex Turnpike (Bedford, Burlington, & Billerica)	Expansion - Roadway	\$20,800,000
Trapelo Road (Belmont)	Modernization - Roadway	\$14,592,000
Additional Parking Spaces (Beverly & Salem)	Expansion - Transit	\$50,000,000
Conley Haul Road (Boston) **	Expansion - Roadway	\$25,000,000
Red Line–Blue Line Connector – Design Only (Boston)***	Expansion - Transit	\$49,000,000
Russia Wharf Ferry Terminal (Boston)	Expansion - Transit	\$2,200,000
Sullivan Square/Rutherford Avenue (Boston) ****	Modernization - Roadway	\$71,000,000
Braintree Split – I-93/Route 3 Interchange (Braintree)	Modernization /Expansion - Roadway	\$36,000,000
I-93/I-95 Interchange (Canton)	Modernization /Expansion - Roadway	\$235,500,000
I-95 (NB)/Dedham Street Ramp/Dedham Street Corridor (Canton)	Expansion - Roadway	\$35,000,000
Route 126/135 Grade Separation (Framingham)	Modernization - Roadway	\$58,500,000
Bruce Freeman Rail Trail (Concord to Westford)	Expansion - Bike/Ped	\$18,700,000
Route 53 Final Phase (Hanover)	Expansion - Roadway	\$1,000,000
Assabet River Rail Trail (Hudson to Acton)	Expansion - Bike/Ped	\$18,100,000
Route 1 Improvements (Malden, Revere, & Saugus)	Expansion - Roadway	\$175,196,000
Needham Street/Highland Avenue (Newton & Needham)	Modernization - Roadway	\$18,400,000
I-93/I-95 Interchange (Reading & Woburn)	Modernization /Expansion - Roadway	\$276,000,000
Clean Air Mobility Program (Regionwide)	Clean Air and Mobility	\$2,000,000/ yr
Bridge Street (Salem)	Expansion - Roadway	\$11,223,250
Green Line Lechmere to Medford Hillside (College Avenue)/ Union Square (Somerville)	Expansion - Transit	\$1,120,000,000
Green Line Extension from Medford Hillside (College Avenue) to Mystic Valley Parkway (Route 16) (Somerville & Medford)	Expansion - Transit	\$140,608,000
Route 18 Capacity Improvements (Weymouth) ****	Expansion - Roadway	\$31,350,000
Montvale Avenue (Woburn)	Expansion - Roadway	\$3,700,000
New Boston Street Bridge (Woburn)	Expansion - Roadway	\$4,900,000

\* Expansion – Project extends or adds capacity to the existing system,

Modernization – Upgrades to the existing system to meet contemporary standards and accommodate all users,

Clean Air and Mobility – Projects and programs funded through the Clean Air and Mobility Program

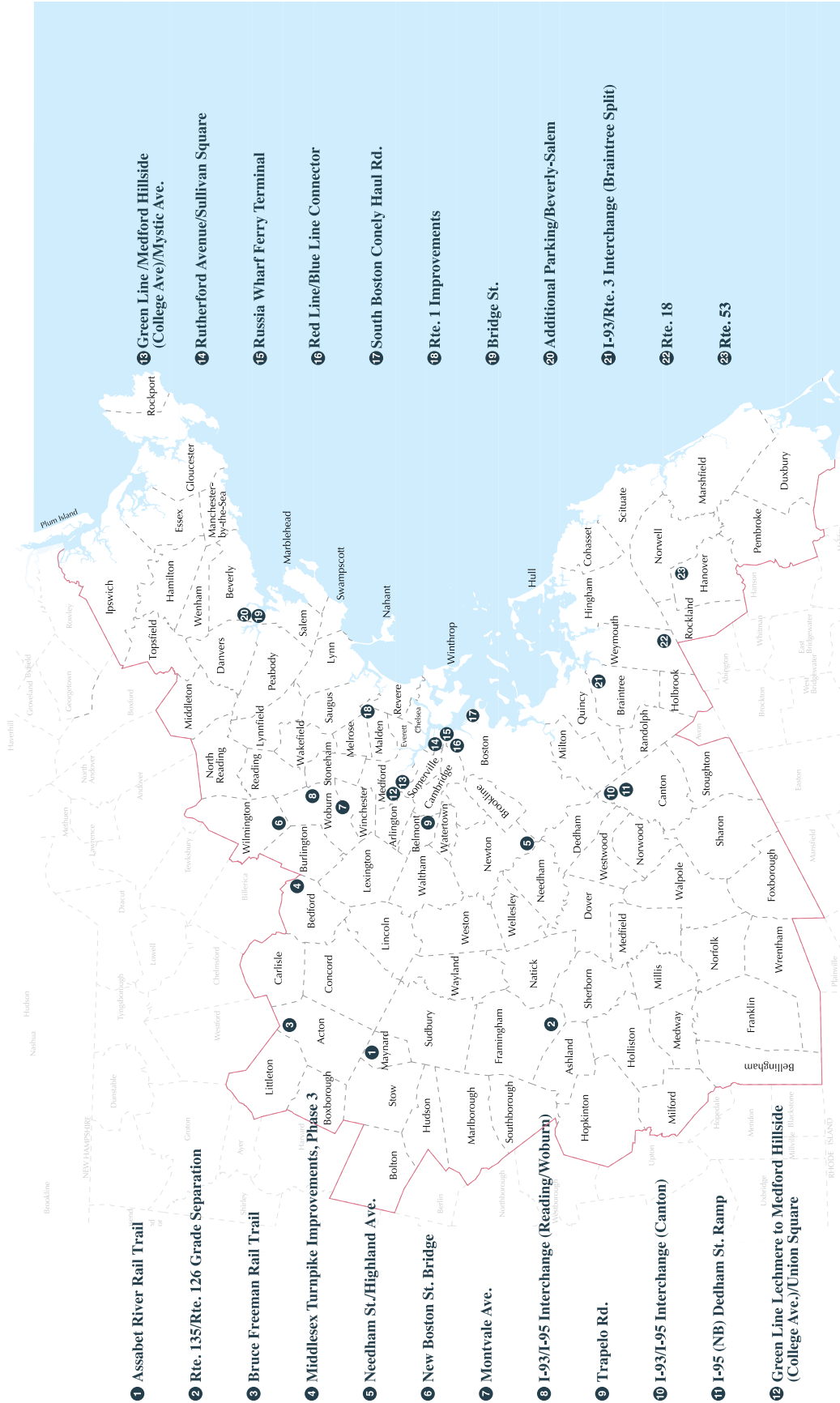
\*\* Non-MPO Funding will be used to fund the Conley Haul Road (Boston). This project will be paid for by the Massachusetts Port Authority.

\*\*\* MassDOT made a formal request on August 1, 2011, to remove this project from the State Implementation Plan regulation. The MPO is continuing to carry this cost until this process is completed.

\*\*\*\* A portion of these projects are funded with earmarks.

FIGURE 8-1

MAJOR INFRASTRUCTURE AND EXPANSION PROJECTS IN THE RECOMMENDED PLAN





highway funding to one transit project. All of the public transportation funds are used for improvements to the regional public transportation system. Based upon this distinction, the major expansion projects total approximately \$1.02 billion for non–Central Artery highway projects from the Boston Region MPO’s Discretionary Capital Program. The MPO also included funding for approximately \$1.042 billion in roadway modernization projects and programs. Table 8-2 shows the total amount of funding dedicated to major infrastructure and capacity expansion projects in this LRTP.

In addition to the major infrastructure and expansion projects listed in Table 8-1, the MPO is committed to continued funding of projects to improve mobility in the region, particularly in the following areas (see Chapters 4 and 5 for more details on these programs):

- Freight movement
- Suburban mobility/transportation demand management
- Bicycle facilities
- Pedestrian facilities
- Congestion Mitigation and Air Quality (CMAQ) Program, including the MPO’s Clean Air and Mobility Program

**TABLE 8-2**

**FUNDING DEDICATED TO MAJOR INFRASTRUCTURE AND EXPANSION PROJECTS**

PROJECT	DEDICATED FUNDING
Central Artery/Tunnel Project	\$685,675,000
Accelerated Bridge Program	\$1,108,000,000
MPO Discretionary Capital Program: Non–Artery Highway Projects (Major Infrastructure/Expansion Program)	\$1,025,698,000
MPO Discretionary Capital Program: Highway Funds Flexed to Transit (Major Infrastructure/Expansion Program)	\$185,031,000
MPO Discretionary Capital Program: Non–Artery Highway Projects (Roadway Modernization Program)	\$1,042,072,000
MPO Discretionary Capital Program: Non–Artery Highway Projects (Clean Air and Mobility Program)	\$58,528,000
MPO Discretionary Capital Program: Non–Artery Highway Projects (Unassigned Funds)	\$1,573,405,000
<b>HIGHWAY FUNDING SUBTOTAL</b>	<b>\$5,678,409,000</b>
Transit expansion projects funded in the Boston MPO by the Commonwealth	\$1,307,300,000
<b>TRANSIT FUNDING SUBTOTAL</b>	<b>\$1,307,300,000</b>

## HIGHWAY PROJECTS IN THE RECOMMENDED PLAN

Table 8-3 lists the highway projects funded under the major infrastructure and expansion program, their costs, and the time frame in which they are projected to be constructed. Pursuant to federal guidance on allowing for inflation, the costs associated with each

highway project are based on the current estimate cost plus 4 percent per year through the year of construction. The location of each project is shown in Figure 8-1.

In addition, Table 8-4 provides a list of bridges costing over \$10 million that are currently scheduled for advertisement.

The next section of Chapter 8 provides a detailed description, current cost, and map for each highway project included in the Recommended Plan.

**TABLE 8-3**

**MAJOR INFRASTRUCTURE AND EXPANSION PROJECTS PROGRAMMED WITH HIGHWAY FUNDING IN THE RECOMMENDED PLAN, WITH COSTS**

	CURRENT COST (2011)	2012–2015	2016–2020	2021–2025	2026–2030	2031–2035	MPO FUNDING	NON-MPO FUNDING*
<b>ONGOING NO-BUILD HIGHWAY PROJECTS</b>								
Route 128 Additional Lanes (Randolph to Wellesley)	\$167,700,000	\$142,700,000	\$25,000,000				\$167,700,000	
Crosby's Corner (Concord & Lincoln)	\$65,000,000	\$65,000,000					\$65,000,000	
<b>RECOMMENDED HIGHWAY PROJECTS</b>								
Middlesex Turnpike Improvements, Phase III (Bedford, Burlington, & Billerica)	\$20,800,000		\$27,400,000				\$27,400,000	
Trapelo Road (Belmont)	\$14,592,000	\$14,592,000					\$14,592,000	
Sullivan Sq./ Rutherford Ave. (Boston)*	\$71,000,000		\$78,100,000				\$78,100,000	\$15,377,710
I-93/Route 3 Interchange – Braintree Split (Braintree)	\$36,000,000					\$85,320,000	\$85,320,000	
I-93/I-95 Interchange (Canton)	\$235,500,000			\$377,040,000			\$377,040,000	
I-95 Northbound/ Dedham St. Ramp/ Dedham St. Corridor (Canton)	\$35,000,000			\$56,040,000			\$56,040,000	
Bruce Freeman Rail Trail (Concord to Westford)	\$18,700,000			\$29,940,000			\$29,940,000	
Route 126/Route 135 Grade Separation (Framingham)	\$58,500,000				\$113,950,000		\$113,950,000	
Route 53 Final Phase (Hanover)	\$1,000,000		\$1,320,000				\$1,320,000	

**TABLE 8 -3 (CONT.)**

**MAJOR INFRASTRUCTURE AND EXPANSION PROJECTS PROGRAMMED WITH HIGHWAY FUNDING IN THE RECOMMENDED PLAN, WITH COSTS**

	CURRENT COST (2011)	2012-2015	2016-2020	2021-2025	2026-2030	2031-2035	MPO FUNDING	NON-MPO FUNDING*
<b>RECOMMENDED HIGHWAY PROJECTS</b>								
Assabet River Rail Trail (Hudson to Acton)	\$18,100,000		\$23,820,000				\$23,820,000	
Route 1 Improvements (Malden, Revere, Saugus)	\$175,196,000					\$415,200,000	\$415,200,000	
Needham St./ Highland Ave./ Winchester St. (Newton & Needham)	\$18,400,000			\$29,460,000			\$29,460,000	
I-93/I-95 Interchange (Reading, Stoneham, Wakefield, & Woburn)	\$276,000,000				\$537,621,000		\$537,621,000	
Bridge St. (Salem)	\$11,223,250		\$14,769,000				\$14,769,000	
Route 18 Capacity Improvements (Weymouth)*	\$31,300,000	\$16,770,000					\$16,770,000	\$14,582,039
Montvale Ave. (Woburn)	\$3,700,000			\$5,924,000			\$5,924,000	
New Boston St. Bridge (Woburn)	\$4,900,000			\$7,850,000			\$7,850,000	
Conley Haul Rd. (Boston)*	\$25,000,000						\$0	\$25,000,000
<b>RECOMMENDED HIGHWAY PROGRAM</b>								
Clean Air and Mobility Program (Regionwide)	\$2,000,000 per yr	\$3,172,300	\$10,937,000	\$12,680,000	\$14,700,000	\$17,039,000	\$58,528,000	
<b>RECOMMENDED TRANSIT PROJECTS USING HIGHWAY FUNDING</b>								
Green Line Extension from Medford Hillside (College Ave.) to Mystic Valley Pkwy (Rte. 16)	\$140,608,000		\$185,031,000				\$185,031,000	
<b>PROJECT TOTAL</b>		<b>\$242,234,000</b>	<b>\$366,377,000</b>	<b>\$518,934,000</b>	<b>\$666,271,000</b>	<b>\$517,559,000</b>	<b>\$2,311,375,000</b>	<b>\$54,959,749</b>
<b>AVAILABLE REVENUE</b>		<b>\$300,490,000</b>	<b>\$569,590,000</b>	<b>\$815,610,000</b>	<b>\$1,018,440,000</b>	<b>\$1,180,650,000</b>	<b>\$3,884,780,000</b>	
<b>PERCENTAGE OF PROGRAM FUNDING</b>		<b>81%</b>	<b>64%</b>	<b>64%</b>	<b>65%</b>	<b>44%</b>	<b>59%</b>	

\* Non-MPO Funding includes earmarks, with the exception of the Conley Haul Road (Boston). This project will be paid for by the Massachusetts Port Authority.

**TABLE 8-4**

**HIGHWAY BRIDGES WITH ESTIMATED COSTS OVER \$10 MILLION**

CITY/TOWN	PROJECT	CURRENT COST	2012-2015	2016-2020	2021-2025	2026-2030
<b>ACCELERATED BRIDGE PROGRAM</b>						
Boston/ Cambridge	Longfellow Bridge	\$260,099,000	\$260,099,000			
Boston	Cambridge St. over the Charles River	\$30,291,000	\$30,291,000			
Boston	North Harvard St. over the Charles River	\$27,646,000	\$27,646,000			
Boston	Casey Overpass over Washington St.	\$33,600,000	\$33,600,000			
Everett/ Medford	Revere Beach Pkwy. over the Malden River	\$41,320,000	\$41,320,000			
Medford	Main St. (Route 38) over the Mystic River (Cradock Bridge)	\$11,620,000	\$11,620,000			
Quincy	Fore River Bridge	\$280,000,000	\$280,000,000			
Revere	Revere Beach Pkwy. over MBTA	\$15,293,000	\$15,293,000			
Revere	Blue Line and Revere Beach Pkwy.	\$10,000,000	\$10,000,000			
Somerville	Route 28 over Washington St.	\$22,910,000	\$22,910,000			
<b>TOTAL ACCELERATED BRIDGE PROGRAM</b>		<b>\$732,779,000</b>	<b>\$732,779,000</b>			
<b>STATEWIDE BRIDGE PROGRAM</b>						
Boston	Massachusetts Ave. over Route 2A (Commonwealth Ave)	\$23,184,000	\$23,184,000			
Boston	North Washington St. over the Charles River	\$55,000,000		\$72,400,000		
Lexington	Route 2A over I-95	\$20,456,000	\$20,456,000			
Lynn/Saugus	Bridge Route 107 over the Saugus River	\$41,433,000	\$41,433,000			
Needham/ Wellesley	Route 128 Add-A-Lane Bridge (Contract V)	\$10,500,000	\$10,500,000			
<b>TOTAL STATEWIDE BRIDGE PROGRAM</b>		<b>\$95,573,000</b>	<b>\$95,573,000</b>	<b>\$72,400,000</b>		
<b>AVAILABLE STATEWIDE BRIDGE REVENUE</b>			<b>\$154,570,000</b>	<b>\$213,270,000</b>		







## **BEDFORD, BILLERICA, AND BURLINGTON: MIDDLESEX TURNPIKE, PHASE 3 (\$20,800,000)**

### **Description**

The proposed improvements will widen Middlesex Turnpike from 800 feet north of Plank Street to 900 feet north of Manning Road. The widening will provide two lanes in each direction, making it a four-lane highway with a median. There will be left-turn lanes at key intersections. The improvements span a segment of approximately 1.5 miles and include the reconstruction of the bridge over the Shawsheen River. The roadway cross-section width will increase to 70 feet, and the total right-of-way will be 85 feet wide. Each direction will consist of a 14-foot outside travel lane, a 13-foot inside travel lane, and a 16-foot median. The median will be reconfigured at key intersections and driveways as a 4-foot median with a 12-foot protected left-turn lane. On the east side of the 70-foot travel way is a 7-foot grass strip, and on the west side are a 3-foot grass strip and a 4-foot concrete sidewalk.

### **Project's Context/Possible Impacts, by MPO Policy Area**

#### **Land Use**

The project consists of a corridor that spans two communities, Bedford and Billerica. The area in Bedford is zoned for industrial park, industrial, general business, and residential uses. The area in Billerica is zoned for industrial uses.

#### **Safety**

There are no high-crash locations within the study area for the years 2006 to 2008, according to MassDOT's list of the Top 200 High-crash intersections.

#### **Mobility**

According to MassDOT traffic counts conducted in 2004, the average daily traffic on the Middlesex Turnpike at the Bedford town line was 19,600 vehicles. According to the draft environmental impact report (DEIR) done in 1995, a Roadway Segment Capacity Analysis showed that Middlesex Turnpike operated at a level of service (LOS) E in the AM and PM peak hours, and that at six out of seven intersections along the turnpike, the critical movement in the AM and PM peak hours operated at LOS F. In terms of delay, the Congestion Management Process monitoring conducted in 2002 found that the average travel speed is below 70 percent of the posted speed along four segments in both the northbound and southbound directions, in both the AM and PM peak periods.

#### **Economic Opportunities**

According to the DEIR, improving the capacity, efficiency, and safety of this roadway will help improve the redevelopment opportunities of this area.

**MAP 8-1**

**BEDFORD, BILLERICA, AND BURLINGTON:  
MIDDLESEX TURNPIKE, PHASE 3**





## BELMONT: TRAPELO ROAD (\$14,592,000)

### Description

This project will be a reconstruction of Trapelo Road from the Cambridge city line to Waverly Oaks Road (Route 60), a length of 2.5 miles. The project will provide traffic signal, sidewalk, bicycle, and streetscape improvements. It will also include the following improvements:

- Construction of a second culvert at Beaver Brook to alleviate flooding
- Fully actuated traffic signals
- ADA-compliant sidewalks throughout both sides of the corridor
- Reduced traffic lane widths to accommodate a bicycle shoulder

### Project's Context/Possible Impacts, by MPO Policy Area

#### Livability

The project enhances livability by improving the viability of walking, bicycling, and taking the MBTA. Pedestrian improvements consist of new or widened and ADA-compliant sidewalks, shortened crossings, and streetscape enhancements. The reduction in traffic lane widths to accommodate 5-foot bicycle lanes will enhance access for bicyclists. These improvements will improve bicyclist and pedestrian access to the Waverley Commuter Rail Station and Shaws Supermarket. The modernization of 13 traffic signals along the corridor will also improve MBTA bus service by reducing the delays for the trackless trolleys that traverse the roadway.

#### Land Use

The project area is zoned for a mix of uses, including commercial and residential (multi-family and single-family housing). The area within one-half mile of the corridor is fully developed, with only a handful of underutilized parcels.

#### Safety

There are no high-crash locations within the study area according to MassDOT's list of the Top 200 High-crash intersections for the years 2006 to 2008.

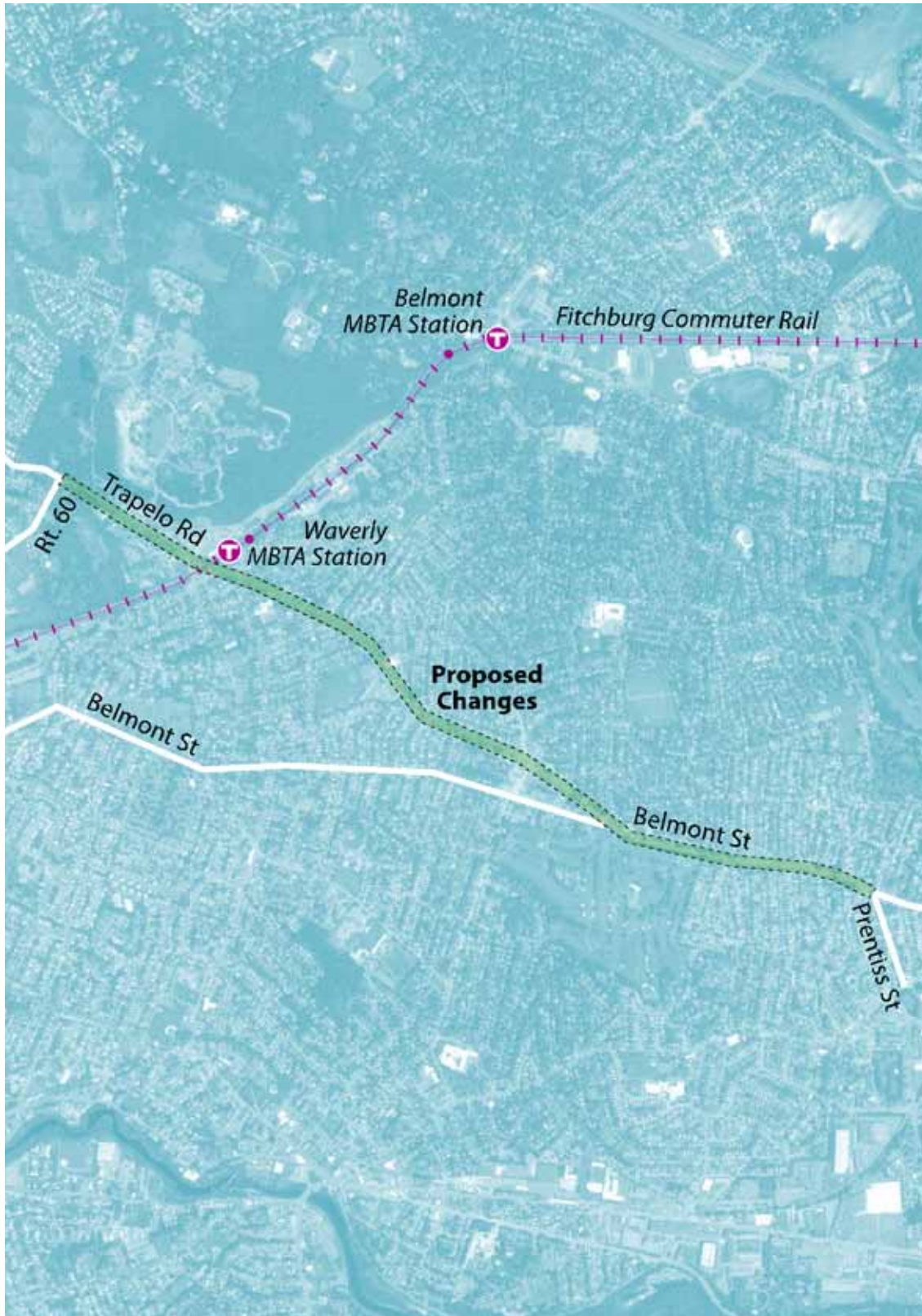
#### Mobility

According to traffic counts by the Transportation Data Corporation (TDC) in 2005, the average daily traffic volume on Trapelo Road ranges from 15,000 vehicles (along Belmont Street and along Trapelo Road east of Pleasant Street) to 30,000 (along Trapelo Road west of Pleasant Street). Trapelo Road operates at a level of service (LOS) C during the AM and PM peak periods. The current posted speed limits on Trapelo Road are 30 mph, but average peak-period speeds are 16.4 mph in the AM and 15.3 mph in the PM.

#### Connectivity

The proposed improvements will improve the connectivity of the area by promoting the use of alternative transportation modes (walking, bicycling, and transit).







## **BOSTON: CONLEY TERMINAL DEDICATED FREIGHT CORRIDOR AND BUFFER OPEN SPACE (\$25,000,000 ESTIMATED)**

### **Description**

The proposed Conley Terminal Dedicated Freight Corridor (CTDFC) project will construct a new terminal access road that will remove container truck traffic from residential East First Street and portions of Summer Street in South Boston. Conley Terminal, New England's only international container terminal, is owned and operated by the Massachusetts Port Authority (Massport). The 101-acre facility has experienced steady growth since the introduction of direct Asian carrier service in 2002. Massport will fund this project.

The project will construct approximately 3/4 mile of dedicated roadway for container trucks, as well as other service truck traffic, between Paul W. Conley Container Terminal in South Boston, and a new intersection on Summer Street, south of the Reserved Channel.

In addition, the project will create a 4.5-acre buffer open space along East First Street that will separate and screen nearby residents from CTDFC and terminal operations.

The project will provide the following elements:

- New haul road alignment serving Conley Terminal, with the potential to segregate inbound and outbound movements on one-way roads under the full Build scenario
- A reconfigured MBTA layover area along East First Street and the opportunity for buses to access the layover area via the haul road
- Service access to the existing MBTA power plant via the haul road
- Access to the existing lobster terminal and future land uses along the Reserved Channel
- Potential to provide access to the Exelon property from the north or east along new roadways
- A 100-foot-wide green space as a buffer offering the potential for new east-west linear park connections



**MAP 8-3**

**BOSTON: CONLEY TERMINAL DEDICATED FREIGHT CORRIDOR AND BUFFER OPEN SPACE**



## **BOSTON: RUTHERFORD AVENUE/SULLIVAN SQUARE (\$71,000,000)**

### **Description**

The Rutherford Avenue project seeks to transform the corridor's highway-like design into a multimodal urban boulevard. The Rutherford Avenue corridor in the Charlestown neighborhood of Boston extends about 1.5 miles from the North Washington Street Bridge to the Sullivan Square MBTA Orange Line station. The existing corridor consists of 8 to 10 lanes that facilitate high-speed automobile travel. Although this roadway layout served high volumes of traffic during the construction of the Central Artery/Tunnel project, it now acts a barrier to the neighborhood. The existing roadway creates significant challenges and safety issues for pedestrians and bicyclists seeking to reach various destinations, including Bunker Hill Community College, Paul Revere Park, the Hood Business Park employment area, and MBTA rapid transit stations.

### **Project's Context/Possible Impacts, by MPO Policy Area**

#### **Livability**

Through the transformation of the highway-like roadway into a multimodal urban boulevard, the project will improve pedestrian and bicycle safety along the corridor and access to the Community College and Sullivan Square MBTA stations on the Orange Line. The at-grade urban boulevard will eliminate the underpasses at Sullivan Square and Austin Street, add a 12-to-16-foot-wide landscaped median, and reduce the roadway to two travel lanes in each direction, with turn lanes at intersections. The livability elements consists of adding 10-foot sidewalks, creating a 20-to-40-foot linear park or buffer, installing 10 traffic signals and crosswalks, shortening crossings, planting 900 trees, and possibly adding a 5-foot wide bike lane in the southbound direction. The designation of exclusive bus lanes at Sullivan Square Station will also improve bus operations for nearly 10 MBTA routes.

#### **Land Use**

The plans for reconfiguring the Sullivan Square roadway network also provide an opportunity to create land parcels for transit-oriented-development (TOD) that will be well suited and well located for commercial and residential redevelopment by the private sector. Many of the parcels in the Sullivan Square area are publicly owned, by either the MBTA or the City of Boston, which opens the doors for possible public-private partnerships.

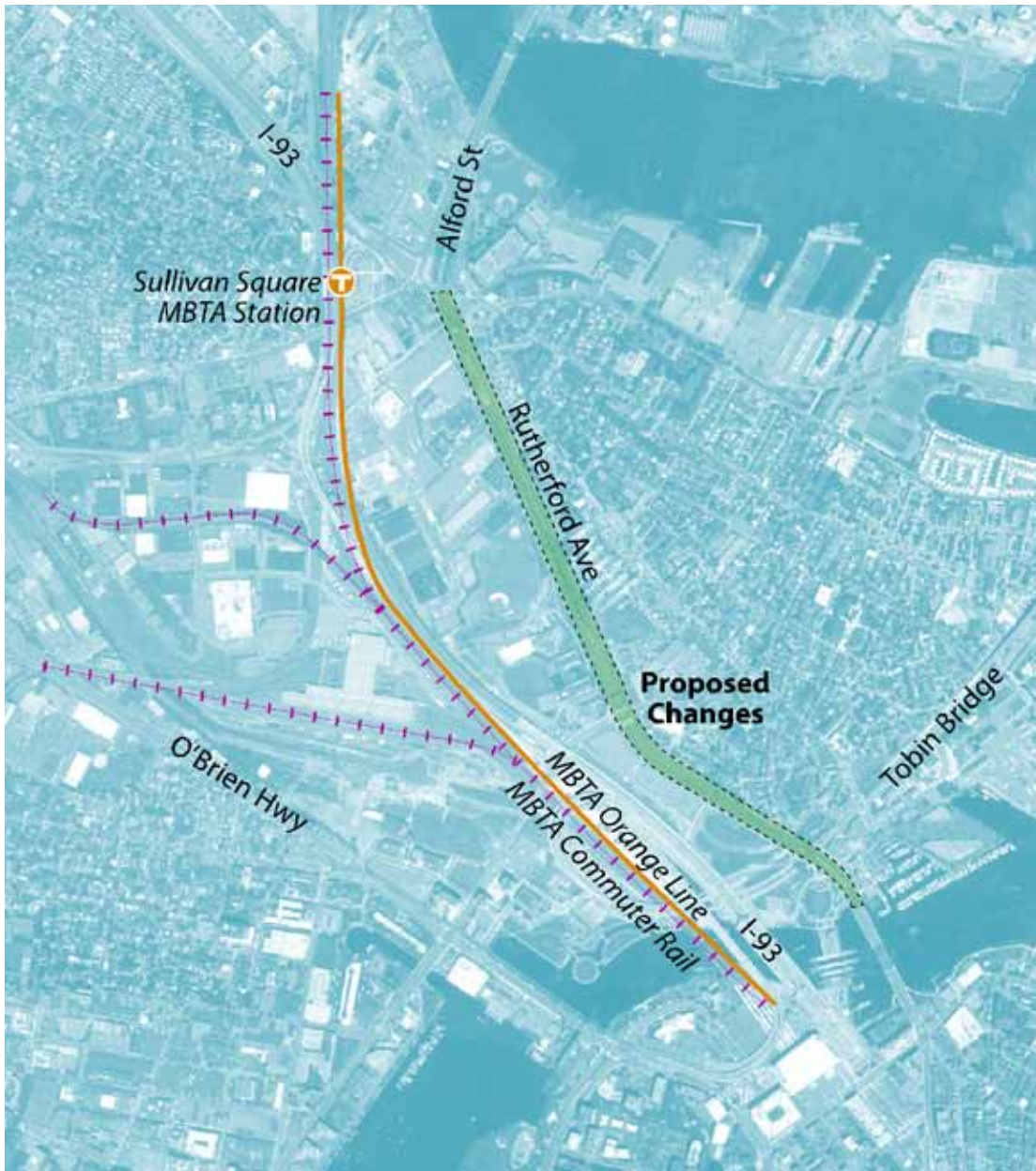
#### **Safety**

There are no high-crash locations within the study area for the years 2006 to 2008, according to MassDOT's list of the Top 200 High-crash intersections.

#### **Mobility**

The design includes mobility improvements for all modes through widened sidewalks, shortened crossings, on-street parking lanes, bicycle lanes, and designated exclusive bus lanes to improve bus operations at the station.





**Connectivity**

The project provides improvements around Sullivan Square by reconfiguring the roadways into an urban grid system of streets to regularize traffic movements and allow for safe street crossings for pedestrians accessing the Sullivan Square MBTA station.

## BRAINTREE: I-93/ROUTE 3 INTERCHANGE (BRAINTREE SPLIT) (\$36,000,000)

### Description

Through its Congestion Management Process, the Boston Region MPO recommended a study of the Braintree Split. The Central Transportation Planning Staff produced a report for the MPO, *I-93/Southeast Expressway/Route 3 (Braintree Split): Operational Assessment and Potential Improvements*, in March 2006. The proposed project addresses mobility and safety issues of the Braintree Split, and includes recommended improvements at the following three locations:

- Route 3 South, between Burgin Parkway and Union Street – additional travel lane and acceleration lanes
- I-93 North On-Ramp from Route 37 East in Braintree – ramp and interchange improvements
- I-93 South, between Route 37 and Route 24 – additional travel lane with interchange improvements

### Project's Context/Possible Impacts, by Relevant MPO Policy Area

#### Land Use

Land surrounding the split in Braintree is zoned Highway Business Residential. The split continues over the town border into Quincy, where adjacent land is zoned Heavy Industrial and Planned Unit Development.

#### Safety

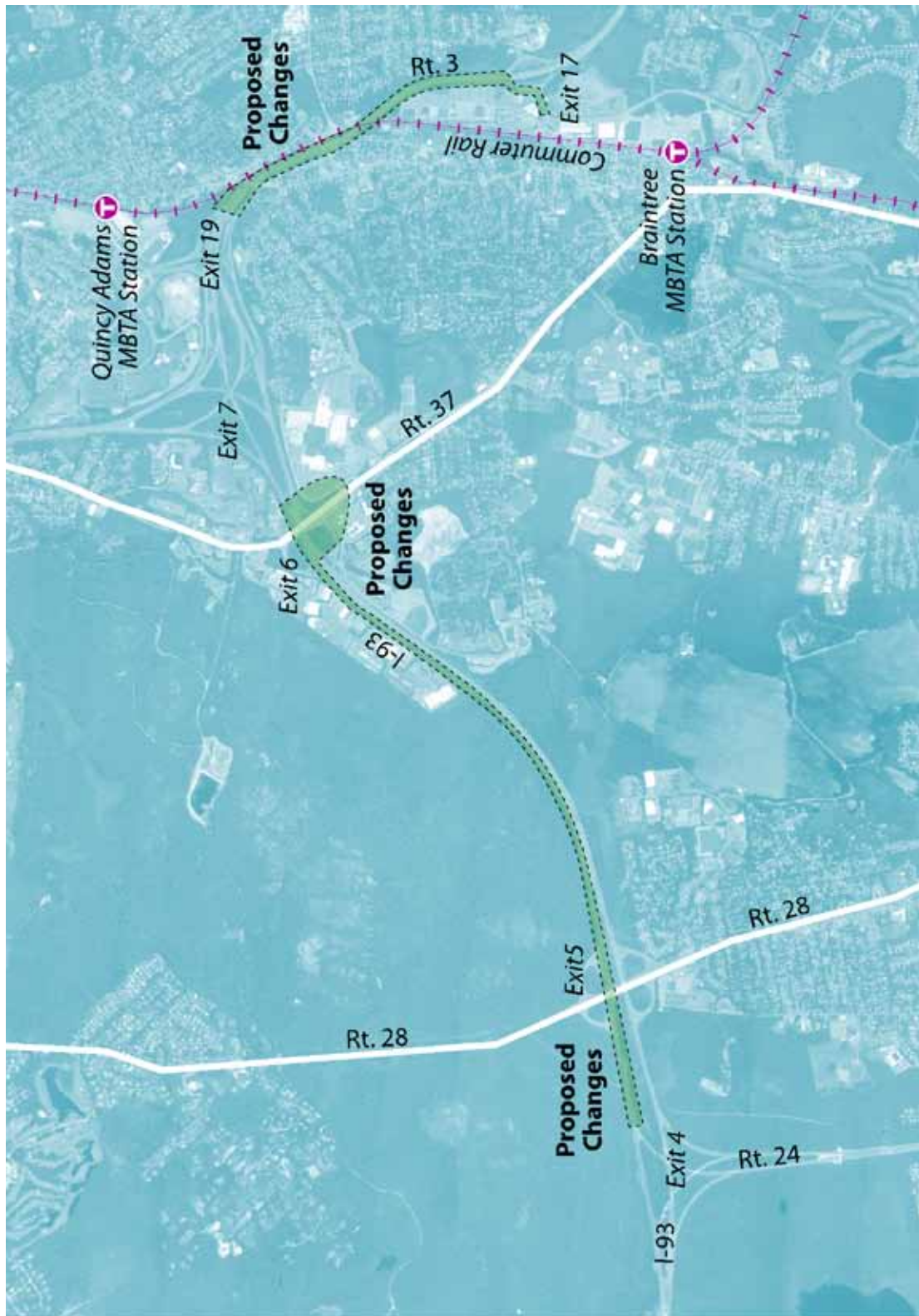
This location is on MassDOT's list of the top 200 high-crash intersection locations for the years 2006 to 2008. The crash total was 671; of these, 434 were property damage only and 233 involved injuries. Four of the crashes involved fatalities. It ranked number one on the list of the state's high-crash locations for that time period. The Braintree Split is also one of the region's top truck-crash locations.

#### Mobility

According to MassDOT's data on 2006 traffic volumes, average daily two-way traffic on I-93 north of Route 37 was 200,600. Average daily two-way traffic on Route 3 between Exits 17 and 19 was 128,800 in 2003. Average daily two-way traffic on Route 3 between Exits 19 and 20 was 115,900 in 2003.

#### Connectivity

The Braintree Split is located near the Quincy Adams Station on the Red Line.





## CANTON: I-95/I-93 INTERCHANGE (\$235,500,000)

### Description

Specific components of the Interstate 95/Interstate 93 interchange project are:

- Replacement of the I-95 northbound entrance ramp with a direct connector ramp
- Construction of a new entrance ramp from University Avenue to I-93 northbound, including the discontinued use of the Green Lodge Street Bridge west of Elm Street
- Construction of a realigned, two-lane direct connection between Route I-93 southbound and I-95 southbound, including a new ramp to Blue Hill Drive
- Construction of a realigned, two-lane, direct connection from I-95 northbound to I-93 northbound
- Widen Dedham Street over I-95 to five lanes. Dedham Street will be widened to four lanes from I-95 to University Avenue in Westwood. Improvements will also be made to the Canton Street/University Avenue Intersection in Westwood.

### Project's Context/Possible Impacts, by MPO Policy Area

#### Land Use

The 37 acres encompassed by this project are located entirely within the Fowl Meadow/Ponkapoag Bog Area of Critical Environmental Concern. Much of the land surrounding the interchanges is permanently protected, although some of it is zoned for single residences and light industry. According to the Environmental Notification Form (ENF) that was submitted to the state's Department of Environmental Protection, the project, as proposed, will decrease roadways and other paved areas by 1.7 acres.

#### Safety

This project is on MassDOT's list of the top 200 high-crash intersection locations for the years 2006 to 2008, I-93 at I-95 was the site of 300 crashes, of which 212 involved only property damage and 88 involved bodily injury. None of the crashes were fatal. It ranked #127 on the list of the state's high-crash intersections. There are recurring safety problems, including numerous truck rollovers, on the I-95 northbound ramp.

#### Mobility

The ENF identifies chronic congestion in the project area in both the morning and afternoon peak periods, with the roadways and the interchanges frequently functioning at level of service F. Severe congestion at the intersection of University Avenue and Blue Hill Drive causes long queues that occasionally extend beyond the I-95 southbound exit ramp to Blue Hill Drive. Traffic volume data show that there were 134,700 vehicle-trips per day on the I-95 section of the project in 2004 and 167,300 trips on the I-93 section in 2006.

#### Connectivity

By reducing congestion and travel times, this project will enhance the attractiveness of Amtrak and MBTA commuter rail services at the Route 128 station, as well as shuttle



bus services connecting the station to residential and business centers in the area. The project will also facilitate greater recreational use of the Blue Hill Reservation trail system that runs through the area.

### Note

This project implements the recommendations of the University Avenue/I-95/I-93 Regional Traffic Study that was prepared by the Central Transportation Planning Staff in July 1999. It is also consistent with the Canton, Dedham, Norwood, and Westwood Municipal Growth Planning Study.

The environmental impact report currently underway includes the Dedham Street/I-95 Northbound Ramp project (see the separate project description which follows this one). The projects are presented separately in order to show the areas in greater detail.

## CANTON: I-95 NORTHBOUND/DEDHAM STREET RAMP (\$35,000,000)

### Description

Construct a new ramp from Interstate 95 northbound to Dedham Street in Canton. This will complement the benefits of the recently completed construction of the Dedham Street/I-95 southbound ramp by providing direct access to the town of Canton and the town of Westwood's University Avenue industrial area. This project is considered part of the Canton/Westwood I-95/I-93/University Avenue project.

### Project's Context/Possible Impacts, by MPO Policy Area

#### Land Use

This project is located in the Fowl Meadow/Ponkapoag Bog Area of Critical Environmental Concern. Adjacent land is zoned for light industry and single-family residences.

#### Mobility

This project will benefit local streets in the area by enabling I-95 northbound traffic destined for the University Avenue area to avoid local residential streets without increasing through traffic on Dedham Street. Users of the University Avenue/Blue Hill Drive area will also benefit.

#### Connectivity

By reducing congestion and travel times, this project will enhance the attractiveness of Amtrak and MBTA commuter rail services at the Route 128 station, as well as shuttle bus services connecting the station to residential and business centers in the area.

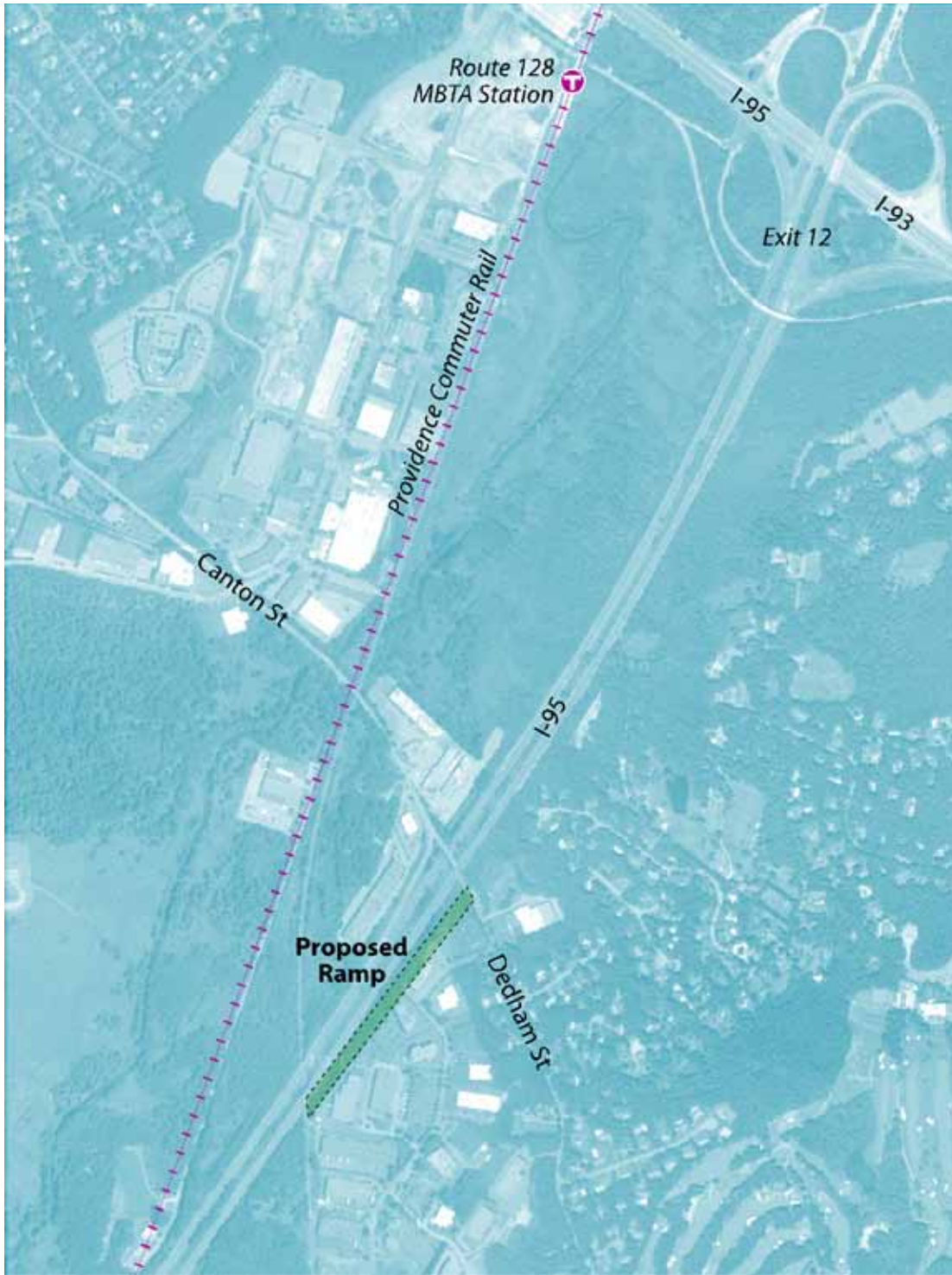
#### Note

This project implements the recommendations of the University Avenue/I-95/I-93 Regional Traffic Study that was prepared by the Central Transportation Planning Staff in July 1999. It is also consistent with the Canton, Dedham, Norwood, and Westwood Municipal Growth Planning Study.



**MAP 8-7**

**CANTON: I-95 NORTHBOUND/DEDHAM STREET RAMP**





## CONCORD TO WESTFORD: BRUCE FREEMAN RAIL TRAIL (\$18,700,000)

### Description

This project will include two construction phases (Phase 2A and 2C) of the Bruce Freeman Rail Trail (BFRT). The new trail will extend beyond the Phase 1 segment, which has already been completed, beginning in Acton and ending at the Concord-Sudbury town line. It will run along the Framingham and Lowell railroad corridor.

Phase 2A will extend from the end of the BFRT Phase 1 section of the trail (the Westford-Lowell Phase) and continue south through Westford, Carlisle, and Acton, a total length of approximately 4.88 miles. It includes the following:

- A new variable-width (ranging from 10 to 12 feet) paved asphalt multi-use rail trail
- Two-foot stabilized shoulders
- An adjacent six-foot-wide stone dust trail (provided where feasible)
- Trail pavement markings and signage
- Passively actuated flashing beacons at trail and roadway crossings
- New roadway pavement markings and signage at trail crossings
- Construction of a prefabricated pedestrian bridge structure over Route 2A/119, and rehabilitation of six existing railroad bridges along the trail
- Construction of culverts, earthwork, landscaping, and other items incidental to the construction of the rail trail.

Phase 2C will include the construction of a 2.5-mile trail section from Commonwealth Avenue south to Powder Mill Road in Concord. The section from Powder Mill Road to the Sudbury town line will be addressed in cooperation with the Town of Sudbury as they develop plans for the trail in their town.

Phase 2B is not part of this project but it will be part of the Concord Rotary project. Phase 2B is the section of the BFRT from Commonwealth Avenue in Concord to the Acton town line.

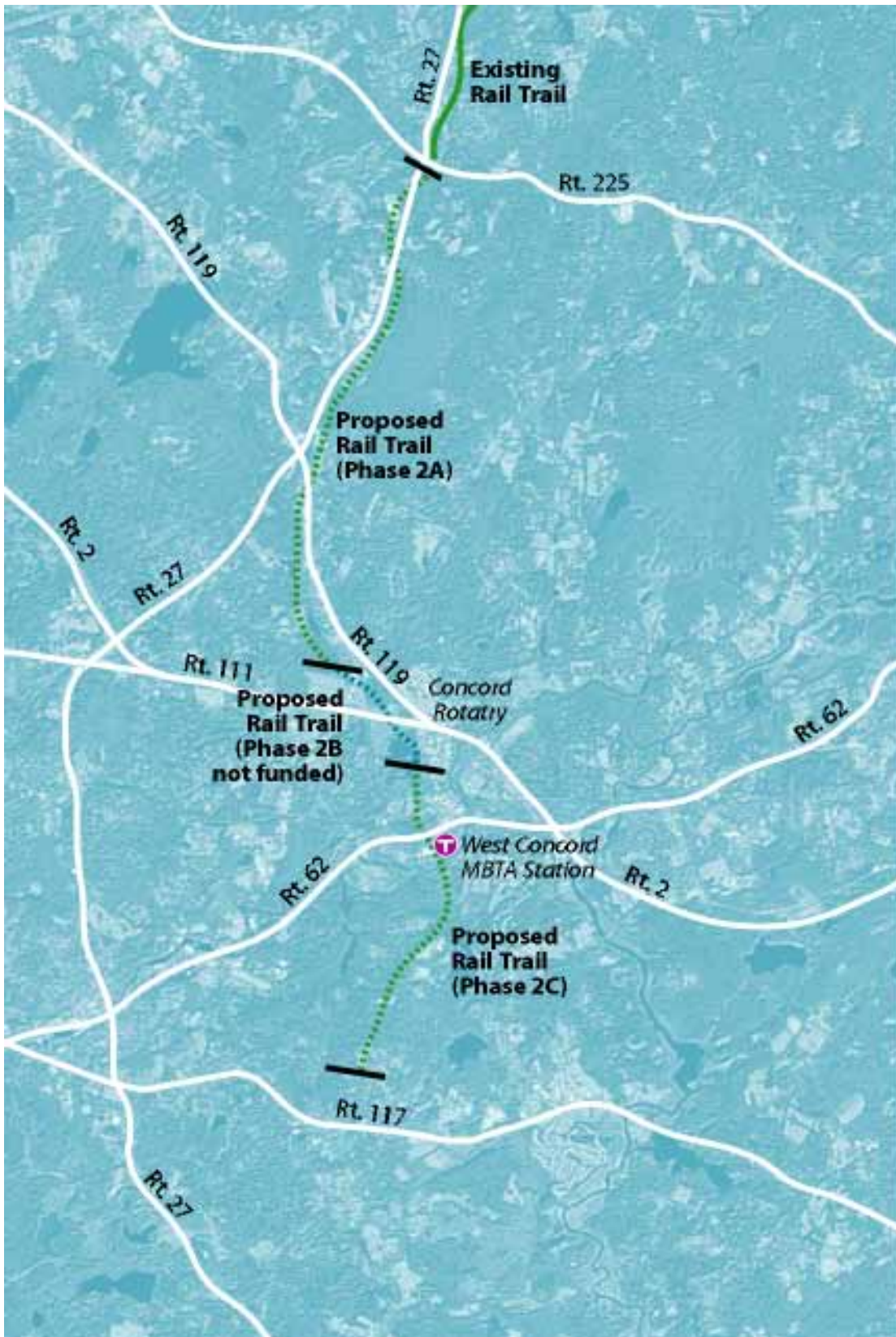
The completed BFRT will span approximately 17 miles and will serve as a multimodal alternative transportation route that will connect eight municipalities to various destinations, including downtowns, commuter rail stations, schools, and scenic areas.

### Project's Context/Possible Impacts, by MPO Policy Area

#### *Livability*

The rail trail will provide a safe route for alternative transportation modes to reach numerous destinations, including downtowns, commuter rail stations, schools, and scenic areas.







## FRAMINGHAM: ROUTE 126/ROUTE 135 GRADE SEPARATION (\$58,500,000)

### Description

Construct a 700-foot, below-grade underpass (one travel lane in each direction) from Park Street to Irving Street, allowing through traffic on Route 126 (Concord Street) to pass underneath Route 135 (Waverly Street) and the railroad tracks. The majority of the underpass will consist of an ascending/descending ramp with an open roof; approximately 135 feet of it will be a tunnel under Route 135 and the railroad tracks.

Travel lanes will be maintained at grade on Route 126 to intersect with Route 135, with upgraded signalization. Each approach to this intersection will have at least two lanes, and all turning movements will be permitted. The open-box configuration of the underpass will prohibit traffic on Howard Street from crossing Route 126 (Concord Street) and will preclude southbound traffic on Route 126 from turning left onto Irving Street.

The design concept for the project includes extensive streetscape amenities, such as widened sidewalks, street trees, decorative lighting, and benches. The project also has the potential to encourage economic development in downtown Framingham, partially through the redevelopment of parcels taken for the roadway reconstruction.

Construction of this project will require land takings, including sites currently in use by downtown businesses. It will also necessitate the elimination of approximately 30 on-street parking spaces.

### Project's Context/Possible Impacts, by MPO Policy Area

#### Land Use

This project is located in Framingham's central business district, which, according to the Executive Office of Environmental Affairs and the Metropolitan Area Planning Council's buildout analysis, is subject to absolute development constraints, but is also a designated redevelopment district. According to the Route 126 Corridor Study, the construction of this project would help facilitate downtown redevelopment by making the downtown area a more attractive location and by providing redevelopment sites through the partial taking of business sites as necessary for the roadway work.

#### Safety

This project is located at a high-crash location – between 2006 and 2008, Route 126 at Route 135 has been the site of 186 crashes, of which 143 involved only property damage and 43 involved bodily injury. As such, it ranked #82 on the list of the state's high-crash intersections. As described above, the design of this project maintains all current movements at the intersection, while providing additional travel lanes for through traffic.

#### Mobility

This project provides additional travel lanes for through traffic on Route 126, bypassing at-grade intersections with Route 135 and the railroad tracks. According to MassDOT data on 2005 traffic volumes, the average daily traffic on this segment of roadway is approximately 19,700 vehicles. The Route 126/Route 135 intersection functions at level of service F in the AM and PM peak periods. In terms of delay, the intersection is tentatively rated as the second worst in the MetroWest subregion and the eighth worst in the Boston region MPO area (source: 2001/2002 Congestion Management System monitoring).





### Connectivity

The Framingham commuter rail station is located near the project site; however, the project does not significantly affect either vehicle or nonmotorized access to the station. Most Metrowest buses that serve downtown Framingham connect at a bus stop on the corner of Route 126 and Howard Street; the project as envisioned will eliminate pedestrian and vehicle access across Howard Street. The Metrowest #5 and #6 buses make connections southeast of the project site; the project as envisioned will not impact these route since it accesses the area via the at-grade connection between Route 126 and Route 135.

### Environmental Justice

An MPO-designated community of concern is located in Southeast Framingham adjacent to the project site. This project will facilitate some level of northbound traffic originating from this area or southbound traffic going to the area; however, the project has not been identified as a priority by the environmental justice community.

### Economic Opportunities

According to the Route 126 Corridor Study, this project is closely related to the redevelopment of the downtown Framingham central business district.

### Livability

As currently envisioned, the project includes many streetscape amenities and will facilitate downtown redevelopment, including possible facade improvements in the area of the town common. The project also eliminates a significant congestion point in downtown Framingham.



## HANOVER: ROUTE 53, FINAL PHASE (\$1,000,000)

### Description

This project will widen Route 53 from two to four lanes in Hanover between Route 3 and Route 123, a distance of 0.26 mile. This project is the fifth and final phase of construction along the Route 53 corridor. Previous projects widened Route 53 to four lanes from Route 3 to Mill Street and Mill Street to Rawson Street. This project also includes the following improvements:

- Installation of a new fully actuated traffic signal at the intersection of Route 53 and the Route 3 northbound ramps
- Construction of a second sidewalk and added shoulders to accommodate pedestrians and bicyclists
- Resurfacing, signage, and drainage.

### Project's Context/Possible Impacts, by MPO Policy Area

#### Land Use

The project area is zoned for a mix of uses, though the area along Route 53 is primarily composed of commercial and business properties. Much of the land abutting Route 53 in the project area is subject to absolute development constraints, according to the Executive Office of Energy and Environmental Affairs (EOEEA) and the Metropolitan Area Planning Council (MAPC) build-out analysis.

#### Safety

There are no high-crash locations within the study area according to MassDOT's list of the top 200 high-crash intersections for the years 2006 to 2008.

#### Mobility

According to MassDOT's data on 2006 traffic volumes, the average daily traffic along this segment of the corridor is approximately 23,900 vehicles. Average observed travel speeds on roadways are compiled in the MPO's Congestion Management Process. Average observed speeds on Route 53 in the study area in the AM peak period range from 35 mph to 42 mph in the northbound direction and are greater than 43 mph in the southbound direction. During the PM peak period, average observed speeds in the northbound and southbound directions of Route 53 range from 35 mph to 42 mph.







## **HUDSON TO ACTON: ASSABET RIVER RAIL TRAIL (\$18,100,000)**

### **Description**

This project will include the construction of the Assabet River Rail Trail from Acton, through Maynard and Stow, to Hudson, a distance of 6.6 miles. The work will also include the construction of two new bikeway bridges, replacement of an existing pedestrian bridge, and rehabilitation or replacement of a railroad bridge. The Towns are also proposing a 1,100-foot boardwalk through a wetland area.

### **Project's Context/Possible Impacts, by MPO Policy Area**

#### ***Livability***

The rail trail will provide an alternative transportation route that will safely link the Assabet River National Wildlife Refuge with the downtown business districts, retail sectors, playing fields, and the South Acton commuter rail station.





## **MALDEN, REVERE, AND SAUGUS: ROUTE 1 IMPROVEMENTS (\$175,196,000)**

### **Description**

Widen Route 1 from four to six lanes between Copeland Circle (Route 60) and Route 99. As part of this project, the on- and off-ramps at Salem Street and Lynn Street will be reconstructed to provide acceleration/deceleration lanes, better turning radii, and full turning movements. Also, the connection between Route 99 and Route 1 will be improved by providing a normal right-lane merge from Route 99 northbound to Route 1 northbound.

### **Project's Context/Possible Impacts, by MPO Policy Area**

#### **Land Use**

Zoning along Route 1 in the project area is primarily residential, light industrial, and highway-oriented businesses.

#### **Safety**

This project area includes a high-crash location – between 2006 and 2008, the intersection of Route 1 and Route 99 in Saugus was the site of 411 crashes, of which 302 involved only property damage and 109 involved bodily injury, with no fatalities. It ranked #44 on the list of the state's high-crash intersections.

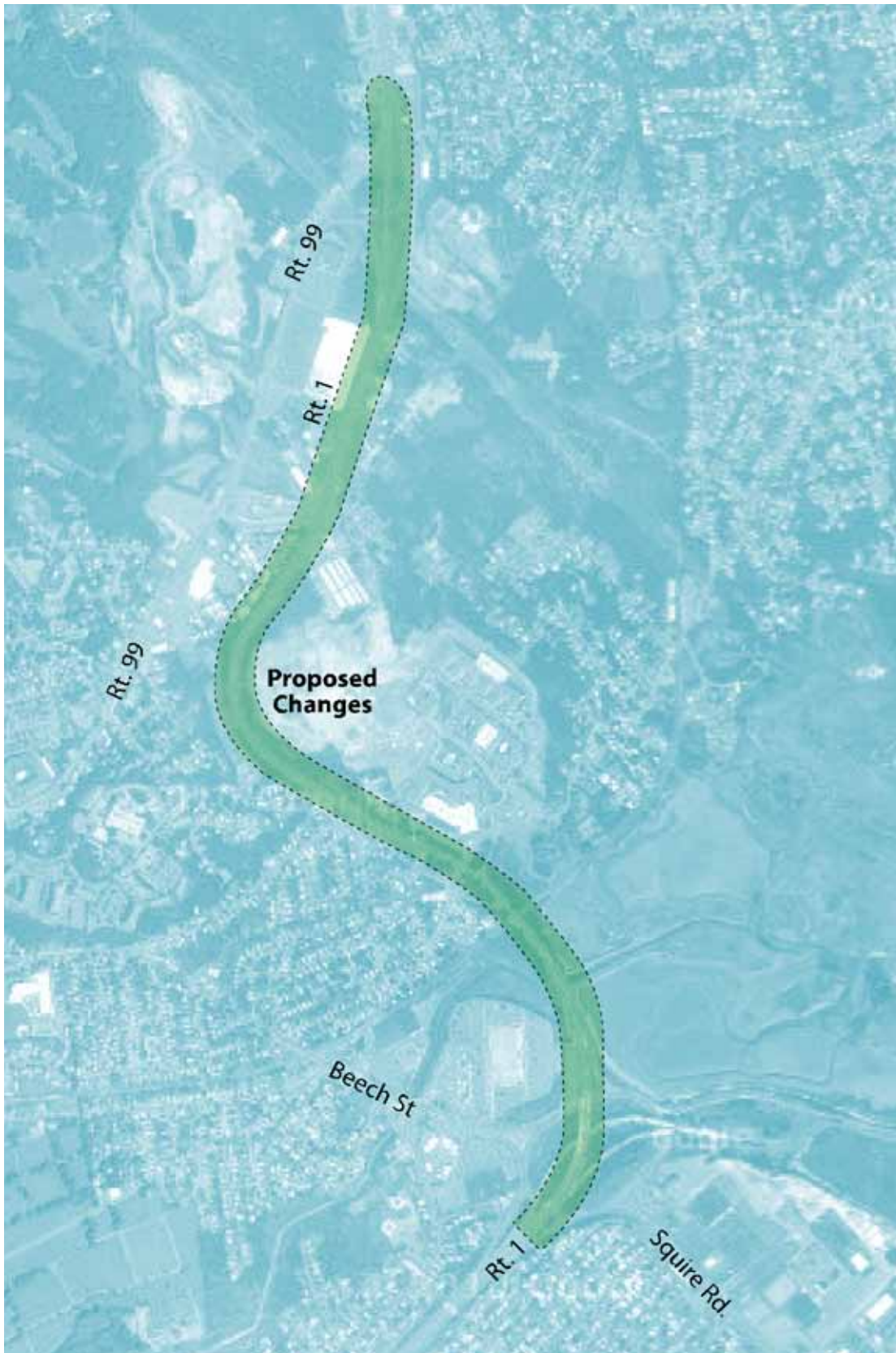
In addition, according to the Lower North Shore Transportation Improvement Study conducted by Boston Region MPO staff in 2000, unsafe traffic operations are present at the on- and off-ramps of the Salem Street/ Lynn Street interchange due to the ramps' geometric limitations, including the absence of deceleration and acceleration lanes, the tight turning radii, and the close proximity of adjacent ramps.

#### **Mobility**

Average daily traffic (ADT) along Route 1 at the Malden-Revere city line was 81,600 in 2008, according to traffic volume data compiled by MassDOT, while ADT along Route 1 one-half kilometer north of Sargent Street (south of Route 60) was 66,200 in 2006. Traffic volumes along Route 1 are significantly higher north of Copeland Circle (Route 60), since Route 60 serves as the major east-west connector between towns north of Malden and the coast, Logan International Airport, and the Wonderland Blue Line station. Despite this, Route 1 has six lanes south of Copeland Circle and narrows to four lanes north of the Circle.

According to the Lower North Shore Study, recurring congestion occurs on Route 1 southbound at the Route 60 off-ramp during the AM peak period and on Route 1 northbound at the Route 60 on-ramp during the PM peak period.









## NEEDHAM AND NEWTON: NEEDHAM STREET/HIGHLAND AVENUE (\$18,400,000)

### Description

Needham Street will remain a three-lane cross-section from the Needham Street/Winchester Street/Dedham Street intersection in Newton to the bridge over the Charles River at the Needham town line. The roadway will be rehabilitated and widened to include bicycles, new sidewalks, reconfigured intersections, and updated traffic signals. The Highland Avenue portion of the project will improve the geometry of the roadway from the Highland Avenue/Webster Street intersection in Needham to the Newton town line. Work will include upgrades and the installation of traffic signals at five intersections. The project will also include the reconstruction and widening of the bridge over the Charles River to accommodate four travel lanes.

### Project's Context/Possible Impacts, by MPO Policy Area

#### Livability

The roadway rehabilitation will include bicycle accommodation, new sidewalks, reconfigured intersections, and updated traffic signals to facilitate nonmotorized travel options.

#### Land Use

The project area in Newton along Needham Street is zoned as residential from Route 9 north and as mixed-use and multiresidential from Route 9 south to the Needham town line. The project area in Needham is zoned as industrial from east of Interstate 95 to the Newton town line, and as residential west of I-95.

#### Safety

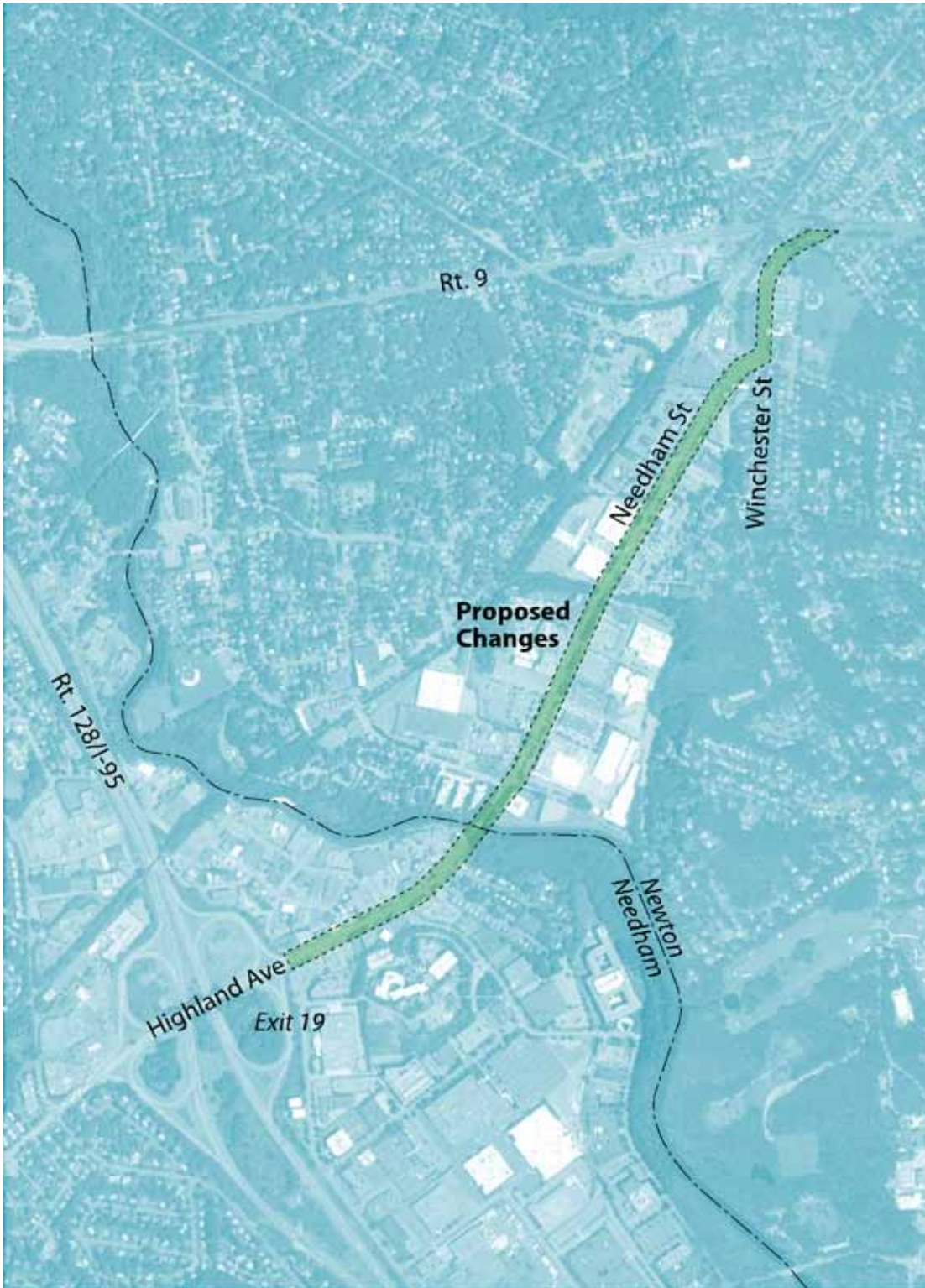
This project area includes one high-crash locations – Highland Avenue at I-95 in Needham. Between 2006 and 2008, the Highland Avenue/I-95 intersection was the site of 331 crashes, of which 267 involved only property damage and 64 involved bodily injury. It ranked #102 on the list of the state's high-crash intersections.

#### Mobility

According to MassDOT data on traffic counts performed in 2002 on Highland Avenue west of Gould Street in Needham, the average daily traffic (ADT) was 23,300 vehicles. The ADT on Needham Street south of Tower Road in Newton in 2001 was 25,200 vehicles. According to counts performed as part of MassDOT's Highland Avenue Corridor Improvements Functional Design Report (FDR) in 2002, the ADT on Highland Avenue east of First Street (just east of I-95 and between the two other count locations) was 36,700 vehicles. Results from the 2001–02 Congestion Management Process monitoring indicate that the average travel speed on both Needham Street and Highland Avenue is 15 mph or less (level of service E/F) along multiple segments of this corridor in the northbound and southbound directions during the AM and PM peak periods.

#### Economic Opportunities

According to both the Highland Avenue Corridor Improvements FDR and the proposed Stop and Shop Supermarket draft environmental impact report, this project would help facilitate redevelopment along this corridor.



## READING AND WOBURN: I-93/I-95 INTERCHANGE (\$276,000,000)

### Description

Improve safety at the junction of Interstate 93 and Interstate 95. The project includes a combination of highway, transit, and transportation demand management improvements as follows:

#### Highway Improvements:

- Add a fourth travel lane to I-95 between I-93 and Route 28 and in the northbound direction only extend the fourth lane to Route 129
- Two new direct connection interchange ramps to remove weaves
- Reconfigured ramps at Route 128 Northbound/Washington Street
- Anticipated noise barriers

#### Transit Improvements:

- Anderson Regional Transportation Center shuttle services
- Increased MBTA reverse peak and local bus service
- New Peabody park-and-ride-lot and shuttle service
- Increased commuter rail – Lowell/Haverhill to Boston

#### Transportation Demand Management:

- Increased marketing, incentives, and signage for transit and carpooling

### Project's Context/Possible Impacts, by MPO Policy Area

#### Land Use

Zoning in the project area is residential, industrial, and business.

#### Safety

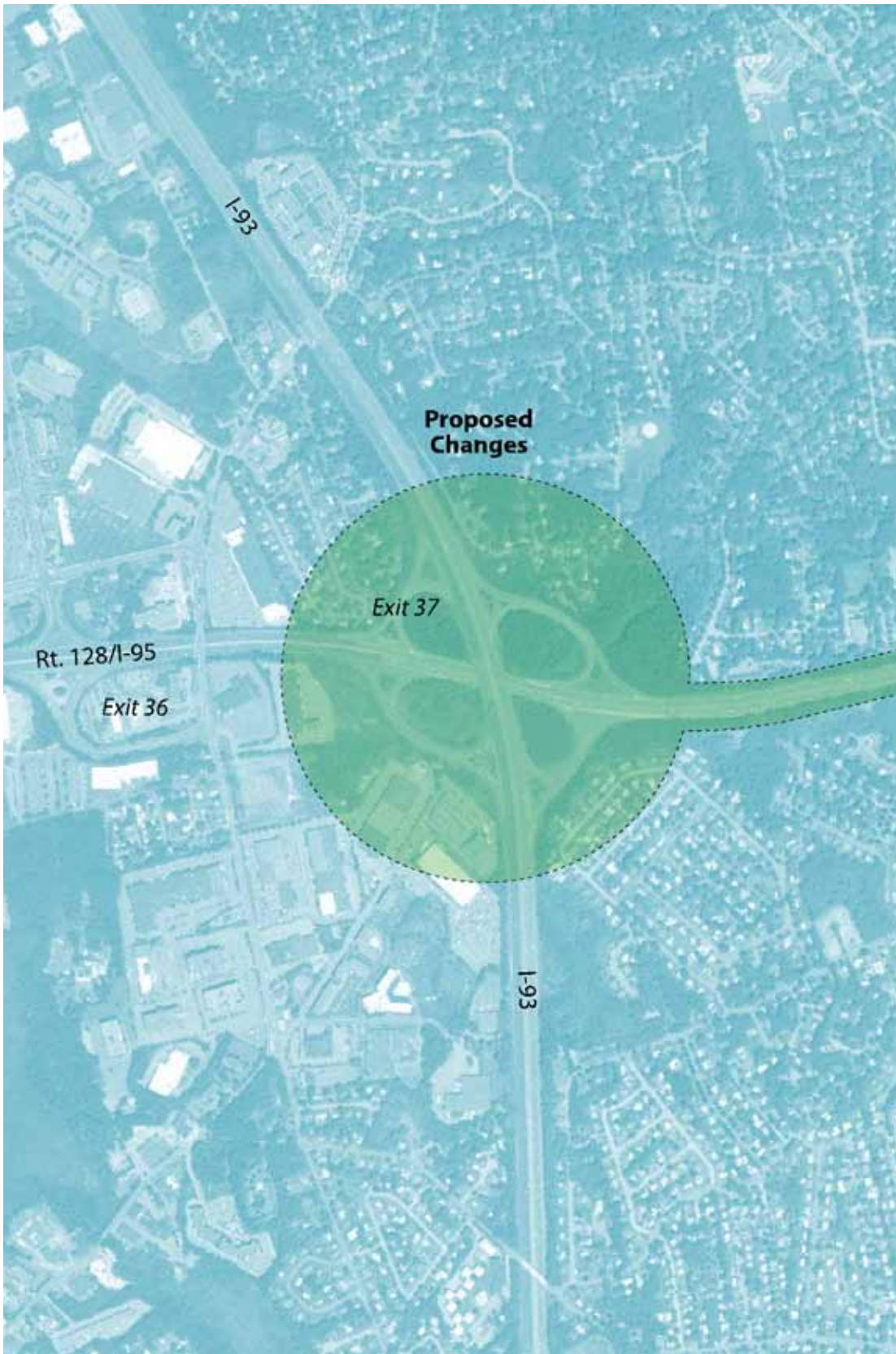
This interchange is a high-crash location—between 2006 and 2008, the I-93/I-95 interchange was the site of 430 crashes, of which 319 involved only property damage and 110 involved bodily injury. It was ranked the #2 high-crash site on the list of the state's high-crash intersections. The interchange also has a high rate of truck crashes, many of which involve trucks rolling over.

#### Mobility

According to MassDOT traffic counts, the average daily traffic on the interstate highways leading into this interchange is as follows:

- I-93 north of I-95 (2010 counts) – 172,900 vehicles
- I-93 south of I-95 (2007 counts) – 184,700 vehicles
- I-95 east of I-93 (2002 counts) – 153,000 vehicles
- I-95 west of I-93 (2005 counts) – 172,700 vehicles









## **SALEM: BRIDGE STREET (\$11,223,250)**

### **Description**

Bridge Street (Route 1A) from Flint Street to Washington Street will be widened to two lanes in each direction.

### **Project's Context/Possible Impacts, by MPO Policy Area**

#### ***Livability***

The project will provide new sidewalks and on-road bicycle accommodation to enhance pedestrian and bicyclist access to the Salem commuter rail station.

#### ***Land Use***

A portion of this area of Bridge Street was recently rezoned to the North River Canal Corridor Mixed-Use District to encourage mixed-use redevelopment and better use of the land. A portion of the adjacent land remains residentially zoned for two-family use.

#### ***Safety***

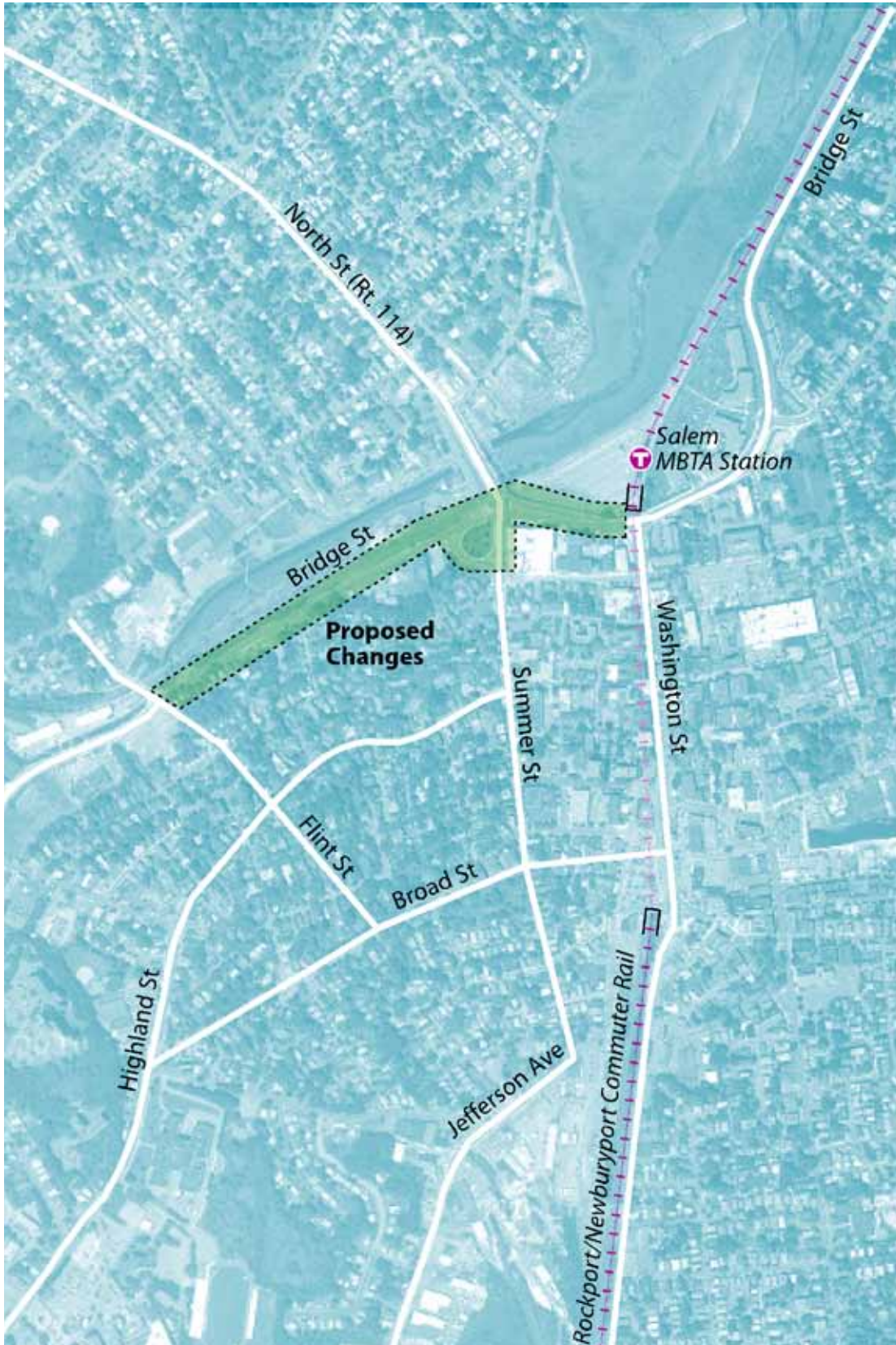
There are no high-crash locations within the study area according to MassDOT's list of the top 200 high-crash intersections for the years 2006 to 2008.

#### ***Mobility***

According to MassDOT traffic counts data, the average daily traffic on Bridge Street north of North Street is 23,900 vehicles (2004 figures).

#### ***Connectivity***

The Salem commuter rail station is located in the vicinity of the project. The MBTA is working to expand parking at this commuter rail station. All MBTA buses that operate in Salem connect at this commuter rail station. The Bridge Street project will improve access to this site and, as envisioned, will enhance pedestrian access on Bridge Street and at the Washington Street rotary.



## WEYMOUTH: ROUTE 18 CAPACITY IMPROVEMENTS PROJECT (\$31,349,250)

### Description

Widen Route 18 to two continuous lanes in each direction (with four-foot shoulders) between Highland Place/Charmada Road (south of Middle/West Street) in Weymouth and Route 139 in Abington. Sidewalks will also be constructed. The Route 18 bridge over the MBTA Old Colony Line (to Plymouth) will be reconstructed and widened.

Intersection improvements (including additional left- and right-turn lanes and some roadway widening between intersections) on Route 18 from Route 3 to Route 139 and including the Middle/West Street intersection. Park Avenue, Columbian Road, and Pond and Pleasant Streets are being constructed as separate projects.

### Project's Context/Possible Impacts, by MPO Policy Area

#### Livability

The project will provide new sidewalks and on-road bicycle accommodation to enhance pedestrian and bicyclist access along the corridor.

#### Land Use

Zoning along the Route 18 corridor in Weymouth includes residential, highway transition, medical services (the South Shore Hospital and other related medical facilities), limited business, and general business. Zoning along Route 18 in Abington is industrial or highway commercial.

#### Safety

This project area includes three high-crash locations – Route 18/Route 3, Route 18/Middle Street, and Route 18/North Avenue – all in Weymouth. Along this corridor between 2006 and 2008, there were 1,192 crashes, of which 931 involved only property damage and 260 involved bodily injury, with one fatality. The Route 18/Route 3 intersection and the Route 18/Middle Street intersection grouped together were ranked #87 on the list of the state's high-crash intersections. The Route 18/North Avenue intersection was ranked #98 on the list of the state's high-crash intersections.

#### Mobility

According to Highway Division traffic counts, the average daily traffic volumes on Route 18 along this stretch of roadway are as follows:

Weymouth:

- North of West Street (2006 counts) – 36,600 vehicles
- North of Park Avenue (2000 counts) – 31,200 vehicles
- North of Pond Street (2006 counts) – 25,200 vehicles

Abington:

- North of Route 139 (2000 counts) – 19,500 vehicles

Intersection analyses were performed as part of the South Weymouth Access Study in August 2000. The existing levels of service (LOS) during the PM peak period were as follows:



## MAP 8-16

## WEYMOUTH: ROUTE 18 CAPACITY IMPROVEMENTS PROJECT

Weymouth:

- Route 18/West Street – LOS E
- Route 18/Park Avenue – LOS C
- Route 18/Columbian Street – LOS E
- Route 18/Pleasant Street – LOS D
- Route 18/Trotter Road – LOS D

Abington:

- Route 18/Route 139 – LOS D

According to 2002 Congestion Management Process monitoring performed by CTPS, the average AM and PM speed on Route 18 in the northbound and southbound directions is calculated to be less than 15 mph for three segments of the roadway in the project area. The average travel speed on Route 18 is below 70 percent of posted speed along 25 segments in the northbound and southbound directions in the AM and PM peak periods. Six signalized intersections in the project area are ranked in the top 25 most delayed intersections (monitored as part of the CMP roadway network) for the South Shore Coalition MAPC subregion in the PM peak period.

### Connectivity

Route 18 provides access to the South Weymouth commuter rail station on the Plymouth Line. The South Shore Tri-Town Development Corporation, responsible for redevelopment of the South Weymouth Naval Air Station, is proposing an expanded, multimodal station in conjunction with the existing South Weymouth commuter rail station.

### Economic Opportunities

This project is a component of the development plan for the former South Weymouth Naval Air Station, which involves the redevelopment of the 1,450-acre site, consistent with the Re-Use Plan formula. The South Shore Tri-Town Development Corporation foresees corporate office park, entertainment, and recreation uses for the site, with more than 60 percent open space (recreational and conservation).





## WOBURN: MONTVALE AVENUE (\$3,700,000)

### Description

This is an arterial and intersection improvement project along Montvale Avenue from Central Street to east of Washington Street in the City of Woburn. It includes the following improvements:

- Widening of Montvale Avenue to four lanes and providing turning lanes at Washington Street
- Reconstruction of roadway and sidewalks
- Installation of new traffic signal system at Central Street and modification of phasing and timing at Washington Street

### Project's Context/Possible Impacts, by MPO Policy Area

#### Land Use

The proposed widening of Montvale Avenue will have minor impacts on the adjacent land uses. The project area contains a mix of uses, but primarily commercial and some residential. Maximum parking requirements and transportation demand management (TDM) requirements for all new developments are imposed. In addition, the project will improve pedestrian and disability access by widening the existing four-foot-wide sidewalks to five or six feet, and adding wheelchair ramps.

#### Safety

The project area includes a high-crash location at the intersection of Montvale Avenue and the Interstate 93 southbound ramp. The location was ranked #171 on MassDOT's Top 200 Crash Locations Report for the years 2006–2008. A total of 165 crashes were reported during the three-year study period. Though there were no fatalities, 128 involved property damage and 37 involved personal injury.

#### Mobility

Average daily traffic (ADT) along Montvale Avenue east of Washington Street was 36,400 vehicles, according to counts collected by MassDOT. Under 2007 existing conditions, the intersection at Montvale Avenue and Washington Street operated at LOS C in the AM and PM peak periods, while the Montvale Avenue and Central Street intersection operated at LOS A in the AM and LOS B in the PM peak period. Although the LOS of service is acceptable, the proposed improvements will better utilize lane use and increase coordination between the intersections to accommodate increasing traffic volumes.

#### Connectivity

The proposed project area serves as a critical connection between I-93, I-95, and the surrounding Woburn area. The project will enhance MBTA bus operations (Routes 354 and 355) by improving the poor operating and safety conditions. In addition, the project will benefit the pedestrian and bicycle activity that links with nearby schools.



## **WOBURN: NEW BOSTON STREET BRIDGE (\$4,900,000)**

### **Description**

Construct a bridge on New Boston Street at the northern end of Woburn Industrial Park where New Boston Street crosses the MBTA's Lowell Line to Woburn Street in Wilmington. This connection existed until approximately 30 years ago, when the bridge was destroyed by fire; it was never reconstructed.

### **Project's Context/Possible Impacts, by MPO Policy Area**

#### **Land Use**

The majority of the land in the New Boston Street area in Woburn is zoned for industrial use; the existing development in the area is primarily commercial/industrial. With the recent opening of the Anderson Regional Transportation Center (RTC) and the I-93 Industriplex interchange, the City of Woburn anticipates additional office and retail development in the project area over the next few years. Just north of the proposed project, in Wilmington, the land is zoned as industrial; and includes Southeast Wilmington Industrial Park. Further north on Woburn Street in Wilmington and south of Route 129, the land is zoned as residential.

#### **Mobility**

No traffic studies have been performed to date; however, the opening of this bridge would provide a second means of access to the growing Industriplex area for residents of Wilmington and communities to the north, as well as for emergency vehicles from the North Woburn fire station.

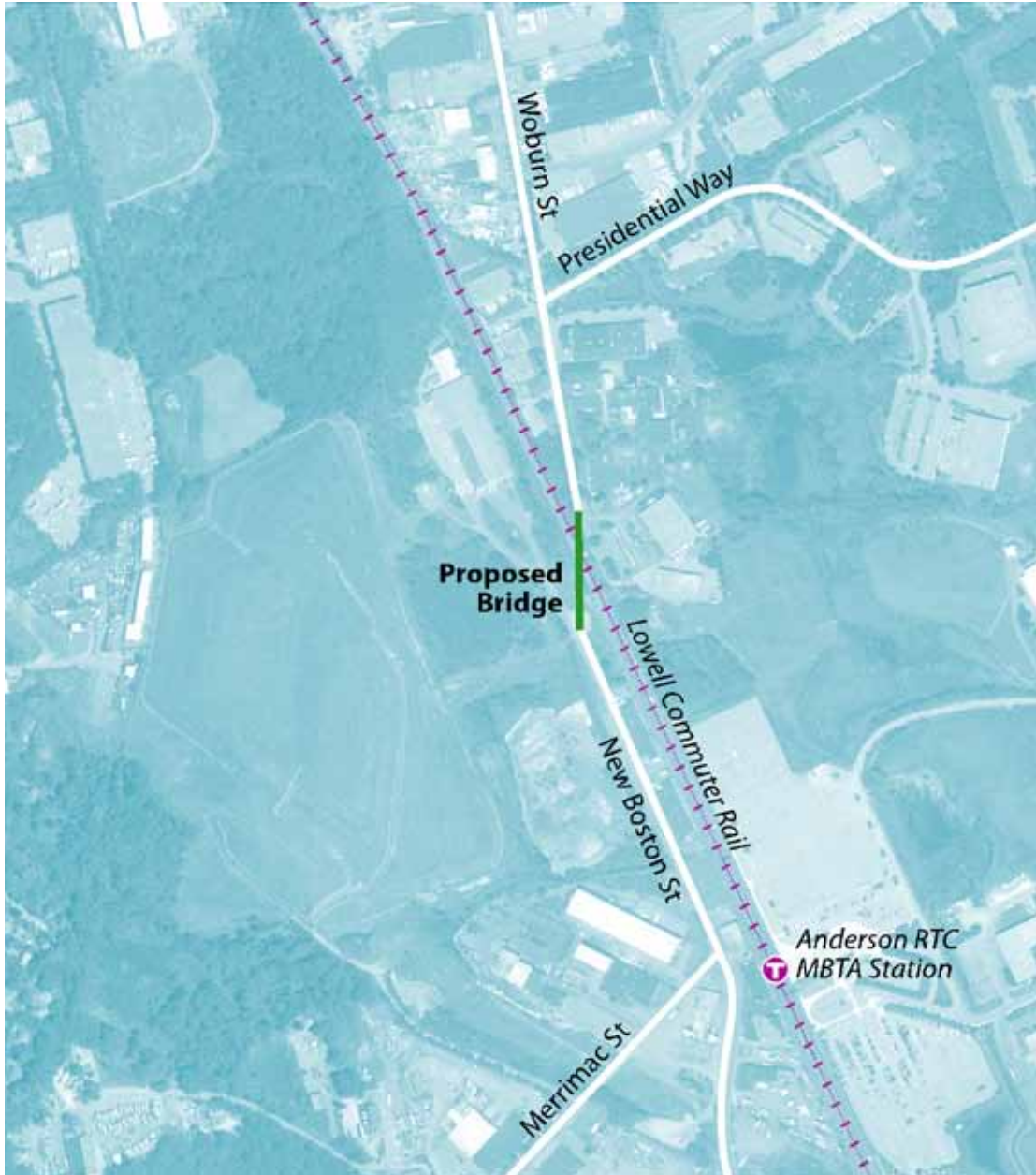
#### **Connectivity**

The Anderson RTC is located just south of the proposed New Boston Street Bridge. The new bridge would provide an additional automobile access point for the park-and-ride and transit services offered at this center.



**MAP 8-18**

**WOBURN: NEW BOSTON STREET BRIDGE**







## TRANSIT PROJECTS IN THE RECOMMENDED PLAN

Table 8-5 lists the transit projects funded under the capacity expansion program, their costs for the period of construction, and when they are projected to be completed. A brief project description of each recommended project and its cost is provided below. The locations of the recommended projects are shown in Figure 8-1.

TABLE 8-5

### EXPANSION TRANSIT PROJECTS IN THE RECOMMENDED PLAN, WITH COSTS

	2012-2015	2016-2020	2021-2025	2026-2030	2031-2035	NON-MPO TRANSIT FUNDS	MPO HIGHWAY FUNDS
<b>ONGOING NO-BUILD TRANSIT PROJECTS</b>							
Fairmount Line Improvements Project (Boston)	\$54,100,000					\$54,100,000	
1,000 New Parking Spaces (Regionwide)	\$32,000,000					\$32,000,000	
Assembly Square Orange Line Station (Somerville)*	\$50,000,000					\$35,000,000	\$15,000,000 (X) from highway funding
<b>RECOMMENDED TRANSIT PROJECTS</b>							
Red Line–Blue Line Connector – Design Only (Boston)**	\$49,000,000					\$49,000,000	
Green Line Extension from Lechmere Station to Medford Hillside (College Avenue)/Union Square (Cambridge and Somerville)*	\$476,200,000	\$643,800,000				\$1,120,000,000	
Green Line Extension from Medford Hillside (College Avenue) to Mystic Valley Parkway (Somerville and Medford)		\$185,031,000 (X) from highway funding					\$185,031,000
Russia Wharf Ferry Terminal (Boston)***	\$2,200,000					\$2,200,000	
Additional Parking Spaces in Beverly and Salem	\$50,000,000					\$50,000,000	
<b>TOTAL</b>	<b>\$823,954,000</b>	<b>\$533,346,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$1,342,700,000</b>	<b>\$200,300,000</b>

X indicates that highway funding is flexed to transit.

\* Assembly Square Orange Line Station - \$35,000,000 is from non-MPO revenues, including federal aid and state earmarks, and other state, local, and private funds. \$15,000,000 was flexed from MPO highway funding to this project.

\*\* MassDOT made a formal request on August 1, 2011, to remove this project from the State Implementation Plan regulation. The MPO is continuing to carry this cost until this process is completed.

\*\*\* The Russia Wharf project is in the process of being reviewed by state and local agencies.



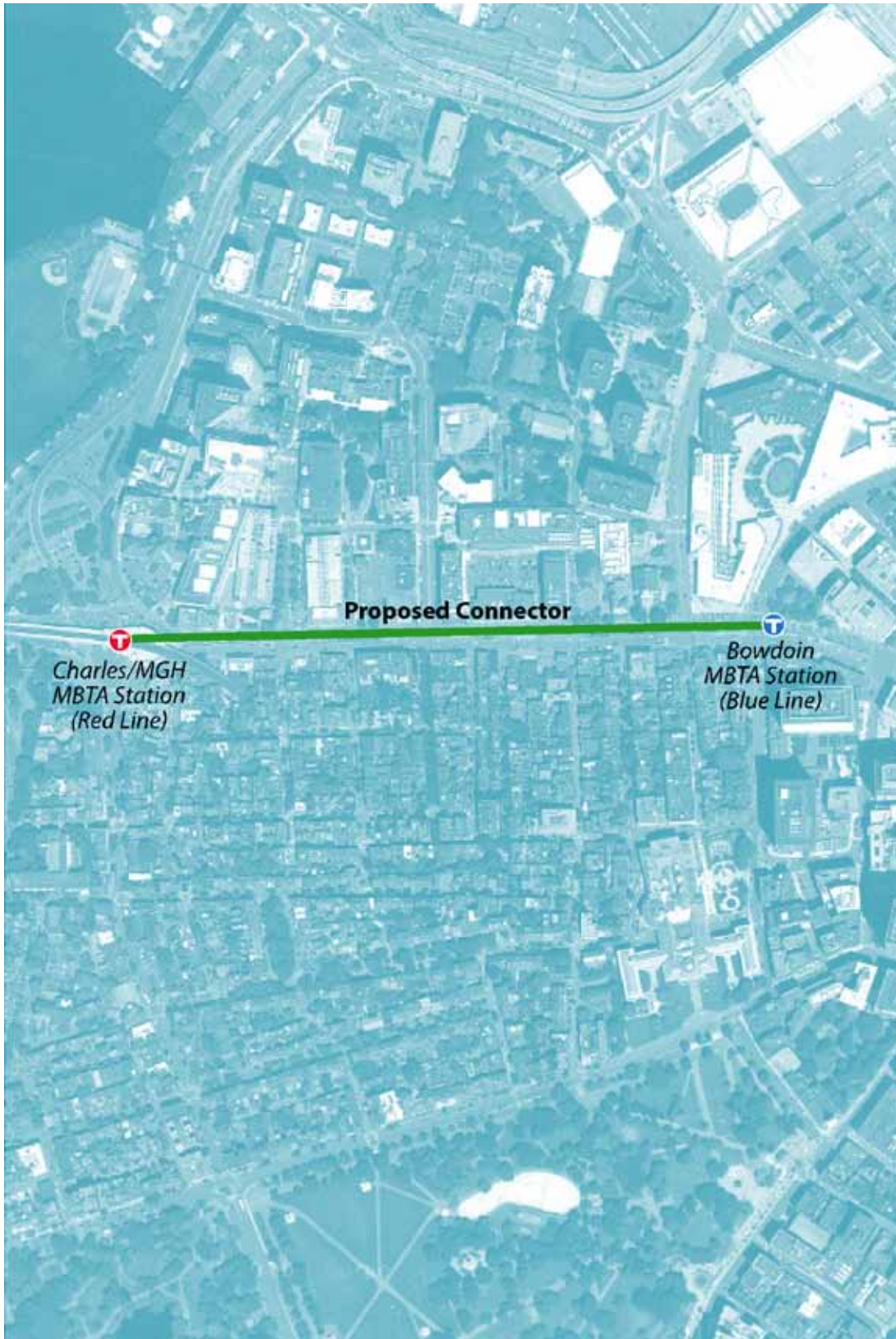
## RED LINE–BLUE LINE CONNECTOR (DESIGN ONLY) (\$49,000,000)\*

### Description

The proposed Red Line–Blue Line Connector consists of an extension of the MBTA Blue Line under Cambridge Street to the Red Line station at Charles/MGH. As currently envisioned, the project would consist of two major components: 1) a new tunnel extending the Blue Line under Cambridge Street from Joy Street to Charles Circle, and 2) a new underground Blue Line station connected to the existing Charles/MGH station. The project will also consider whether and how to make use of the existing Bowdoin Station, which will require significant rehabilitation, possibly including the relocation of underground track and platforms.

The Massachusetts Department of Environmental Protection's State Implementation Plan (SIP) requires only that MassDOT complete the final design for the project. Construction of the Red Line–Blue Line Connector is not required. The SIP contains procedures and programs to monitor, control, maintain, and enforce compliance with national air quality standards.

\* MassDOT made a formal request on August 1, 2011 to remove this project from the State Implementation Plan regulation. The MPO is continuing to carry this cost until this process is completed.





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**CAMBRIDGE, SOMERVILLE, AND MEDFORD: GREEN LINE EXTENSION PROJECT (PHASE I: LECHMERE STATION TO MEDFORD HILLSIDE (COLLEGE AVENUE)/UNION SQUARE – \$1,120,000,000; PHASE II: MEDFORD HILLSIDE (COLLEGE AVENUE) TO MYSTIC VALLEY PARKWAY/ROUTE 16 – \$140,608,000)**

**Description**

This project, the purpose of which is to improve corridor mobility, boost transit ridership, improve regional air quality, ensure equitable distribution of transit services, and support opportunities for sustainable development, will extend the MBTA Green Line in two separate phases. Phase I will extend the Green Line from a relocated Lechmere Station in East Cambridge to Medford Hillside (College Avenue) in Medford, with a branch to Union Square in Somerville. Phase II will further extend the Green Line from Medford Hillside (College Avenue) to Mystic Valley Parkway (Route 16) at the Somerville/Medford municipal boundary.

**Phase I**

Lechmere Station to Medford Hillside (College Avenue) with a branch to Union Square (State Implementation Plan commitment)

**Proposed Stations**

New Green Line stations are currently proposed for:

- College Avenue, Medford – Located at the intersection of College Avenue and Boston Avenue in Medford, adjacent to Tufts University. The station platform will be located on the north side of the College Avenue bridge, which crosses over the MBTA Lowell Line. Access to the station will be provided from both Boston Avenue and College Avenue, as well as from the Burget Avenue neighborhood, which lies northeast of the station site.
- Broadway/Ball Square, Medford/Somerville – Located at the intersection of Broadway and Boston Avenue on the north side of Ball Square. The station platform will be located on the north side of the Broadway bridge, which crosses over the MBTA Lowell Line. Access to the station will be provided from both Boston Avenue and Broadway. An electrical substation, needed to support the Green Line Extension, will likely be installed at this location.
- Lowell Street, Somerville – Located at the Lowell Street Bridge, which crosses over the MBTA Lowell Line adjacent to the proposed extension of the Somerville Community Path. The station platform will be located on the north side of the Lowell Street Bridge. Access to the station will be provided from Lowell Street.
- Gilman Square, Somerville – Located in the vicinity of the Medford Street crossing of the MBTA Lowell Line, behind Somerville’s City Hall, Public Library, and High School. The station platform will be located on the north side of the Medford Street bridge, which crosses over the MBTA Lowell Line. Access to the station will be provided from Medford Street. The proposed extension of the Somerville Community Path will be located in close proximity to the station.



## **CAMBRIDGE, SOMERVILLE, AND MEDFORD: GREEN LINE EXTENSION PROJECT (PHASE I: LECHMERE STATION TO MEDFORD HILLSIDE (COLLEGE AVENUE)/UNION SQUARE – ; PHASE II: MEDFORD HILLSIDE (COLLEGE AVENUE) TO MYSTIC VALLEY PARKWAY/ ROUTE 16 (CONT.)**

- Washington Street, Somerville – Located within the footprint of the Washington Street bridge, proximate to Somerville’s Brickbottom, Inner Belt, and Cobble Hill areas. The station platform will be located south of the Washington Street undergrade crossing of the MBTA Lowell Line. Access to the station will be provided via entrances located under or adjacent to the south abutment of the bridge, in conjunction with improved sidewalk and street crossings in the area. The proposed extension of the Somerville Community Path will be located in proximity to the station.
- Union Square, Somerville – Located east of Prospect Street in the vicinity of Union Square in Somerville. The station platform will be located within the MBTA Fitchburg Line right-of-way east of Prospect Street. Access to this station will be provided from both the street and bridge levels of Prospect Street.

Details of the design of the stations, including the relationship of the stations to the pedestrian, bicycle, and bus networks around them, are being more fully developed. The MBTA is engaging the public in developing the “look and feel” of the stations and the areas around the stations.

### **Vehicle Storage and Maintenance Facility**

The Green Line Extension will also require the construction of a new light rail vehicle storage and maintenance facility in the vicinity of the Green Line Extension. MassDOT has identified a location known as “Option L” in the Inner Belt area of Somerville as its preferred alternative for the location of the vehicle support facility. The MBTA is currently working on the program and design of the maintenance facility and its associated vehicle storage areas. The MBTA must acquire certain parcels of private property in order to construct the vehicle facility at the Option L location.

### **Phase II**

#### **Medford Hillside (College Avenue) to Mystic Valley Parkway (Route 16)**

This project is not part of the State Implementation Plan commitment. The Boston Region Region MPO members think that this is an important project and voted to include this phase in the Recommended Plan by flexing highway funding to this transit project. Design has not yet proceeded for this project. The terminus would be a station at Mystic Valley Parkway (Route 16).

**MAP 8-20**

**CAMBRIDGE, SOMERVILLE, AND MEDFORD: GREEN LINE EXTENSION PROJECT (PHASE I: LECHMERE STATION TO MEDFORD HILLSIDE (COLLEGE AVENUE)/UNION SQUARE – ; PHASE II: MEDFORD HILLSIDE (COLLEGE AVENUE) TO MYSTIC VALLEY PARKWAY/ROUTE 16**







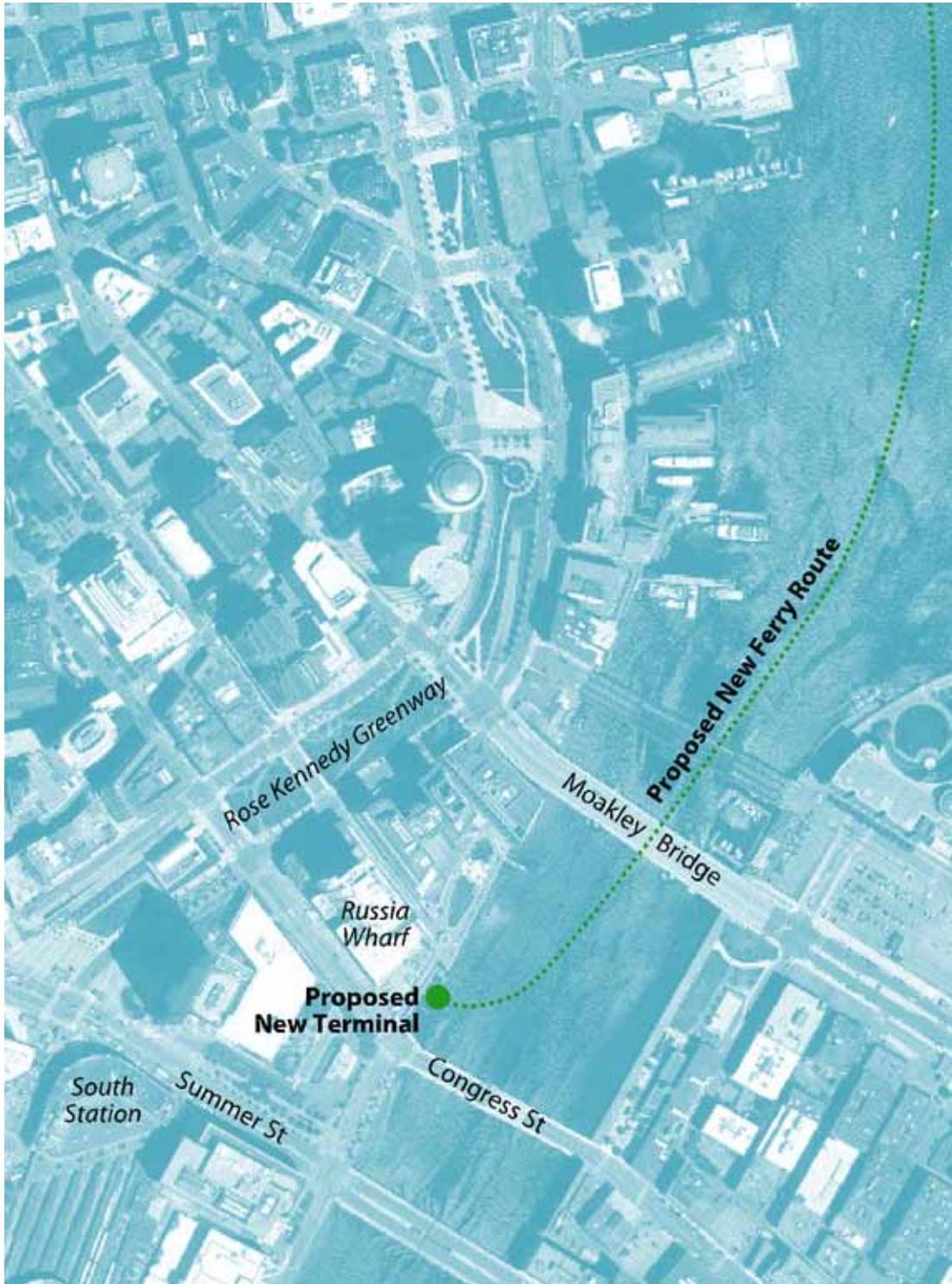
**BOSTON: FERRY EXPANSION – RUSSIA WHARF/SOUTH STATION (\$2,200,000)**

**Description**

This project will consist of implementing a new ferry route in Boston Inner Harbor, from the existing terminal at the Charlestown Navy Yard to a new terminal at Russia Wharf, which is located in Fort Point Channel at Congress Street. The construction at Russia Wharf is a CA/T legal commitment.

**Note**

The cost includes the construction of Russia Wharf (\$2,200,000). The legal commitment of the Commonwealth is only the construction of the wharf. The Boston Region MPO is carrying the cost of the Wharf in the expansion category. Service will be provided by others.





## BEVERLY AND SALEM: ADDITIONAL PARKING SPACES (\$50,000,000)

### Description

The MBTA will construct additional parking spaces at the MBTA stations in Beverly and Salem to encourage commuters and other travelers to make use of the public-transit network for trips into downtown Boston and other locations, as appropriate. Both locations are among the top three highest ridership stations within the MBTA commuter rail systems.

#### *Beverly Depot Station Parking Garage*

A new commuter parking garage adjacent the existing Beverly Depot Station, which is located in downtown Beverly, will be constructed. The garage will include approximately 500 spaces for the exclusive use of MBTA commuter parking, and may also incorporate an additional 150 spaces to support a future transit-oriented development (TOD) to be considered for development in the future.

In addition to the parking garage, an at-grade, covered pedestrian connector along the MBTA right-of-way will be constructed to provide a safe, secure, and accessible connection to the existing station platform at the Depot. The project will also include pedestrian enhancements and a streetscape on the public walkways that connect to the station, as well as some level of site improvements to the portions of the site that will be reserved for the future development.

The parking structure will be designed and engineered to accommodate an additional level of transit-oriented uses that might be built on top of the parking structure as part of the future TOD development, such as apartments or other residential units. As part of this project, infrastructure pathways and utility distribution corridors will be incorporated to simplify the task of constructing the future development that will be integrated into the project site.

#### *Salem Intermodal Parking Expansion*

The MBTA is advancing the design and construction of a structured parking facility at Salem Station. This station is located at the north end of Washington Street and serves as a gateway to historic downtown Salem. The station is also an important bus hub, with seven MBTA bus routes providing service.

The existing surface parking available at the MBTA parcel is 340 MBTA commuter spaces. (The abutting surface lot operated and maintained by the City provides another 120 spaces, which are used primarily by commuters.) The proposed parking garage will have approximately 750 spaces. This project will also include station modernization and accessibility enhancements.



**MAP 8-22**

**BEVERLY AND SALEM: ADDITIONAL PARKING SPACES**





## PROJECTS INCLUDED IN OTHER MPO AREAS

The Boston Region MPO has included a section in its LRTP identifying additional projects that are funded in other MPO areas that affect travel within the Boston region. A list of these projects, with the time frame of construction, is shown in Table 8-6. The MPO has also included these projects in the travel demand model for air quality conformity purposes. A brief description of each project and its costs for the time period of construction is also provided.

TABLE 8-6

### PROJECTS INCLUDED IN OTHER MPO AREAS AND ENDORSED BY THE BOSTON REGION MPO

RESPONSIBLE MPO	PROJECT NAME	TIMEFRAME OF CONSTRUCTION
Merrimack Valley MPO	Lowell Junction Interchange	2030–2035
Montachusett MPO	Fitchburg Commuter Rail	2012–2015
Central Mass. MPO	Interchanges at I-495/I-90 and I-495/Route 9	2021–2025

## WILMINGTON, TEWKSBURY, AND ANDOVER: LOWELL JUNCTION

### Description

This project includes constructing a new highway interchange on Interstate 93 between Exit 42 (Dascomb Road) and Exit 41 (Route 125). The new interchange will provide improved access from Interstate 93 to the industrial and office properties in the Lowell Junction area (at the Tewksbury-Wilmington border). The project will also include the construction of a connection to a planned extension of Burt Road to Ballardvale Street and the widening of I-93 to four lanes in each direction from the existing lane drop at the Wilmington-Tewksbury line to the Shawsheen River just south of Exit 42 in Tewksbury.

### Project's Context/Possible Impacts, by Relevant MPO Policy Area

#### Land Use

The area of the proposed interchange is located at the intersection of the towns of Andover, Wilmington, and Tewksbury. Land use in the area of the proposed interchange in Andover is currently zoned for industrial use. Land in the study area in Wilmington is also zoned as industrial, while land in Tewksbury is zoned as both residential and industrial.

Some of the land near the proposed interchange is available for future development, while the remainder is subject to absolute development constraints, according to the Executive Office of Environmental Affairs and the Metropolitan Area Planning Council's buildout analysis. However, the three communities have embarked on a cooperative effort to explore a new, unified land use development plan in the area that is consistent with the Commonwealth's sustainable development goals. This approach has been undertaken because officials in each community have recognized the development opportunities that construction of an interchange will bring to the area, and have concluded that establishing a coordinated land use plan will maximize the benefit that each community would receive from the project.

In support of this effort, the communities have hired a consultant to assist them in developing a shared community vision of the area, with the goal of developing "a broad policy statement of the type and character of development which each of the three communities wishes to achieve; the underlying community benefits and impacts that each wishes to manage; and the means by which to achieve these goals."<sup>1</sup> The consultant team is currently working with the Junction Route 93 Development Area Task Force to define alternative land use concepts for the area with the intent of identifying a preferred development scenario.

#### Safety

Because this is a new interchange that has not yet been constructed, there are no crash data for this project.

<sup>1</sup> The Junction Route 93 Development Area in Andover, Tewksbury, and Wilmington, Massachusetts Letter of Agreement

## WILMINGTON, TEWKSBURY, AND ANDOVER: LOWELL JUNCTION (CONT.)

### *Mobility*

According to MassDOT's traffic volumes data for the commonwealth, average daily two-way traffic on Interstate 93 north of Route 62 in Wilmington was 154,900 in 2004.

Average observed travel speeds on roadways are compiled in the MPO's Congestion Management Process. Average observed speeds on Interstate 93 North at the location of the proposed interchange are 60 mph or greater during the AM and PM peak periods. Average observed speeds on Interstate 93 South at the location of the proposed interchange are 30–44 mph during the AM peak period (meeting the CMP's congestion threshold), and 60 mph or greater during the PM peak period.

According to the Lowell Junction Interchange Study conducted by Vanasse Hangen Brustlin Inc. in 2006, significant congestion occurs at both the Route 125 and Dascomb Road interchanges with I-93. Access to Lowell Junction is via local roadways that connect to these interchanges. Analyses performed at intersections in the study area indicate the following:

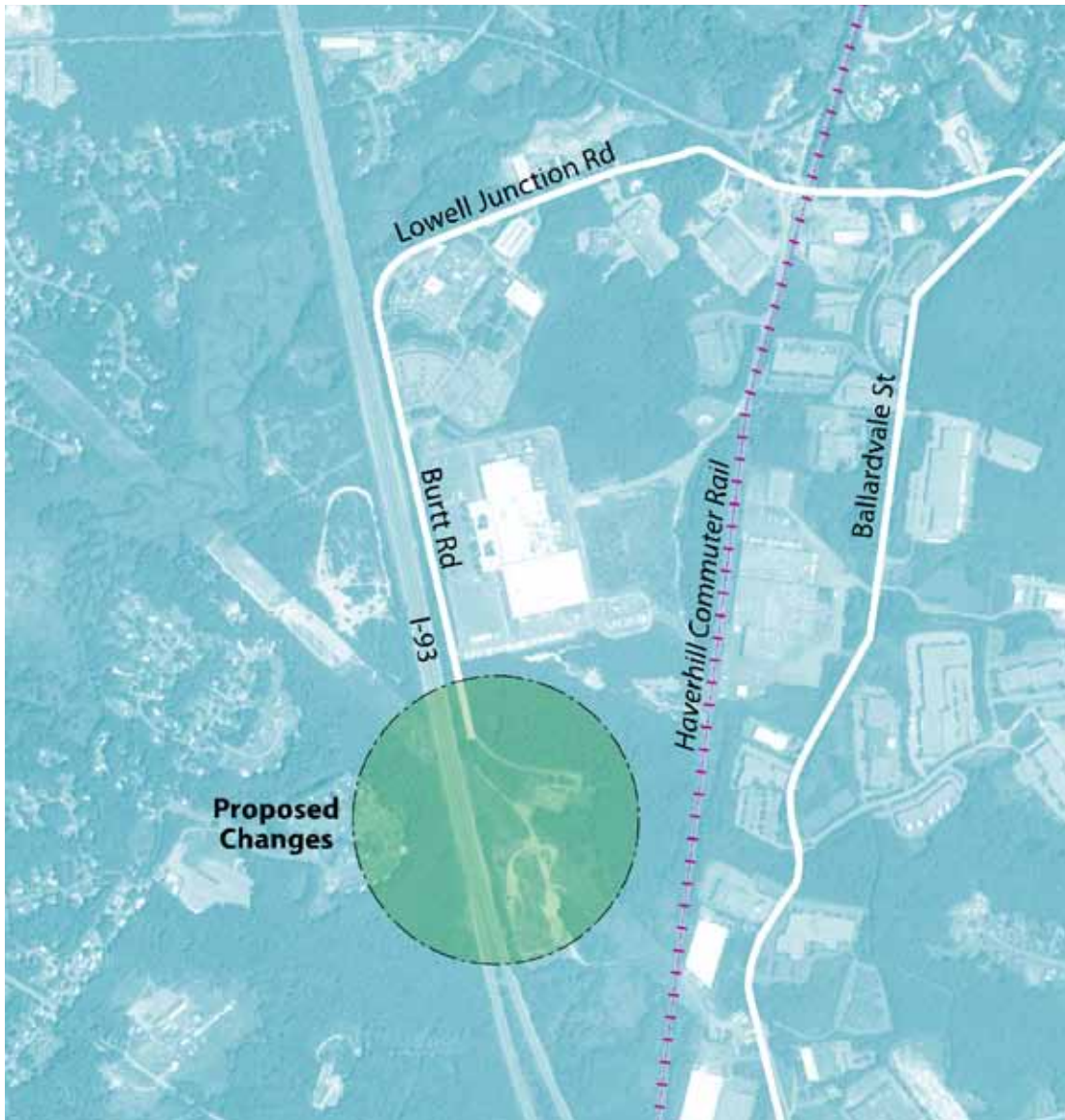
- Route 125/Ballardvale Street operates at a deficient level of service during both peak periods. Interim improvements to this intersection and the surrounding area were included in the 2004 Boston Regional Transportation Plan.
- Dascomb Road intersections with Frontage Road and Lovejoy Road operate at an acceptable level of service (LOS) during both peak periods.
- Analyses of unsignalized intersections performed at eight study-area locations indicate that all four intersections at the I-93 ramps (Exits 41 and 42) experience level of service (LOS) E or F for side-street traffic during both peak periods. Three of the local intersections experience LOS F during the PM peak and one operates at LOS F during the AM peak. Only one intersection operates at an acceptable LOS during both peak periods.

### *Connectivity*

The proposed interchange will improve access to industrial and office properties in the Lowell Junction area from I-93. The MBTA's Haverhill commuter rail line runs near the location of the proposed interchange. The communities of Andover, Tewksbury, and Wilmington have embarked on a joint planning effort to develop a coordinated land use and development plan for the area. One of the land use scenarios now being considered calls for the construction of a commuter rail stop near the new interchange, but there are no plans for a new station in the area at this time.

### *Economic Opportunities*

The addition of the interchange will provide improved access to the existing industrial and commercial developments in the Lowell Junction area. It will also expand the economic base of the area by providing access to currently undeveloped land that is zoned for industrial and commercial use on both the east and west sides of I-93. Implementation of a sustainable-growth land use plan for the area could substantially



increase the level of benefit that this project could provide to the three communities and to the commonwealth.

**Note**

The Merrimack Valley MPO is responsible for including the funding for this project in their transportation plan. At this time, they are projecting that the project will be completed by 2035. The Boston Region MPO and Northern Middlesex MPO will list this project in their Long-Range Transportation Plans because the project has portions in all three MPO areas.



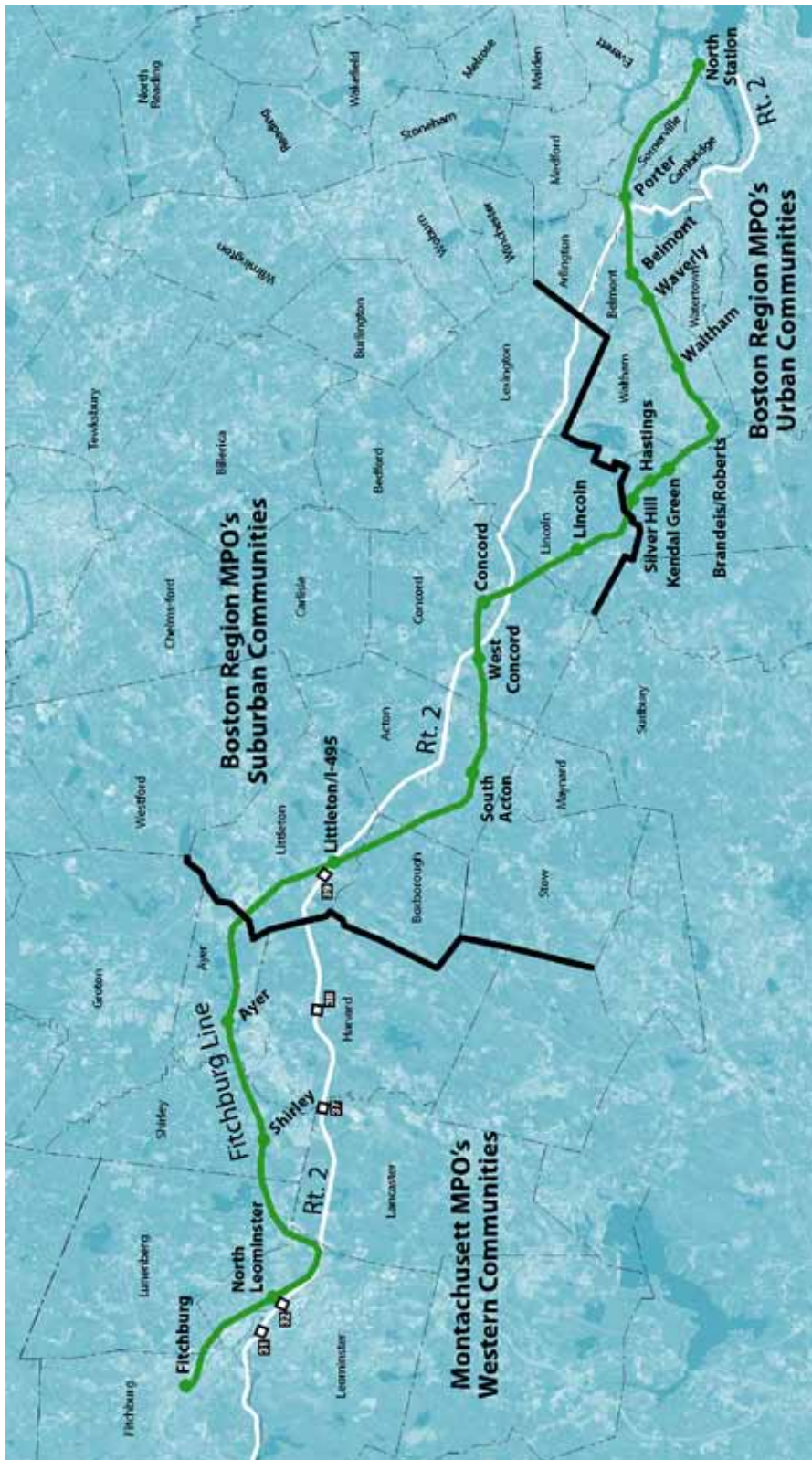
## FITCHBURG: COMMUTER RAIL (\$200,000,000)

### Description

Improvements will be made along the Fitchburg commuter rail line to reduce the travel time between Fitchburg and Porter Square, in Cambridge, to one hour or less. The existing stations will remain and no new stations will be added. Improvements will include:

- Install Fiber-Optic Cable from West Acton to Somerville
- Replace Wayside Signal System with in-cab system from West Acton to Somerville
- Construct nine new/reconfigured crossovers and interlockings and retire existing
- Reinstall double track from Ayer to West Acton
- Construction/realignment of track through Willows to Ayer
- Construct Center High Level Platforms at South Acton as part of station reconstruction
- Reconstruction of seven bridges





## HOPKINTON, SOUTHBOROUGH, AND WESTBOROUGH: INTERCHANGES AT INTERSTATE 495/INTERSTATE 90 AND INTERSTATE 495/ROUTE 9 (\$25,310,000)

### Description

The interchanges at Interstate 495/Interstate 90 and Interstate 495/Route 9 are currently under study by MassDOT to analyze their existing and future safety and capacity deficiencies. The 495/MetroWest Partnership (formerly the Arc of Innovation) identified these two interchanges as two of the 495 MetroWest corridor's top ten traffic nightmares, which was updated in 2007. The limits of the study along I-495 extend from one mile north of Route 9 to one mile south of I-90. On Route 9, the study extends from one mile west of I-495 (including the interchange ramps at Route 9/Computer Drive/Research Drive) to one mile east of I-495. On I-90, the study extends from one mile west of I-495 to one mile east of I-495.

### Project's Context/Possible Impacts, by MPO Policy Area

#### Safety

Between 2006 and 2008, the I-495/I-90 interchange was the site of 206 crashes, of which 155 involved only property damage and 51 involved bodily injuries, with one fatality. During that same period, the I-495/Route 9 interchange was the site of 102 crashes, of which 75 involved only property damage and 27 involved bodily injuries, none with fatalities. The I-495/I-90 interchange is also one of the top truck-crash locations in the Boston region. It handles many of the trucks traveling through the region between northern and southern New England.

#### Mobility

According to MassDOT traffic count data, the average daily traffic on I-495 and I-90 near this interchange data is as follows:

Interstate 90:

- Between Exits 11 and 11A (west of the interchange) – 89,200 (2006 counts)
  - Approximately 12 percent of traffic is large trucks
- Between Exits 11A and 12 (east of the interchange) – 94,200 (2006 counts)
  - Approximately 7 percent of traffic is large trucks

Interstate 495:

- South of Route 9 (north of interchange) – 92,100 (2006 counts)
- South of I-90 – 98,900 (2004 counts)

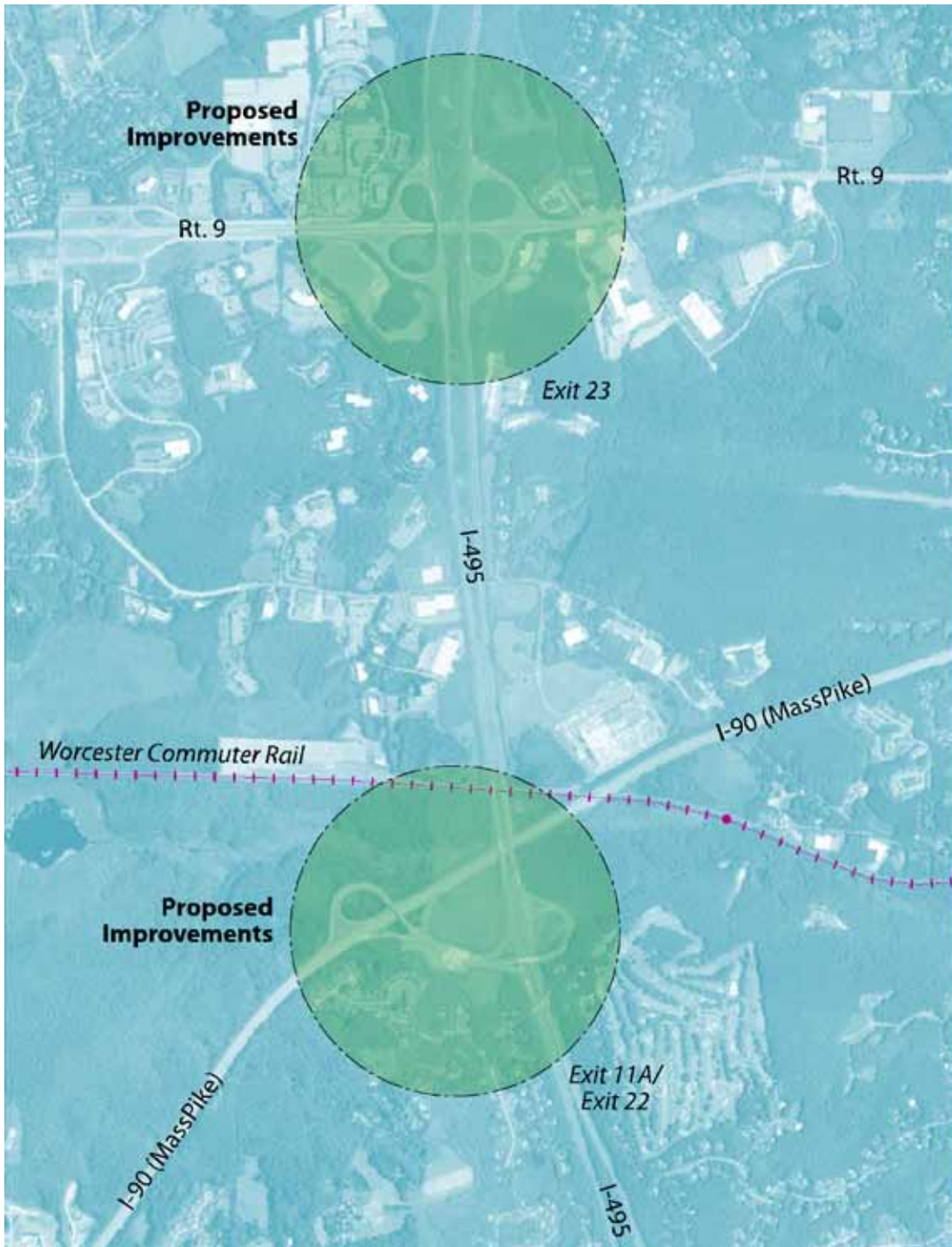
According to MassDOT traffic count data, the average daily traffic on I-495 and Route 9 near this interchange is as follows:

Interstate 495:

- South of Route 9, Westborough – 92,100 (2006 counts)



**MAP 8-25 HOPKINTON, SOUTHBOROUGH, AND WESTBOROUGH: INTERCHANGES AT INTERSTATE 495/INTERSTATE 90 AND INTERSTATE 495/ROUTE 9**



Route 9:

- East of Route 30, Westborough (west of the interchange) – 53,000 (2004 counts)
- West of Woodland Road, Southborough (east of the interchange) – 49,100 (2004 counts)



## MODEL RESULTS AND INTERPRETATION OF THE RECOMMENDED PLAN

The travel demand model set used in the analysis for this LRTP is based on the traditional four-step urban transportation planning process of trip generation, trip distribution, mode choice, and trip assignment. It reflects existing travel conditions and forecasts future-year travel on the entire eastern Massachusetts transit and highway system. This eastern Massachusetts region includes an additional 63 communities outside of the 101-municipality Boston Region MPO area, including communities east of Worcester, north to the New Hampshire border, and south into portions of Bristol and Plymouth counties. This area, which is larger than the Boston Region MPO area, is used in order to capture a more accurate picture of the travel demands within the region. The travel demand model set is employed to estimate weekday transit ridership, highway traffic volumes, and nonmotorized travel (walking and bicycling), primarily on the basis of forecasts of study-area demography and projected highway and transit improvements. The model set uses the best component models, networks, and input data available to MPO staff at this time. See more detailed information on the travel demand model in Appendix C.

### 2009 Base-Year Scenario

The travel demand model uses the year 2009 as a starting point for model analysis. This is the latest year for which the MPO has a depth of reliable data for model inputs. The 2009 Base Case consists of those major roadway and transit projects that were built and opened for public use by April 2009. Those projects' attributes were coded into the model's transportation network representation to serve as the base, or starting point, for analysis. An existing-conditions network was calibrated to reflect year 2009 travel conditions.

### Future-Year Land-Use Scenario

The future-year land-use scenario is based on inputs from two sources. For the 101 cities and towns within the Boston Region MPO area, the MPO adopted the Metropolitan Area Planning Council (MAPC) land use scenario referred to as MetroFuture. The demographic data for this land-use scenario were also developed by MAPC, and allocate forecasts of population, households, and employment by transportation analysis zone (TAZ) out to the year 2035. Some of the attributes of this scenario are:

- More new population growth would occur in the Inner Core and Regional Urban Centers.
- More new jobs would be located in the Inner Core or Regional Urban Centers.
- Two-thirds of new suburban housing growth would be in or near town centers and existing commercial areas.
- Most new suburban housing would be created through redevelopment.
- The region would build more starter homes for young families, and more apartments and condominiums for the elderly and empty nesters, helping to retain two demographic cohorts that have high rates of out-migration.

- Investments in public education, community colleges, and job training would help to increase the skill level of the local workforce, fostering economic development.

For the 63 communities that are located outside of the Boston Region MPO area, the MPO agreed to use the forecasts from the neighboring regional planning agencies. The resulting combined demographic dataset is referred to as the Regional Planning Agency (RPA) Hybrid Scenario. For this hybrid scenario, the population in this region is projected to increase by 11.8 percent between 2009 and 2035. During the same time period, employment is projected to grow by 8.8 percent. The households are projected to increase by 13.7 percent, whereas the average household size is projected to decrease from 2.50 persons in the Base Year to 2.46 in year 2035.

## Future-Year Transportation Alternatives

The travel model analysis for the LRTP consists of analyzing first the future-year No-Build transportation alternative, followed by analyzing the “Build” transportation alternative, which is with the Recommended Plan. The demographic dataset stays constant, but the distributions of trip flows vary as a result of different transportation network investments.

### 2035 No-Build Network

The No-Build network consists of: 1) all the projects that make up the Base Year network, 2) those that have already been built since year 2009 and are in operation, and 3) those projects that the MPO felt were far enough along in the programming and construction process to be considered implemented. Major highway and transit projects that are part of the 2035 No-Build network are listed in Appendix C.

### Build (Recommended Plan) Network

The Build network consists of the highway and transit projects selected for construction in this LRTP, and described earlier in Chapter 8 and in Table 8-3, in addition to what is assumed for the No-Build network.

## Travel Model Results

The results of the travel model runs provide information about how the transportation system is likely to be used in the future and also estimates the impact that the Boston Region MPO’s investments will have on travel patterns. The model results forecast the following metrics across the 2009 Base Year, 2035 No-Build Scenario, and 2035 Recommended Plan Scenario:

- Daily linked trips, by mode (auto, transit, and nonmotorized)
- Average daily unlinked transit ridership by mode (bus, subway, commuter rail, etc.)
- Total vehicle-miles of travel (VMT) and vehicle-hours of travel (VHT) on a typical weekday

The 2035 demographic forecasts projected growth in the number of employees and residents in Eastern Massachusetts. This projected increase in activity from growth in households and employment relates closely with the increase in total trips. As a result of the high percentage change in population (11.8 percent), households (13.7 percent),

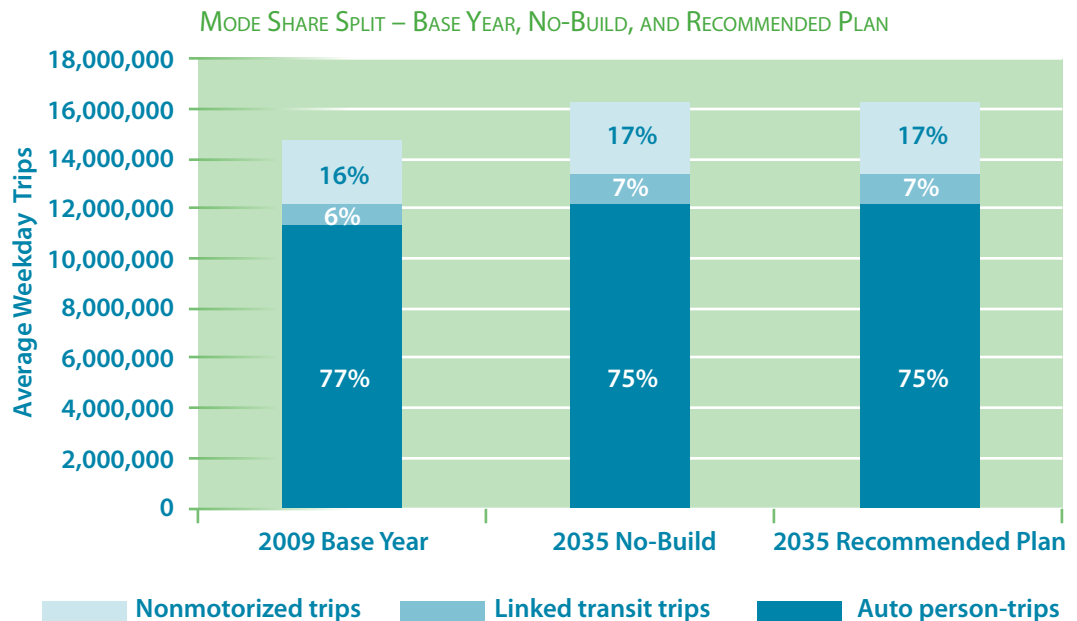
and employment (8.8 percent) in this region, the number of total trips on an average weekday, regardless of mode, is estimated to increase from nearly 17.0 million trips in 2009 to approximately 19.0 million trips in 2035. This represents an 11.7 percent increase, or an average annual growth through 2035 of almost 0.5 percent.

The assumed level of economic growth leads to significant increases in the number of trips produced within and attracted within the region on an average weekday. The biggest increase in trips is expected in the Inner Core and the outer portions of the region. External stations (points of entry into and exit from the modeling region) see a substantial increase (25.5 percent) in the number of trips.

In addition to the increase in total person-trips to the region, there are also likely to be slight changes in mode choice between the 2009 Base Year and the 2035 No-Build scenarios. Transit and nonmotorized trips are expected to grow faster than auto trips. Transit trips are projected to have the greatest increase, from 899,100 trips in 2009 to 1,169,300 trips in the 2035 No-Build scenario (30 percent). Nonmotorized trips are estimated to increase by almost 17 percent, from 2.42 million trips in 2009 to 2.84 million trips in the 2035 No-Build scenario. Trips made by auto show a lower percentage increase, of just over 7 percent, as it grows from 11.39 million trips in 2009 to 12.21 million trips in the 2035 No-Build scenario.

Figure 8-2 that shows the change in the share of auto, transit, and nonmotorized trips in the Base Year, No-Build, and Recommended Plan scenarios. It indicates that as transit and nonmotorized trips grow faster than auto person-trips, they will make up a slightly greater percentage of total trips in the 2035 No-Build and Recommended Plan scenarios. This growth in transit is a result of a greater concentration of activity near transit service, and locating complementary land uses together to increase walking and bicycling trips.

FIGURE 8-2



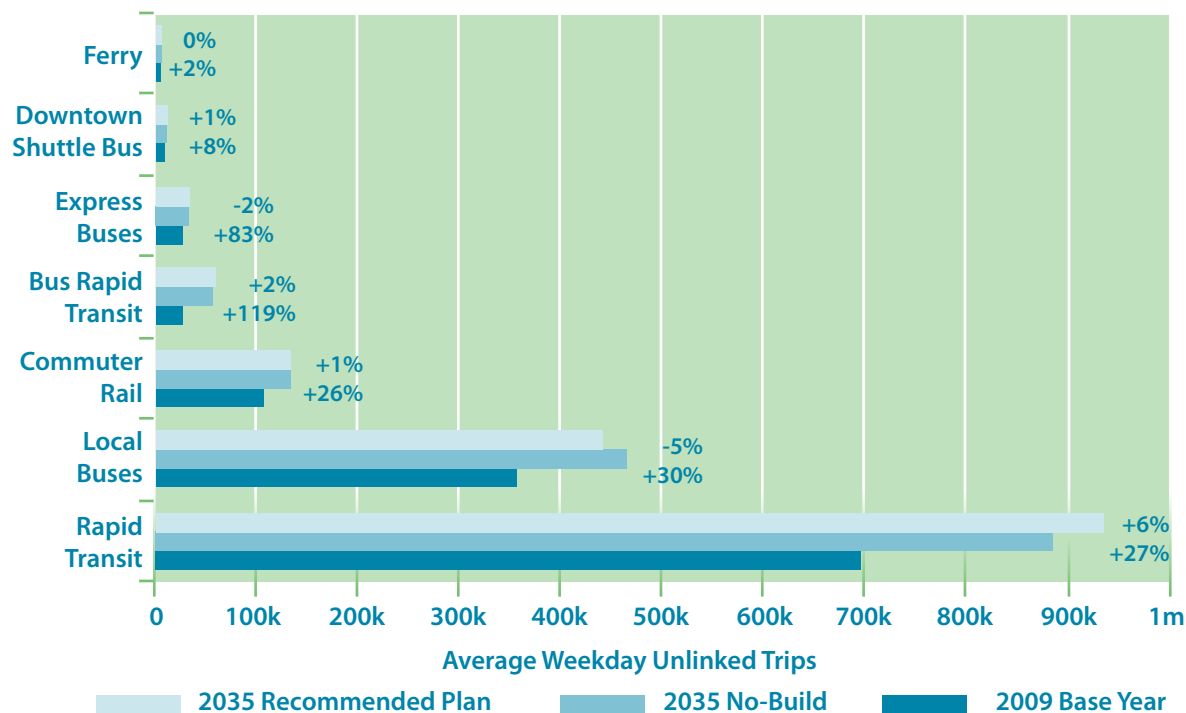
## Transit

To determine the true level of transit demand, both in absolute value and spatial distribution, given the underlying population/household and employment projections, the transit ridership forecasts from the transit portion of the overall travel-forecasting model have not been constrained by transit service capacity.

Observed data indicate that there were approximately 899,100 linked transit trips on a typical weekday in 2009. In the 2035 No-Build, the number of linked transit trips is projected to reach about 1.2 million trips, a 30 percent increase.<sup>2</sup> This increase is a result of two factors: growth in demographics (which has a major impact, as discussed above) and changes to the transportation system (ex. Fairmount Corridor Improvements and Fitchburg Line Improvements) that shift more people onto transit from other modes, such as the auto and nonmotorized modes. The unlinked transit trips are estimated to increase from 1.22 million in 2009 to 1.58 million in the 2035 No-Build scenario, a 30 percent increase.<sup>3</sup> Figure 8-3 shows how these additional trips are expected to be taken across the various transit modes. The bottom percentages indicate the change in unlinked trips from the 2009 Base Year to the 2035 No-Build, and the top percentages indicate the change between the 2035 No-Build and the 2035 Recommended Plan.

FIGURE 8-3

### UNLINKED TRANSIT TRIPS BY MODE



<sup>2</sup> Linked trip: a trip from origin to destination on the transit system. Even if a passenger must make several transfers during a journey, the trip is counted as one linked trip on the system.

<sup>3</sup> Unlinked trip: any segment of a linked trip. The number of passengers who board public transportation vehicles.



The number of unlinked trips on the rapid transit system is projected to grow by 189,100 trips (27 percent) in the 2035 No-Build scenario. The majority of this increase is related to demographic growth. Local bus trips are also projected to have a substantial increase, approximately 105,600 trips (30 percent). Most of this increase is tied to demographic growth. Commuter rail is expected to increase by 26,800 trips (26 percent) in the 2035 No-Build scenario. This is likely the result of the added/improved Fairmount Line and Fitchburg Line service, in addition to growth of demographics, and future traffic congestion favoring commuter rail over the auto mode. Bus-rapid-transit (BRT) is likely to add 30,500 trips (119 percent) in the 2035 No-Build scenario, due to operation of Silver Line Four (SL4) that commenced in September 2009. Unlinked trips on the express bus system are projected to increase by 5,700 trips (23 percent), and the downtown shuttle bus system is expected to add 100 trips in the 2035 No-Build scenario.<sup>4</sup> Ferry service shows little change. One possible reason is that the Greenbush commuter rail line hugs the coast and is located near several ferry services. This may siphon off some of the potential ferry users to commuter rail.

The 2035 Recommended Plan scenario helps to identify the impacts that the region's transportation investments have on the system. For transit, the 2035 Recommended Plan adds approximately 32,000 (2 percent) new unlinked transit trips to the system. The largest change would be almost 52,000 new unlinked trips to the rapid transit system, an increase of 6 percent. This increase is primarily related to the construction of the Green Line Extension (Lechmere to College Avenue and College Avenue to Mystic Valley Parkway plus Union Square) and partially to the completion of the Beverly and Salem garages. A significant portion of these new rapid transit trips is expected to be siphoning off current local bus users, as local bus trips are expected to decline by approximately 21,000 trips (-5 percent) in the 2035 Recommended Plan scenario. There will also be incremental growth in bus rapid transit (1,100), commuter rail trips (800), and downtown shuttle buses (100). The addition of parking in Beverly and Salem will primarily be responsible for increases in commuter rail trips. Ferry trips will remain constant, and express bus trips will decrease by 700 trips (-2 percent).

## Highway

The model produces several metrics for measuring the highway transportation network, including vehicle trips, vehicle-miles of travel (VMT), vehicle-hours of travel (VHT), and average speed. The 2035 No-Build scenario indicates that there will be growth in vehicle trips, VMT, and VHT, resulting directly from greater motorist activity. Vehicle trips include all vehicle types, such as personal vehicles, trucks, taxis, and vehicles from outside the region. There were about 13 million vehicle trips on the average weekday using the roadway system in 2009. This number is projected to increase by 10.2 percent, to 14.1 million vehicle trips in the 2035 No-Build scenario. Similarly, auto person-trips are projected to increase by roughly 7.2 percent between the Base Year and 2035 No-Build scenario. The explanation for the total number of vehicle trips increasing more than the auto-person-trips is a greater increase in truck trips and a higher number of vehicle trips made by people traveling inside/outside of our modeled area.

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<sup>4</sup> Express buses are operated by the MBTA, Logan Express, and private carriers. Downtown shuttle buses are operated by Partners Healthcare.

Despite auto travel growing at a slower rate than that projected for transit, roadway vehicle-miles traveled (VMT) is projected to increase. The total VMT on the region's highway network is projected to increase by nearly 10,600,000 miles (9.7 percent) in 2035 under the No-Build scenario. Yet, the average trip length will likely decrease by 0.5 percent, reflecting a greater geographical concentration of activity in the 2035 No-Build scenario. Nearly all of the increase in VMT is due to projected demographic growth.

VHT is projected to increase by nearly 600,000 hours (18.7 percent) in the 2035 No-Build scenario. VHT growth is expected to increase at a faster rate than VMT because the additional traffic is causing more congestion. This also leads to lower average speeds, reflected by the 7.5 percent decrease in average speed on the highway system in the 2035 No-Build scenario.

According to the 2035 Recommended Plan, the cumulative effect of the new highway projects on auto travel is minimal (less than one percent change). It is projected that there will be a decrease of 6,600 vehicle trips from the 2035 No-Build scenario and 9,900 less VHT, yet both reductions make up less than a one percent change. Projections also forecast an increase in VMT of 56,900 miles (less than one percent). The average trip length, average travel time, and average speed remain unchanged in the 2035 Recommended Plan scenario.

### **Nonmotorized Travel**

The nonmotorized mode consists of walking and bicycling trips occurring between areas in our model area called transportation analysis zones. Between the Base Year and the 2035 No-Build scenario, this mode is projected to increase by 410,900 trips (17 percent). This increase is a function of residences being located closer to work and activities.

The 2035 Recommended Plan scenario indicates that about 12,700 trips (less than one percent) are expected to be diverted from nonmotorized modes due to improvements in transit services and highway facilities.



## BACKGROUND

In addition to its transportation equity program (discussed in Chapter 6), the MPO has performed a detailed, system-level analysis of transportation equity in the region, examining the distribution of the transportation system's benefits and burdens among environmental justice and non-environmental justice areas and among environmental justice and non-environmental justice population zones. (These types of areas and zones are defined in the section below.) The analysis also examined the impacts, in terms of various analysis factors, of this LRTP's recommended set of projects through 2035 (see Chapter 8 for the list of projects) on those types of areas and zones. The measures focus on mobility, accessibility, and environmental-impact concerns.

As interpreted from federal guidance, the MPO should recommend a regional set of transportation projects in its LRTP that does not burden environmental justice areas when compared to a network that includes no projects other than those already underway. The results of the final analysis, summarized in this chapter, show that the MPO's recommended set of transportation projects does not burden environmental justice areas and environmental justice population zones more than the 2035 No-Build network and, in several cases, benefits them.

## ENVIRONMENTAL JUSTICE AREAS AND ENVIRONMENTAL JUSTICE POPULATION ZONES

### Geography Used for Outreach and Accessibility Analysis

As discussed in Chapter 6, environmental justice areas are based on the demographics of the people living in a transportation analysis zone (TAZ). TAZs are an aggregation of census geography based on population and numbers of trips. According to the definition used for the MPO's transportation equity program, "A TAZ will be considered an environmental justice area if it is over 50 percent minority or has a median household

Accessibility to services and jobs, mobility and congestion, and air quality are analysis factors used to indicate benefits and burdens.

income at or below 60 percent of the region’s median [income]” (60% of the region’s median household income of \$55,800 is \$33,480).<sup>1</sup> (Environmental justice areas are presented in Figures 6-1 and 6-2 (in Chapter 6).

In addition to being the focus of the transportation equity program, environmental justice areas are used in the accessibility portion of the MPO’s environmental justice analysis, as described in this chapter.

### **Geography Used for Mobility, Congestion, and Air Quality Analysis**

In the mobility, congestion, and environmental quality portions of the analysis, environmental justice population zones are used. To locate environmental justice populations, the MPO selected broader criteria for lower-income and minority TAZs than those used for locating environmental justice areas. Though not required, this greater inclusion of TAZs is in line with—and slightly more inclusive than—the Massachusetts Executive Office of Energy and Environmental Affairs (EOEEA) definition of environmental justice populations. The broader criteria avoid masking data for isolated TAZs and include more environmental justice populations. The MPO’s thresholds for these environmental justice populations are:

- Low income – The median household income in the MPO region in 2000 was approximately \$55,800. A low-income TAZ was defined as having a median household income at or below 80 percent of this level (\$44,640).
- Minority – Of the MPO population in 2000, 21.4% were minorities (nonwhite and Hispanic). A minority TAZ is defined as having a percentage of minority population greater than 21.4 percent.

The environmental justice population zones in the Boston Region MPO area and in the urban core are shown in Figures 9-1 and 9-2, respectively.

The 2035 demographic forecasts assumed the same distributions of the environmental justice areas and environmental justice population zones as were observed in the 2000 census, and that the environmental justice population’s growth rate will be the same as the rate that the Metropolitan Area Planning Council has forecast for the overall population of the given area. The 2035 Build and 2035 No-Build networks were based on the same demographic forecasts but developed unique distributions of trip flows based on the transportation network for the No-Build and Build scenarios.

## **ANALYSIS FACTORS**

The MPO used several factors as indicators of benefits and burdens for environmental justice and non-environmental justice areas. These factors are:

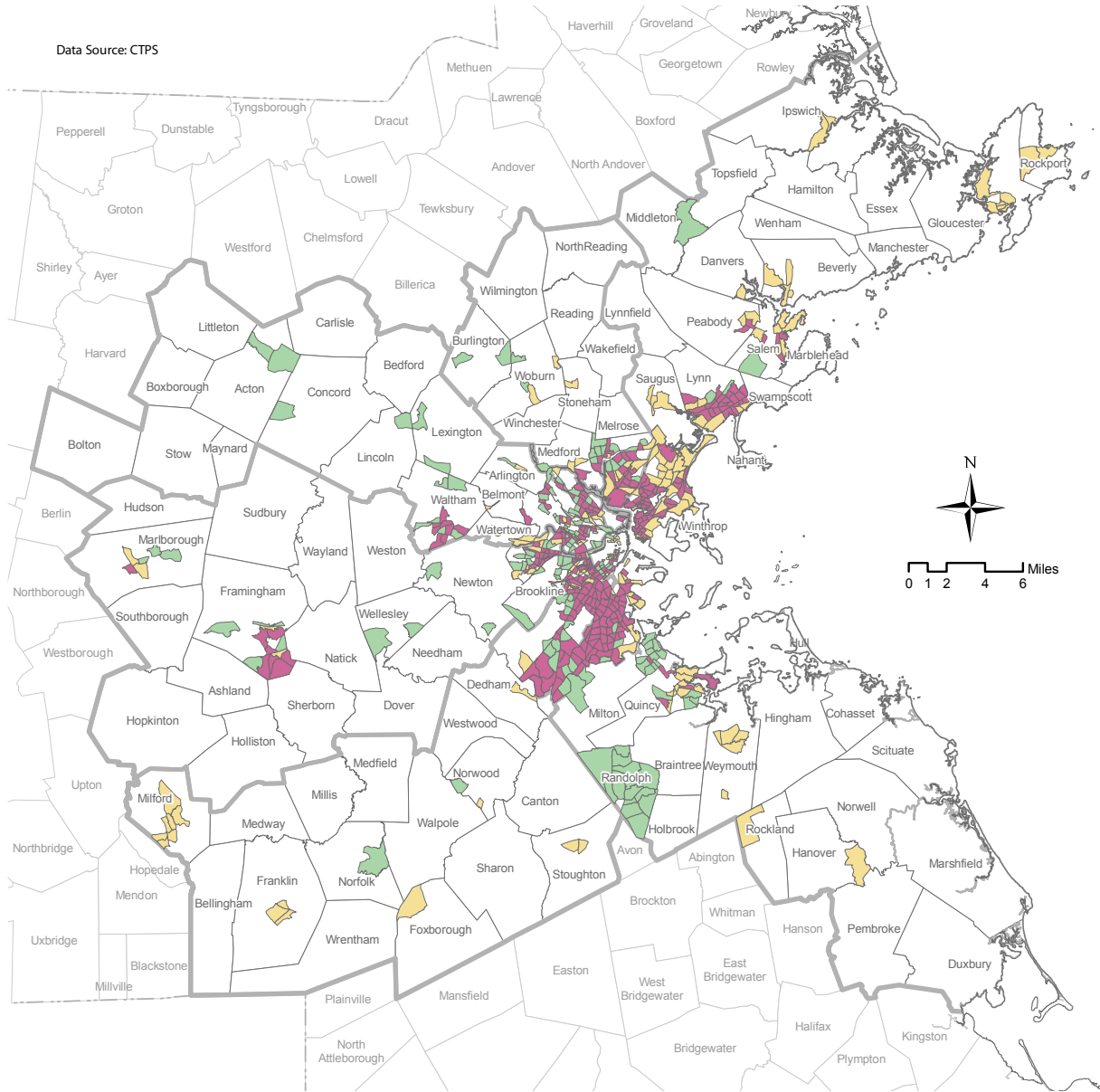
- Accessibility to needed services and jobs

<sup>1</sup> The MPO used the 2000 U.S. census to define environmental justice areas. Though the 2010 census minority population data at the tract level was released on March 22, 2011, the household income data have yet to be released at the tract level. MPO staff have determined that the 2005–09 American Community Survey (ACS) sample data have high margins of error at the tract level for minority population and did not want to use them as a source. Environmental justice areas will be redefined when complete, new data are available.



**FIGURE 9-1**

**ENVIRONMENTAL JUSTICE POPULATION ZONES – REGIONWIDE**



Data Source: CTPS

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

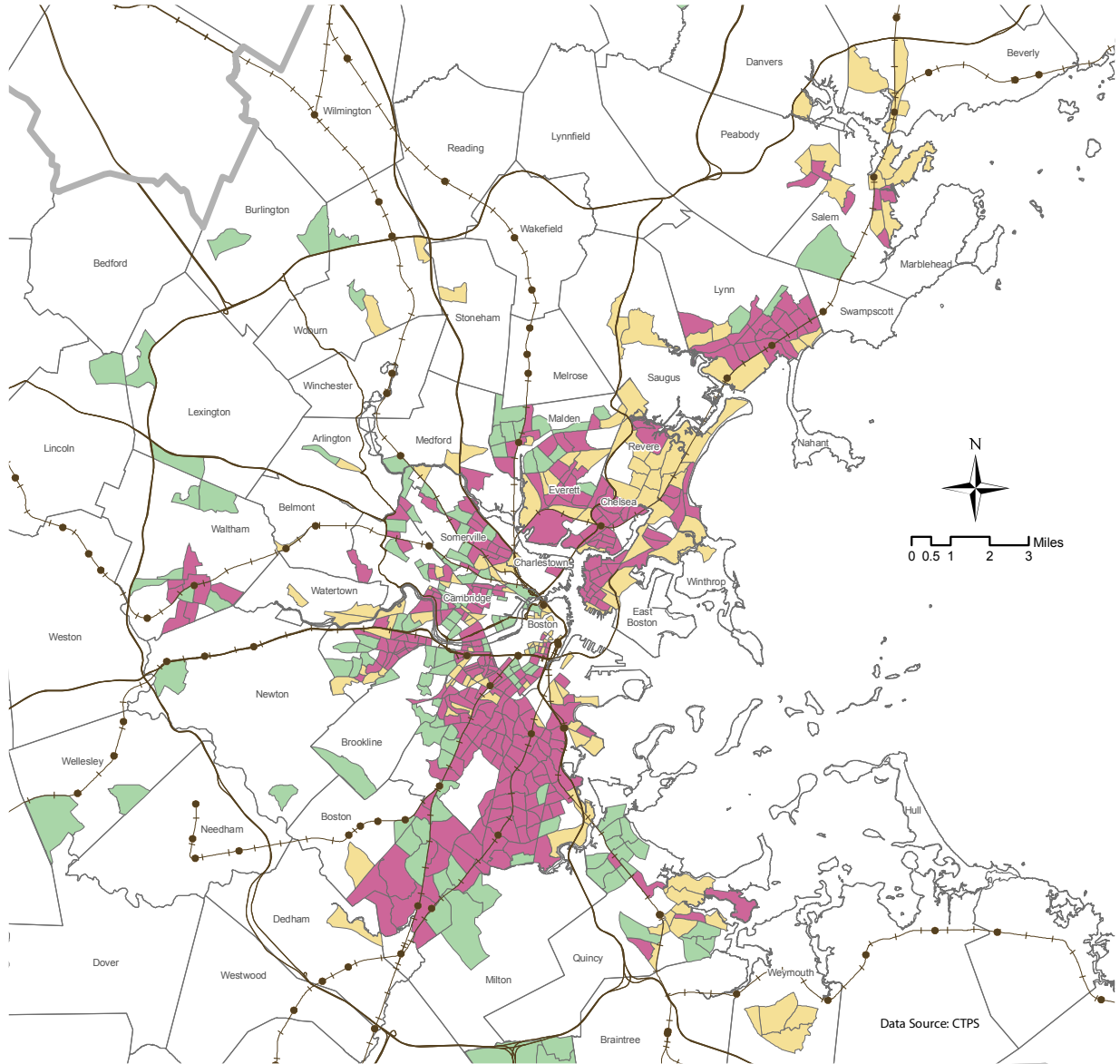
- Meets income criterion
- Meets minority criterion
- Meets both criteria

**\*Criteria for Environmental Justice Population Zones**

A TAZ in which the median household income in 1999 was equal to or less than 80% of the MPO median of \$55,800 (\$44,600) or in which the 2000 population was more than 21.4% minority.

**FIGURE 9-2**

**ENVIRONMENTAL JUSTICE POPULATION ZONES – CENTRAL AREA**



**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 1999 was equal to or less than 80% of the MPO median of \$55,800 (\$44,600) or in which the 2000 population was more than 21.4% minority.

- Mobility and congestion
- Air Quality

The first factor was applied to environmental justice and non–environmental justice areas, the second and third to environmental justice population zones and non–environmental justice population zones.

To avoid confusion, environmental justice areas and environmental justice zones will both be referred to as environmental justice areas in the remainder of this chapter.

### Accessibility Analysis

MPO staff analyzed access to needed services and jobs in terms of average transit and highway travel times from environmental justice areas to industrial, retail, and service employment opportunities; health care; and institutions of higher education. The analysis of transit travel times included destinations within a 40-minute transit trip, and the analysis of highway travel times included destinations within a 20-minute auto trip. The accessibility analysis also included an examination of the number of destinations within a 40-minute transit trip and a 20-minute auto trip. The thresholds of a 40-minute transit trip and 20-minute highway trip represent average commute times in the region based on the 2000 census Journey-to-Work data.

Staff examined differences between the 2035 No-Build network and the 2035 Build network for environmental justice and non–environmental justice areas. The accessibility analysis factors were:

- The average travel time to industrial, retail, and service jobs within a 40-minute transit trip and a 20-minute auto trip
- The average number of industrial, retail, and service jobs within a 40-minute transit trip and a 20-minute auto trip
- The average travel time to hospitals, weighted by the number of beds, within a 40-minute transit trip and a 20-minute auto trip
- The average number of hospitals, weighted by the number of beds, within a 40-minute transit trip and a 20-minute auto trip
- The average travel time to facilities of two- and four-year institutions of higher education, weighted by enrollment, within a 40-minute transit trip and a 20-minute auto trip
- The average number of facilities of two- and four-year institutions of higher education, weighted by enrollment, within a 40-minute transit trip and a 20-minute auto trip

Based on census Journey-to-Work data, a 40-minute transit trip and a 20-minute highway trip represent average commute times in the region.

### Mobility, Congestion, and Air Quality Analysis

MPO staff analyzed mobility, congestion, and environmental impacts by comparing analysis factors for environmental justice areas to those for non–environmental justice areas. Staff examined differences between the average levels of these analysis factors within the two types of areas for the 2035 No-Build network and the 2035 Build network.

The mobility, congestion, and air quality analysis factors were:

- Congested vehicle-miles traveled (VMT) – congested vehicle-miles traveled: the volume of vehicle-miles traveled within a TAZ on highway links with a volume-to-capacity ratio of 0.75 or higher
- VMT per square mile – the number of vehicle-miles traveled per square mile of dry land within a TAZ
- Carbon monoxide (CO) per square mile – the number of kilograms of carbon monoxide emitted per square mile of dry land within a TAZ
- Transit production time<sup>2</sup> – the average door-to-door travel time for all transit trips produced in the TAZ
- Highway production time – the average door-to-door travel time for all highway trips produced in the TAZ
- Transit attraction time – the average door-to-door travel time for all transit trips attracted to the TAZ
- Highway attraction time – the average door-to-door travel time for all highway trips attracted to the TAZ

## SUMMARY OF RECOMMENDED LRTP ANALYSIS RESULTS

The recommended LRTP benefits environmental justice areas.

The environmental justice analysis determined that while the 2035 recommended LRTP Build network improves accessibility, mobility, and congestion conditions relative to the 2035 No-Build network for both environmental justice and non-environmental justice areas, it benefits environmental justice areas slightly more. Carbon monoxide emissions are higher in environmental justice areas than in non-environmental justice areas in both the No-Build and the Build networks, and they increase for both populations in the Build network over the No-Build. Results are summed for each type of area and are averaged by the number of environmental justice and non-environmental justice TAZs, respectively.

### Accessibility Analysis Results:

Results from the accessibility analysis show the following for trips from environmental justice areas to nearby jobs, colleges, and hospitals:

- Travel times to destinations are less or the same for environmental justice areas in the 2035 Build network as for those in the 2035 No-Build network.
- People in environmental justice areas will be able to access more destinations within a 40-minute transit ride in the 2035 Build network than in the 2035 No-Build network, and even though the transportation model indicates 20-minute highway access to slightly fewer jobs and hospital beds in the Build network, the difference is not statistically significant as it is within the model's margin of error.
- The 2035 Build network increases the number of area destinations accessible by transit for environmental justice areas.

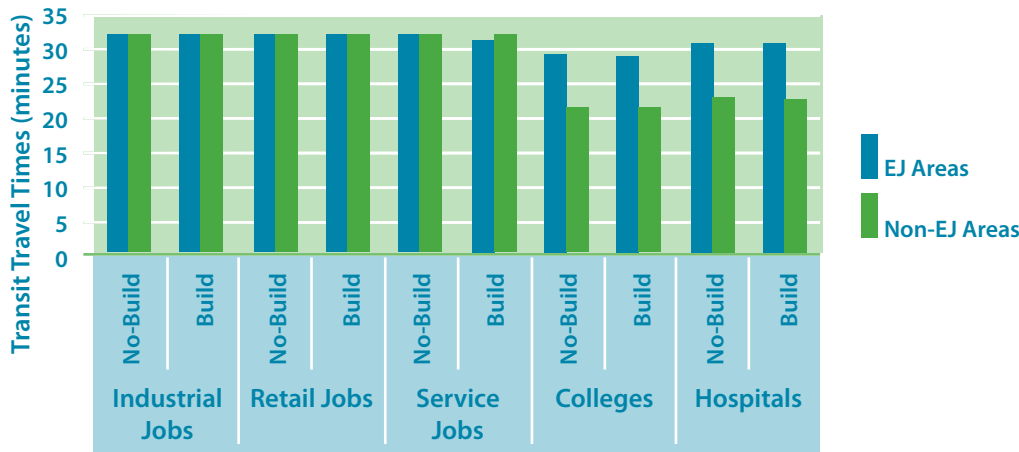
<sup>2</sup> Productions and attractions are used in transportation modeling to identify types of trip ends and are loosely related to origins and destinations.



Figure 9-3 shows that average transit travel times to area jobs are approximately 30 minutes, with those for environmental justice areas slightly less than for non-environmental justice areas. Travel times to hospitals and colleges are higher for environmental justice areas in both the No-Build and Build networks.

**FIGURE 9-3**

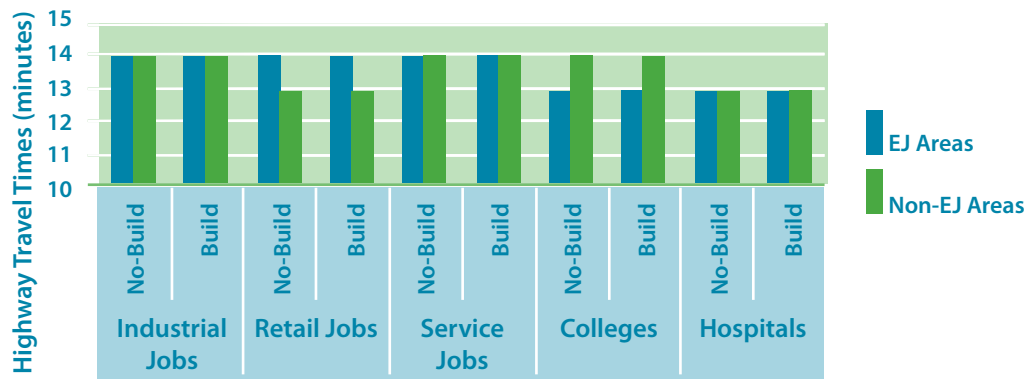
**AVERAGE TRANSIT TRAVEL TIMES TO DESTINATIONS FOR ENVIRONMENTAL AND NON-ENVIRONMENTAL JUSTICE AREAS IN THE 2035 NO-BUILD AND 2035 BUILD NETWORKS**



While Figure 9-4 shows that average highway travel times to colleges and hospitals are slightly less for environmental justice areas than for non-environmental justice areas, the differences in average highway travel time to jobs are statistically insignificant.

**FIGURE 9-4**

**AVERAGE HIGHWAY TRAVEL TIMES TO DESTINATIONS FOR ENVIRONMENTAL AND NON-ENVIRONMENTAL JUSTICE AREAS IN THE 2035 NO-BUILD AND 2035 BUILD NETWORKS**



Figures 9-5 to 9-7 show that the average environmental justice area has transit and highway access to notably more jobs than the average non-environmental justice area. In addition, environmental justice populations can access more jobs by transit in the Build network than in the No-Build network.

FIGURE 9-5

AVERAGE NUMBER OF INDUSTRIAL JOBS TO WHICH THERE IS ACCESS FOR ENVIRONMENTAL AND NON-ENVIRONMENTAL JUSTICE AREAS IN THE 2035 NO-BUILD AND 2035 BUILD NETWORKS

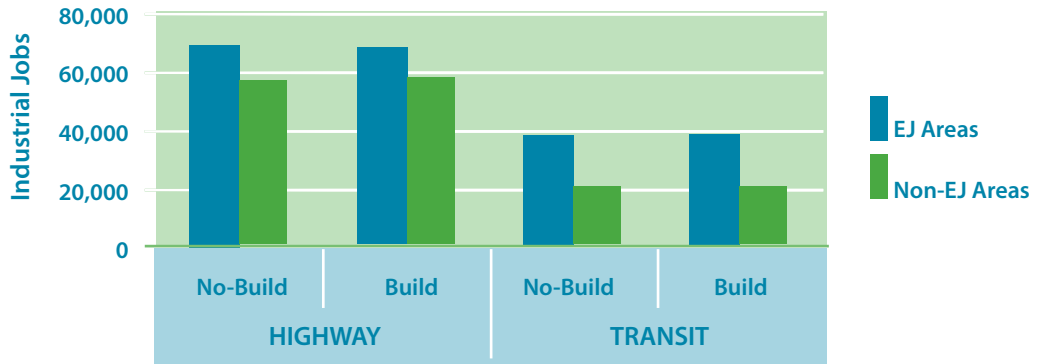


FIGURE 9-6

AVERAGE NUMBER OF RETAIL JOBS TO WHICH THERE IS ACCESS FOR ENVIRONMENTAL AND NON-ENVIRONMENTAL JUSTICE AREAS IN THE 2035 NO-BUILD AND 2035 BUILD NETWORKS

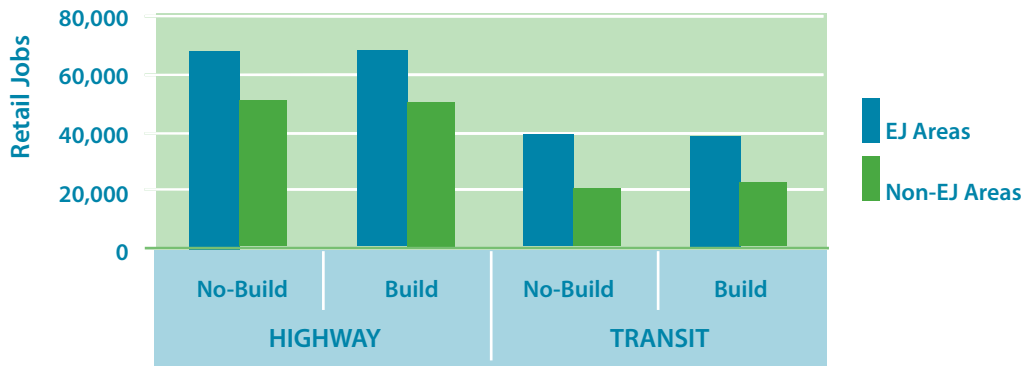


FIGURE 9-7

AVERAGE NUMBER OF SERVICE JOBS TO WHICH THERE IS ACCESS FOR ENVIRONMENTAL AND NON-ENVIRONMENTAL JUSTICE AREAS IN THE 2035 NO-BUILD AND 2035 BUILD NETWORKS

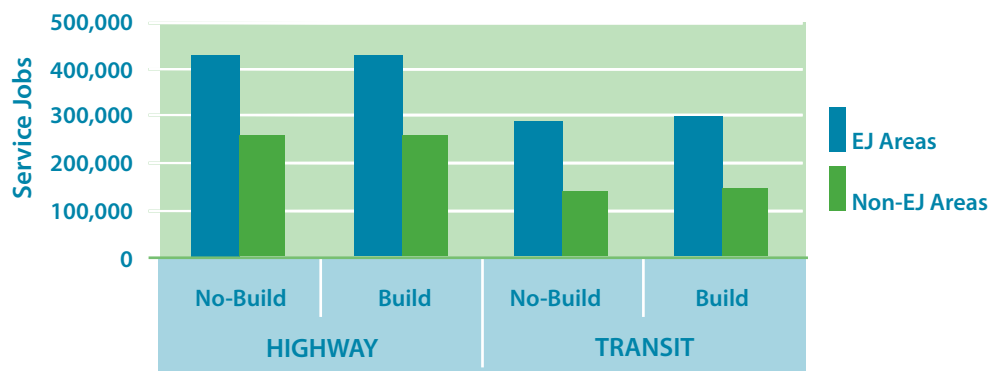


Figure 9-8 shows that the average environmental justice area has transit and highway access to notably more two- and four-year colleges than the average non-environmental justice area. The figure also shows that people in environmental justice areas are estimated to have access to more colleges in the Build network than in the No-Build network.

FIGURE 9-8

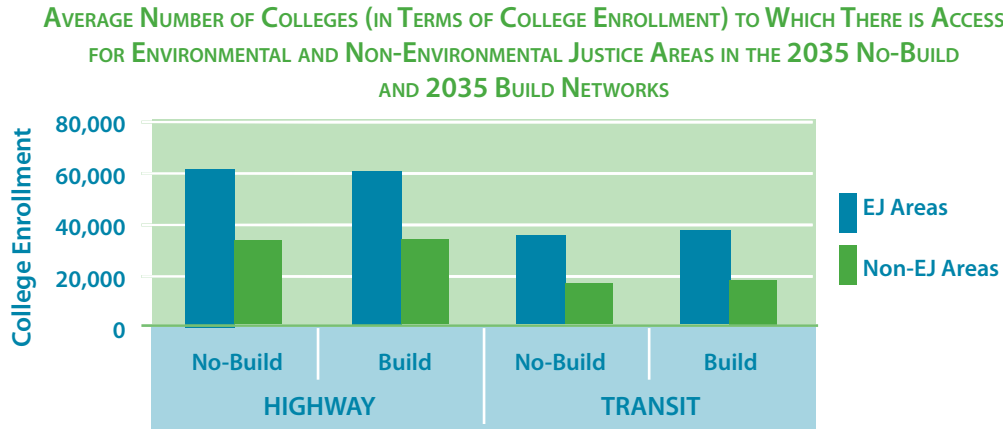
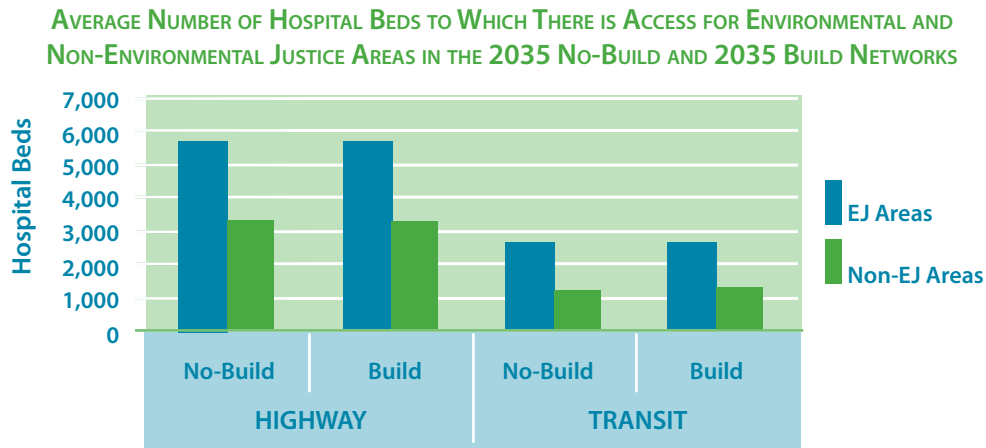


Figure 9-9 shows that the average environmental justice area has transit and highway access to more hospital beds than the average non-environmental justice area.

FIGURE 9-9



### Mobility, Congestion, and Air Quality Analysis Results:

Results from the mobility, congestion, and environmental analysis show the following for trips within environmental justice areas:

- Congested VMT is slightly less for environmental justice areas in the 2035 Build network than in the 2035 No-Build network.
- VMT per square mile is less for environmental justice areas in the 2035 Build network than in the 2035 No-Build network, indicating a diversion of travel mode choices from highway to transit.

- The 2035 Build network yields slightly more CO emissions per square mile for both environmental justice and non-environmental justice areas than the 2035 No-Build network does; however, the increase is smaller for environmental justice population zones than for environmental justice areas.

Figure 9-10 shows that average transit travel times for attractions and productions are shorter for environmental justice areas than for non-environmental justice areas.

FIGURE 9-10

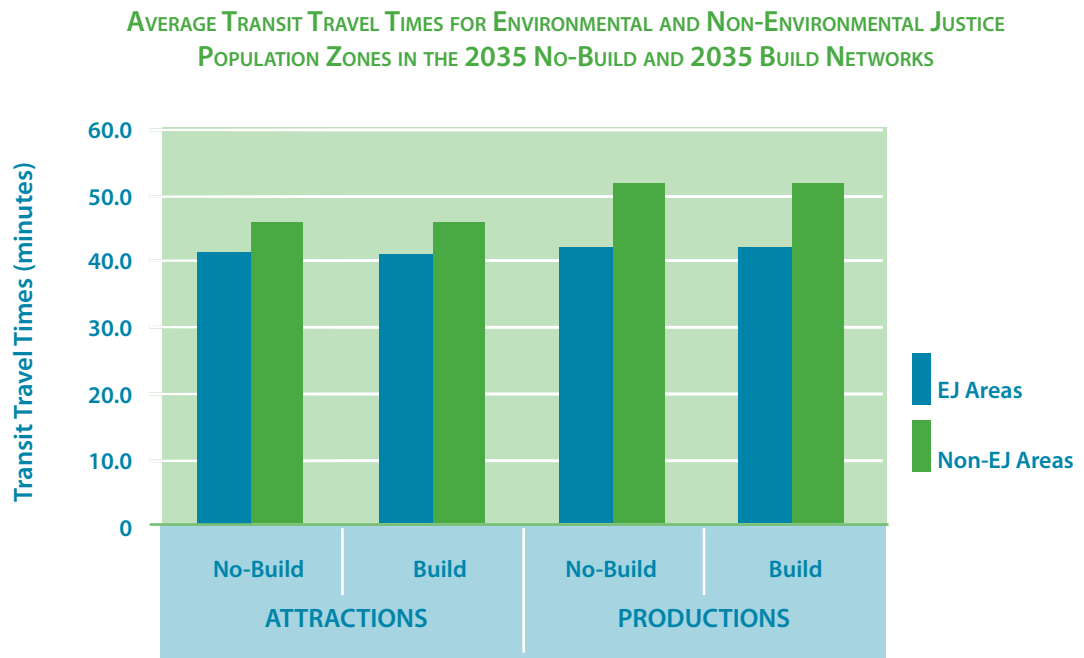
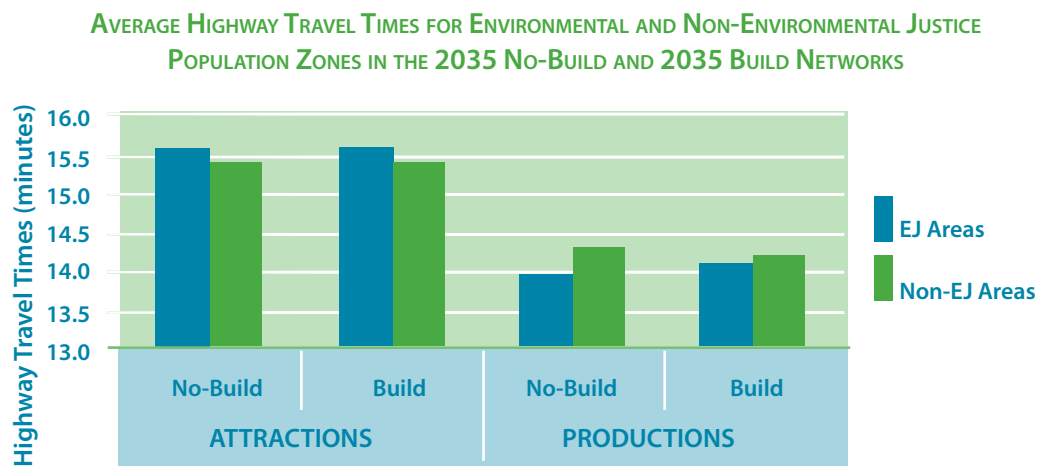


Figure 9-11 shows that there is no statistical difference in average highway attraction and production travel times for environmental justice areas and non-environmental justice areas.

FIGURE 9-11





Both figures show that differences in average travel time between environmental justice population zones and non-environmental justice population zones are more pronounced for transit than for highway trips.

Figure 9-12 shows that average congested VMT is less for environmental justice areas than for non-environmental justice areas.

FIGURE 9-12

**AVERAGE CONGESTED VEHICLES MILES TRAVELED (VMT) FOR ENVIRONMENTAL AND NON-ENVIRONMENTAL JUSTICE POPULATION ZONES IN THE 2035 NO-BUILD AND 2035 BUILD NETWORKS**

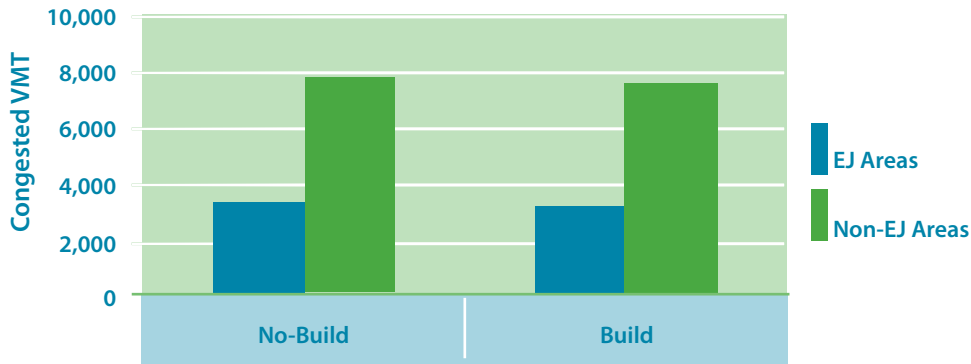


Figure 9-13 shows that average VMT per square mile is greater for environmental justice areas than for non-environmental justice areas in both the No-Build and Build networks.

FIGURE 9-13

**AVERAGE VMT FOR ENVIRONMENTAL AND NON-ENVIRONMENTAL JUSTICE POPULATION ZONES IN THE 2035 NO-BUILD AND 2035 BUILD NETWORKS**

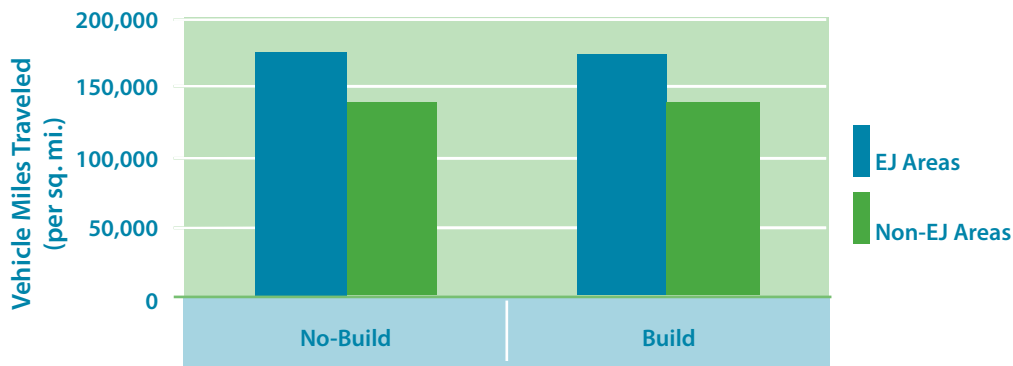
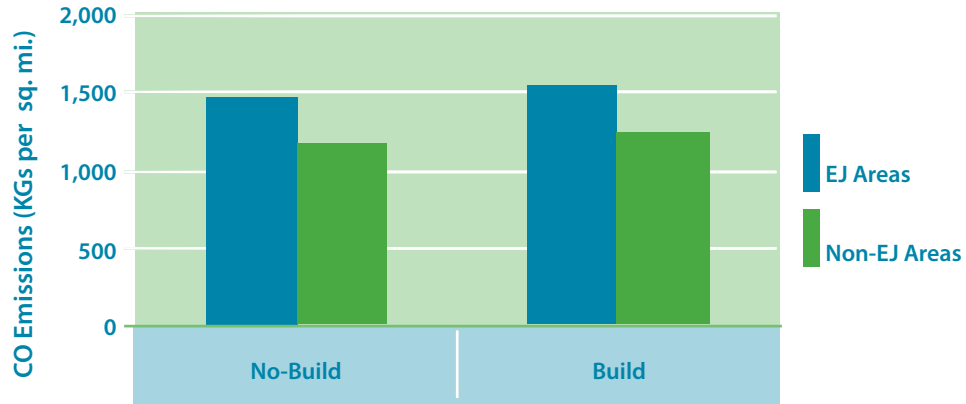


Figure 9-14 shows that average CO emissions are greater for environmental justice areas than for non-environmental justice areas in both the No-Build and Build networks.

FIGURE 9-14

**AVERAGE CARBON MONOXIDE (CO) EMISSIONS PER SQUARE MILE FOR ENVIRONMENTAL AND NON-ENVIRONMENTAL JUSTICE POPULATION ZONES IN THE 2035 NO-BUILD AND 2035 BUILD NETWORKS**



## **SELECTED PROJECTS THAT WILL BENEFIT ENVIRONMENTAL JUSTICE AREAS**

The following transit project in the LRTP will improve air quality and provide more transportation options for environmental justice populations:

- Somerville: Extend Green Line from Lechmere to Mystic Valley Parkway – Provides better access to rapid transit stations, employment, and retail opportunities.

The following highway project will benefit people living in nearby and adjacent environmental justice areas in the following ways:

- Framingham: Route 126/Route135 Grade Separation – Improves air quality in the area by allowing traffic to flow more freely. Improves connectivity for people accessing downtown destinations.



## INTRODUCTION

The 1990 Clean Air Act Amendments (CAAA) require metropolitan planning organizations within nonattainment areas to perform air quality conformity determinations prior to the approval of Long-Range Transportation Plans (LRTPs) and Transportation Improvement Programs (TIPs), and at such other times as required by regulation. A nonattainment area is one that the United States Environmental Protection Agency (EPA) has designated as not meeting certain air quality standards. A conformity determination is a demonstration that plans, programs, and projects are consistent with the State Implementation Plan (SIP) for attaining the air quality standards. The CAAA requirement to perform a conformity determination ensures that federal approval and funding go to transportation activities that are consistent with air quality goals. This chapter presents information and analyses for the air quality conformity determination for the projects in *Paths to a Sustainable Region* LRTP, as required by federal regulations (40 CFR Part 93) and the Massachusetts Conformity Regulations (310 CMR 60.03). It also includes the regulatory framework, conformity requirements, planning assumptions, mobile source emissions budgets, and conformity consultation procedures related to the determination.

### Legislative Background

The 1970 Clean Air Act defined a one-hour national ambient air quality standard (NAAQS) for ground-level ozone. The one-hour ozone standard is 0.12 parts per million, averaged at each monitor over one hour and not to be exceeded more than once per year. Hourly values are determined by readings recorded at air quality monitors located throughout the state. The 1990 CAAA further classified degrees of nonattainment of the one-hour standard based on the severity of the monitored levels of the pollutant. The entire commonwealth of Massachusetts was classified as being in serious nonattainment for the one-hour ozone standard, with a required attainment

date of 1999. The attainment date was later extended, first to 2003 and a second time to 2007.

In 1997, the EPA proposed a new, eight-hour ozone standard that replaced the one-hour standard, effective June 15, 2005. Scientific information had shown that ozone could affect human health at lower levels, and over longer exposure times than one hour. The new standard was challenged in court, and after a lengthy legal battle, the courts upheld it. It was finalized in June 2004. The eight-hour standard is 0.08 parts per million, averaged over eight hours and not to be exceeded more than once per year. Nonattainment areas were again further classified based on the severity of the eight-hour values. Massachusetts as a whole was classified as being in moderate nonattainment for the eight-hour standard, but it was separated into two nonattainment areas—Eastern Massachusetts and Western Massachusetts.



The Eastern Massachusetts Ozone Nonattainment Area includes all of Barnstable, Bristol, Dukes, Essex, Middlesex, Nantucket, Norfolk, Suffolk, and Worcester counties. With this nonattainment classification, the CAAA requires the Commonwealth to reduce its emissions of volatile organic compounds (VOCs) and nitrogen oxides (NO<sub>x</sub>), the two major precursors to ozone formation, to achieve attainment of the eight-hour ozone standard by 2009.

In addition, on April 1, 1996, the cities of Boston, Cambridge, Chelsea, Everett, Malden, Medford, Quincy, Revere, and Somerville were classified as being in attainment for carbon monoxide (CO). As part of the LRTP, an air quality conformity analysis must still be completed for these

communities, as they have a carbon monoxide maintenance plan approved as part of the SIP. The 2010 CO motor vehicle emission budget established for the Boston CO attainment area with a maintenance plan is 228.33 tons of CO per winter day.

As of April 22, 2002, the community of Waltham was redesignated as being in attainment for CO, with an EPA-approved limited-maintenance plan. In areas with approved limited-maintenance plans, federal actions requiring conformity determinations under the transportation conformity rule are considered to satisfy the “budget test” (as budgets are treated as not constraining in these areas for the length of the initial maintenance period). Any requirements for future “project-level” conformity determinations for projects located within this community will continue to use a “hot-spot” analysis to ensure that any new transportation projects in this CO attainment area do not cause or contribute to CO nonattainment.

On January 31, 2008, the Massachusetts Department of Environmental Protection (DEP) submitted to the EPA a revision of the Massachusetts SIP that included a revised



eight-hour ozone attainment demonstration for Eastern Massachusetts. This SIP revision included a 2009 mobile-source emission budget for VOC and NO<sub>x</sub> emissions in the Eastern Massachusetts Ozone Nonattainment Area. The EPA found the eight-hour budget adequate for conformity purposes on March 18, 2008. The Boston Region MPO must show conformity with this eight-hour budget.

## Conformity Regulations

Designated MPOs are required to perform conformity determinations by ozone nonattainment area for their LRTPs and TIPs. Section 176 of the CAAA defines conformity to a State Implementation Plan to mean conformity to the plan's purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of the standards. The Boston Region MPO must certify with regard to the activities outlined in the LRTP and TIP that:

- None will cause or contribute to any new violation of any standard in any area.
- None will increase the frequency or severity of any existing violation of any standard in any area.
- None will delay the timely attainment of any standard or any required interim emission reductions or other milestones in any area.

The EPA issued final conformity regulations in the November 24, 1993, *Federal Register*, and DEP issued conformity regulations effective December 30, 1994. They set forth requirements for determining conformity of LRTPs, TIPs, and individual projects. The federal conformity regulations were amended several times through August 2010. The components of the required conformity analysis are listed below and are explained in detail subsequently.

## Conformity Criteria

- Horizon years
- Latest planning assumptions
- Latest emission model used
- Timely implementation of transportation control measures (TCMs)
- Conformity in accordance with the consultation procedures and SIP revisions
- Public participation procedures
- Financially constrained document

## Procedures for Determining Regional Transportation Emissions

### The Conformity Test

- Consistent with emission budgets set forth in SIP
- Contributes to reductions in CO nonattainment areas

This conformity determination will show the consistency of the LRTP with the 2009 mobile-source emission budget for VOC and NO<sub>x</sub> in the Eastern Massachusetts Ozone





Nonattainment Area and with the CO emission budget for the Boston, Cambridge, Chelsea, Everett, Malden, Medford, Quincy, Revere, and Somerville maintenance area.

## **CONFORMITY DETERMINATION CRITERIA**

This conformity determination has been prepared in accordance with 40 CFR Part 93, Transportation Conformity Rule Amendments: Flexibility and Streamlining: Final Rule. It shows that the LRTP has been prepared following all the guidelines and requirements of the Rule.

### **Horizon Year Requirements**

The horizon years for regional model analysis have been established following 40 CFR 93.106(a) of the Federal Conformity

Regulations. The years for which emissions are calculated are shown below.

- 2010 – Milestone Year: This year is currently being used as the base year for calculation of emission reductions of VOCs and NO<sub>x</sub>.
- 2016 – Milestone Year and Analysis Year: This year is used to show conformity with the CO budget in the Boston nonattainment area and the 2009 ozone budget in Eastern Massachusetts.
- 2020 – Analysis Year
- 2025 – Analysis Year
- 2035 – Horizon Year: Last forecast year of the LRTP

### **Latest Planning Assumptions**

Section 93.110 of the Federal Conformity Regulations outlines the requirements for the most recent planning assumptions that must be in place at the time of the conformity determination. Assumptions must be derived from current estimates and future projections of population, household, employment, travel, and congestion data developed by the MPO. Analysis for the LRTP is based on U.S. census data and information obtained from the Metropolitan Area Planning Council (MAPC), the Massachusetts Department of Transportation (MassDOT), and other sources. The following is a list of the sources of data used for model calibration in this analysis:

- Population, households, and household size: Year 2009 data at a community level received from the U.S. Census Bureau. Community to TAZ-level distribution based on 2000 Census allocation.
- Employment: The Central Transportation Planning Staff's Eastern Massachusetts Site-Level Employment Database for 2009, finalized in 2010.

- Household income, resident workers, and vehicle ownership: The data from Summary File 3 data for Massachusetts from the 2000 U.S. Census of Population and Housing were interpolated to produce year 2009 data.
- Household workers: The year 2009 data were arrived at by interpolating Census Transportation Planning Package Part 1 for Massachusetts from the 2000 U.S. Census of Population and Housing.
- Traffic volumes: MassDOT 2008–09 Traffic Volumes for the Commonwealth of Massachusetts. Traffic counts taken for external stations and screen lines were used.
- Population, household, and employment forecasts: The forecasts of population, households and employment for the 101 cities and towns within the Boston Region MPO area were developed by the Metropolitan Area Planning Council (MAPC) using what is called the “MetroFuture” scenario. This scenario was developed by altering a number of assumptions from their previous Extended Growth scenario. The MetroFuture scenario seeks to channel regional growth and development by targeting the majority of growth to denser areas with already available water, sewer, and transit infrastructure. In this scenario, it is assumed that a greater percentage of residents will be living within walking distance of transit and of major activity centers. The forecasts of population, households, and employment for the 63 cities and towns outside of the Boston Region MPO that are in the MPO’s modeled area were developed by MassDOT and the neighboring regional planning agencies (RPAs).
- Project-level data: Obtained from the responsible implementing agency.

### Transit Service Policy Assumptions

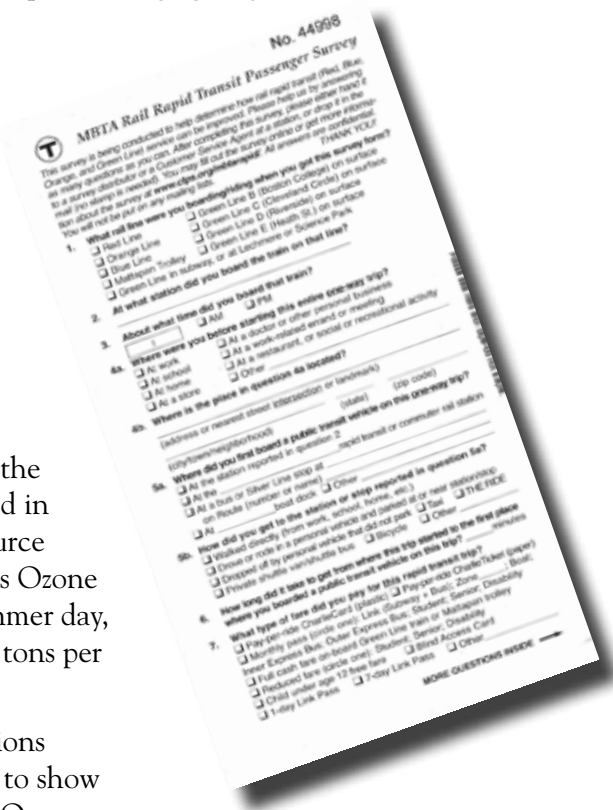
The transit service assumptions used in ridership modeling for the LRTP were based on MBTA service in the spring of 2009. The model calibration was performed using the following:

- *Ridership and Service Statistics*, 8th edition, MBTA Blue Book, 2009
- Transit On-Board Survey (2008-2009)

### Emission Inventory Assumptions

For the LRTP, conformity is determined in relation to the SIP mobile-source emission budgets that were approved in March 2008 for VOC and NOx. The VOC mobile-source emission budget for 2009 for the Eastern Massachusetts Ozone Nonattainment Area has been set at 63.5 tons per summer day, and the 2009 mobile-source budget for NOx is 174.96 tons per summer day.

The Boston Region MPO area’s VOC and NOx emissions are included with those in the following MPO regions to show conformity with the SIP in the Eastern Massachusetts Ozone



#### Nonattainment Area:

- Cape Cod MPO
- Central Massachusetts MPO
- Merrimack Valley MPO
- Montachusett Region MPO
- Northern Middlesex MPO
- Old Colony MPO
- Southeastern Region MPO
- Martha's Vineyard Commission (considered an MPO for planning purposes)
- Nantucket Planning and Economic Development Commission (considered an MPO for planning purposes)



CO emission projections have been set for the nine cities in the Boston area that are classified as being in attainment for CO. An emission attainment inventory for CO of 501.53 tons per winter day was established for all sources of CO emissions (mobile, industrial, and all other sources) for the redesignation year 1993. Of the 501.53 tons, 305.43 tons per winter day was allocated for mobile sources. In addition to the attainment year inventory, the EPA required that emission projections for every five years through 2010 be developed for all sources to ensure that the combination of all CO emissions would not exceed the 501.53 tons per winter day maximum allowance in the future. The mobile-source emission projection of 228.33 tons per winter day was set for

2010. Emissions from the nine towns in the Boston area may not exceed the amount in the last year of the maintenance plan (2010).

MassDOT's Office of Transportation Planning estimated the results for all of the MPOs in the Eastern Massachusetts Ozone Nonattainment Area using a statewide travel demand model (the Boston Region MPO's model results were included as the latest planning assumptions for the conformity analysis). The air quality analysis has been finalized for all of the MPOs, and MassDOT has made the final conformity determination for this ozone nonattainment area.

#### **Latest Emission Model**

Emission factors used for calculating emission changes were determined using MOBILE 6.2, the model used by DEP in determining the mobile-source budget. Emission factors



for motor vehicles are specific to each model year, pollutant type, temperature, and travel speed. MOBILE 6.2 requires a wide range of input parameters, including inspection and maintenance program information and other data, such as hot/cold start mix, emission failure rates, vehicle fleet mix, and fleet age distribution.

The input variables used in this conformity determination were received from DEP. The inputs used for the 2009 Base Year were the same as those used in determining the latest emissions inventory for the Commonwealth of Massachusetts. The inputs used for the years 2009 through 2030 were also received from DEP, and include information on programs that were submitted to the EPA as the strategy for the Commonwealth to obtain ambient air quality standards.

### Timely Implementation of Transportation Control Measures

Transportation control measures (TCMs) were required in the SIP in revisions submitted to the EPA in 1979 and 1982 and in those submitted as part of the Central Artery/Tunnel project. The TCMs included in the 1979 and 1982 submissions were accomplished through construction or through implementation of ongoing programs. The only exceptions are the bus immersion-heater program, the Newton Rider bus service, the private bus insurance discount concept, and the pedestrian malls in Lynn, Cambridge, and Needham. Other services have been substituted for these TCMs. These projects were all included in past Boston Region MPO LRTPs and TIPs.


TCMs were also submitted as a SIP commitment as part of the Central Artery/Tunnel project mitigation. The status of these projects has been updated using the Administrative Consent Order (ACO) signed by the Executive Office of Transportation and the Executive Office of Environmental Affairs (EOEA) in September 2000 and January 2005, and the SIP – Transit Commitments Status Report, which was submitted by MassDOT to DEP in July 2011. All of the projects are included in the LRTP as recommended or completed projects. They include:

- Southeast Expressway High-Occupancy-Vehicle (HOV) Lane
- HOV Lane on I-93 to Mystic Avenue
- 20,000 New Park-and-Ride Spaces
- Ipswich Commuter Rail Extension to Newburyport
- Old Colony Commuter Rail Extension
- Framingham Commuter Rail Extension to Worcester
- South Boston Piers Transitway



### Reevaluation Process of SIP TCMs

MassDOT and DEP went through an extensive process for reevaluating TCMs that had been included in the original Central Artery SIP that had not been completed on schedule—the Green Line Arborway



Restoration, the Red Line–Blue Line Connector, and the Green Line Extension to Ball Square/Tufts University. This process began in 2004 and was completed in 2008. The outcome included DEP’s agreeing to the following alternative commitments:

- Fairmount Line Improvements.
- 1,000 Additional Park-and-Ride Parking Spaces in the Boston Region.
- Complete a final design of the Red Line–Blue Line Connector from the Blue Line at Government Center to the Red Line at Charles Station.
- Enhanced Green Line extended beyond Lechmere to Medford Hillside and Union Square.

MassDOT recently announced through its State Implementation Plan – Transit Commitments 2011 Status Report submitted to DEP on July 27, 2011 that they are proposing delays or changes to these projects. In that submission, MassDOT included a Petition to Delay for the Fairmount Line Improvement Project and the 1,000 New Park and Ride Spaces. They also made a formal request to remove the Red Line-Blue Line project and have informed DEP that the Green Line Extension to College Avenue will be delayed. MassDOT will work with DEP to set up a process for addressing these changes over the next several months and will continue to keep the Boston Region MPO informed of this process through its monthly reports at their regularly scheduled meetings. The Boston Region MPO will continue to include these projects in the LRTP until the process has been completed, assuming that any interim projects or programs will provide equal or better emission benefits. When the process has been completed, the MPO will amend the LRTP and its conformity determination to include any changes (including any interim projects or programs). A status of each of these projects as reported in the status report is provided below.

### ***A Status Report of the Uncompleted SIP Projects***

A more detailed description of the status of these projects can be found at <http://www.eot.state.ma.us/default.asp?pgid=content/transitCommitment&sid=about>.

### ***Fairmount Line Improvement Project – SIP Requires Completion by December 2011***

#### ***Project Status***

MassDOT/MBTA anticipate that the Four Corners, Talbot Avenue, and Newmarket Stations will be incrementally completed in 2012-2013. A station at Blue Hill Avenue, which had provoked controversy among abutters, is now moving forward. The station is tentatively scheduled for construction advertisement in February 2012, with anticipated construction to start in May 2012. MassDOT/MBTA have also begun the formal Petition to Delay process for the Fairmount Line Improvement project and have prepared a list of potential interim reduction offset measures. The proposed measures were developed with the input and assistance of Fairmount Line stakeholders and MassDOT believes that the potential offset measures meet the standard of being within the transit ridership area required in the SIP. The measures include shuttle bus service from Andrew Square to Boston Medical Center and increased bus service on bus routes 29 and 31 servicing Roxbury, Dorchester, and Mattapan.

***Funding Source:*** the Commonwealth

## 1,000 New Park-and-Ride Spaces – SIP Requires Completion by December 2011

### **Project Status**

MassDOT/MBTA will not meet the SIP deadline for this project because construction of the Wonderland garage, which will provide 612 of the required spaces, has fallen behind schedule. MassDOT/MBTA currently anticipate that the Wonderland project will be completed in April 2012. MassDOT/MBTA are requesting that DEP not require any interim reduction offset measures because of the brevity of the delay and the low level of short-term air quality benefits. The remaining 388 required spaces are being provided through other, smaller parking projects throughout the MBTA system.

**Funding Source:** the Commonwealth

## Red Line/Blue Line Connector – Final Design – SIP Requires Completion by December 2011

### **Project Status**

MassDOT/MBTA are proposing to nullify the commitment to perform final design of the Red Line/Blue Line Connector, due to the unaffordability of the eventual construction of the project. MassDOT has initiated a process to amend the SIP to permanently and completely remove the obligation to perform final design of the Red Line/Blue Line Connector. To this end, MassDOT will work with DEP and with the general public on the amendment process. MassDOT is not proposing to substitute any new projects in place of the Red Line/Blue Line Connector commitment, given the absence of any air quality benefits associated with the current Red Line/Blue Line commitment (final design only). Correspondence from MassDOT to DEP formally initiating the amendment process was submitted on July 27, 2011, and is posted to the MassDOT website. This is the beginning of a process that includes a formal public comment period and public meeting. This process could take up to two years.

**Funding Source:** MassDOT is proposing to nullify this commitment

## Green Line Extension Project – SIP Requires Completion by December 2014

### **Project Status**

MassDOT/MBTA has performed an in-depth risk assessment for the project, which is now trending for completion in 2018-2020. MassDOT/MBTA is beginning the process of formally petitioning DEP on the delay and MassDOT/MBTA will be developing a list of potential interim reduction offset measures, to be informed by public input.

MassDOT, which has committed substantial resources to the Green Line Extension project, a top transportation priority of the Commonwealth and the largest expansion of the MBTA rapid transit system in decades, is now transitioning the project from the planning and environmental review phases to design, engineering, and eventual construction, coupled with the tasks associated with applying for New Starts funding. As part of this transition, the MBTA has assumed lead project management responsibility for the ongoing development of the Green Line Extension project, with MassDOT continuing to support the MBTA on an as-needed basis. This transition to design, engineering, and construction represents the achievement of a crucial and exciting milestone for the Green Line Extension project, which has now progressed farther and closer to implementation, with the support and advocacy of elected leaders, municipal

officials, organized advocates, and hundreds of individual members of the public, than at any time in the past.

Together, MassDOT and the MBTA have also managed an extensive community and public participation effort for the Green Line Extension project, which enjoys widespread support from local officials and the public in general. This community participation effort, while time-consuming, has made the project better and more responsive to public concerns, and is appropriate for a project of this magnitude and importance to the surrounding community and to the region as a whole.

The Green Line Extension is an enormously complex capital project, with many tasks and sub-tasks that must be completed, some in sequence and some in parallel, in order for the first rider to travel from a relocated Lechmere Station toward Union Square and College Avenue. In the 2010 SIP Status Report, MassDOT indicated that the Green Line Extension project was tracking for completion at the end of October 2015, ten months past the legal deadline of December 31, 2014. Over the past four months, the Green Line Extension project team has performed a cost/schedule/risk analysis. As a result, the 2010 schedule projections for the Green Line Extension project have been further refined. MassDOT and the MBTA now have a much deeper and more nuanced understanding of the constraints and limitations that must be managed in order to implement the Green Line Extension project.

Based upon those continuing analyses, MassDOT is now projecting a timeframe, rather than a specific month or day, for the introduction of revenue service on the Green Line Extension. The points within the timeframe are associated with different probabilities, as shown below:

- 10% Probability of Not Exceeding – September 2018
- 50% Probability of Not Exceeding – June 2019
- 90% Probability of Not Exceeding – July 2020

It is important to note that this schedule scenario assumes the issuance of a notice to proceed to a Design/Build contractor only after the MBTA has taken full ownership of all private property of any substantial size required for the construction of the Green Line Extension. This allows the Green Line Extension project to benefit from lessons learned on the Greenbush Commuter Rail project, in which the MBTA did not take ownership of needed properties until after the issuance of a notice to proceed to the Design/Build contractor, costing the MBTA both time and money and slowing the overall completion of the project. It also assumes that the federal National Environmental Policy Act (NEPA) process for the Green Line Extension will be complete in November of 2011 and that necessary property acquisition can begin at that time.

The work that has gone into developing the detailed risk analyses and to quantifying the statistically-based schedule ranges is significant and the most detailed done to date for the Green Line Extension project. However, MassDOT and the MBTA are not satisfied with the schedule ranges shown here, and are actively considering strategies that could mitigate schedule risks and improve upon the probable delivery dates for passenger service on the Green Line Extension. Some of the strategies under consideration are identified below:



- The development of a ‘phasing’ scenario that could have segments of the Green Line Extension in revenue service earlier than projected, thereby mitigating at least some of the delay described above. In this scenario, opening of the Green Line Extension project would be phased, allowing some stations to open for public use while others are still being constructed.
- The possibility of awarding a Design/Build contract prior to completion of all major property acquisitions. While this would run counter to the lessons of the Greenbush project, it could potentially expedite completion of the project.
- The possibility of using a project delivery method other than Design/Build, specifically Construction Manager - General Contractor. Although this method is relatively new, it could potentially expedite final design and construction.
- In order to better and more frequently share with project stakeholders and the general public the status and progress of the Green Line Extension project, the MBTA proposes to convene a GLX Steering Group. The Group, which will be chaired by the MBTA, will include representatives of MassDOT Planning; MassDOT Highway Division; the Cities of Cambridge, Somerville, and Medford; and the Federal Transit Administration. The first task for the Group will be to review the anticipated Green Line Extension project schedule, including phasing options, to try to lessen the projected delay. The Group will, therefore, meet on at least a bi-weekly basis, at least in the short term. The MBTA and its technical team will report to the Group on the schedule and status of the Green Line Extension project, and will bring any other pertinent issues to the Group. The Group will follow all Open Meeting guidelines.

In addition, the MBTA plans to request a ‘Letter of No Prejudice’ from the FTA, which could allow the Green Line Extension project to move forward more quickly while still preserving the future potential to seek federal reimbursement for state monies expended.

The timeline listed above represents a substantial delay beyond the current SIP deadline of December 31, 2014, triggering the need to provide interim emission reduction offset projects and measures for the period of the delay (beginning January 1, 2015). On June 9, 2011, the Boston Region MPO adopted a workscope directing the Central Transportation Planning Staff (CTPS) to initiate the process of calculating the reductions of NMHC, CO, and NO<sub>x</sub> reductions equal to or greater than the reductions projected for the Green Line Extension itself, as specified in the SIP regulation that will be required for the period of the delay. This work will include calculating Green Line Extension air quality benefits for the period of delay and generating and modeling potential alternative interim offsets. It is anticipated that this work will be completed by the end of December 2011. CTPS will work with MassDOT and the MBTA on this process.

Once that process is complete, MassDOT and the MBTA will develop a portfolio of interim projects and/or measures that can meet the requirement, and will seek input from both DEP and the general public on the portfolio. MassDOT and the MBTA are aware of the strong public interest in potential interim emission reduction offsets, having already received many suggestions and recommendations; they will strive to make use of ideas presented to them by the public whenever possible. However, MassDOT and the MBTA are acutely aware of the need for any selected interim emission reduction offsets to quantitatively and demonstrably meet the emission reduction threshold established



in the SIP regulation, and will be subjecting potential interim emission reduction offsets to necessary rigorous analysis by the CTPS. MassDOT and the MBTA are also sensitive to the constrained fiscal environment in which all of the Massachusetts transportation agencies currently operate, and will weigh fiscal concerns when selecting appropriate interim emission reduction offsets. In addition, MassDOT is holding a public hearing on the Green Line Extension Project Environmental Assessment on October 20, 2011. At that hearing, MassDOT will take public comments on suggested interim offset mitigation measures. It is anticipated that MassDOT will provide DEP the proposed interim offsets in the spring/summer of 2012 at which time DEP will begin its process of reviewing the offsets.

MassDOT will keep DEP apprised of the progress made by the CTPS as it develops the emission reduction targets for the portfolio of interim emission reduction offset projects and measures.

**Funding Source:** the Commonwealth

### Russia Wharf Ferry Terminal

#### **Project Status**

Building of the Russia Wharf Ferry Terminal was the responsibility of the Central Artery/Tunnel (CA/T) Project. Actual ferry service to the wharf was not included in the SIP requirement, and the CA/T Project is not responsible for providing that service. In May 2006, the CA/T Project requested a deferral of the construction of the facility from DEP and the Boston Conservation Commission (BCC) pending the availability of ferry service and resolution of the status of the Old Northern Avenue Bridge, which is too low to provide clearance to vessels of a size or configuration suited to regularly scheduled passenger service. In June 2008, the Boston Conservation Commission approved an extension of this facility's Order of Conditions to June 2011. The Massachusetts Turnpike Authority completed a marketing demand study in October 2009 to determine the potential demand for service in this area, the type of service that could be provided, and the physical, operational, and financial constraints of this project. In February 2010, this information was forwarded to the Massachusetts Department of Transportation as part of the ongoing evaluation of this facility. This study will be sent to the Department of Environmental Protection Waterways Program and BCC in the second half of 2011. The only water transportation service currently available at this location is on-call water taxi. There is no regularly scheduled passenger water transportation service, and there is no party with a plan or proposal to provide such service. The City of Boston is moving forward to evaluate design/engineering alternatives to the Old Northern Avenue Bridge that would address the vessel clearance issue, which currently makes operation of regularly scheduled ferry service difficult and inefficient.

**Funding Source:** the Commonwealth

#### **Consultation Procedures**

The conformity regulations require the MPO to make a conformity determination according to consultation procedures set out in the state and federal regulations and to follow public involvement procedures established by the MPO under federal metropolitan transportation planning regulations.

Both the state and federal regulations require that the Boston Region MPO, MassDOT, DEP, EPA, and the Federal Highway Administration consult on the following issues:

- Selection of regional emissions analysis models, including model development and assessing project design factors for modeling
- Selection of inputs to the most recent EPA-approved emissions factor model
- Selection of CO hot-spot modeling procedures, as necessary
- Identification of regionally significant projects to be included in the regional emissions analysis
- Identification of projects that have changed in design and scope.
- Identification of exempt projects
- Identification of exempt projects that should be treated as nonexempt because of adverse air quality impacts
- Identification of the latest planning assumptions and determination of consistency with SIP assumptions

These issues have all been addressed through consultation among the agencies listed above.

### Public Participation Procedures

Title 23 CFR Sections 450.324 and 40 CFR 90.105(e) require that the development of the LRTP, TIP, and related certification documents provide an adequate opportunity for public review and comment.

Section 450.316(b) establishes the outline for MPO public participation programs. The Boston Region MPO's public participation program was adopted in June 2007 and amended in April 2010. The development and adoption of this program conforms to these requirements. The program guarantees public access to the LRTP and TIP and all supporting documentation, provides for public notification of the availability of the LRTP and TIP and the public's right to review the draft documents and comment on them, and provides a public review and comment period prior to the adoption of the LRTP and TIP and related certification documents by the MPO.

On August 7, 2011, a public notice was placed in the *Boston Globe* informing the public of its right to comment on this draft document. On September 22, 2011, the Boston Region MPO voted to approve the LRTP and its Air Quality Conformity Determination. This allowed ample opportunity for public comment and MPO review of the draft document. These procedures comply with the associated federal requirements.

### Financial Consistency

Title 23 CFR Section 450.324 and 40 CFR 93.108 require the LRTP to "be financially constrained by year and include a financial plan that demonstrates which projects can be implemented using current revenue sources and which projects are to be implemented using proposed revenue sources."

This Boston Region MPO LRTP, *Paths to a Sustainable Region*, is financially constrained to projections of federal and state resources reasonably expected to be available during the appropriate time frame. Projections of federal resources are based upon the estimated apportionment of the federal authorizations contained in SAFETEA-LU, the six-year transportation reauthorization bill, as allocated to the region by the state or as allocated among the various Massachusetts MPOs according to federal formulas or MPO agreement. Projections of state resources are based upon the allocations contained in the current state Transportation Bond Bill and historic trends. Therefore, the LRTP complies with federal requirements relating to financial planning.

## **PROCEDURES FOR DETERMINING REGIONAL TRANSPORTATION EMISSIONS**

The federal conformity regulations set forth specific requirements for determining transportation emissions. The requirements and the procedures used for the LRTP are summarized below.

### **Demographics, Employment, and Transportation Demand**

Specific sources of population, household, employment, and traffic information used in the LRTP have been listed above under the Latest Planning Assumptions section. Chapter 8 outlines recommendations for specific projects for the time period ending in 2035 for the Boston region.

Only regionally significant projects are required to be included in the travel-demand modeling efforts. The federal conformity regulations define regionally significant as follows:

A transportation project (other than an exempt project) that is on a facility which serves regional transportation needs (such as access to and from the area outside of the region, major activity centers in the region, major planned developments such as new retail malls, sport complexes, etc., or transportation terminals as well as most terminals themselves) and would be included in the modeling of a metropolitan area's transportation network, including at a minimum all principal arterial highways and all fixed guideway transit facilities that offer an alternative to regional highway travel.

In addition, specific projects have been exempt from regional modeling emissions analysis. The categories of exempt projects include:

- Intersection channelization projects
- Intersection signalization projects at individual intersections
- Interchange reconfiguration projects
- Changes in vertical and horizontal alignment
- Truck size and weight inspection stations
- Bus terminals and transfer points



The Recommended Plan Network in this conformity determination is composed of projects proposed in the approved TIPs and LRTP, and projects in the MBTA capital budget. A list of the projects that meet these criteria and are included in the Recommended Plan Network and this conformity determination is provided in Table 10-1. The list includes all regionally significant projects in the Eastern Massachusetts Ozone Nonattainment Area.

In addition to emissions calculated using the regional transportation model (which includes emissions from cars, trucks, and motorcycles), a separate analysis was performed off model to determine emissions from commuter rail, commuter boat, and the MBTA bus program. These calculations are shown in Table 10-2.

**TABLE 10-1**

**REGIONALLY SIGNIFICANT PROJECTS INCLUDED IN THE REGIONAL TRANSPORTATION MODELS FOR THE EASTERN MASSACHUSETTS OZONE NONATTAINMENT AREA**

ANALYSIS YEAR	COMMUNITY	DESCRIPTION OF PROJECTS
<b>UNDER CONSTRUCTION – BOSTON REGION MPO</b>		
2016	Bedford, Burlington	Middlesex Turnpike Improvements, Phases 1 and 2
2016	Bellingham	Pulaski Boulevard
2016	Boston	Fairmount Line Improvements, including new stations
2016	Boston	East Boston Haul Road/Chelsea Truck Route (new grade separated roadway)
2016	Concord, Lincoln	Route 2/Crosby's Corner (grade separation)
2016	Danvers	Route 128/Route 35 and Route 62
2016	Hudson	Route 85 (capacity improvements from Marlborough TL to Route 62)
2016	Marshfield	Route 139 Widening (to 4 lanes between School St. and Furnace St.)
2016	Quincy	Quincy Center Concourse, Phase 2 (new roadway: Parking Way to Hancock St.)
2016	Randolph to Wellesley	Route 128 Additional Lanes
2016	Somerville	Assembly Square Orange Line Station
2016	Somerville	Assembly Square Roadways (new and reconfigured)
2016	Weymouth, Hingham, Rockland	South Weymouth Naval Air Station Access Improvements
2016	Regionwide	1000 Additional Park-and-Ride Spaces
<b>RECOMMENDED PLAN PROJECTS – BOSTON REGION MPO</b>		
2016	Beverly	Beverly Station Commuter Rail Parking Garage
2016	Boston	Conley Haul Road
2016	Salem	Salem Station Commuter Rail Parking Garage Expansion
2016	Somerville, Cambridge, Medford	Green Line Extension to Medford Hillside (College Avenue)/Union Sq.
2016	Weymouth	Route 18 Capacity Improvements
2020	Bedford, Burlington, Billerica	Middlesex Turnpike Improvements, Phase 3 – widening Plank St. to Manning Rd.
2020	Boston	Sullivan Square/Rutherford Avenue Improvements
2020	Hanover	Route 53, Final Phase (widening to 4 lanes between Route 3 and Route 123)
2020	Salem	Bridge Street (widening to 4 lanes between Flint and Washington St.)
2020	Somerville, Medford	Green Line Extension from Medford Hillside (College Avenue) to Mystic Valley Parkway (Route 16)

(CONT.)

**TABLE 10-1**

**REGIONALLY SIGNIFICANT PROJECTS INCLUDED IN THE REGIONAL TRANSPORTATION MODELS FOR THE EASTERN MASSACHUSETTS OZONE NONATTAINMENT AREA (CONT.)**

ANALYSIS YEAR	COMMUNITY	DESCRIPTION OF PROJECTS
<b>RECOMMENDED PLAN PROJECTS – BOSTON REGION MPO</b>		
2025	Canton	I-95 (NB)/Dedham Street Ramp/Dedham Street Corridor (new ramp with widening on Dedham St. from I-95 to University Ave.)
2025	Canton	Interstate 95/Interstate 93 Interchange (new direct connect ramps)
2025	Newton, Needham	Needham Street/Highland Avenue (includes widening Charles River Bridge)
2025	Woburn	Montvale Avenue (widening from Central St. to east of Washington St.)
2025	Woburn	New Boston Street Bridge (reestablish connection over MBTA Lowell line)
2035	Braintree	Braintree Split - I-93/Route 3 Interchange
2035	Framingham	Route 126/135 Grade Separation
2035	Reading, Woburn, Stoneham	I-93/I-95 Interchange (new direct connect ramps)
2035	Revere, Malden, Saugus	Route 1 (widening from 4 to 6 lanes between Copeland Circle and Route 99)
2035	Wilmington	Tri-Town Interchange (new “Lowell Junction” interchange on I-93 between Route 125 and Dascomb Rd.)
<b>CAPE COD REGION</b>		
2020	Barnstable	Yarmouth Rd. /Route 28 (widening to 4 lanes) with Hyannis Access Improvements
2025	Bourne	Route 6 Exit 1 WB on-ramp changes and interchange improvements
2035	Bourne	Route 25 Access Ramp widening, Belmont Circle two-way travel
2035	Capewide	Daily Passenger Rail Service: Hyannis to Buzzard’s Bay, Middleborough
2035	Mashpee	Mashpee Rotary Ring Roads (connectors, Great Neck Rd., Routes 28 and 151)
<b>CENTRAL MASSACHUSETTS REGION</b>		
2016	Northborough	Route 20, Church St. to South St., signal coordination in corridor
2016	Shrewsbury/Worcester	Route 9 Bridge over Lake Quinsigamond: widening, additional lane each direction
2016	Auburn	Route 12/20 to Auburn TL capacity improvements and raised median
2016	Worcester	Lincoln/Highland/Pleasant Streets intersection corridor improvements, minor widening, select signal coordination
2016	Worcester	Route 20 Widening to a consistent 4 lanes
2020	Charlton, Oxford	Route 20 Widening to a consistent 4 lanes
2025	Westborough, Hopkinton	I-90/I-495 and I-495/Route 9 Interchange Improvements (CD or front-age) roads)
2035	Worcester	Route 122/122A Madison St./Chandler St. Kelley Square to Pleasant St.: various improvements and signal coordination
2035	Worcester	I-290 Hope Ave. (to full interchange and roundabout at Webster St. and Hope Ave.)
2035	Millbury, Sutton	Route 146 Improvements: Route 122A to Central Turnpike
<b>MARTHA’S VINEYARD REGION</b>		
n/a	n/a	None

(CONT.)

**TABLE 10-1**

**REGIONALLY SIGNIFICANT PROJECTS INCLUDED IN THE REGIONAL TRANSPORTATION MODELS FOR THE EASTERN MASSACHUSETTS OZONE NONATTAINMENT AREA (CONT.)**

ANALYSIS YEAR	COMMUNITY	DESCRIPTION OF PROJECTS
<b>MERRIMACK VALLEY REGION</b>		
2016	Amesbury	Route 110 from I-495 to I-95 (widen from 2 lanes to 4)
2020	Newburyport, Amesbury	I-95 over Merrimack River (Whittier Bridge widening from 6 to 8 lanes)
2020	Methuen	Route 110/113 (Methuen Rotary – new interchange ramps at I-93)
2025	Lawrence, North Andover	Route 114 (widening from I-495 to Waverly Road)
2035	Andover	Tri-Town Interchange (new “Lowell Junction” interchange on I-93 between Route 125 and Dascomb Rd.) and I-93 widening to 4 lanes in each direction from new interchange/current “lane drop” area to I-495
<b>MONTACHUSETT REGION</b>		
2016	Fitchburg/Westminster	New Wachusett Commuter Rail Station
2016	Ayer to South Acton	Fitchburg Line Commuter Rail Improvements (double track)
2020	Leominster	Route 13 Hawes St. to Prospect St. (some widening, new signals, etc.)
2025	Athol	New Interchange on Route 2 at South Athol Road
<b>NANTUCKET REGION</b>		
n/a	n/a	None
<b>NORTHERN MIDDLESEX REGION</b>		
2016	Westford	Route 110 Minot’s Corner to Nixon Rd., widen to 4 lanes
2020	Billerica	Middlesex Turnpike Improvements, Phase 3 – widening Plank St. to Manning Rd.
2035	Tewksbury	Tri-Town Interchange (new “Lowell Junction” interchange on I-93 between Route 125 and Dascomb Rd.) and I-93 widening to 4 lanes in each direction from new interchange/current “lane drop” area to I-495.
2035	Westford	I-495 at Boston Road (Exit 32) widening of on- and off-ramps
2035	Lowell, Tewksbury, Chelmsford, and Westford	I-495 Additional travel lane each direction between Exits 32 and 35 and between Exits 37 and 40
2035	Lowell	Wood Street, Rourke Bridge: new bridge, widening and corridor improvements
<b>OLD COLONY REGION</b>		
2016	Abington	Route 18 –Widening to 4 Lanes from Route 139 to Highland Rd.
2020	Brockton	Route 123 –Widen from Route 24 to Angus Beaton Drive
2020	Bridgewater	Route 24 –Add Northbound Slip Ramp from Route 104 WB to Route 24 NB Northbound
2020	Plymouth	Route 3 –Add Northbound on-Ramp at Long Pond Road (Exit 5)
2020	Plymouth	Long Pond Road Bridge widening (Exit 5)
2025	Brockton	Main Street, Warren Avenue, Spring Street, West Elm Street, Belmont Street - Reestablish Two-Way Circulation
2025	West Bridgewater	Route 106 –Widening from 2 to 4 Lanes between Route 24 and Route 28
2035	Plymouth	Route 3 – Add NB Off-ramp to Plimouth Plantation Hwy (Exit 4)
2035	Plymouth	Route 25 –Add New Interchange Before Exit 1 and connect to Bourne Road
2035	West Bridgewater	Route 28, Route 106, Central Square Signal and intersection coordination

(CONT.)

**TABLE 10-1**

**REGIONALLY SIGNIFICANT PROJECTS INCLUDED IN THE REGIONAL TRANSPORTATION MODELS FOR THE EASTERN MASSACHUSETTS OZONE NONATTAINMENT AREA (CONT.)**

ANALYSIS YEAR	COMMUNITY	DESCRIPTION OF PROJECTS
<b>SOUTHEASTERN MASSACHUSETTS REGION</b>		
2016	Fall River, Somerset	New Brightman Street Bridge –capacity improvements to 4 lane divided facility
2016	Fall River	Route 79/Davol Street (interchange improvements and new traffic circulation)
2016	Freetown	Route 24 – New Interchange (Exit 8 ½)
2016	Mansfield	Route 140/I-495 New Southbound On-Ramp
2020	Dartmouth	Route 6 (Faunce Corner Rd)/I-195 Interchange –Bridge Widening to 5 Lanes
2035	Taunton	Route 24/140 –Interchange Reconstruction

**TABLE 10-2**

**EMISSIONS FROM OFF-MODEL SOURCES OF VMT IN EASTERN MASSACHUSETTS**

	MODE	2010		2016		2020		2025		2035	
		GRAMS	TONS	GRAMS	TONS	GRAMS	TONS	GRAMS	TONS	GRAMS	TONS
<b>VOC EMISSIONS</b>	Buses	30,400	0.034	30,400	0.034	30,400	0.034	30,400	0.034	30,400	0.034
	Commuter Rail	123,400	0.136	70,500	0.078	70,500	0.078	27,100	0.030	9,500	0.010
	Commuter Boat	285,800	0.315	285,800	0.315	285,800	0.315	285,800	0.315	285,800	0.315
	<b>TOTAL</b>	<b>439,600</b>	<b>0.485</b>	<b>386,700</b>	<b>0.426</b>	<b>386,700</b>	<b>0.426</b>	<b>343,300</b>	<b>0.378</b>	<b>325,700</b>	<b>0.359</b>
<b>NOx EMISSIONS</b>	Buses	1,288,100	1.420	1,288,100	1.420	1,288,100	1.420	1,288,100	1.420	1,288,100	1.420
	Commuter Rail	2,711,400	2.989	1,613,300	1.778	1,613,300	1.778	921,900	1.016	447,400	0.493
	Commuter Boat	539,800	0.595	539,800	0.595	539,800	0.595	539,800	0.595	539,800	0.595
	<b>TOTAL</b>	<b>4,539,300</b>	<b>5.004</b>	<b>3,441,200</b>	<b>3.793</b>	<b>3,441,200</b>	<b>3.793</b>	<b>2,749,800</b>	<b>3.031</b>	<b>2,275,300</b>	<b>2.508</b>

**Changes in Project Design Since the Last Conformity Determination Analysis**

The Commonwealth requires that any change in project design from the previous conformity determination for the region be identified. The last conformity determination was performed for the JOURNEY to 2030 Amendment, in November 2009. Changes that have occurred since the last conformity determination are as follows:

- The modeled base year has changed to 2009 and updated to 2010.
- A new analysis year has been included in the conformity determination. An air quality analysis has been completed for 2016. This complies with EPA’s Transportation Conformity Rule Restructuring Amendments (40 CFR Part 93.118,



expected to become effective August 2011), which states that “if the attainment date has not yet been established, the first analysis year must be no more than five years beyond the year in which the conformity determination is being made.” (2011 base to 2016 analysis year).

- Emission factors have been developed for 2010, 2016, 2020, 2025, and 2035 using Mobile 6.2, with inputs approved by DEP and EPA.
- New HPMS (Highway Performance Monitoring System) adjustment factors have been developed for the new 2010 base year.

### Model-Specific Information

40 CFR Part 93.111 outlines requirements pertaining to the network-based transportation demand models. These requirements include modeling methods and functional relationships that are to be used in accordance with accepted professional practice and are to be reasonable for purposes of estimating emissions. The Boston Region MPO has used the methods described in the conformity regulations for the analysis in this LRTP.

### Highway Performance Monitoring System Adjustments

As stated in EPA guidance, all areas of serious ozone and carbon monoxide nonattainment must use the Federal Highway Administration’s (FHWA’s) Highway Performance Monitoring System (HPMS) to track daily vehicle-miles of travel (VMT) prior to attainment to ensure that the state is in line with commitments made in reaching attainment of the ambient air quality standards by the required attainment dates. MassDOT provided HPMS information to DEP. DEP used this information in setting mobile-source budgets for VOCs, NO<sub>x</sub>, and CO in all SIP revisions prior to 1997. DEP has since revised its VOC and NO<sub>x</sub> budgets using transportation-demand model runs. However, the models must still be compared to HPMS data, since HPMS is currently the accepted tracking procedure as outlined in the regulations.

The conformity regulations require that all model-based VMT be compared with the HPMS VMT to ensure that the region is in line with VMT and emission projections made by DEP. An adjustment factor that compares the 2000 HPMS VMT to the 2000 transportation model VMT has been developed. This adjustment factor is then applied to all modeled VOC and NO<sub>x</sub> emissions for the years 2010 through 2035 to ensure consistency with EPA-accepted procedures.

$$\frac{2010 \text{ HPMS VMT}}{2010 \text{ Modeled VMT}} = \text{Adjustment factor for VOC and NO}_x$$

HPMS adjustment factors, calculated on a regional basis, are applied to the model output of future scenarios, and they occasionally change as base-year models are updated or improved. The latest HPMS factors for the Eastern Massachusetts Ozone Nonattainment Area are shown in Table 10-3.

**TABLE 10-3**

**HPMS ADJUSTMENT FACTORS**

MPO REGION	2010 HPMS VMT (MILES)	TRAVEL DEMAND MODEL VMT (MILES)	HPMS/MODEL CONVERSION FACTOR
Cape Cod	6,869,000	4,456,118	1.541
Central Massachusetts	14,564,000	11,924,422	1.221
Martha's Vineyard	266,000	224,944	1.183
Merrimack Valley	9,353,000	9,143,834	1.023
Boston	60,751,000	71,225,035	0.853
Montachusett	5,015,000	4,392,193	1.142
Nantucket	153,000	71,899	2.128
Northern Middlesex	6,523,000	6,735,326	0.968
Old Colony	6,883,000	6,549,927	1.051
Southeastern Massachusetts	14,710,000	13,745,040	1.070
<b>TOTAL EASTERN MASS.</b>	<b>125,087,000</b>	<b>128,468,738</b>	<b>0.974</b>

Since the CO emission budget for the Boston CO attainment area was determined using the HPMS method rather than the transportation model, a different adjustment factor is applied to the CO emissions for the nine cities and towns in that area. This was done by comparing the 1990 CO emissions from the nine cities and towns resulting from the 1990 base-year model run to the 1990 HPMS-generated CO emissions data submitted as part of the SIP. The HPMS data were divided by the model data to determine the CO adjustment factor to be applied to all modeled CO emissions for future years. The CO HPMS adjustment factor is 0.71.

**THE CONFORMITY TEST**

**Consistency with Emission Budgets Set Forth in the SIP**

The Boston Region MPO has conducted an air quality analysis for *Paths to a Sustainable Region*. The purpose of the analysis is to evaluate the air quality impacts on the SIP of the projects included in the LRTP. The analysis evaluates the change in ozone-precursor (VOCs and NOx) emissions and CO emissions due to implementation of the LRTP. The modeling procedures and assumptions used in this air quality analysis follow the EPA’s final conformity regulations. They are also consistent with procedures used by DEP to develop Massachusetts’s “1990 Base-Year Emission Inventory,” “1996 Reasonable Further Progress Plan,” “Post-1996 Reasonable Further Progress Plan,” “1996 Rate of Progress Report,” and “Ozone Attainment Demonstration” for the SIP. All consultation procedures were followed to ensure that a complete analysis of the LRTP was performed and was consistent with the SIP.

The primary test for showing conformity with the SIP is to demonstrate that the air quality conformity of this LRTP is consistent with the emission budgets set forth in the SIP. The Massachusetts Reasonable Further Progress Plan (RFP) was deemed complete by the EPA on June 5, 1997. The EPA determined that the 15 percent RFP SIP

submittal contained an adequate mobile source emissions budget to conduct conformity determinations using the conformity criteria. In addition, the 2009 mobile-source emission budget for Eastern Massachusetts was found adequate for conformity purposes by the EPA in March 2008.

The MPO staff estimated VOC and NOx emissions for the Boston Region MPO region. MassDOT included the Boston Region MPO emissions estimates in the final emission totals for all areas and all MPOs in Massachusetts. The VOC mobile-source emission budget for 2009 for the Eastern Massachusetts Ozone Nonattainment Area has been set at 63.5 tons per summer day, and the 2009 mobile-source budget for NOx is 174.96 tons per summer day. As shown in Tables 10-4 and 10-5, the results of the air quality analysis demonstrate that the VOC and NOx emissions from all build scenarios are less than the VOC and NOx emissions budgets for the Eastern Massachusetts Ozone Nonattainment Area.

The CO mobile-source attainment inventory for 1993 for the nine cities in the Boston area recently reclassified as being in attainment is 305.43 tons per winter day. The projection of mobile sources for the Boston maintenance area is 228.33 tons per winter day for 2010. Estimates of CO emissions for the nine cities in the Boston maintenance area for various years are shown in Table 10-6. The CO emissions are less than the CO emission budget.

**TABLE 10-4**

**VOC EMISSIONS ESTIMATES FOR THE EASTERN MASSACHUSETTS OZONE NONATTAINMENT AREA  
(IN TONS PER SUMMER DAY)**

YEAR	BOSTON REGION MPO ACTION EMISSIONS	EASTERN MA ACTION EMISSIONS	EMISSION BUDGET	DIFFERENCE (ACTION MINUS BUDGET)
2010	n/a	64.974	n/a	n/a
2016	17.664	36.232	63.50	-27.268
2020	15.645	32.386	63.50	-31.114
2025	15.316	30.988	63.50	-32.512
2035	14.657	31.063	63.50	-32.437

**TABLE 10-5**

**NOx EMISSIONS ESTIMATES FOR THE EASTERN MASSACHUSETTS OZONE NONATTAINMENT AREA  
(IN TONS PER SUMMER DAY)**

YEAR	BOSTON REGION MPO ACTION EMISSIONS	EASTERN MA ACTION EMISSIONS	EMISSION BUDGET	DIFFERENCE (ACTION MINUS BUDGET)
2010	n/a	178.925	n/a	n/a
2016	30.307	66.219	174.96	-108.741
2020	19.531	45.188	174.96	-129.772
2025	17.092	36.521	174.96	-138.439
2035	12.214	29.038	174.96	-145.922

**TABLE 10-6**

**WINTER CO EMISSIONS ESTIMATES FOR THE CO MAINTENANCE AREA FOR THE NINE CITIES IN THE BOSTON AREA  
(ALL EMISSIONS IN TONS PER WINTER DAY)**

YEAR	BOSTON REGION MPO ACTION EMISSIONS	EMISSION BUDGET	DIFFERENCE (ACTION MINUS BUDGET)
2010	180.57	228.33	-47.76
2016	112.64	228.33	-115.69
2020	107.98	228.33	-120.35
2025	107.54	228.33	-120.79
2035	106.67	228.33	-121.66

**CONCLUSION**

The Clean Air Act Amendments of 1990 established air quality conformity requirements for transportation plans, programs, and projects. The EPA published a final rule in the November 24, 1993, Federal Register, with several amendments through January 2008, providing procedures to be followed by the U.S. Department of Transportation in determining conformity of transportation plans, programs, and projects with the SIP for meeting air quality standards. Eastern Massachusetts has been designated a “moderate” ozone nonattainment area for the eight-hour ozone standard. Federal conformity regulations require that the impact of transportation plans, programs, and projects on nonattainment areas be evaluated.

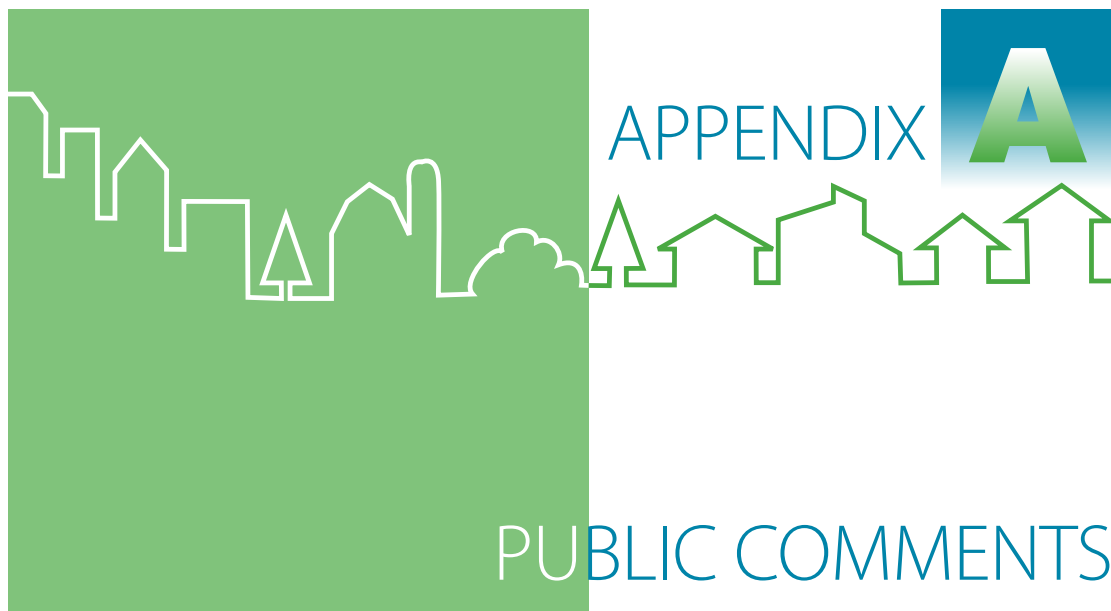
The Boston Region MPO has conducted an air quality analysis for projects in Paths to a Sustainable Region. The purpose of the analysis was to evaluate the air quality impacts of the LRTP on the SIP. The analysis evaluates the change in ozone precursor emissions (VOCs and NOx) and CO emissions due to the implementation of the LRTP. The modeling procedures and assumptions used in this air quality analysis follow the EPA’s and the Commonwealth’s guidelines and are consistent with all present and past procedures used by the Massachusetts DEP to develop and amend the SIP.

MassDOT has found the emission levels from all areas and all MPO regions in Eastern Massachusetts, including emissions resulting from implementation of the LRTP, to be in conformance with the SIP according to state and federal conformity criteria. Specifically, the following conditions are met:

- The VOC emissions for the build scenarios are less than the 2009 VOC mobile-source emission budget for analysis years 2016 through 2035.
- The NOx emissions for the build scenarios are less than the 2009 NOx mobile-source emission budget for analysis years 2016 through 2035.
- The CO emissions for the build scenarios are less than projections for analysis years 2016 through 2035 for the nine cities in the Boston CO maintenance area.

In accordance with Section 176(c)(4) of the Clean Air Act as Amended in 1990, the Boston Region MPO has completed this review and hereby certifies that Paths to a Sustainable Region, and its latest conformity determination, conditionally conforms with 40 CFR Part 93 and 310 CMR 60.03 and is consistent with the air quality goals in the Massachusetts State Implementation Plan.





## OVERVIEW OF CONTENTS

As a result of its extensive outreach activities, the MPO received a substantial number of written and spoken comments on Paths to a Sustainable Region. They are summarized in this appendix. The formal comments on the draft document that were received during the 30-day public review and comment period are each summarized in Table A-2; a response from the MPO accompanies each of these comments. The contents of this appendix are:

- Table A-1, Comments Received During the Development of the Draft Long-Range Transportation Plan, June 1, 2010–August 14, 2011
- Table A-2, Comments Received During the Official Public Comment Period, August 15–September 13, 2011

## THE BOSTON REGION MPO'S OUTREACH ACTIVITIES

In developing Paths to a Sustainable Region, the MPO conducted a variety of outreach activities, beginning in the spring of 2010, inviting the involvement of participants that included the Regional Transportation Advisory Council; area residents; municipal, state, and federal officials; businesses; transportation interest groups; environmental groups; transportation providers; persons with disabilities; low-income and minority communities; the elderly; and persons with limited English proficiency. Methods for eliciting public input included:

- The Regional Transportation Advisory Council, the main avenue for public involvement in the work of the MPO. It is the MPO's official advisory group. Composed of transportation advocacy groups and other interest groups, municipal officials, and state agencies, it is charged with creating a forum for ongoing and robust discussion of pertinent regional transportation topics and for generating

diverse views to be considered by the MPO. MPO staff often discussed Paths to a Sustainable Region with the Advisory Council and its Plan Committee during the course of this LRTP's development. The Advisory Council submitted several letters and reports to the MPO expressing its views and providing guidance to the MPO.

- Open houses that informed the public about the transportation planning process and about studies and projects underway and offered a forum for discussion and an exchange of ideas. Open houses were held periodically from the adoption of the last LRTP in 2009 through the summer of 2011 and focused on LRTP topics such as policies, modeling, transportation equity, transportation projects, and land use planning.
- Public workshops on the LRTP held in July 2010, February 2011, and August 2011 to hear the views of members of the public and to provide information on the LRTP. The February 2011 workshops were held to generate feedback on the draft transportation needs assessment, and the July 2011 workshops were held to discuss the draft LRTP and seek more comments. The workshops were held in locations throughout the region: Bedford, Boston (three workshops), Burlington, Natick, Needham, Norwood, and Saugus.
- A transportation equity forum held in February 2011 at the Boston Public Library for professionals working in organizations serving environmental justice neighborhoods and for members of the public, at which the transportation needs of low-income and minority persons living in these neighborhoods were discussed.
- “Invite Us Over” sessions, where MPO staff visited, when requested, organizations with an interest in transportation planning, to present information about and discuss ideas for the LRTP.
- MAPC subregion meetings, where MPO staff met periodically with MAPC subregional groups to keep these local officials informed of the LRTP process and its progress, to gather feedback on the visions and policies and on the transportation needs assessment, and to receive information on projects under consideration for inclusion in the LRTP.
- Environmental consultations with staff from the Massachusetts Department of Environmental Protection, the Executive Office of Energy and Environmental Affairs, and the Massachusetts Department of Transportation. At these meetings, MPO staff provided updates on the development of the LRTP and gave the environmental agencies an opportunity to provide feedback on the work.

Ongoing, multipurpose outreach tools and activities of the MPO also contributed to public involvement in Paths to a Sustainable Region. The MPO uses several methods for keeping the public informed of its work and creating opportunities for the public to provide feedback and engage in the transportation planning process:

- Email distribution lists (MPOinfo and MPOmedia), used to distribute timely information and news to stakeholders, the general public, and the media. MPOinfo is a one-way email distribution list that includes more than 1,700 contacts, including municipal officials, planners, transportation equity contacts, special interest groups, members of the general public, legislators, environmental agencies and interest groups, and providers of transportation, including freight transport. Press releases are also distributed to more than 200 media outlets, including local Spanish-language publications (which receive Spanish-language text).
- TRANSreport, the MPO’s monthly newsletter. TRANSreport is an important means of providing information on various aspects of the entire MPO planning process, including announcements of public participation opportunities and outreach activities. Special inserts on important LRTP topics were included to provide detailed information and encourage public comment. TRANSreport is sent to approximately 3,000 recipients, including over 100 state legislators and their staffs, numerous local officials, and members of the general public in each municipality in the region.
- A website, [www.bostonmpo.org](http://www.bostonmpo.org), with pages devoted to the LRTP and each of the other certification documents. Basic information on Paths to a Sustainable Region has been posted at [www.bostonmpo.org/2035plan](http://www.bostonmpo.org/2035plan) since the planning process for the document was launched. Draft documents were also posted there as they became available. These Web pages were promoted through the website’s home page, by email messages to MPOinfo, and on postcards that were distributed at public meetings.

A new Web feature developed for Paths to a Sustainable Region allowed visitors to the site to easily submit feedback. Under the link to each draft document, a “Provide Feedback” button was posted. By clicking on this button, a visitor could provide feedback on any draft material at any time. This feedback is included in Table A-1.

- Social media outlets, including Twitter. The MPO launched a Twitter account (@BostonRegionMPO) in March 2010. Social media sites are among the most visited websites on the Internet and allow the MPO to reach a broad audience and attract people to the MPO’s website to learn more about the MPO’s work. Announcements about Paths to a Sustainable Region, such as notifications of the availability of draft documents and of public meetings, were transmitted through Twitter. The MPO also uses YouTube to explain transportation planning issues.

**TABLE A-1**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
Unidentified	Hopedale resident	Supports extending commuter rail to Hopedale. The community is growing, but isolated.	8/5/11
Fernando Colina	Medford resident	Supports the Green Line Extension to Route 16. Having reliable and affordable transportation will improve the quality of life for residents along the extension route.	8/4/11
Jeff Reese	Medford resident	Upset about the delay of the Green Line Extension to 2018 or later. The extension is a mandatory project that was supposed to be completed by 2014. Obtaining federal funding is not a requirement for the project to proceed. The project is not complex as it will be built within an existing right-of-way. Suggests the funds being used to add a lane to Route 128 could go towards the Green Line Extension. Questions why highway expansions are prioritized over transit expansions. The Green Line Extension will reduce air pollution in Medford and Somerville coming from I-93. The two communities bear a large burden from this facility, which benefits residents of many other communities. Any interim offset projects should have environmental, transportation, and economic development improvements.	8/4/11
Janet Campbell	Somerville resident	Supports construction of the Community Path from Lowell Street to Lechmere. It should be built at the same time as the Green Line Extension.	7/24/11
Scott Mullen	Arlington resident	Supports the Green Line Extension to Route 16. Supports light rail in general.	7/25/11
Stephen Winslow	Bike to the Sea Inc.	The MPO should fund the Northern Strand Community Path rather than the Route 1 widening. The Northern Strand can serve the same purpose, will cost less, will have less environmental impact, and will produce greater health benefits. It has the potential to attract more users than the Minuteman because of the adjoining population densities.	7/15/11
Pat Brown	Sudbury resident	Commends the MPO on the draft "Livability and the Environment" chapter. It is unclear how the MPO determines if a path is for recreation or transportation. This is important because a path for transportation may reduce emissions, while a recreational path may not. Trail counts should be conducted in summer and winter in order to understand if the trail is being used for transportation purposes. Both capital and operation expenses should be tracked in the LRTP to allow better comparison of projects. The discussion for Figure 5-16 should explain what constitutes transit and the appropriate level of service relative to population density. Recent breakdowns on the MBTA system highlight the need for more maintenance expenditures. A discussion of the trade-off between maintenance and expansion should be included. Table 5-2 does not define community type, pedestrian coverage, or bicycle coverage, nor does it indicate the source of data or when it was collected. Bicycle plans developed by MAPC and MassDOT are fiscally unconstrained. The MPO should communicate through its public outreach the fiscal constraints imposed by the federal process.	7/18/11
Unidentified	Boston resident	Bus rapid transit (BRT) is a subpar transportation option. The MPO should build light rail and heavy rail systems rather than BRT. Supports extending the Orange Line through Boston to Route 128.	7/19/11

(CONT.)



**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
Michael J. Lang	East Braintree Civic Association	MassDOT is proposing a new Fore River Bridge 28 stories high with a 250-foot channel clearance. This is too large for the shipping needs and would negatively affect the community. A bascule bridge would be cheaper, built faster, and more accommodating to commuters and boaters. It would be cheaper to maintain and better to look at. The "Type Study" conducted by MassDOT should be available. The funding for the project should be withheld until the public can review this study.	7/9/11
Lydia Rogers	Wildlife Passages Task Force, Concord	Suggests the Plan include a dictionary of acronyms. Recommends the Plan include a discussion of strategies to mitigate wildlife impacts. Wildlife underpasses save animals, preserve movement corridors, and improves safety for drivers.	7/7/11
Fred Moore		Dissatisfied that the Blue Line to Lynn has not been built.	7/6/11
Anne Lee		Supports construction funding for the Assabet River Rail Trail (Acton-Maynard-Stow section).	7/4/11
U.S. Rep. Niki Tsongas	US Congress	Supports the Assabet River Rail Trail and Bruce Freeman Rail Trail in the LRTP. Keeping these trails in the LRTP will ensure that necessary funding will be allocated for these trails. The federal government has pledged more than \$1.5 million in HPP earmarks, launching a partnership with the state and local communities to build the trails. It is important that the projects be brought to completion. Both trails have tremendous community and regional support. Both trails terminate at commuter parking lots and will be used by many communities as part of a multimodal transportation model. Both trails advance economic development goals by providing connections to the town centers of Hudson, Maynard, and Marlborough.	6/30/11
Jim Gallagher	Somerville resident	The Plan, as a "public" document, should be useful and accessible to that public. That means a document that is relatively short, which can be read in a few hours at most (50 to 100 pages with a lot of graphics). And it should be largely written in non-technical, jargon-free language. And as for the mix of specific projects to include, I think that few projects should be listed beyond 2025. Instead there should be a commitment to fix already identified and prioritized needs, whether or not a specific "project" is already under design. To cite one example, there is currently no "project" under development to make improvements to the 128 Central area (I-90 to I-93), in spite of its current problems and the hopes/plans for additional economic growth which will require more people to get to the corridor than currently do. Rather than ignoring this critical need (effectively saying that nothing will be done in this corridor before 2035), the Plan should contain a commitment for improvements as they are identified, perhaps even including some very general allocation of a minimum amount of funds that may be needed. And a commitment that in the time before the next Plan is developed there will be additional study to identify those fixes, with some slightly more specific costs that can then be included in the next Plan.	6/29/11

(CONT.)

**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
Jonah Petri	Somerville resident	Concerned about the draft set of projects in the LRTP. Directing 85% of money toward highway expansion and reinforcement is counter to the stated goals of the LRTP. The LRTP should be addressing environmental justice, increasing use of low-carbon transportation modes, and most importantly, preserving a livable climate for our children. More paths are needed instead of massive highway investment.	6/27/11
Mike Gowing	Acton Board of Selectmen	The Town of Acton thanks the MPO for keeping the Assabet River Rail Trail and Bruce Freeman Rail Trail projects in the draft LRTP and asks that they remain in the final LRTP. Keeping the ARRT in the FFYs 2016-20 time band and the BFRT in the FFYs 2021-25 time band reflects Acton's priorities with respect to these projects. The Town of Acton is committed to the completion of both trails and counts on the continued support of the MPO.	6/16/11
Ed Beauchemin		Supports construction funding for the Assabet River Rail Trail (Acton-Maynard-Stow section). The Rail Trail will provide access between the Acton MBTA station and many businesses in the area. It will provide a safe path for commuters, walkers, joggers, bicyclists, and other users to use instead of the busy streets. Encourages the MPO to start the construction of this project as soon as possible.	6/21/11
Carolyn Stock		Supports construction funding for the Assabet River Rail Trail (Acton-Maynard-Stow section).	6/21/11
David Mark	Assabet River Rail Trail	Supports construction funding for the Assabet River Rail Trail (Acton-Maynard-Stow section). This part of ARRT will provide for safe, off-road commuting among the towns and the railroad station in Acton. Currently, non-car commuting is along Route 27, a busy road with narrow shoulders and in parts no sidewalks. Has been volunteering on ARRT projects since 2000.	6/21/11
Stephen Wagner	Maynard resident	Supports construction funding for the Assabet River Rail Trail (Acton-Maynard-Stow section). Uses the very short section in Maynard that has been cleared; the mulch between the rails is a great walking surface. If the trail were complete to South Acton, would use it regularly to walk to the commuter trains daily.	6/21/11
Debra Mercurio		Supports construction funding for the Assabet River Rail Trail (Acton-Maynard-Stow section).	6/21/11
Sara Hartman	Maynard resident	Supports construction funding for the Assabet River Rail Trail (Acton-Maynard-Stow section). The available public recreation space, especially in Maynard, is very limited and there are many Maynard residents who are eagerly supporting and waiting for a rail trail that will open up new possibilities in this area. The roads are not very safe for biking and the traffic has gotten increasingly heavy in the last 10 years.	6/21/11
Johanna MacAloney		Supports construction funding for the Assabet River Rail Trail (Acton-Maynard-Stow section). This project has been ongoing for more than 15 years and needs to be completed. The Acton and Maynard sections are likely to be the most heavily used portions of the trail. Delays in trail construction are only leading to higher overall costs. This is an important project for our communities and for the health of the environment.	6/21/11

(CONT.)

**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
Charlie Flammer		Supports construction funding for the Assabet River Rail Trail (Acton-Maynard-Stow section). As in other areas that have developed bike paths, it will transform the towns by injecting a vitality into the area as people make use of it to improve their health and interact with others.	6/20/11
Richard J. Fallon	Assabet River Rail Trail	Supports construction funding for the Assabet River Rail Trail (Acton-Maynard-Stow section). The part completed so far is excellent and well used.	6/20/11
Lucille Spera		Supports funding for the Assabet River Rail Trail completion. Wants to ride for miles from Marlboro through Hudson and Stow and on to Maynard, Sudbury, and Concord. Wants to connect it all for us and for our kids.	6/20/11
Neal Silverman		Supports funding the Assabet River Rail Trail as quickly as possible.	6/20/11
April Lowe		Supports construction funding for the Assabet River Rail Trail (Acton-Maynard-Stow section). The rail trail currently is a wonderful place for her and her family to walk and ride bikes. Supports funding for the continuation and lengthening of the trail and to make it more of a draw for bikers from around the state.	6/20/11
Chris Spear	Assabet River Rail Trail (AART)	Supports construction funding for the Assabet River Rail Trail (Acton-Maynard-Stow section). States that a teenage son was able to use the dirt road to bike around their town of Stow and into Maynard without having to ride his bike on the busy Route 62 and Route 117. It would save the writer at least a mile when biking to Maynard, Sudbury, and beyond. The writer is a bicycling merit badge counselor, and could plan more rides, and safer rides, if the ARRT was completed between Marlborough and Acton.	6/20/11
Priscilla Ryder	City of Marlborough Conservation Officer	Supports construction funding for the Assabet River Rail Trail (Acton-Maynard-Stow section). The trail is an asset in Marlborough and Hudson; recommends extending the trail to its full length of 12 miles from Marlborough to the South Acton train station. This is a great nonmotorized transportation corridor and an asset to our region. Recommends keeping this funding in the plan.	6/20/11
Rebecca Arsenault	AECOM and Hudson resident	As an avid user of the rail trail systems and local resident, strongly supports the FFYs 2011-2035 Long Range Transportation Plan, Paths to a Sustainable Region. Requests that the MPO consider the continuous development of these projects to enhance our future as a sustainable region.	6/20/11
John E. McNamara	Maynard resident, ARRT member	Supports construction funding for the Assabet River Rail Trail (Acton-Maynard-Stow section). It would provide construction jobs and stimulate the economies of Stow, Maynard, and Acton, and it would get sedentary senior citizens out on their bikes for healthy exercise.	6/19/11
Sarah Johnson	Hudson resident	Supports construction funding for the Assabet River Rail Trail (Acton-Maynard-Stow section). The trail has added enormous value to the Hudson and Marlborough area, which would greatly benefit by the expansion. The trail adds value to their homes and livelihood. Reports often running on the trail alone and then walking with her kids later in the day. Loves to watch others enjoying the trail as well, especially during nice weather. The trail promotes exercise as well as adding value to the community as a whole.	

(CONT.)

**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
Richard Gelpke	Hudson resident	Supports the Assabet River Rail Trail project. Is a long-time user, who, before retiring, worked closely with AART. The rail trail is a tremendous asset to the towns. Reports that he walks and bikes it a lot in the summer (is away in the winter) and sees a lot of people, especially younger ones, now on the trail. It is a great way for families to be together - "there is precious little of it happening now." It is also a great place to exercise, see the countryside, and just plain enjoy the out-of-doors. Requests that the MPO keep this a very high priority in its planning and funding process.	6/19/11
Jezanna Gruber		Supports funding for the Assabet River Rail Trail through Acton, Maynard and Stow. Would use this trail frequently, along with the rest of her family. Would like to be able to bike safely to Maynard instead of driving.	6/19/11
Kathie Larsen		Supports construction funding for the Assabet River Rail Trail (Acton-Maynard-Stow section). This is valuable both for recreational purposes and commuting. With limited parking in South Acton for non-Acton residents, this path allows people to ride bikes to commute into Boston. It is both environmentally wise and good for exercising.	6/19/11
Mary Hunter Utt	Assabet River Rail Trail	Supports the Assabet River Rail Trail. It is an important linkage for five communities, offering opportunities for recreation and commuting.	6/19/11
Duncan Power	Assabet River Rail Trail	Supports completing the Assabet River Rail Trail (Acton-Maynard-Stow section) as soon as possible. The short, direct connection between commuter rail, the Maynard business center, and Stow residences would benefit the economy.	6/19/11
Michael B. Duclos	Assabet River Rail Trail	Supports construction funding for the Assabet River Rail Trail (Acton-Maynard-Stow section). Stow is perhaps the most isolated, beautiful and utilitarian section since it avoids travel on high-traffic roads (Route 117/62 or Hudson Rd.) and passes between the Assabet River and National Wildlife Refuge, connecting major housing developments to downtown Maynard and the South Acton Rail Station. States that it is difficult to imagine a higher-leverage use of public dollars, in return for reduced automobile traffic, higher quality of life and fitness, and quiet access to a beautiful corner of Stow. Stow Town Meeting has enthusiastically and nearly unanimously voted financial support for this project for the obvious value it presents.	6/19/11
Richard Denio	Unidentified	Supports the Assabet River Rail Trail. Trails provide more than just a place for healthy exercise; they also encourage a sense of community among the users and economic benefit to the towns they pass through. They must be of sufficient length, at least 12 miles, to attract a good number of cyclists and pedestrians. All successful trails are of a good length.	6/18/11
Tom Kelleher	Assabet River Rail Trail, Inc.	Supports keeping construction funding for the Assabet River Rail Trail project (Acton-Maynard-Stow) in the FFYs 2016-2020 time slot of the LRTP, if not sooner.	6/18/11

(CONT.)



**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
Tom Yardley	Medical Academic and Scientific Community Organization Inc. (MASCO)	Commends the MPO for developing the Needs Assessment of the LRTP and comments on needs of the Central Area of the MPO region and the Longwood Medical Area (LMA). Supports including the Urban Ring as an Illustrative Project in the LRTP and notes that the Needs Assessment identifies the need for additional circumferential transit services in the Central Area. Requests that the Needs Assessment note that the LMA is not directly served by commuter rail, further contributing to the need for improved circumferential transit, and that Yawkey Station does not have full rush-hour service, requiring riders destined for the LMA to travel into Boston and then outbound again. MASCO is pleased about the upgrades to Yawkey Station. The Needs Assessment should note that further schedule changes are needed to ensure that additional trains can be scheduled to stop when the station is rebuilt.	6/14/11
Michelle Ciccolo	Minuteman Advisory Group on Interlocal Coordination (MAGIC)	MAGIC's priority projects for the LRTP are: the Assabet River Rail Trail (Acton-Maynard-Stow, and Hudson-Stow segments); Bruce Freeman Rail Trail, Phases 2A, 2B, 2C, and 2D; and Concord Rotary. Requests that the Assabet River Rail Trail, Phase 2, be programmed in the earliest available time band of the LRTP so that earmarked funds can be accessed for the remainder of the design for the two-mile Track Road section of Stow. Also requests that all phases of the Bruce Freeman Rail Trail be programmed and that Phase 2B be coordinated with the Concord Rotary project. Also supports siting a multimodal transportation facility near Weston and Waltham along the Route 128 corridor and programming funding for it in the LRTP as soon as feasible. (The letter also included comments on the TIP and UPWP. MAGIC's TIP priorities are: Crosby's Corner; Middlesex Turnpike, Phase 3; and Minuteman Bikeway Extension.)	6/14/11
Rep. Carl Sciortino; Rep. Denise Provost; Sen. Patricia Jehlen; Sen. Kenneth Donnelly	State Representatives and State Senators	Support the Green Line Extension to Route 16.	6/15/11
Rep. James Dwyer; Rep. Jay Kaufman; Sen. Kenneth Donnelly; Sen. Patricia Jehlen	State Representatives and State Senators	Wrote (in regard to TIP programming) to express their support for the New Boston Street Bridge and Montvale Avenue projects in Woburn. The projects would enhance public safety, quality of life, and economic development in Woburn and surrounding areas.	6/14/11

(CONT.)

**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
Jim Nigrelli	Sudbury resident	States that the two rail-trail projects listed in the draft LRTP are estimated to cost nearly \$54 million, and that, according to the plan, the \$54 million does not include Phase 2B of the Bruce Freeman Rail Trail, which is part of the Concord Rotary/Route 2 project. At over \$4.5 million dollars a mile, the costs of these recreational trails will provide little benefit in meeting the transportation needs of the MetroWest area compared to other transportation projects. Provides an example: the recent expansion of CSX's rail facility in Worcester would create improved freight service for businesses and improved service for commuters along the Worcester/Framingham Line to Boston's South Station. At a cost of \$100 million, the CSX expansion would have far greater impact on congestion mitigation and air quality improvement than \$54 million spent on 11 miles of bike paths in the suburbs of Boston. With limited funds, the MPO should prioritize "true" transportation projects over those that are recreational and nonessential.	6/13/11
Daniel A. DePompei	Sudbury resident	Compliments the MPO on maintaining a realistic long-range schedule/plan for the Assabet River and the Bruce Freeman Rail Trails. The Assabet is at a stage of maturity and acceptance that deserves inclusion in the long-range transportation plan. The Bruce Freeman does not enjoy this maturity. The Bruce Freeman does not belong on the current long-range plan for the following reasons: 1) The towns along the currently proposed route for the Bruce Freeman are not united in a concept for the trail; 2) the Bruce Freeman creates significant, unresolved environmental, wildlife, and small-business conflicts along the proposed trail route; 3) there are no quantified transportation benefits applicable to the trail; and 4) future phases of the proposed trail (south Sudbury and Framingham) would require additional real property purchases from CSX, the current owner. Who should purchase this property and how the purchase would be funded are problems requiring resolution prior to any additional planning for the Bruce Freeman.	6/12/11
Martin Ferguson	Arlington resident	Supports Option 1 of the proposed LRTP Investment Strategies with the Green Line Extension to Route 16. This would be very convenient for East Arlington residents living near the Medford line for traveling to the hospital area in Boston.	6/9/11
Robert Gentile	Framingham resident	States that the Framingham 126/135 Grade Separation project is a waste of money if it is seen only as a highway modernization project. This project should be designed to benefit passenger and freight rail as well. This would involve grade separation of rails crossing Route 135 and Route 126. Otherwise, it would only speed up traffic going through downtown Framingham without making the downtown area a more desirable destination. A number of downtown merchants agree with this assessment.	6/8/11
John Akers	Stow resident	Supports programming the Assabet River Rail Trail in the LRTP. Considerable local funds have been spent on right-of-way acquisition. Acton, Maynard, Hudson, Marlborough, and Stow are working together in a process that will promote and improve pedestrian and bicycle use, and increase fitness.	6/14/11

(CONT.)

**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
Pat Brown	Sudbury resident	Concerned that the inclusion of the Bruce Freeman Rail Trail (Acton, Concord) in the 2021-2025 period of the LRTP does not state explicitly that the two segments are disjoint. The failure to include the Route 2 crossing would leave trail users from Acton with no safe passage to Concord; users from Concord could not safely arrive at Acton, for the same reason. The Route 2 crossing (606223) of the trail must be included in the cost estimate and in the project description, or the trail would not provide safe access to public transportation at the West Concord commuter rail station for users from Acton and points north. Preliminary estimates for the Route 2 crossing, which has not reached 25% design, are currently \$6 million (see project 606223 in the MassDOT PROJIS database). Requests that these costs be included in the estimates for the Bruce Freeman Rail Trail. Alternatively, the Plan should indicate that the proposed segments are disjoint and describe the provision for the safety of trail users until they can be connected.	6/10/11
Sarah Hamilton	Medical Academic and Scientific Community Organization Inc. (MASCO)	The Longwood Medical Area is the largest employment center outside of downtown Boston but has limited transit access. MASCO is grateful to the state for its support of transit improvements in the area. To support job growth in the LMA area, continued collaboration would be needed to plan for LMA's infrastructure needs. MASCO supports modeling incremental components of the Urban Ring Locally Preferred Alternative and selecting some low-cost components for the LRTP. Suggestions for modeling are: Ruggles Station Platform Improvements; Melnea Cass Boulevard center median busway; Montfort Street Corridor improvements; Albany Street bus lanes in Boston; short-term cross-town bus service improvements to the LMA from Sullivan Station to JFK/UMass Station; and an alternative LMA tunnel for long-range bus rapid transit (BRT) service. The MPO's Needs Assessment reinforces these suggestions. MASCO requests that the MPO include the Urban Ring as an Illustrative Project in the LRTP. By taking incremental steps to evaluate elements of Central Area transit improvements, such as components of the Urban Ring, the state would be in a better position to achieve greenhouse gas reduction goals in the future.	6/8/11
Carole Wolfe	Sudbury Citizens for Responsible Land Stewardship	Expresses concern about the Assabet River Rail Trail and Bruce Freeman Rail Trail. The number of people who would use the trails for transportation verses recreation has not been determined. There is no verifiable measurement to prove that congestion mitigation or air quality improvement would result from these multi-million-dollar investments. It is unrealistic to believe the BFRT would have any quantifiable impact on relieving congestion at the Concord rotary or that unplowed, unlighted suburban trails would significantly improve the region's transportation. The timeframes for the trails should be extended so that more accurate measures to calculate commuter use could be developed to better assess cost-benefit. In addition to the construction cost, there will be costs for maintaining the trails, and communities don't always have the financial resources for maintenance. Building the trails would also have a cost to wildlife and wildlife habitat. A Sudbury wildlife study has determined that trail construction would have irreparable consequences for wildlife, especially through riparian zones that provide the greatest amount of wildlife diversity. Acton and Concord should also conduct wildlife studies to understand the impacts that the trails would have on wildlife.	6/13/11

(CONT.)

**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
Resa Blatman and Stefan Cooke	Somerville residents	Supports full funding for construction of the Community Path from Lowell Street (Somerville) to Lechmere/NorthPoint (Cambridge) in the LRTP. It would make sense to build the Path along with the Green Line Extension since both projects share infrastructure, rights-of-way, and simultaneous heavy construction.	6/7/11
Richard C. Walker III	Federal Reserve Bank of Boston	The Federal Reserve Bank supports the Silver Line, Phase III, and T Under D projects. These projects could make a real difference in the continued success of the emerging South Boston Waterfront, in the revitalization of Dudley Square, and in better meeting the job and transportation needs of Boston and Greater Boston residents.	6/6/11
Alex and Ami Feldman	Somerville residents	Supports full funding for construction of the Community Path from Lowell Street (Somerville) to Lechmere/NorthPoint (Cambridge) in the LRTP. It would make sense to build the Path along with the Green Line Extension since both projects share infrastructure, rights-of-way, and simultaneous heavy construction. This would link a network of paths, help reduce car usage, encourage people to exercise, and build community.	6/5/11
Winfred Kathy Martin and David L. Johnson	Somerville residents	Supports full funding for construction of the Community Path from Lowell Street (Somerville) to Lechmere/Northpoint (Cambridge) in the LRTP. It makes sense to build the Path along with the Green Line Extension since both projects share infrastructure, rights-of-way, and simultaneous heavy construction.	6/3/11
Shoshana Gourdin	Somerville resident	Supports full funding for construction of the Community Path from Lowell Street (Somerville) to Lechmere/NorthPoint (Cambridge) in the LRTP in the same time frame as the Green Line Extension.	6/3/11
David B. Clarke	Unidentified	Supports the Bruce Freeman Rail Trail, Phase 2, in the FFYs 2016-20 time band of the LRTP. It is important to him as a cyclist who would use the trail for local transportation instead of using a car.	6/3/11
Tara Urspruch	Unidentified	Supports Option 1 of the proposed LRTP Investment Strategies with the Green Line Extension to Route 16.	6/2/11
John Kyper	Sierra Club, Massachusetts Chapter	The Sierra Club supports the Green Line Extension to Route 16 and is dismayed that the MPO is considering dropping the final link of the extension, thereby permanently terminating the Green Line at College Avenue. A terminus at Route 16 would be better suited to serving motorists driving from suburban communities than the College Avenue station, which would be accessed primarily by foot or bus. The extension to Route 16 is critical for the entire metropolitan region. If it is to become a success in enhancing the urban fabric by providing alternatives to the private automobile, it must be well designed and well built from the start.	6/2/11
Rick Kaufman	Unidentified	Supports the Green Line Extension to Route 16.	6/2/11
Linda Given	Somerville resident	Supports full funding for construction of the Community Path from Lowell Street (Somerville) to Lechmere/NorthPoint (Cambridge) in the LRTP. It would make sense to build the Path along with the Green Line Extension since both projects share infrastructure, rights-of-way, and simultaneous heavy construction. The path would improve the quality of life, encourage exercise and recreation, and provide access to Boston.	6/2/11

(CONT.)

**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
Marc Gabriel	Somerville resident	Supports full funding for construction of the Community Path from Lowell Street (Somerville) to Lechmere/NorthPoint (Cambridge) in the LRTP. It makes sense to build the Path along with the Green Line Extension since both projects share infrastructure, rights-of-way, and simultaneous heavy construction.	6/2/11
Keith Fallon		Supports Option 1 of the proposed LRTP Investment Strategies with the Green Line Extension to Route 16.	6/2/11
Robert Cowherd		Supports the Rutherford Avenue and Sullivan Square projects in the LRTP, and references the bicycle safety aspect of the project. Proper infrastructure engineering is important for determining whether or not we travel by car or bicycle. People will reject the bicycle as a viable transportation alternative if there is not a safe, interconnected system for bicyclists.	6/2/11
Susanna Barry	Somerville resident	Supports full funding for construction of the Community Path from Lowell Street (Somerville) to Lechmere/NorthPoint (Cambridge) in the LRTP. It makes sense to build the Path along with the Green Line Extension since both projects share infrastructure, rights-of-way, and simultaneous heavy construction.	6/2/11
Mayor Michael McGlynn	Medford Mayor	Supports the Green Line Extension to Route 16. The mayor has requested over the years that the state define its proposed extension of the Green Line, analyze possible impacts, and identify transit development opportunities, while creating a plan to protect and preserve residential neighborhoods. It is premature to eliminate funding for the study while the MAPC Land Use Study is not complete. Supports preservation of residential neighborhoods in the Hillside while identifying opportunities for the expansion of the commercial tax base and creation of jobs. The Walking Court housing development could benefit from a public-private partnership to improve living conditions for seniors and from providing a mix of uses. The redevelopment of the Whole Food's property should be evaluated to explore mixed-use transit-oriented opportunities.	6/1/11
Jared Ingersoll	Medford resident	Supports Option 1 of the proposed LRTP Investment Strategies with the Green Line Extension to Route 16. The proximity of this station to several environmental justice communities in Medford and Somerville makes the location at Route 16 and Boston Avenue essential for providing quality transportation to this neighborhood. The terminus at College Avenue does not fulfill the Commonwealth's requirement to serve the neighborhood of Medford Hillside. Extending the line all the way to Mystic Valley Parkway would provide the best environmental benefits and would insure that Massachusetts meets the requirements of the Clean Air Act. Not meeting this would put millions of dollars in federal highway money in jeopardy.	6/1/11
Loren Barcus	Somerville resident	Supports the Green Line Extension to Route 16. To not do this is short sighted and not in the best interest of Medford, Somerville, or the Boston region.	6/1/11
Enrique Tamayo	Unidentified	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. Encouraging more bicycling needs to happen to address issues of obesity, energy, etc. Neighborhood connections to the MBTA stations would generate more users and economic development, which would benefit the surrounding communities of Cambridge and Somerville and set a positive civic example.	6/1/11

(CONT.)



**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
Nicole Stewart	Charlestown resident	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP.	6/1/11
Ivey St. John	Charlestown resident	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. Charlestown was promised a redesigned Rutherford Avenue and Sullivan Square once the Big Dig was done, and the current plan meets that promise and would end Charlestown's role as a regional commuter route.	6/1/11
Matt Porter	Unidentified	Supports the Rutherford Avenue project.	6/1/11
Sean Nyhan	Charlestown resident	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. Supports changing Rutherford Avenue from the current highway to a neighborhood boulevard, and adding green space and a bike path.	6/1/11
Kate Namous	Unidentified	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. The project would improve neighborhood connections to the MBTA and give Charlestown better links to Cambridge, Somerville, and Everett.	6/1/11
Andre Leroux	Massachusetts Smarth Growth Alliance	Supports full funding for construction of the Community Path from Lowell Street (Somerville) to Lechmere/NorthPoint (Cambridge) in the LRTP. It makes sense to build the Path along with the Green Line Extension since both projects share infrastructure, rights-of-way, and simultaneous heavy construction. This is a rare opportunity to transform connections across the region and turn a largely recreational trail system into a more functional one, safe and viable for commuters. Also supports the Green Line Extension to Route 16.	6/1/11
Paul Morgan	Somerville resident	Supports full funding for construction of the Community Path from Lowell Street (Somerville) to Lechmere/NorthPoint (Cambridge) in the LRTP. It makes sense to build the Path along with the Green Line Extension since both projects share infrastructure, rights-of-way, and simultaneous heavy construction. The path will increase ridership on the Green Line. Many who would otherwise drive would use the path to commute to Boston. Air quality issues in the community and region are serious and without a change in thinking and leadership they are not going to get better.	6/1/11
Janet C. Miller	Charlestown resident	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. The area is a blight on the neighborhood and hazardous, especially for bicyclists and pedestrians.	6/1/11
William Messenger	Belmont resident	Supports full funding for construction of the Community Path from Lowell Street (Somerville) to Lechmere/NorthPoint (Cambridge) in the LRTP. It makes sense to build the Path along with the Green Line Extension since both projects share infrastructure, rights-of-way, and simultaneous heavy construction. The streets in this corridor are not safe for bicyclists. All people in the Greater Boston area would benefit from reduced auto traffic, lower health care costs, and improved air quality if the route were attractive, safe, and direct for bicycles.	6/1/11

(CONT.)

**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
Darlene and Brian Matthews	Somerville residents	Supports full funding for construction of the Community Path from Lowell Street (Somerville) to Lechmere/NorthPoint (Cambridge) in the LRTP. It makes sense to build the Path along with the Green Line Extension since both projects share infrastructure, rights-of-way, and simultaneous heavy construction. The path will benefit tourists and the local community by reducing pollution and traffic, as well as by encouraging physical activity, safe nonmotorized vehicle travel, and a lifestyle that supports local businesses by putting the consumers near the markets.	6/1/11
Sandra and Kevin Kelley	Charlestown residents	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. It would improve neighborhood connections to the MBTA stations and improve the surrounding communities of Cambridge and Somerville.	6/1/11
Frank Hall	Everett resident	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. Would like to see more bike-friendly roadways.	6/1/11
Diana E. Gilchrist	Somerville resident	Supports full funding for construction of the Community Path from Lowell Street (Somerville) to Lechmere/NorthPoint (Cambridge) in the LRTP. It makes sense to build the Path along with the Green Line Extension since both projects share infrastructure, rights-of-way, and simultaneous heavy construction. The path would allow her to bike, walk, or take the T to work, and it would improve quality of life and increase property values.	6/1/11
Marji Gere	Somerville resident	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. Supports connecting the new bicycle lanes on Washington Street in Somerville to the planned bicycle lanes in Charlestown.	6/1/11
Sarah Freeman	Arborway Coalition	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. The Arborway Coalition supports improving neighborhood connections to MBTA stations throughout the region, and it promotes safety for all users: pedestrians, bicyclists, motorists, and residents.	6/1/11
Rep. Carolyn C. Dykema	State Representative	Supports the Route 126/135 Grade Separation project in Framingham in the LRTP. It is important for five MetroWest Communities. Reliance on rail service is expected to increase given the significant economic activity in the region and the impending purchase of the rail line from CSX. The ability to meet this increased need will be constrained without a plan for addressing the longstanding concerns at the 126/135 intersection. Public safety at the intersection is also a concern. There is a high accident rate there that will only grow as rail service is increased.	6/1/11
Kristine Daniel	Unidentified	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP.	6/1/11
Regina Capozzi	Sotheby's Realty	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. They are important for the safety and well being of residents (the rotary is dangerous), would provide neighborhood access to MBTA stations, and would improve the surrounding communities of Cambridge and Somerville.	6/1/11
Maureen Barillaro	Somerville Climate Action	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. They are important for neighborhood connections to the MBTA stations and improving the surrounding communities of Cambridge and Somerville. The future of transportation depends on low-energy, high-volume transport in urban environments.	6/1/11

(CONT.)

**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
Emile Baker	Charlestown resident	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. Would like more trees and better landscaping to decrease the noise on Rutherford Avenue.	6/1/11
Rebecca Albrecht		Supports the Rutherford Avenue and Sullivan Square projects in the LRTP.	6/1/11
Roland Bartl	Town of Acton	Requests programming of construction funding for the Assabet River Rail Trail in the LRTP, which would allow access to a federal HPP earmark. Alternatively, the MPO should find another way or formula with the FHWA that would allow the ARRT communities to access the HPP earmark.	5/31/11
Jennifer Truong	Charlestown resident	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. The redesign of this area is vital for improving pedestrian and cyclist safety, improving access to public transportation and green space, and coping with traffic volumes and speeds.	6/1/11
Aaron Spransy	Brighton resident	Supports full funding for construction of the Community Path from Lowell Street (Somerville) to Lechmere/NorthPoint (Cambridge) in the LRTP. It makes sense to build the Path along with the Green Line Extension since both projects share infrastructure, rights-of-way, and simultaneous heavy construction.	6/1/11
Brad Simas	Unidentified	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP.	6/1/11
Joanne Samuelson	Unidentified	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. Also supports the Green Line Extension to Union Square and neighborhood connections to MBTA stations.	6/1/11
Mark Rosenshein	Chairman, Charlestown Neighborhood Council Development Committee	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. The Charlestown Neighborhood Council endorses the design concept. The community supports the improvements for pedestrian access, traffic flow management, reintegration of the MBTA stations with the community, a regional bike path, and increased community connectivity.	6/1/11
Joe Rapoza	Unidentified	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP.	6/1/11
Daniel Pugatch	Somerville resident	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. The Sullivan Square rotary is dangerous. Suggests a footbridge for providing safer access for bicyclist and pedestrians around that location.	6/1/11
Tanya Paglia	Somerville resident	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP.	6/1/11
Lorna Murphy	Unidentified	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. They would improve the appeal of Charlestown, Somerville, and Cambridge. With improvements being made near Middlesex Avenue, it is critical that Rutherford Avenue and Sullivan Square be able to handle the increase in traffic and keep up with the look and feel of the area.	6/1/11
Tim Maimone	Charlestown resident	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP.	6/1/11

(CONT.)

**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
Bob Kindel	Somerville resident	Supports full funding for construction of the Community Path from Lowell Street (Somerville) to Lechmere/NorthPoint (Cambridge) in the LRTP. It makes sense to build the Path along with the Green Line Extension since both projects share infrastructure, rights-of-way, and simultaneous heavy construction. The Path would provide a safe way for students to get to school, tie together neighborhoods, provide commuting options, mitigate congestion, and increase MBTA ridership.	6/1/11
Cynthia Gillham	Charlestown resident	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP.	6/1/11
Peter G. Furth	Unidentified	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. This dangerous site can be transformed into a transit-oriented development, a safer arterial, and linear path with bike paths.	6/1/11
Chandler Blake	Charlestown resident	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. Supports continued bike improvements in Boston.	6/1/11
Bathsheba Grossman	Somerville resident	Supports full funding for construction of the Community Path from Lowell Street (Somerville) to Lechmere/NorthPoint (Cambridge) in the LRTP. It makes sense to build the Path along with the Green Line Extension since both projects share infrastructure, rights-of-way, and simultaneous heavy construction.	6/1/11
Steven Ozer	Charlestown resident	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. These projects are for making the gateway to Boston more attractive and accessible. They would improve alternative transportation options.	6/1/11
Christopher Collier	Charlestown resident	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. These projects would enhance community and business development in Charlestown, Cambridge, and Somerville, improve access to the MBTA Orange Line, encourage multimodal transportation, and improve regional equity by benefitting the residents of the Mishawum Park housing development.	6/1/11
Robert teDuits	Unidentified	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP.	6/1/11
Carl Jahn	Charlestown resident	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP.	6/1/11
Nathan Blanchet	Charlestown resident	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. Reconstruction is needed for safety, traffic flow efficiency, and neighborhood-friendly economic development.	6/1/11
Tai Dinnan	Somerville resident	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP.	6/1/11
Wendy Landman	Executive Director, WalkBoston	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. Would provide greatly improved multi modal transportation options to residents and employees of nearby Boston, Somerville, and Cambridge neighborhoods.	6/1/11
George Ulrich	Unidentified	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. On behalf of the Boston Cyclists Union and Rozzie Bikes, supports the neighborhood connections to the MBTA stations and improvements to surrounding communities.	6/1/11

(CONT.)

**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
Holger Zwickau	Charlestown resident	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP.	6/1/11
Jurgen Weiss	Somerville resident	Supports full funding for construction of the Community Path from Lowell Street (Somerville) to Lechmere/NorthPoint (Cambridge) in the LRTP. It makes sense to build the Path along with the Green Line Extension since both projects share infrastructure, rights-of-way, and simultaneous heavy construction. Creating a cycling infrastructure would have a tremendous positive impact on the energy footprint of the region.	6/1/11
Kristin Valdmanis	Charlestown resident	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP.	6/1/11
Noel Twigg	Unidentified	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. Rutherford Avenue is an important link for the surrounding neighborhoods and much used by bikers, pedestrians, and those accessing MBTA stations.	6/1/11
Brian Thomas	Unidentified	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP.	6/1/11
Annette Tecce	Charlestown resident	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. These roadways are hazardous for pedestrians, bicyclists, and cars.	6/1/11
Daniel Shugrue	Unidentified	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP.	6/1/11
Gerald Robbins	Charlestown resident	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. It is critical to providing bicycle and pedestrian access to Sullivan Square Station and other parts of Boston, Somerville, and Cambridge. They will improve traffic flow, especially when the Assembly Square redevelopment has been completed.	6/1/11
Anthony Reidy	Charlestown resident	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. These projects would complete the transformation of Charlestown and prepare the way to link it to Assembly Square in a seamless beautification of the neighborhoods. It would make a proper entry to Boston for people coming off I-93 or Route 99.	6/1/11
Louise Ambler Osborn	Charlestown resident	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. The Sullivan Square rotary is dangerous for drivers, bicyclists, and pedestrians.	6/1/11
Sarah Newlin	Charlestown resident	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. These are vital to the continued improvement of the residential neighborhoods of Charlestown, Cambridge, and Somerville, and would improve safety.	6/1/11
Cory Mian	Somerville resident	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. This corridor is a major connector for the region. It has suffered from under-investment and is in need of state resources. The surrounding area is ripe for development.	6/1/11
Nicholas Mian	Somerville resident	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. This area of Boston has untapped development potential.	6/1/11

(CONT.)



**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
Kateri McGuinness	Charlestown resident	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. It will improve connections to MBTA stations and enhance quality of life in surrounding communities.	6/1/11
Anthony A. McGuinness	Unidentified	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. They would improve connections to the MBTA at Sullivan Square and Community College making the MBTA more accessible.	6/1/11
Linda Lintz	Unidentified	Supports full funding for construction of the Community Path from Lowell Street (Somerville) to Lechmere/NorthPoint (Cambridge) in the LRTP. It makes sense to build the Path along with the Green Line Extension since both projects share infrastructure, rights-of-way, and simultaneous heavy construction.	6/1/11
Liz and Chuck Levin	Charlestown residents	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. The improvements would provide good vehicular, transit, bicycle, and walking access to Charlestown, and more open space. MBTA stations are currently difficult to access.	6/1/11
Nate Leskovic	Unidentified	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP.	6/1/11
William Lamb	Chair, Design Review Committee, Charlestown Preservation Society	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. The projects would improve traffic flow, pedestrian safety, access to MBTA stations, and the regional bicycle network.	6/1/11
Cindy Kimball	Unidentified	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP.	6/1/11
Kate Kennen	Co-Chair, Friends of Sullivan Square	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. These improvements would provide alternate modes of transportation, increased access to the MBTA, and new green space. They would benefit Somerville, Cambridge, and Everett.	6/1/11
Doug and Leigh Hurd	Charlestown residents	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. Ideally they would include neighborhood connections to MBTA stations and improvements to the surrounding areas of Cambridge and Somerville.	6/1/11
Burton Holmes	Somerville resident	Supports full funding for construction of the Community Path from Lowell Street (Somerville) to Lechmere/NorthPoint (Cambridge) in the LRTP. It makes sense to build the Path along with the Green Line Extension since both projects share infrastructure, rights-of-way, and simultaneous heavy construction.	6/1/11
Justin Hildebrandt	Somerville resident	Supports full funding for construction of the Community Path from Lowell Street (Somerville) to Lechmere/NorthPoint (Cambridge) in the LRTP. It makes sense to build the Path along with the Green Line Extension since both projects share infrastructure, rights-of-way, and simultaneous heavy construction.	6/1/11
Alex Gershaw	Malden resident	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. It is an important corridor for travel to and from Boston, Charlestown, Somerville and Everett. The state should soon renovate the Alford Street Bridge on Route 99 in Everett and resurface Route 99 and Beacham Street in Everett. The Rutherford/Sullivan improvements would dovetail with these projects.	6/1/11

(CONT.)

**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
Karen and Justin Ferguson	Charlestown residents	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. Current traffic patterns in the area are untenable, and it is dangerous to cross the rotary on foot.	6/1/11
Jeanine Jenks Farley	Somerville resident	Supports full funding for construction of the Community Path from Lowell Street (Somerville) to Lechmere/NorthPoint (Cambridge) in the LRTP in the same time frame as the Green Line Extension. It makes sense to build the Path along with the Green Line Extension since both projects share infrastructure, rights-of-way, and simultaneous heavy construction.	6/1/11
Glen Fant and Anne-Marie Wayne	Medford residents	Supports full funding for construction of the Community Path from Lowell Street (Somerville) to Lechmere/NorthPoint (Cambridge) in the LRTP in the same time frame as the Green Line Extension. It makes sense to build the Path along with the Green Line Extension since both projects share infrastructure, rights-of-way, and simultaneous heavy construction. The Path would add to the commercial benefits of the Green Line Extension by funneling foot and bicycle traffic from as far away as Lexington.	6/1/11
Debbie Collier	Charlestown resident	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. They would improve traffic and enhance community and business development in Charlestown, Cambridge, and Somerville, and would improve access to MBTA Orange Line stations.	6/1/11
Amy Branger	Charlestown resident	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. Charlestown has had to bear the brunt of Central Artery construction impacts and it's time to reclaim Rutherford for the community.	6/1/11
Blythe Robertson and Mary Perkins	Charlestown residents	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP.	6/1/11
Jean Bourguignon	Charlestown resident	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP.	6/1/11
Ted Bach	Somerville resident	Supports full funding for construction of the Community Path from Lowell Street (Somerville) to Lechmere/NorthPoint (Cambridge) in the LRTP. It makes sense to build the Path along with the Green Line Extension since both projects share infrastructure, rights-of-way, and simultaneous heavy construction. Having strong mixed-mode transit would help reduce dependence on cars and increase MBTA ridership.	6/1/11
Nancy Arents	Charlestown resident	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP. The area is unsafe for pedestrians and is an eyesore.	6/1/11
Neil and Ivy Ahluwalia	Unidentified	Supports the Rutherford Avenue and Sullivan Square projects in the LRTP.	6/1/11
Patrice Kastenholz	West Medford resident	Supports Green Line Extension to Route 16 and would prefer that it go farther, to West Medford center.	5/31/11
Elizabeth Bolton	Medford resident	Supports full funding for the Green Line Extension to Route 16. It is inexcusable to leave the neighborhood beyond Tufts without subway access. Subway access is critical due to roadway congestion, air pollution, and rising fuel costs. It would make the neighborhood more vibrant.	5/31/11

(CONT.)

**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
Justin Ashton	Citizen and resident of Somerville	Supports Option 1 of the proposed LRTP Investment Strategies with the Green Line Extension to Route 16.	5/31/11
Laura Solano	Medford Resident	Supports Option 1 of the proposed LRTP Investment Strategies with the Green Line Extension to Route 16.	5/31/11
Judith Siegel	East Arlington Resident	Supports Option 1 of the proposed LRTP Investment Strategies with the Green Line Extension to Route 16.	5/31/11
Conor McKenzie	Unidentified	Supports Option 1 of the proposed LRTP Investment Strategies with the Green Line Extension to Route 16.	5/31/11
Alex Bilsky	Arlington resident	Supports Option 1 of the proposed LRTP Investment Strategies with the Green Line Extension to Route 16.	5/30/11
R. P. Marlin	East Arlington resident	Supports Option 1 of the proposed LRTP Investment Strategies and the Green Line Extension to Route 16. Looks forward to biking to a new Green Line station to reduce car use and reduce traffic along Route 16. The Mass. Ave. area is becoming more bicycle-and pedestrian-friendly, seeing more businesses attracted to the area, and residential areas revitalized.	5/29/11
John Reinhardt	Unidentified	Supports Green Line to Route 16.	5/29/11
David von Schack	Unidentified	Supports Option 1 of the proposed LRTP Investment Strategies with the Green Line Extension to Route 16.	5/28/11
Jeanie Tietjen	Arlington resident	Supports Option 1 of the proposed LRTP Investment Strategies with the Green Line Extension to Route 16.	5/27/11
Chris Nitchie	Unidentified	Supports the Green Line Extension to Route 16. The Mystic River area has existing pathways that make this a natural corridor for pedestrian and bicycle traffic. It makes sense to connect the Green Line to this corridor.	5/27/11
Carolyn Montello	Unidentified	Supports Option 1 of the proposed LRTP Investment Strategies with the Green Line Extension to Route 16. The project is a legal commitment of the Commonwealth and the hallmark of GreenDOT. It should be the centerpiece of the LRTP. This is a chance to revitalize Medford and provide sustainable transportation.	5/27/11
John McKenna	Arlington resident	Supports the Green Line Extension to Arlington.	5/27/11
Julie Marcal	Arlington resident	Supports Option 1 of the proposed LRTP Investment Strategies and the Green Line Extension to Route 16.	5/27/11
Robert Lemp	Arlington resident	Supports Option 1 of the proposed LRTP Investment Strategies and the Green Line Extension to Route 16.	5/27/11
Meryl Becker	East Arlington Resident	Supports Option 1 of the proposed LRTP Investment Strategies and the Green Line Extension to Route 16.	5/27/11
Ted A. Adams	Medford Resident	Supports extending the Green Line to Route 16.	5/27/11
Julia Malik	Arlington resident	Supports Option 1 of the proposed LRTP Investment Strategies with the Green Line Extension to Route 16.	5/27/11

(CONT.)

**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
S. Riley Hart	Arlington resident	Supports Green Line to Route 16.	5/27/11
Christine Gorwood	Unidentified	Supports Option 1 of the proposed LRTP Investment Strategies with the Green Line Extension to Route 16.	5/27/11
Sarah Endo	Unidentified	Supports Option 1 of the proposed LRTP Investment Strategies with the Green Line Extension to Route 16.	5/27/11
Kaitlyn Wong	Somerville resident	Supports the Green Line Extension to Route 16.	5/26/11
Lynne Weiss	Medford Hillside resident	Supports Option 1 of the proposed LRTP Investment Strategies with the Green Line Extension to Route 16. The extension is vital for reaching the customer base who would benefit from the extension and cut down on traffic pollution. It would also allow more people to reduce their driving by providing access to shopping and businesses located at and near Route 16.	5/26/11
Alison Walcott	Medford resident	Supports Option 1 of the proposed LRTP Investment Strategies with the Green Line Extension to Route 16. The project is a legal commitment of the Commonwealth and the hallmark of GreenDOT. It should be the centerpiece of the LRTP.	5/26/11
Greg Venne	West Medford resident	Supports the Green Line Extension to Route 16. It would help reduce the growing congestion of Routes 93, 16, and 60, the McGrath and O'Brien highways, and all secondary roads in Medford, Somerville, and Cambridge.	5/26/11
Lawrence Sodano	Medford resident	Supports the Green Line Extension to Route 16. A station at Route 16 would connect transit to a larger population than a terminus at College Avenue, and it would draw riders from West Medford, West Somerville, and Arlington. It would relieve traffic congestion on Alewife Brook Parkway. A terminus at College Avenue would result in more traffic congestion on Boston Avenue.	5/26/11
Franklin J. Schlerman	Medford resident	Supports Option 1 of the proposed LRTP Investment Strategies with the Green Line Extension to Route 16.	5/26/11
Michael Sandler	Arlington resident	Supports the Green Line Extension to Route 16.	5/26/11
Nancy Salzer	East Arlington resident	Supports Option 1 of the proposed LRTP Investment Strategies and the Green Line Extension.	5/26/11
Vaughan Rees	Medford resident	Supports Option 1 of the proposed LRTP Investment Strategies with the Green Line Extension to Route 16.	5/26/11
John Murphy	Medford resident	Supports the Green Line Extension to Route 16. If resources were available, the line should go to Route 128.	5/26/11
Jim Moodie	Medford resident	Supports the Green Line Extension to Route 16. It would provide access to more riders and prevent potential traffic gridlock if the line were to terminate at College/Boston Avenues. A long-term vision is required. Keep Boston a leader in mass transit.	5/26/11
Peter Micheli	Medford resident	Supports the Green Line Extension to Route 16. It would reach thousands more commuters in West Medford and Arlington. It would be short-sighted not to extend the line.	5/26/11

(CONT.)

**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
Nancy Lincoln	Medford resident	Supports Option 1 of the proposed LRTP Investment Strategies and the Green Line Extension to Route 16. The Extension is essential.	5/26/11
Thomas W. Lincoln	Medford resident	Supports the Green Line Extension to Route 16. It is a legal commitment of the Commonwealth and it is an investment in a sustainable future.	5/26/11
Michael Lambert	Medford resident	Supports the Green Line Extension to Route 16. The project would make downtown Boston and Somerville accessible to Medford residents by transit and take cars off the road.	5/26/11
Unidentified	Unidentified	Supports the Green Line Extension to Boston Avenue in Medford.	5/26/11
Daniel J. Jacob	Medford resident	Supports Option 1 of the proposed LRTP Investment Strategies and Green Line Extension to Route 16.	5/26/11
John Hoppe	Arlington resident	Supports Option 1 of the proposed LRTP Investment Strategies and Green Line Extension to Route 16.	5/26/11
Lois Grossman	Medford resident	Supports the Green Line Extension to Route 16. It should be the centerpiece of the LRTP. Supports efforts toward sustainable living and movement toward mass transit.	5/26/11
Martin Fraser	Medford resident	Supports the Green Line Extension to Route 16. Benefits would include reduced traffic, improved public safety, improved quality of life, and improved parking.	5/26/11
Rev. Dorothy Emerson	West Medford resident	Supports the Green Line Extension to Route 16.	5/26/11
Erik Egbertson	Medford resident	Supports Option 1 of the Investment Strategies, with the Green Line Extension to Route 16. With rising gas prices, connecting neighborhoods to a subway line will be fundamental to ensuring that these communities thrive. The state should focus on modes of transportation that are the most efficient. Light rail is a good investment. Challenges the MPO to also consider future projects to connect MBTA lines radially.	5/26/11
Eileen de Rosas	Arlington resident	Supports the Green Line Extension to Route 16. Better service to downtown Boston is needed.	5/26/11
D. Carnevale	Unidentified	Opposes funding the Green Line Extension. Prefers that monies be used to update and repair existing infrastructure. Questions how the extension would be maintained when the MBTA has over \$8 billion of debt.	5/26/11
Christine Bennett	Medford resident	Opposes spending on the Green Line Extension project as Medford has subway and bus routes already. Prefers that monies be used to repair potholes in all major roadways, improve existing bus and train service, update trains and buses to make them more eco-friendly, and improve accessibility to persons with disabilities throughout the MBTA system.	5/26/11
Sarah Beardslee	Unidentified	Supports the Green Line Extension to Route 16.	5/26/11

(CONT.)



**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
Elisabeth Bayle	Medford Hillside resident	Opposes the removal of the Green Line Extension to Route 16 from the L RTP. It should be put back into Phase 1 of the Green Line Extension project to make it more economical to build, less disruptive than a two-phase project, and closer to the state's obligation to provide improved air quality, environmental justice, and opportunities for transit-oriented development. The project to Route 16 fulfills the state's legal obligation to bring rail transit to Medford Hillside.	5/26/11
Carol Band	Arlington resident	Prefers Option 1. Supports the Green Line Extension to East Arlington.	5/26/11
Debra Agliano	Medford resident	Supports Investment Strategy 1, with the Green Line Extension to Route 16. Expanding public transportation is important due to increasing gas prices, overcrowding on roads, and harm to the environment.	5/26/11
Jonathan Koopmann	Arlington Resident	Supports the Green Line to Route 16.	5/26/11
Naomi Slagowski	Unidentified	Supports Option 1 of the proposed L RTP Investment Strategies with the Green Line Extension to Route 16.	5/26/11
Judy Kaplan	Unidentified	Opposes Option 1 of the proposed L RTP Investment Strategies and opposes the Green Line Extension to Route 16.	5/26/11
Megan Allen	Resident of Medford	Supports Option 1 of the proposed L RTP Investment Strategies with the Green Line Extension to Route 16.	5/26/11
Michael Adamian	Medford Hillside resident	Supports the Green Line Extension to Route 16.	5/26/11
Bruce Kulik	Resident of Medford	Supports Option 1 of the proposed L RTP Investment Strategies with the Green Line Extension to Route 16.	5/26/11
James McGinnis	Unidentified	Supports Option 1 of the proposed L RTP Investment Strategies with the Green Line Extension to Route 16.	5/26/11
Zachary Atwell	Resident of Medford	Supports the Green Line Extension to Route 16.	5/26/11
Andrew Griswold	Resident of Medford	Supports Option 1 of the proposed L RTP Investment Strategies with the Green Line Extension to Route 16.	5/26/11
Maxim Weinstein	Unidentified	Supports Option 1 of the proposed L RTP Investment Strategies with the Green Line Extension to Route 16.	5/26/11
Phil Goff	Co-chair, East Arlington Livable Streets Coalition	Supports Green Line to Route 16.	5/26/11
Lindsay Leete	Resident	Supports Green Line to Route 16.	5/26/11
Jan Nicholson	Resident (S. Medford)	Supports Green Line to Route 16.	5/26/11
Alex Epstein	Somerville Bicycle Advisory Committee	Supports Option 1 of the proposed L RTP Investment Strategies with the Green Line Extension to Route 16. Would like to see the Somerville Community Path included as well.	5/26/11

(CONT.)

**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
Mary Kaye	Medford, MA	Supports Option 1 of the proposed LRTP Investment Strategies with the Green Line Extension to Route 16.	5/26/11
Scott Englander	Unidentified	Supports Option 1 of the proposed LRTP Investment Strategies with the Green Line Extension to Route 16.	5/26/11
Lauren H. Grymek	Executive Director, South Boston Seaport Transportation Management Association	Requests that the MPO model the Silver Line, Phase III, and T Under D projects for inclusion in the LRTP. Both projects are critical to the continued success of the emerging South Boston Waterfront neighborhood. T Under D would reduce travel times and improve safety for Silver Line riders traveling to and from Logan Airport, and in the future, Chelsea. It would also improve vehicular traffic on D Street and adjacent roadways by eliminating a signalized intersection. It addresses the need for maintenance, modernization, and efficiency; livability and economic benefit; mobility; and issues relating to the environment and climate change. Silver Line, Phase III, would address a need identified in the MPO's Needs Assessment (the "three-seat ride" between locations in Boston, Brookline, and Newton to the South Boston Waterfront and Logan Airport). It could also address congestion in the Central Subway and reduce the need for a transfer at Park Street. It would address transportation equity issues by providing a one-seat ride between Roxbury and Logan Airport and would create new job opportunities on the Waterfront.	5/25/11
Susie Nacco	Medford resident	Supports Option 1 of the proposed LRTP Investment Strategies with the Green Line Extension to Route 16.	5/25/11
Jim Morse	Unidentified	Opposes funding for the Green Line Extension to Route 16. Funds should be used to support larger financial issues such as the repair of bridges and highways, and the backlog of maintenance at the MBTA. There needs to be a moratorium on all MBTA expansion. Comment references the current state deficit and findings of the Transportation Finance Report.	5/25/11
Kristin Mattera	Medford resident	Supports the Green Line Extension to Route 16.	5/25/11
Unidentified	Unidentified	Supports Option 1 of the proposed LRTP Investment Strategies and the Green Line Extension to Route 16. The Extension is a legal commitment of the Commonwealth and is the hallmark of the state's GreenDOT initiative.	5/25/11
James Feldman	Unidentified	Supports Investment Strategy 1 with the Green Line Extension to Route 16.	5/25/11
Stacy Colella	Unidentified	Supports full funding for the Green Line Extension to Route 16. It is vital for the economy and the environment.	5/25/11
Chris Donelan	Unidentified	Supports Option 1 of the proposed LRTP Investment Strategies with the Green Line Extension to Route 16.	5/25/11
Ethan Contini-Field	Somerville Resident	Supports the Green Line Extension to Route 16.	5/25/11
Paul Lehrman	Tufts University	Supports the Green Line Extension to Route 16.	5/25/11
Ann Gallagher	MGNA	Supports Option 1 of the proposed LRTP Investment Strategies with the Green Line Extension to Route 16.	5/25/11

(CONT.)

**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
David Phillips	Medford resident	Supports Option 1 of the proposed LRTP Investment Strategies with the Green Line Extension to Route 16. The extension would provide critical access to schools, jobs, sporting, and other opportunities for a new generation of young people. It would serve environmental justice areas. It is a legal commitment of the Commonwealth. It has strong community support.	5/24/11
Rep. James Arciero	State Representative	Supports the Bruce Freeman Rail Trail, Phase 2. This project has sustained community support. It would reduce traffic congestion by enhancing commuter access to the West Concord commuter rail station and to the commuter bus from the Colonial Liquor Plaza in Acton. It would benefit area shops and businesses. Bicycle and pedestrian projects provide alternatives to auto travel and investing in those infrastructure needs would encourage non-auto commuting. This would yield economic, environmental, and public health benefits.	5/17/11
Kenneth Krause	Medford resident	Supports the Green Line Extension to Route 16. The Route 16 terminus strengthens the projects in all criteria. The station design no longer requires the need to acquire two large office buildings. An extension of the Minuteman Bikeway will end two blocks west of the proposed station. The Department of Conservation and Recreation plans to extend the Bikeway to Wellington Station. Medford has already built part of the path. New developments in the area, including an expanded office building and housing for seniors and young people with disabilities, are located near the future station. MAPC is in the middle of a yearlong community visioning process for the area. The project is consistent with the state's GreenDOT policy directive.	5/25/11
Felix and Gwendolyn Blackburn	Medford residents	Opposes the Green Line Extension to Route 16. Other areas need transportation improvements more, such as the Dorchester and Mattapan neighborhoods of Boston. Maintenance of the existing system should be the top priority.	5/24/11
Unidentified	Unidentified	Opposes the Green Line Extension. Prefers that funds be spent on maintenance of road, bridges, and transit.	5/24/11
Richard Grant	Unidentified	Opposes the Green Line Extension because the MBTA does not have funds for the project and federal funds are not guaranteed. Tufts University is a benefactor of the project and should help pay for it.	5/24/11
Paul Morrissey	Aero Cycle owner	The MBTA should not extend the Green Line. The system needs to be repaired before it's expanded. Medford is already well served by transit. Not everyone would benefit from the increased property values that the extension would bring.	5/24/11

(CONT.)

**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
Thomas Nally	A Better City	Supports implementation of several elements of the Urban Ring because they will relieve infrastructure constraints, fill gaps in service, accommodate increased transit demand, enhance transportation equity, and support realization of the MetroFuture land use vision. The Urban Ring should not be viewed as a mega-project, but a project that can be implemented incrementally as funding becomes available. Potential early actions include: Albany St. bus lanes (\$1 million), Mountfort St. bus lanes (\$14 million), Ruggles Station improvements (\$33 million), Melnea Cass Blvd. reconstruction with median busway (\$27 million), Albany St. bus lanes in Boston (\$2 million), and Mass Ave. and possible Columbia Point bus lanes (\$ 2 million). Other possible early action items include: interim surface improvements in the Fenway/ Longwood area, bus lanes on 3rd and 1st Streets in Cambridge, and the East Boston Bypass Road, with a potential Silver Line extension to Chelsea. A Better City also supports the T Under D project, Silver Line, Phase III, and the Red Line-Blue Line Connector. Asks the MPO to include a selection of the early actions for the Urban Ring in the Plan and to model them.	5/23/11
Marco Rivero	Unidentified	Supports the Green Line Extension to Route 16.	5/23/11
Ken Krause	Medford Green Line Neighborhood Alliance	Extending the Green Line to Route 16 strengthens its evaluation in the regional mobility, ridership, environmental benefits, cost effectiveness, economic development, and environmental justice evaluation criteria. Keep the Green Line to Route 16 in the Plan.	5/23/11
Chris Ramsey	Medford resident	Supports Investment Strategy 1 because it includes the Green Line Extension to Route 16.	5/20/11
Rachael Stark	Walking in Arlington	Supports the Green Line Extension to Route 16. The Red Line extension to Alewife made Arlington a more desirable community, and the Green Line Extension would have the same effect.	5/19/11
Juliet Moir	Arlington resident	Supports the Green Line Extension to Route 16.	5/19/11
Edward Starr	Arlington Transportation Advisory Committee	Supports the Green Line Extension to Route 16 because it could reduce the automobile use of residents in the area.	5/19/11
Chris Loreti	Arlington Town Meeting member	Supports the Green Line Extension to Route 16.	5/19/11
Martin Klingensmith	Massachusetts resident	Supports the Green Line Extension to Route 16.	5/19/11
Scott Smith	Arlington resident	Supports the Somerville Community Path because it would connect the Minuteman Bikeway and Charles River Path network, and because it would support the Green Line Extension.	5/19/11
Thouis Jones	Arlington resident	Supports the Green Line Extension to Route 16.	5/19/11
Gwen Blackburn	Green Line Advisory Group for Medford	Does not support the Green Line Extension to Route 16. There is enough transportation between Medford and Boston. The project is a waste of funds.	5/19/11
Maria Daniels	Unidentified	Supports the Green Line Extension to Route 16.	5/19/01

(CONT.)

**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
Andrew Bengtson	Arlington resident	Supports the Green Line Extension to Route 16.	5/19/11
Mark Kaepplein	Arlington resident	Route 16 should be expanded before the Green Line is extended. The Extension would bring more traffic. Funds should be invested in maintenance to the highway and transit system before expanding the transit system.	5/19/11
Michael Sandman	Brookline Transportation Board	Supports the inclusion of the Commonwealth Ave., Phase 2A, project in the Plan. Supports the inclusion of fencing along the MBTA reservation as an important safety improvement.	5/19/11
Rep. Michael Capuano	United States Congress	States that it is essential to set a project priority list and move forward with it. The Somerville Community Path should be added to the Universe of Projects. The Green Line Extension to Route 16 should be included in the second and third proposed investment strategies. Urges the MPO to include both projects in the Plan.	5/18/11
Roberta Cameron	Unidentified	Supports the Green Line Extension to Route 16. It is an ideal terminus that would expand transit options for many underserved neighborhoods. Transit, and bicycle and pedestrian transportation, are key to the future when cars are no longer affordable or preferred. The MPO should invest in infrastructure that would give people more options.	5/18/11
Alia Atlas	Unidentified	Supports the Green Line Extension to Route 16.	5/18/11
John Kohl	Unidentified	Supports the Green Line Extension to Route 16. It would fulfill the legal obligation to extend the Green Line to Medford Hillside, and should be the centerpiece of the Plan.	5/18/11
John Roland Elliott	Medford Hillside resident	Supports the Green Line Extension to Route 16 for its air quality and environmental justice benefits. It would also comply with the legal requirement to extend the Green Line to Medford Hillside. Supports Investment Strategy 1.	5/18/11
David Rajczewski	Medford Green Line Neighborhood Alliance	Supports the Green Line Extension to Route 16. It is consistent with the state's GreenDOT policy and should be a centerpiece of the Plan.	5/18/11
Michael Bernstein	Medford Hillside business owner and resident	Supports the Green Line Extension to Route 16. There is widespread community support for the project. It would support the environmental and transit needs of Medford Hillside, West Medford, West Somerville, and East Arlington.	5/18/11
Carter Wall	Medford Hillside resident	Supports the Green Line Extension to Route 16.	5/18/11
Peter Ungaro	Unidentified	Supports Investment Strategy 1 because it includes the Green Line Extension to Route 16. The project could reduce auto use by residents in the area.	5/18/11
Susan Fendell	Somerville resident	Supports the Green Line Extension to Route 16.	5/18/11
Sophia Sayigh	Arlington resident	Supports the Green Line Extension to Route 16.	5/18/11
Alex Formanek	Unidentified	Supports the Green Line Extension to Route 16.	5/18/11

(CONT.)



**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
Nadia Sladkey	Arlington resident	Supports the Green Line Extension to Route 16.	5/18/11
Tom Scott	Arlington resident	Supports the Green Line Extension to Route 16.	5/18/11
John Roland Elliott	Medford resident	Supports the Green Line Extension to Route 16. It would improve air quality and access for the community. It would serve a marginalized, underserved population.	5/18/11
DiDi Vaz	Medford resident	Supports the Green Line Extension to Route 16. The project would support economic development in the Medford Hillside neighborhood. The Route 16 terminus rates better in every evaluation criterion than the College Avenue terminus. It should be a centerpiece of the Plan.	5/18/11
Stephen Paul Linder	Medford resident	Supports the Green Line Extension to Route 16. Will improve connections from Medford to Cambridge.	5/18/11
Unidentified	Unidentified	Supports the Green Line Extension to Route 16.	5/18/11
Jeanne Griffith	Concord resident	Supports Phase 2 of the Bruce Freeman Rail Trail. It would improve non motorized access to many destinations. Design funds have been committed to the Trail. It should be in the FFYs 2016-2020 time band. It would be a vital connection in a nascent, but growing, web of active transportation facilities.	5/18/11
Carolyn Rosen, Chair	Green Line Advisory Group for Medford	Does not support the Route 16 terminus for the Green Line Extension. The T has a large backlog of deferred maintenance that must be addressed before expansion. There are already many bus routes in the area of the proposed station. The area is already a vibrant, walkable community. The Route 16 terminus would disrupt a historic African American community in West Medford.	5/19/11
Dr. William Wood	Unidentified	Does not support the Route 16 terminus for the Green Line Extension. It would affect many lives, disrupt a vibrant historic African American community, and increase traffic in the area, requiring a parking lot. Supports the Green Line Extension to College Avenue. The transit-oriented development planned for the area around Route 16 would not serve the needs of the existing community.	5/19/11
Rep. Sciortino, Sen. Jehlen, Rep. Garballey	Massachusetts General Court	Urges the MPO to support the Green Line Extension to Route 16. The Patrick Administration supports the Route 16 terminus, and it is the preferred alternative identified in the Draft Environmental Impact Report. It is receiving very positive support from the community during the current MAPC public engagement. Expanding public transportation supports regional and statewide economic growth. The extension of the Green Line to College Avenue fails to meet the Commonwealth's obligation to extend the Green Line to the Medford Hillside neighborhood. It would be more cost-effective and less disruptive to the community to combine Phases 1 and 2 of the project. Funding for the entire project should be in the FFYs 2011-2015 time band of the Plan.	5/18/11
Unidentified	Unidentified	Supports Investment Strategy 1 because it includes the Green Line Extension to Route 16. It would serve thousands of commuters, and fulfill the commitment to serve Medford Hillside.	5/18/11

(CONT.)

**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
Michael Lambert and Tom Bent	City of Somerville	Request that the Somerville Community Path, Phase 2 (Lowell Street Station to Inner Belt District), be included in the Plan. This would pave the way for the City to seek external funds for the project. Design work has begun as part of the Green Line Extension project. The estimated cost is \$17 million, plus contingency, and the City expects it to decrease. It would connect trails in the western suburbs to Boston, and must be built along with the Green Line. Timing is important because of the Green Line project; the Path should be programmed for the FFYs 2013-2015 time period. The project would improve transportation options, unlock economic opportunity, and bring cleaner air and recreational space to an environmental justice community.	5/18/11
Melissa B. Bennett	Medford resident	Supports Investment Strategy 1 because it includes the Green Line Extension to Route 16. Extending the Green Line to Route 16, rather than College Avenue, would improve its performance in every evaluation criterion.	5/18/11
Erik Jacobs	Medford resident	Supports Investment Strategy 1 because it includes the Green Line Extension to Route 16. Extending the Green Line to Route 16, rather than College Avenue, would improve its performance in every evaluation criteria.	5/18/11
Andrew Callen	Acton resident	Supports the Bruce Freeman Rail Trail. The Trail would provide a commuting alternative to driving.	5/18/11
Crispin Olson	Arlington resident	Supports the Green Line Extension to Route 16. It would serve the only environmental justice community in Arlington. It would serve many more people than would be served ending the project at College Avenue.	5/18/11
Kamal Dasu	Acton resident	Supports the Bruce Freeman Rail Trail. The project would provide access to commuter rail and bus, and would provide congestion relief.	5/18/11
Christopher Burgess	Unidentified	Supports the Bruce Freeman Rail Trail. It would provide access to shopping in downtown Chelmsford and green commuting opportunities to IBM.	5/18/11
Nancy Powers	Friends of the Bruce Freeman Rail Trail	Supports the Bruce Freeman Rail Trail for its transportation and recreational benefits.	5/18/11
Doug Carr	Medford resident	Supports the proposed Investment Strategy 1 because it's the only one that includes extending the Green Line to Route 16. Extending the project to Route 16 has mobility, ridership, environmental, cost-effectiveness, and environmental justice benefits.	5/18/11
Mary Ellen Chaney	Unidentified	Supports including Phase 2 of the Bruce Freeman Rail Trail in the FFYs 2016-2020 time band of the Plan. It would benefit many people, and the environment.	5/18/11
Ed Kross	Framingham resident	Supports including Phase 2 of the Bruce Freeman Rail Trail in the FFYs 2016-2020 time band of the Plan. The Trail would offer commuting alternatives. The Mass Central Rail Trail is also an important component in creating a path network.	5/18/11
Donna Laquidara-Carr	Medford resident	Supports the proposed Investment Strategy 1 because it includes the Green Line Extension to Route 16. It would serve a larger market, and would reduce traffic in the Hillside neighborhood. It would have environmental and social justice benefits.	5/18/11

(CONT.)

**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
David G. Fox	Boxborough resident	Supports including Phase 2 of the Bruce Freeman Rail Trail in the FFYs 2016-2020 time band of the Plan. It would give people another commuting option, save oil, help to improve air quality, and reduce wear and tear on roads. It also has health benefits.	5/18/11
Suzanne Knight	Concord resident	Supports Phase 2 of the Bruce Freeman Rail Trail. The Trail would provide safe access to several destinations. It would also be an ideal way to get to work.	5/18/11
Lynn Weissman and Alan Moore	Friends of the Community Path	Requests that a \$25 million budget line item be included in the proposed investment strategies to build the Community Path with the Green Line Extension. It would be more expensive, and logistically impractical, to design and build the Community Path after the Green Line Extension. Prefers, but does not endorse, Investment Strategy 3 presented at the May 5 MPO meeting. None of the three strategies is consistent with GreenDOT, and none account for the need to program the Path with the Green Line Extension. The Path would connect the Minuteman and Charles River Path networks, reduce congestion, improve air quality and safety, and have benefits for the environmental justice neighborhoods of East Somerville.	5/18/11
Anne Gardulski	Boxborough resident	Supports including Phase 2 of the Bruce Freeman Rail Trail in the FFYs 2016-2020 time band of the Plan. It would provide a safe recreational bike, running and walking path that would help alleviate the choke point at Concord Rotary. It would reduce congestion, provide nonmotorized access to other modes and destinations, and build a strong sense of community. Supports Plan Strategy 3.	5/18/11
Sherry Bauman	Unidentified	Supports the Community Path connector. The project would create a safe connection between the Minuteman Bikeway and the Charles River Path network. It would have commuting, environmental, and health benefits.	5/18/11
Tom Michelman	Acton resident	Supports including Phase 2 of the Bruce Freeman Rail Trail in the FFYs 2016-2020 time band of the Plan. The Trail has a contract in place for design and has overwhelming local support. The Sudbury portion of the project has not made enough progress, but has strong public support. The design will be completed for all relevant portions before 2016 if it's included in the Plan. The MPO does not put weight on several factors that support the Trail, including the support for these facilities from the public, the need for alternative transportation in order to reduce dependency on imported oil, and the growth in bicycling that would result from the completion of a network, bike sharing, and allowing bikes on the T during peak hours. Urges the MPO to adopt Strategy 3 outlined in their May 5 meeting. The Plan can't be considered sustainable if it does not increase funding for bicycles and pedestrians.	5/18/11
Cathy Ricketson	Westford resident	Supports including Phase 2 of the Bruce Freeman Rail Trail in the FFYs 2016-2020 time band of the Plan.	5/17/11
Cynthia McLain	Chelmsford resident	Supports including the Bruce Freeman Rail Trail in the FFYs 2016-2020 time band of the Plan. The extended trail would give people better access to many destinations, and other transportation facilities such as commuter rail and the Minuteman Bikeway. It would support sustainable transportation and give young people a safe place to learn to ride a bike. Failure to include the Trail in the Plan could result in the loss of federal design funds.	5/17/11

(CONT.)

**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
Alan Frankel	Framingham resident	Supports including Phase 2 of the Bruce Freeman Rail Trail because it would help alleviate congestion and improve commuter access to commuter rail and bus. Phase 1 has been successful and delaying the project could result in the loss of federal funds and support from the governor.	5/17/11
Stanislav R. Mudrets	Framingham resident	Supports Phase 2 of the Bruce Freeman Rail Trail. Riding a bike is much cheaper than driving a car. It would help reduce congestion and pollution.	5/17/11
Chad Gibson, Co-Chair	East Arlington Livable Streets Coalition	The proposed Investment Strategies 2 and 3 do not promote sustainability. Supports Strategy 1 because it includes the Green Line Extension to Route 16. Encourages the MPO to lead the country in a progressive transportation policy that will reduce our dependency on automobiles.	5/17/11
Mayor Curtatone	City of Somerville	Requests that the Green Line Extension from College Avenue to Route 16 be included in the FFYs 2016-2020 time band of the Plan. The project would improve quality of life, decrease air pollution, and accelerate economic development. The Route 16 station presents an excellent opportunity for transit-oriented development.	5/17/11
Dick Williamson	Sudbury resident	Supports the Bruce Freeman Rail Trail. State and federal funds have been secured for design. Any project designed with federal funds must be in the first 10 years of the Plan. Expects construction of Phases 2A and 2C to be programmed before 2021. The Trail will provide nonmotorized access to many destinations and other modes of transportation. Construction closer to 2013 is highly desirable.	5/17/11
W. Barber	Concord resident	Supports the Bruce Freeman Rail Trail. It would have recreational benefits, and would give people nonmotorized access to parks, fields, and commercial centers.	5/17/11
Alan Mertz	Acton resident	Supports including Phase 2 of the Bruce Freeman Rail Trail in the FFYs 2016-2020 time band of the Plan. It would provide nonmotorized access to commuter rail and reduce congestion. The project is ready to access design funds, and must be in the first 10 years of the Plan in order to do so.	5/17/11
Paul Cohen, Town Manager	Chelmsford	Supports including Phase 2 of the Bruce Freeman Rail Trail in the FFYs 2016-2020 time band of the Plan. It would provide alternative transportation access to many destinations, and provide open space and recreational opportunities.	5/17/11
Blossom Hoag	Hingham resident	The Linden Ponds retirement community is not served by public transportation. The surrounding area is growing. Supports a bus route on Whiting Street in Hingham to serve the elderly and employees in the area, and to connect modes of transportation.	5/17/11
Steve Buchanan	Sudbury resident	Supports the Bruce Freeman Rail Trail because biking on roads is dangerous and the Trail would give people commuting options other than driving.	5/17/11
Margaret Kohin	Acton resident	Supports Phase 2 of the Bruce Freeman Rail Trail because it would serve a dual purpose for transportation and recreation. It would reduce automobile traffic, global warming, and gridlock.	5/17/11
Bob Zuffante	Concord resident	Supports including Phase 2 of the Bruce Freeman Rail Trail in the earliest possible time band of the Plan because of the problems of obesity, scarce resources, and pollution.	5/17/11

(CONT.)

**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
P. McWilliams	Westford resident	Supports the Bruce Freeman Rail Trail because it would provide a safe place for people to exercise and commute.	5/17/11
Dave and Emily	Unidentified	Supports the Bruce Freeman Rail Trail because it would provide a healthy transportation choice.	5/17/11
Lowell Gilbert	Acton resident	Supports the Bruce Freeman Rail Trail and bicycle facilities in general. Gasoline availability will inevitably drop, making them necessary, and the Bruce Freeman Rail Trail would connect commercial areas and provide a safe crossing of Route 2.	5/17/11
Jack Currier	Bruce Freeman Rail Trail; Nashua, NH, resident	Supports the Bruce Freeman Rail Trail because it would allow for more commuting by bicycle.	5/17/11
Gary Webster	Bruce Freeman Rail Trail	Supports the Bruce Freeman Rail Trail because it's a good use of scarce funds.	5/17/11
Joshua Mazgelis	Westford resident	Supports the Bruce Freeman Rail Trail because it would give people nonmotorized access to destinations they currently drive to, including a commuter rail station.	5/17/11
Daniel Singer	Friends of the Bruce Freeman Rail Trail	Supports Phase 2 of the Bruce Freeman Rail Trail because it would improve the quality of life in the surrounding areas by providing recreation, exercise, and non-automotive access to businesses and offices, which would relieve congestion and reduce pollution.	5/17/11
Jane Calvin	Lowell Parks and Conservation Trust Inc.	Supports the Bruce Freeman Rail Trail. Is working to ensure that the Concord River Greenway connects with the Bruce Freeman Rail Trail in Chelmsford.	5/17/11
Steve Buchanan	Sudbury resident	Supports the Bruce Freeman Rail Trail for its commuting and safety benefits.	5/17/11
Mark Childs	Unidentified	Supports Phase 2 of the Bruce Freeman Rail Trail for its health, recreational, and congestion-reducing benefits.	5/16/11
Maria Kuffner	Unidentified	Supports Phase 2 of the Bruce Freeman Rail Trail.	5/16/11
Lynne Ziter	Sudbury Resident	Supports the Bruce Freeman Rail Trail for the health and quality-of-life benefits it would provide.	5/16/11
Carol Domblewski	Friends of the Bruce Freeman Rail Trail; resident of Acton	Supports including the Bruce Freeman Rail Trail in the FFYs 2016 - 2020 time band of the Plan because it would give people access to destinations without needing a car, and would provide health and quality-of-life benefits.	5/16/11
Lisa Mandel	Unidentified	Supports including the Bruce Freeman Rail Trail in the FFYs 2016-2020 time band of the Plan for the environmental, health, and economic benefits.	5/16/11
Denise Howard	Friends of the Bruce Freeman Rail Trail	Supports including the Bruce Freeman Rail Trail in the FFYs 2016-2020 time band of the Plan because of its health benefits. Voters prefer paths to highways.	5/16/11
Josef Kerimo	Concord resident	Supports Phase 2 of the Bruce Freeman Rail Trail because it would provide connections to transit options and reduce congestion.	5/16/11

(CONT.)



**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
Paulita Alinskas	Friends of the Bruce Freeman Rail Trail	Supports the Bruce Freeman Rail Trail because of the safety, health, and congestion-reduction benefits it would provide.	5/16/11
Leonard Simon	Unidentified	Supports including the Bruce Freeman Rail Trail in the FFYs 2016-2020 time band of the Plan because of the safety and air quality benefits it would provide.	5/16/11
Ann Grace	Unidentified	Supports the Bruce Freeman Rail Trail because it would improve air quality and health, and would provide access to the West Concord MBTA station.	5/16/11
Kim Colson	Westford resident	Supports Phase 2 of the Bruce Freeman Rail Trail because it would allow people to reach destinations by bike rather than car, and it would be a recreational resource.	5/16/11
Kathryn Angell	Concord resident	Supports including Phase 2 of the Bruce Freeman Rail Trail in the FFYs 2016-2020 time slot of the LRTP because it would decrease congestion by providing alternatives to driving and connect to other bike investments in the region, and because of the time and effort dedicated to planning for the Trail by the proponents.	5/16/11
Howard Quin	Unidentified	Supports including the Bruce Freeman Rail Trail in the FFYs 2016-2020 time band of the Plan.	5/16/11
Daphne G. Freeman	Chelmsford resident	Supports the Bruce Freeman Rail Trail because it would provide an alternative to driving and connect to other transportation modes and bike investments in the region.	5/16/11
Kathryn Achen Garcia	Unidentified	Supports including Phase 2 of the Bruce Freeman Rail Trail in the FFYs 2016-2020 time slot of the Plan.	5/16/11
Stuart Johnstone	Concord resident	Supports including Phase 2 of the Bruce Freeman Rail Trail in the FFYs 2016-2020 time band of the Plan because of the time and effort of the project proponents to advance the project to its current status, and the need for nonmotorized transportation options.	5/16/11
Nancy Savage	Acton resident	Supports including Phase 2 of the Bruce Freeman Rail Trail in the FFYs 2016-2020 time band of the Plan because it would give people a nonmotorized option for commuting in a congested area.	5/16/11
Jim Terry	Concord resident	Supports including Phase 2 of the Bruce Freeman Rail Trail in the FFYs 2016-2020 time band of the Plan because of the health benefits of the Trail, and because it would give people nonmotorized access to many destinations in an area that is congested.	5/16/11
Lisa Underkoffler	Acton resident	Supports Phase 2 of the Bruce Freeman Rail Trail because of the health benefits of the Trail, and because it would give people nonmotorized access to many destinations. It would also give people, including those confined to a wheelchair, access to fresh air and exercise.	5/16/11
Rick Fallon	Acton resident	Supports Phase 2 of the Bruce Freeman Rail Trail.	5/16/11
Kathleen Klofft	Unidentified	Supports the Bruce Freeman Rail Trail because it would reduce congestion along local roadways.	5/16/11

(CONT.)

**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
Bruce R. Freeman	Bedford, NH, resident and son of former Rep. Bruce Freeman	Supports including Phase 2 of the Bruce Freeman Rail Trail in the FFYs 2016-2020 time slot of the LRTP because it would decrease congestion by providing alternatives to driving, and connect to other bike investments in the region, and because of the time and effort dedicated to planning for the Trail by the proponents. The Trail would help people save on the cost of gasoline, promote health, and help to create a network that would allow bicycling to blossom. Voters prefer paths to highways.	5/16/11
Richard E. Kenyon	Westford resident	Supports including Phase 2 of the Bruce Freeman Rail Trail in the FFYs 2016-2020 time slot of the LRTP because it would decrease congestion by providing alternatives to driving, and connect to other bike investments in the region, and because of the time and effort dedicated to planning for the Trail by the proponents. The Trail would help people save on the cost of gasoline, promote health, and help to create a network that will allow bicycling to blossom. Voters prefer paths to highways.	5/16/11
Elizabeth Adams	Unidentified	Supports the Bruce Freeman Rail Trail because it would improve health and air quality, and relieve congestion.	5/15/11
Frona Vicksell	Friends of the Bruce Freeman Rail Trail	Supports rail trails because they are safer and faster than roads for bicyclists and pedestrians.	5/15/11
Michelle Lee	User of the Bruce Freeman Rail Trail	Supports Phase 2 of the Bruce Freeman Rail Trail because it would provide connections to other modes of transportation and new bicycle investments, such as the Boston bike sharing program.	5/15/11
Barbara Pike	Bruce Freeman Rail Trail	Supports including Phase 2 of the Bruce Freeman Rail Trail in the FFYs 2016-2020 time slot of the LRTP because it would provide an alternative to driving and connect many destinations.	5/15/11
Sue Felshin	Concord resident	Supports Phase 2 of the Bruce Freeman Rail Trail because it would give people alternatives to driving and reduce congestion.	5/15/11
Eunice Garay	Sudbury resident	Supports including the Bruce Freeman Rail Trail in the FFYs 2016-2020 time band of the Plan because of the quality-of-life and environmental benefits. It would allow people to replace auto trips with biking or walking trips.	5/15/11
Rafael Mares	Conservation Law Foundation	Urges the MPO to keep the Green Line Extension to Route 16 in the Plan, and for the MPO to ensure that the Plan complies with the requirements of the GreenDOT initiative of MassDOT. There is community consensus that Route 16 is the best terminus for the Green Line Extension. The Commonwealth has incorporated GreenDOT into its Global Warming Solutions Act Climate Plan. Accordingly, in its consideration of projects to include in the Plan, the MPO is required to plan for reducing greenhouse gas emissions over time. The LRTP must incorporate elements that balance highway system expansion with projects that support smart growth and promote public transportation, walking, and bicycling. Extending the Green Line to Route 16, and extending the Somerville Community Path, are the types of projects that will enable the state to meet its greenhouse gas emissions reduction mandate.	5/12/11
Wendy Landman, Executive Director	WalkBoston	Supports the Somerville Community Path because it would connect the Minuteman Bikeway and Charles River Path network, and because it would support the Green Line Extension.	5/5/11

(CONT.)

**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
Renata von Tscharnner, President	Charles River Conservancy	Urges the MPO to include the Community Path connector as a top priority bicycle and pedestrian project in the Universe of Projects for the next Plan. The extended Path would connect the Minuteman Bikeway and the Charles River Path network, and stations of the Green Line Extension. The developers of NorthPoint in Cambridge are building the path through their property. The Path must be built with the Green Line Extension.	5/2/11
Carole Wolfe	Sudbury resident	Does not support the Bruce Freeman Rail Trail because it is for recreation, rather than transportation; most people will drive to it; it costs about \$3 million per mile; it would run through environmentally sensitive areas; and the path will not be convenient for accessing destinations such as schools. Funds are scarce and would be better spent on projects that move large numbers of people, such as public transportation.	5/2/11
Catharine M. Hornby, Chair	Cambridge Bicycle Committee	Supports including the Somerville Community Path project in the Plan because it would connect the Minuteman Bikeway to downtown Boston, and because it would support the Green Line Extension.	5/2/11
Patrick McMahon, Vice President	Simpson Housing, LLLP	Supports the Causeway Street Reconstruction Project. Simpson Housing is building 287 apartments and 17,000 square feet of retail space at Bulfinch Triangle. The Causeway Street project would improve the safety and livability of the area. Urges the MPO to support the project.	5/2/11
Urban Ring, Phase 2, Citizens' Advisory Committee	Urban Ring, Phase 2	<p>The Urban Ring project contains several elements that would be worthwhile as stand-alone projects. The Urban Ring is the surest way to direct development to dense, already developed areas. The CAC welcomes the MPO policy that economic impacts are a criterion for evaluating projects. The project would also address policies calling for a higher transit mode share, and actions to address climate change and transportation equity.</p> <p>Among the early actions the MPO can take to address issues identified through the Needs Assessment are:</p> <ul style="list-style-type: none"> <li>* Ruggles Station platform improvements</li> <li>* Bus lanes on 1st Street in Cambridge, and 3rd and Main Street near Kendall Square, and Main and Albany streets to Cambridgeport</li> <li>* Extension of Silver Line service into Chelsea along the new bypass road, and a dedicated busway from Everett to the Orange Line via Wellington with a new bridge over the Malden River, or via mixed traffic on Route 99 with access to Sullivan Square Station through bus lanes</li> <li>* Melnea Cass Blvd. reconstruction with a center median busway</li> <li>* Mountfort St. corridor with bus lanes on the Carlton St. bridge, and between Park Dr. and Beacon St.</li> <li>* Albany St. bus lanes in Boston</li> <li>* Massachusetts Ave. and Columbia Point bus lanes</li> </ul> <p>These projects and components of projects address the Plan's priorities and should be modeled to document their benefits.</p>	3/21/11
Arlene Wyman Petri	Unidentified	Supports the Community Path because it would support health and the environment, reduce congestion, and improve the quality of life.	5/9/11
William H. Petri	Wayland resident	Supports the Community Path because of its safety, mobility, and environmental benefits. It would connect the Minuteman Bikeway and the Charles River Path network. Would like the MPO to fund the Cedar-to-Lowell section in the FFY 2012 Transportation Improvement Program. The Community Path should be built with the Green Line Extension.	5/4/11

(CONT.)

**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
Keja Valens	Somerville resident	Supports including the Community Path connector in the Plan because of the project's environmental benefits. The Path would also promote access for all people to the Green Line Extension.	5/3/11
Ryan Robbins	Somerville resident	Supports including the Community Path connector in the Plan because it would close gaps in the region's bike network. The Path should be build along with the Green Line Extension.	5/3/11
Kathleen Knisely	Somerville resident	Supports the Community Path connector. The project would create a safe connection between the Minuteman Bikeway and the Charles River Path network. It will have commuting, recreational, social, and health benefits.	5/2/11
Laura McMurry	Cambridge resident	Supports including the Community Path connector in the Plan because it would close gaps in the region's bike network. The Path should be build along with the Green Line Extension.	5/2/11
John Wilde	Somerville resident	Supports including the Community Path connector in the Plan because of the project's environmental benefits. The Path would also promote access for all people to the Green Line Extension. It should be built with the Green Line Extension.	5/2/11
Linda Lintz	Medford resident	Supports including the Community Path connector in the Plan because it would close gaps in the region's bike network and provide access for all users to the Green Line Extension. The Path should be build along with the Green Line Extension.	5/2/11
Jonathan O'Connor	Boston resident	Supports building the Community Path connector with the Green Line Extension because it would be cost-effective to build them together, and they would both reduce congestion. The Path has environmental, health, financial, and safety benefits. It would provide a place for children to safely learn to ride a bike. It would promote health, local business, and improved quality of life, and would close a gap in the path network.	5/2/11
Camille Petri	Unidentified	Supports the Community Path connector because of its community safety, environmental, health, and mobility benefits. It must be built with the Green Line Extension.	5/2/11
Ulandt Kim	Somerville resident	Supports the Community Path connector because it would provide a safe place to bike and walk. It should be a higher priority than the Green Line Extension.	5/2/11
Alex Feldman	Somerville resident	Supports the Community Path connector because it would reduce congestion, increase T ridership, promote exercise, and support the Bike Share program. It will also connect the Minuteman Bikeway to the Charles River Path network. It should be designed and built with the Green Line Extension.	5/2/11
Gabrielle Weiler	Boston resident	Supports the Community Path connector because it would close gaps in the region's bike network. It should be designed and built with the Green Line Extension.	5/2/11
Jeff Reese	Medford resident	Supports including the Community Path connector in the Plan because it would close gaps in the region's bike network. The Path would also promote access to the Green Line Extension. It should be built with the Green Line Extension.	5/2/11

(CONT.)

**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
Joel Snider	Cambridge resident	Supports the Community Path connector because it would close gaps in the region's bike network and provide access into Boston and Cambridge for major events such as the 4th of July. It should be designed and built with the Green Line Extension.	5/2/11
Dan Hamalainen	Waltham resident	Supports the Community Path connector because it would close gaps in the region's bike network. It should be designed and built with the Green Line Extension.	5/2/11
Anna Anctil	Watertown resident	Supports the Community Path connector because it would close gaps in the region's bike network, and give people a safe place to bike. It should be designed and built with the Green Line Extension.	5/2/11
Sen. Tolman; Rep. Brownsberger; Belmont Selectmen Jones, Paolillo, and Firenze	Elected officials representing Belmont	Support the Belmont Trapelo Road Corridor Project. Belmont has spent about \$2.7 million on the project. Pleased that the project was identified as a regional need. Ask that the project be included in the Plan, and ultimately placed in the FFY 2015 element of the TIP. It is expected that the right-of-way will be secured by the spring of 2012.	5/2/11
David H. Douglas	Somerville resident	Supports including the Community Path connector in the Plan because it would close gaps in the region's bike network. The Path would also promote access for all people to the Green Line Extension. It should be built with the Green Line Extension.	5/1/11
Jay Wessland	Somerville resident	Supports including the Community Path connector in the Plan because it would close gaps in the region's bike network. The Path would also promote access for all people to the Green Line Extension. It should be built with the Green Line Extension.	5/1/11
Michelle Liebetreu	Somerville resident	Supports including the Community Path connector in the Plan because it would close gaps in the region's bike network. The Path would also promote access for all people to the Green Line Extension. It should be built with the Green Line Extension.	5/1/11
Resa Blatman and Stefan Cooke	Somerville residents	Supports including the Community Path connector in the Plan because it would close gaps in the region's bike network. The Path would also promote access for all people to the Green Line Extension. It should be built with the Green Line Extension.	5/1/11
Fred Berman and Lori Segall	Somerville residents	Supports including the Community Path connector in the Plan because it would close gaps in the region's bike network. The Path would also promote access for all people to the Green Line Extension. It should be built with the Green Line Extension.	5/1/11
Pauline Lim	Somerville resident	Supports including the Community Path connector in the Plan because it would close gaps in the region's bike network. The Path would also promote access for all people to the Green Line Extension. It should be built with the Green Line Extension.	5/1/11

(CONT.)



**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
Jess Hicks	Somerville resident	Supports including the Community Path connector in the Plan because it would lose gaps in the region's bike network. The Path would also promote access for all people to the Green Line Extension. It should be built with the Green Line Extension.	4/30/11
Matthew Belmonte	Unidentified	Supports including the Community Path connector in the Plan because it would close gaps in the region's bike network and improve safety. It should be built with the Green Line Extension.	4/29/11
Arnold Reinhold	Cambridge resident	Supports including the Community Path connector in the Plan because it is cost-effective and would close gaps in the region's bike network. It should be built with the Green Line Extension.	4/29/11
Lynn Weissman and Alan Moore	Friends of the Community Path	Supports the Community Path Connector, which would connect the Minuteman Bikeway to the Charles River Path network. The Path needs to be built with the Green Line Extension. The Path is consistent with the Plan's visions and policies, and would address identified needs. The density of Somerville, and the critical connection made by the path, mean that no other multi-use trail proposed in the region would generate the usage of the Community Path. The Path would bring riders to the Green Line extension, would fill a missing link, provide a safe and emissions-free path to downtown Boston, provide recreational and open space in environmental justice communities, and create safe routes to schools. The Path has been identified as a priority in many other planning documents, and has already received funding from the MPO for other sections. It is part of other proposed trails. The Path is consistent with new federal and state policy directives encouraging livability and healthy transportation.	4/27/11
Lynn Weissman and Alan Moore	Friends of the Community Path	In an addendum to their 4/27/11 letter, stated the following points: Please include the Community Path in the list of Projects and Programs by Investment Category released on April 5. There is tremendous regional support for the project. In March, 138 letters in support of the project were sent to the MPO. Many of the letters mentioned the safety benefits of the project.	5/3/11
Alice Grossman	Somerville resident	Supports including the Community Path connector in the Plan because it would close gaps in the region's bike network. The Path would also promote access for all people to the Green Line Extension. It should be built with the Green Line Extension.	4/27/11
Robert O'Brien, Executive Director	Downtown North Association	Supports the Causeway Street Crossroads Initiative and the larger Boston Crossroads Initiative. Causeway Street supports very high pedestrian volumes to and from regional centers of employment, recreation, and transportation. The project is consistent with the visions and policies of the Plan. The project would address a regional need. The project would restore the connection between the West and North Ends, long severed by the elevated highway and transit facilities. The project would make Causeway Street a vibrant multimodal urban boulevard that supports livability, mobility, safety, and aesthetics. Asks the MPO to support the project.	4/20/11
Susan Brooks	Unidentified	Supports the Bruce Freeman Rail Trail because it provides nonmotorized access to several destinations.	4/15/11

(CONT.)

**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
Terri North	Kenmore Residents Group	Supports the Commonwealth Ave Phase 2A improvement project.	4/13/11
Melissa Hoffer	Conservation Law Foundation	The State's Clean Energy and Climate Plan for 2020 requires the LRTP to address MassDOT's three sustainability goals and plan for reducing greenhouse gas emissions over time. It will require that MPOs and MassDOT balance highway system expansion with projects that support other modes and smart growth. The LRTP is also required to evaluate greenhouse gas emissions and ensure that the emissions are reduced over time. The emissions must fit into an overall statewide greenhouse gas reduction target. Would like to know how greenhouse gas emissions will be quantified and whether or not each project will be evaluated individually. Would like to know who will be responsible for quantifying the emissions. Would like to know how the methods of different agencies for quantifying emissions will be made consistent. Would like to know which methods will be used, which model will be used to estimate the vehicle-miles traveled, and whether or not induced demand will be considered.	4/12/11
Pam Beale, President	Kenmore Association	Supports the Commonwealth Ave, Phase 2A, improvement project. Phase 1 enhanced the streetscape and improved safety for all street users.	4/10/11
Elizabeth Walsh	Boston resident	Supports the Commonwealth Ave., Phase 2A, improvement project.	4/8/11
Suzanne Kennedy, Town Administrator	Town of Medway	Medway has hired a design firm for the reconstruction of Route 109. This demonstrates the town's strong commitment to taking appropriate project management actions.	4/7/11
Yvette Lancaster, President	Audobon Neighborhood Citizens Group	Supports the Commonwealth Ave, Phase 2A, improvement project. It would enhance the streetscape and improve safety for all street users.	4/7/11
Alan Weinberger	Bay State Road Neighborhood Association	Supports the Commonwealth Ave, Phase 2A, improvement project. Phase 1 enhanced the streetscape for all users.	4/1/11
Bob Church	Kenmore Towers	Supports the Commonwealth Ave, Phase 2A, improvement project.	4/1/11
Gary Nicksa, Vice President for Operations	Boston University	Supports the Commonwealth Ave, Phase 2A, improvement project. It would enhance the streetscape and improve safety for all street users.	3/28/11
Unidentified	Sudbury resident	Not in favor of the Bruce Freeman Rail Trail. Funds should be spent on maintaining the MBTA system rather than recreational trails.	3/2/11
Thomas Hedden, Ph.D.	(self-employed)	Supports the Bruce Freeman Rail Trail to Framingham. The completed section is full of riders, skaters, joggers, and others. Roads can be dangerous places for children to ride bikes. The Trail would promote healthy exercise and safety.	2/28/11
Chris Barrett	Unidentified	Supports the Bruce Freeman Rail Trail. \$1 million is available for design of the next phase. The Trail should be built soon so the design funds don't go to waste.	2/28/11
William Latimer	Clinton Greenway Conservation Trust	Supports the Mass Central and Bruce Freeman Rail Trails. They have health, environmental, social justice, and community connectivity benefits.	2/28/11

(CONT.)

**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
Richard J. Fallon	Acton resident	Supports the Bruce Freeman Rail Trail.	2/28/11
Bob Krankewicz	Bruce Freeman Rail Trail member	Supports the Bruce Freeman Rail Trail. It would help with the “greening” of Massachusetts and improve citizens’ health through increased exercise and cleaner air. It could lead to a healthier citizenry, which in turn lessens the cost of health care incurred by the public and the state government.	2/28/11
John Barry	Bolton resident	Supports the Bruce Freeman Rail Trail.	2/28/11
Robert Comer	Friend of the Bruce Freeman Rail Trail, Concord resident	Supports the Bruce Freeman Rail Trail. Substantial investments have been made by the state, municipalities, and volunteers. The Trail would enhance bicycle and pedestrian connections to the Fitchburg Line and West Concord. Bicycle storage facilities along the Fitchburg Line should also be expanded. Being able to bike to the train and store a bike safely and reliably would encourage sustainable commuting and travel.	2/28/11
Danielle Woodman Kehoe	Unidentified	Supports expansion of the Bruce Freeman Rail Trail. Trails support the health of citizens by providing a beautiful, safe space for activities such as walking, running, and bike riding.	2/28/11
Nancy Peacock	Unidentified	Supports investments that encourage bicycling.	2/27/11
Robert Mandel	Unidentified	States that this is a time to close the state budget deficit by eliminating any unnecessary spending. Believes that bike-oriented facilities expenses are not essential.	2/27/11
Gerard Boyle	Resident	Supports shared-use trails.	2/27/11
Timothy Fohl	Unidentified	Supports shared-use trails.	2/27/11
Bill Stewart	Acton resident	Supports the expansion of the Bruce Freeman Rail Trail. Many bikers, runners, and walkers use the trail.	2/27/11
Jim Salem	Unaffiliated	Supports the Bruce Freeman Rail Trail. It would reduce automobile traffic and improve bicycle connections to the Fitchburg Line.	2/27/11
Robert D. Hall	Friends of the Bruce Freeman Rail Trail	Impressed by the thoroughness with which the MPO is working on the Long-Range Transportation Plan. Asks planners not to view trails for bike and pedestrian travel as simply recreational facilities whose realization can be delayed until the economy can afford them. They have mobility, safety, environmental, and public health benefits. Supports the Bruce Freeman Rail Trail.	2/27/11
Ellen Quackenbush	Concord resident	Supports the Bruce Freeman Rail Trail. It would offer recreational and transportation benefits for everyone.	2/27/11
Frederick M. Rust	Boy Scout Troop 63, Sudbury	There are few transportation alternatives for teenagers or other non-drivers in the MetroWest area. Bicycling can be a safe, enjoyable, and human-power alternative to autos, but only if there are dedicated bicycling routes. The Bruce Freeman Rail Trail would help connect schools, town centers, and athletic fields. The transportation needs of younger citizens should be an important consideration to the Needs Assessment, and dedicated bicycle facilities are an appropriate way to meet these needs.	2/27/11

(CONT.)

**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
Bob Schneider	Bruce Freeman Rail Trail rider	Supports the Bruce Freeman Rail Trail. It would improve health and air quality. A lot has been spent on roads. More investment should be made in trails.	2/27/11
Franny Osman	Acton Transportation Advisory Committee	Supports the Bruce Freeman Rail Trail. Encourages the MPO to consider radial and circumferential routes between the big highways. Between-town transit is lacking. Promoting local and between-town transit projects would support the economy.	2/27/11
James Fitzpatrick	Sudbury resident	Supports rail trails. They offer health, community development, environmental, and air quality benefits. They should be driven by coordinated state and regional planning, rather than relying on individual communities to develop them. A very vocal minority of people have delayed implementation of a rail trail crossing through Sudbury.	2/27/11
Mary Hunter Utt	Friends of the Bruce Freeman Rail Trail	Any form of transportation that helps wean us from cars, pollution, and oil dependence should be a priority. Bicycle trails are important for recreation, connection, and fitness. The Bruce Freeman Rail Trail should be a priority.	2/27/11
Thomas W Bailey	Concord resident	Supports inclusion of the Bruce Freeman Rail Trail in the Long-Range Transportation Plan.	2/27/11
Wendy Wolfberg	Unidentified	Supports the Bruce Freeman Rail Trail. It provides a critical service in supporting community diversity, and it provides a neutral area to support positive and friendly interaction. It also provides a safe place for recreational activity. It is safe for mothers with small children, for young kids on their own, and for older citizens.	2/27/11
Brett Peruzzi	Framingham resident	"Supports the Bruce Freeman Rail Trail. The trail would provide a vital corridor for walking, biking, and other forms of personal transportation to many key points of interest and commerce, and to educational and cultural facilities.	2/27/11
R Bradley Potts	Westford resident	Supports rail trails. Rail corridors are a wasted commodity and could be vitalized and utilized with support from the state. They can support commuting and recreational transportation.	2/27/11
Sharon Mastenbrook	Maynard resident	Traffic in the areas to be served by the Bruce Freeman Rail Trail is at gridlock. More transportation options to Boston and Lowell are necessary. The Trail will provide many personal, community, and environmental benefits.	2/27/11
Susan Brooks	Unidentified	Supports the Bruce Freeman Rail Trail. Gas prices are high. Public policy should help people travel more easily and safely without cars.	2/27/11
Barbara Pike	Unidentified	The Bruce Freeman Rail Trail would provide off-road nonmotorized access to commuter rail stations, schools, shopping centers, and recreation facilities. It should be included for construction funding.	2/27/11
Pat Wallace	Unidentified	Supports extending the hours of service for the MBTA system. Young adults are heading for other places in part because of a lack of late night transit service.	2/27/11

(CONT.)

**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
Judith Artley	Resident of Framingham, Sudbury Valley Trustees, New England Wild Flower Society	Supports the Bruce Freeman Rail Trail. The Trail would provide safe, accessible transportation by foot and bicycle to work, the library, shopping, and other destinations. Minimizing the use of gas-powered vehicles improves air quality and eliminates noise.	2/27/11
James Weaver	Unidentified	Rail trails are mainly recreational. Basic transportation infrastructure should have a much higher priority.	2/27/11
Pat Brown	Citizen	The metrobostoncommondata.org information on walkways is, to my direct knowledge, out-of-date for Sudbury.  The need to expand walkway coverage may be perceived as more urgent in communities that delay updating their sidewalk inventory, since they appear to have fewer walkways than they actually have.	2/25/11
Donna DeAngelis and Eric Holm	Concord residents	"More funds should be invested in support and maintenance of commuter rail equipment. The system has frequent delays due to disabled trains. Recreational investments, such as the Bruce Freeman Rail Trail, are important. But investing in the maintenance of our basic public transportation infrastructure is even more important. Many people support rail trails, but the majority of us would prefer that we address these basic needs first."	2/25/11
Ernest Stern	Unidentified	Supports the Bruce Freeman Rail Trail. It would provide a safe route to West Concord and provide a place for exercise.	2/25/11
Beth Logan	Unidentified	Supports the Bruce Freeman Rail Trail and extending the Lowell Line into New Hampshire with a stop in Chelmsford. Alternative transportation will help cut greenhouse gas emissions. Trails give people safe routes on which to walk or bike, and are less costly to repair than roads. For expansion projects, transit and nonmotorized modes should be prioritized over highways.	2/24/11
Pat Brown	Citizen	"Asks if the draft LRTP incorporates data and analysis, and addresses the recommendations, of the 2007 Massachusetts Transportation Finance Committee reports.  The Needs Assessment includes a No-Build scenario, but it does not explicitly outline the results of a No-Maintain scenario. The MPO should focus on maintenance of existing facilities. The Needs Assessment should include a realistic look at how mobility in the region would be reduced if we were to choose not to invest in maintenance."	2/22/11
Lydia Rogers	Unidentified	Expressed concerns about the impacts of the Bruce Freeman Rail Trail on wildlife. It is an expensive project at a time when communities like Concord are turning off street lights to save money. There are also major safety issues that have not been solved at the railroad crossing in the downtown area of West Concord. This is a recreational trail that would not decrease automobile traffic or improve air quality.	2/21/11

(CONT.)



**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
Steve Olanoff	Town of Westwood	The Needs Assessment of the LRTP does not cover the needs of economic development adequately. Large economic development areas and large projects are listed, but many locally designated economic development areas are not mentioned. While many transportation needs are outlined, there is no connection drawn between the economic development areas and projects and the transportation needs to support this economic development.	2/17/11
Larry Koff	Larry Koff and Associates	“The Needs Assessment should put the costs into a broader context so that citizens and policy makers can better assess the financial deficiencies and choices before the Commonwealth. Currently, resources are dispersed so that everyone gets some funding, but there is no clear path to the future. MetroFuture requires that the funding be allocated to advance the vision identified in the plan. Important coalitions are formed, new funding sources identified, and a clearer set of land use, economic development, environmental and equity goals achieved. I think the Regionwide Needs Assessment should reflect these choices. The State Rail Plan offers ways to promote economic growth, but it should have discussed the relocation of Beacon Park Yards.”	2/17/11
Jim Gallagher	Somerville resident	States that the level of detail in the Needs Assessment is too great. Many of the problems identified should be reframed to state a need, and accompanied by graphics. For bottlenecks, one of the three methods referred to is based on V/C ratios [Volume-to-Capacity], a very crude and often misleading measure. Focusing on V/C ratio would encourage roadway capacity expansion and exclude many options that increase throughput (for example, signal improvements and Intelligent Transportation Systems). For crash locations, a need to fix the five worst non-interstate intersections should also be identified. In the Bicycle and Pedestrian section, the need statement can identify ways to judge the necessity of new proposed facilities. For example, on all federal-aid-eligible facilities where bicyclists and pedestrians are allowed, there needs to be a sidewalk on both sides and safe crossings every 1,000 feet, and bicycle lanes on all roadways with posted speed limits of 35mph or higher. For Transportation Equity, environmental justice solutions need to be identified. For the land use section, the investment transportation infrastructure needs to be done in a way that is consistent with the regional land use plan. Urges the MPO to use this to identify and prioritize regional needs, and then use those needs to prioritize future projects, programs, and ideas.	2/16/11
Peter Smith	Arlington resident	Supports extension of the Red Line to Arlington Center. It would be well used and reduce congestion on local roads.	2/14/11
Sam Milton	Arlington resident	Recommends that the MPO should consider extending the Red Line to Arlington and Lexington.	2/11/11

(CONT.)

**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
James Marsh	City of Lynn, Development Director	"The City of Lynn is plagued by poor traffic flow and access. The City of Lynn's commercial base and resulting economics are limited to smaller, local roads that pass through residential neighborhoods with many intersections. The City needs a carefully constructed transportation plan to address the possibilities of a casino on Route 1A and the waterfront development that would be the largest in the Northeast Corridor. It is imperative to the City's long-term viability to create solutions revolving around Route 1A, Route 107, and the Blue Line, as they provide access to our downtown, industrial zones, and waterfront. Also needed is access into Lynn at Goodwin Circle/ Route 129 and pedestrian access to the developing waterfront."	2/9/11
Gail Costelas	Massachusetts Department of Environmental Protection	Recommends that the MPO reach out to commuters by using bus advertising and/or announcements on MBTA platforms. Also, the Department of Environmental Protection (DEP) collects comments from area companies on how the transportation system should be improved. These comments are required as part of the Ride Share regulation. DEP could share these comments with MPO staff.	2/9/11
Linda Olson Pehlke	Brookline Town Meeting Member, Climate Action Committee	"Surface Green Line service improvements should include using signal priority to give trains priority right-of-way at some signalized intersections in Brookline. Service and capacity of the C Line must be improved to handle current and future demand. Circumferential bus and transit routes need improvement. The bunching problem and slow travel speeds could benefit from stop consolidation and signal priority for buses. Comfort and protection from the elements must be improved for bus riders. Bicycle and pedestrian crossings at Riverway and Route 9/Brookline Ave. must be improved. Pedestrian access to the Reservoir T stop must be improved. Circumferential transit, bicycle, and pedestrian travel must be a priority focus."	2/6/11
Martin Klingensmith	Unidentified	Supports extending the Red Line to Bedford.	2/5/11
Unidentified	Arlington resident	Supports extending the Red Line. The present terminus at Alewife creates parking problems in East Arlington.	2/5/11
Chris Moore	Unidentified	Supports the extension of the Red Line to Arlington and eventually Lexington.	2/5/11
Peter Hechenbleikner	Town Manager, Reading	"Concerned that data about commuter rail parking usage in Reading is inaccurate. Suggests the MPO count the total number of parking spaces used by commuters, not just the off-street spaces. In Table 3-3 [of the Needs Assessment] Reading should not be listed as an ICICLE member, but we have a very active Climate Protection Committee. Figure 3-7 could be clearer as to which community is represented by which dot. On page 53 in the recommendations, one deficiency that is not adequately highlighted is that which talks about deficiencies on I-95 from Burlington to Wakefield. It should mention including the lane drop east and west (or north and south) bound beginning at the intersection of I-93 and I-95. The Needs Assessment should consider bus shelters. Some of the bus lines (137) would benefit from smaller (and alternate-fuel) vehicles, based on their ridership."	2/2/11

(CONT.)

**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
Marc Johnson	Selectman, Hamilton	States that the Northeast Corridor draft plan completely misses our real transportation needs. Citizens need to get to concentrations of shopping and medical areas. We can always benefit from improved commuter connections to downtown Boston, but that is not our highest transportation priority. We need scheduled local public transit, even if on an abbreviated schedule. We have no public transportation other than commuter rail on the Newburyport branch. Hamilton, Ipswich, and Wenham have better-scheduled bus/RIDE/minibus connections to other transit areas, such as north Beverly or Beverly/Salem/Peabody/Danvers for elderly and young citizens.	2/2/11
Jim Gallagher	Somerville resident	States that the design of the Plan seems to be based on a paper document which is posted online. I think it should be an e-document that can be printed as needed. That means there should be internal links to other sections referred to and other documents: the MBTA's Program for Mass Transportation and MAPC's MetroFuture. It is too long and too full of jargon to be useful to anyone but the most initiated and committed members of the public.	2/2/11
Jim Gallagher	Somerville resident	Please list the summary chapter as under development. Boston Proper is referred to separately in the Needs Assessment. Does that mean Boston Proper is not part of the Central Area? Is the distinction important?	2/2/11
Jim Gallagher	Somerville resident	"There is no way to attach a document here. For a review of a long document, which will likely take place over a number of days/openings/saves, it would be much easier to prepare one coherent document and submit it once."	2/2/11
Jim Gallagher	Somerville resident	"A direct link from the Needs Assessment announcement on the front page to the Needs Assessment write-ups would be helpful. And once the reader gets to the correct place, if the reader cares about one corridor or a few communities, an easier way to figure out where to look would be appreciated. Asks why there are different colors for communities in the same corridor. (Knows the inside-the-MPO versus the modeled-area distinction, but why would most people?) The MPO should be striving to make this as easy as possible so people will not get frustrated and can focus on substantive comments."	2/2/11
Stephanie Mercandetti	Town of Walpole	On Table 6-3 on Page 6-20 of the draft Needs Assessment, please note that Walpole has approved 43D Priority Development Sites and does not have an approved 40R District. I think the Maturing Suburb box should also be checked.	2/2/11
Dick Williamson	Bruce Freeman, Assabet River, and Mass Central Rail Trails	States that the section on the West corridor appears to be a summary of what exists today. Major additions to the Bruce Freeman, Assabet River, and Mass Central Rail Trails are in various stages of planning and design. These shared-use paths would be a major addition to the intermodal transportation mix and would cost much less than many of the mega-projects that are being considered suggest that, perhaps a measure such as return-per-dollar should be used to value these low-costs projects.	2/1/11
Chris Anzuoni	Massachusetts Bus Association	Asks if the passenger transportation services provided within and beyond the MAPC communities by the network of intercity bus carriers will be recognized in the development of this plan? There does not yet appear to be an acknowledgement of these options on the Radial Corridors map, the Circumferential Corridors map or the Ideas for Visions and Policies chart.	1/27/11

(CONT.)

**TABLE A-1 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE DEVELOPMENT OF *PATHS TO A SUSTAINABLE REGION*:  
JUNE 1, 2010 - AUGUST 14, 2011**

NAME	AFFILIATION	FEEDBACK	DATE
Linda Olson Pehlke	Town of Brookline Climate Action Committee	<p>"States that there are many important and positive visions and policies. However, there do not seem to be any guidelines on setting priorities. Perhaps the MPO could include a goal of assigning a certain percentage of funds to alternative transportation. Some really good research about the costs, amount of land, impacts on travel, impact on the ability to retain dense commercial centers, etc., with our current excessive parking requirements would be really helpful."</p>	5/18/10
Meg Robertson	Massachusetts Commission for the Blind	<p>Should emphasize improving pedestrian access to subway stations and improving the lighting.</p>	5/17/10
Pat Brown	Sudbury resident	<p>"Recommends that the Plan include a glossary that defines terms and acronyms. It would help the public understand the document. A new vision should be added to require that future maintenance and operating costs be included in the plans for any system expansion and the revenue source for these expenditures be identified.</p> <p>Also, a new vision should be added to require a cost-benefit analysis of investments. For the livability vision, energy use is managed efficiently and alternative energy sources are used should be amended to read "energy use is managed efficiently and alternative energy sources are used where appropriate and cost-effective".</p> <p>For the mobility vision, a new statement should be added to include balancing and addressing the needs of all stakeholders - transit riders, drivers, cyclists, pedestrians, and taxpayers.</p> <p>For the safety and security vision, the viability of all transportation infrastructure should be protected from natural and man-made threats. Emergency response and evacuation routes should receive priority, but all infrastructure should be protected as much as possible."</p>	6/1/10
Pat Brown	Sudbury resident	<p>"States that there is only a single reference to freight in this draft, found under the mobility vision section. The smooth flow of food, fuel, medicine, and other commodities through the greater Boston metropolitan region is critical to the future viability and economic success of the region and to the health and well-being of its residents. A specific policy or addition to the current policies should ensure that maintenance of the freight infrastructure is a focus of this plan, specifically requesting that projects describe whether the proposed project maintains or expands freight transport facilities.</p> <p>The safety and security policies should include a policy to educate cyclists, pedestrians, and motorists in using the roads safely, responsibly and effectively."</p>	6/1/10

TABLE A-2

SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Green Line Extension Comment Key	Multiple	GLX 1 Comment: The delay of the Green Line Extension is unacceptable. The Green Line Extension is a legal commitment under the State Implementation Plan and the Transportation Conformity regulations for the LRTP and the Transportation Improvement Program (TIP). The MPO should reject the delay.	X				<p>GLX Response: The extension of the Green Line to Medford Hillside (College Avenue)/ Union Square is part of the Air Pollution Control Regulations of the Commonwealth's Department of Environmental Protection (DEP), codified in 310 CMR 7.36, Transit System Improvements. Because the Green Line to Medford Hillside (College Avenue)/ Union Square Extension project is a legal commitment, the Boston Region MPO has included it in its Long-Range Transportation Plan and Air Quality Conformity Determination (LRTP). The MPO must include in its LRTP any new project costing over \$10 million that uses federal transportation funds, any project that adds capacity to the transportation system, and any project that is included as a Transportation Control Measure (a strategy to reduce emissions of air pollutants) in the State Implementation Plan (SIP).</p> <p>The Green Line to Medford Hillside (College Avenue)/Union Square Extension project is being studied and designed by the Massachusetts Department of Transportation (MassDOT) and the Massachusetts Bay Transportation Authority (MBTA) and funded using Commonwealth or New Starts funds. The MPO felt that it was important to further extend the Green Line from Medford Hillside (College Avenue) to Route 16/Mystic Valley Parkway as a second phase of the extension project and "flexed" \$185 million of federal funding dedicated to highway projects to do so. Flexing of this type is at the discretion of the MPO. The segment of the Green Line Extension project from Medford Hillside (College Avenue) to Route 16/Mystic Valley Parkway is not part of the SIP commitment.</p> <p>310 CMR 7.36 (4) states that SIP projects may be delayed beyond their established deadlines. For delayed projects, MassDOT must implement interim emission offset measures during the period of delay. These measures, which must be in place by December 31, 2014 (the legal deadline for the construction of the Green Line Extension), must provide an air quality benefit that is equal to that anticipated from the construction of the Green Line Extension. MassDOT submitted its annual SIP Status Report to the DEP on July 27, 2011. The document is available at <a href="http://www.mass.gov/massdot/sip">www.mass.gov/massdot/sip</a>. In that report, MassDOT announced there would be a substantial delay past 2014. MassDOT is currently working with the Central Transportation Planning Staff (the staff to the MPO) to project the air quality benefit that would have resulted from the Green Line Extension during the period of anticipated delay. (continued on next page)</p>



**TABLE A-2 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011**

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Green Line Extension Comment Key	Multiple	GLX 1 Comment (cont.): The delay of the Green Line Extension is unacceptable. The Green Line Extension is a legal commitment under the State Implementation Plan and the Transportation Conformity regulations for the LRTP and the Transportation Improvement Program (TIP). The MPO should reject the delay.	X				Once that analysis is complete, MassDOT and the MBTA will develop a portfolio of interim measures that meet the calculated air quality threshold. Once a set of measures is approved by the DEP, the MPO will amend the LRTP to list them and identify their sources of funding. Since the Green Line Extension to Medford Hillside (College Avenue)/Union Square has a deadline of 2014, there is time to identify the measures, submit them for public review and DEP approval, and amend them into the LRTP. Until that time, the MPO will continue to carry the Green Line Extension project in the LRTP in the 2012-2015 time band; once the interim project(s) providing equal or greater air quality benefits to the region are added, it will be appropriate for the extension project's time band to be changed.
Green Line Extension Comment Key	Multiple	GLX 2 Comment: Full funding of the Green Line Extension project and any interim replacements must be identified in the Boston Region MPO's FFYs 2012-15 TIP and the LRTP.		X			The Green Line Extension to Medford Hillside (College Avenue)/Union Square project is being funded by the Commonwealth, with funding that is not at the discretion of the MPO. Nevertheless, the MPO felt that it was important to further extend the Green Line from Medford Hillside (College Avenue) to Route 16/Mystic Valley Parkway, and "flexed" \$185 million of highway funding to do so (the flexing of funds is at the discretion of the MPO). The segment of the project from Medford Hillside (College Avenue) to Route 16 section is not part of the SIP commitment. (continued on next page)

(CONT.)

**TABLE A-2 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011**

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Green Line Extension Comment Key	Multiple	GLX 2 Comment (cont.): Full funding of the Green Line Extension project and any interim replacements must be identified in the Boston Region MPO's FFYs 2012-15 TIP and the L RTP.		X			For the Green Line Extension to Medford Hillside (College Avenue)/Union Square portion of the project, MassDOT is pursuing federal funding – through the competitive New Starts program managed by the Federal Transit Administration – to support the design and construction. In January of 2010, MassDOT and the FTA initiated formal collaboration on the development of a complete New Starts application for the Green Line Extension project. The final New Starts application materials are in progress and need to be finalized for FTA review. In addition to the use of any federal funding, MassDOT and the MBTA will use Commonwealth funds to support the design and construction of the Green Line Extension project. These funds will be raised with the backing of authorizations made to support the SIP projects in Transportation Bond Bills of the past several years. At present, MassDOT has \$800 million (less funds already spent on planning, design, and construction) in active Transportation Bond Bill authorizations for the SIP projects. As needed, MassDOT will seek additional Transportation Bond Bill authorization to cover the costs of the Green Line Extension project. This information is presented in Chapter 7 (The Financial Plan) of the L RTP. The funding that is projected for the first four years of the project is included in the FFYs 2012-2015 Transportation Improvement Program.
Green Line Extension Comment Key	Multiple	GLX 3 Comment: The Green Line to Route 16 must be funded because it is a State Implementation Plan legal commitment.			X		The legal commitment is to construct the Green Line to Medford Hillside (College Avenue) with a spur to Union Square. The MPO felt that it was important to further extend the Green Line from Medford Hillside (College Avenue) to Route 16/Mystic Valley Parkway as a second phase of the Green Line Extension project, and “flexed” \$185 million of funding dedicated to highway projects to do so. Flexing of this type is at the discretion of the MPO. The segment of the Green Line Extension project from Medford Hillside (College Avenue) to Route 16/Mystic Valley Parkway is not part of the SIP commitment.

(CONT.)

**TABLE A-2 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011**

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Green Line Extension Comment Key	Multiple	GLX 4: Delaying the Green Line Extension project also delays the Community Path. Full funding of the Community Path should be programmed in the MPO's FFYs 2012-15 TIP.				X	<p>The design and the cost of design for the proposed extension of the Community Path are included as part of the Green Line Extension to Medford Hillside (College Avenue)/Union Square project; however, this is not part of the State Implementation Plan improvement. As part of Paths to a Sustainable Region, the MPO was required to update project costs and revise the financial assumptions in the Long-Range Transportation Plan (LRTP). While the MPO worked to use its available funding in a way that produces the optimal benefit, many projects that would help to maintain the existing system or allow for future expansion or enhancement could not be included in the fiscally constrained LRTP.</p> <p>The MPO intends to continue working with state and federal partners to identify additional transportation funding in order to be prepared for the future. This project will remain in the Universe of Projects list and will be considered during the development of the next LRTP.</p>
Jennifer Dorsen	Somerville resident		X			X	
Michael Monroe	Somerville resident		X				
Matthias David Siebler	Somerville resident		X			X	
Sylvia Romm, MD	Somerville resident		X			X	
Jennifer Lawrence	Somerville resident		X	X			
Jonathan Buck	Unidentified		X	X			
Dorie Clark	Somerville resident		X	X			
Emily Arkin	Somerville resident		X				
Dianne Haas	Somerville resident		X				
Don MacKenzie	Unidentified		X				
David J Marcus, PhD	Somerville resident		X				
Kate Ledogar	Somerville resident		X				
Larry Rosenberg	Unidentified		X				
Jill Clarke	Somerville resident		X			X	
Marcus Rozbitsky	Unidentified		X				
Satori Bailey	MA resident		X				

(CONT.)

TABLE A-2 (CONT.)

SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Victoria Thompson	Somerville resident		X				
Gloria Korsman	Cambridge resident		X			X	
Steven Morr-Wineman	Cambridge resident		X				
Cynthia Snow	Unidentified		X				
Joanna Herlihy	Cambridge resident		X				
Doroth Fennell	Tufts University student		X				
Henry Lieberman	Cambridge resident		X				
Anne Tate	Somerville resident		X	X			
Glen Fant & Anne-Marie Wayne	Medford residents		X			X	
Steve Mulder	Somerville resident		X				
Nina Garfinkle	Livable Streets Alliance, President		X			X	
Susan Moynihan	Somerville resident		X			X	
Ellen Shea	Somerville resident		X	X		X	
Tanya Paglia	Somerville resident		X				
Daniel Brockman	Somerville resident		X				
Maureen Barillaro	"Somerville Climate Action		X				
David Dahlbacka	Somerville resident		X				
Andy Pyman	Somerville resident		X				
Janine Fay	Somerville resident		X				
Sara Rostampour	Somerville resident		X	X			
Ethan Contini-Field	Somerville resident		X			X	
Todd Kaplan	Somerville resident		X				
Alice Grossman	Unidentified		X	X			
John Wilde	Somerville resident		X			X	

(CONT.)

**TABLE A-2 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011**

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Alp Sipahigil	Cambridge resident		X			X	
Zehra Cemile Marsan	Medford resident		X			X	
Naomi Slagowski	Somerville resident		X				
Barbara Broussard	East Cambridge Planning Team, President		X				
Bob Nesson	Boston resident		X			X	
Alex Epstein	Somerville resident		X				
Jamie Glass	Cambridge resident		X				
Tai Dinnan	Somerville resident		X			X	
Lois Grossman	Medford resident		X		X		
Dennis Dunn	Weymouth resident		X		X		
Lynn Laur	Somerville resident		X				
Susan Wilkinson	Somerville resident		X			X	
Rachel Stark	Unidentified		X				
Jeffrey Swan	Medford resident		X			X	
Luke McDermott	Medford resident		X		X		
William Messenger	Belmont resident			X		X	
Rachelle	Unidentified		X		X		
David Scott	Somerville resident		X				
Mark Chase	Somerville resident		X				
Pauline Lim	Unidentified		X	X		X	
Eric Becker	Somerville resident		X				
Marla Rhodes	Somerville resident		X				
Michael De Lisi	Somerville resident		X	X			
Melissa Lowitz	Somerville resident		X				
Leonard Tower Jr.	Somerville resident		X			X	
Dan Hamalainen	Waltham resident		X			X	

(CONT.)



TABLE A-2 (CONT.)

SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Linda Goulet	Somerville resident		X	X			
Erin Hemenway	Somerville resident		X	X			
Phoebe Hackett	Somerville resident		X				
Carice Reddien	Cambridge resident		X				
John Roland Elliott	Medford resident		X	X	X		
Chris Mancini	Somerville resident, Exec. Dir. Groundworks		X	X	X		
Aileen Bellwood	Somerville resident		X	X	X		
Natasha Burger	Somerville resident		X	X		X	
Heather Van Aelst	Brickbottom Community Trust		X	X		X	
James Moodie	Medford resident			X			
Alan Moore	Somerville resident		X	X		X	
Richard Nilsson	Nilsson Associates		X				
Michael Chiu	Somerville resident		X				
Joanna Hale	Somerville resident		X				
Thomas Eagan	Somerville resident		X	X			
James McGinnis	Somerville resident		X	X	X		
Andrew Hinterman	Somerville resident		X			X	
Jared Worful	Somerville resident		X	X	X		
Adelaide Smith	Somerville resident		X	X		X	
Karen Molloy	Somerville resident		X	X		X	
Vanessa Vega	Medford resident		X	X	X		
Emma Oster	Somerville resident		X	X	X		
Julia Petipas	Somerville resident		X				

(CONT.)

**TABLE A-2 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011**

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Lisa Brukilacchio	Somerville resident		X	X	X		
Elizabeth Kazakoff	Somerville resident		X	X		X	
Michael Prange	Somerville resident		X	X			
Beatrice Denise Taylor	Somerville resident		X	X		X	
Nancy Bernhard	Somerville resident		X	X		X	
Rich and Alison Lee	Unidentified		X	X	X		
Elisabeth Bayle	Medford resident		X	X	X		
Marguerite Avery	Somerville resident		X	X			
John Wilde	Somerville resident		X	X		X	
Wendy Blom	Somerville resident		X	X		X	
Rachel Burckardt	Cambridge resident		X				
Douglas Rhodes	Medford resident		X	X		X	
Lynn Weissman	Somerville resident		X	X		X	
Enid Kumin	Somerville resident		X	X		X	
James Bride	Somerville resident		X	X			
Ellin Reisner	Somerville Transportation Equity Partnership, President		X	X			
Joel Bennett	Somerville resident		X	X		X	
Andrea Yakovakis	Unidentified		X	X	X	X	
Scott C Campbell	Dedham resident		X	X		X	
Jeanine Jenks Farley	Somerville resident		X	X		X	
Derek Prior	Somerville resident		X				
Resa Blatman	Unidentified		X	X		X	
Gerald R. Herb Wilmoth	Somerville resident		X				
Paul Morgan	Somerville resident		X	X		X	

(CONT.)

TABLE A-2 (CONT.)

SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Catherine Thompson	Somerville resident		X	X		X	
Alex Krogh-Grabbe	Somerville resident		X	X		X	
Courtney Petri	Somerville resident		X	X		X	
Michelle Liebetreu	Somerville resident		X	X		X	
Leigh Lozano	Somerville resident		X	X		X	
Abe Cohen Dvornik	Somerville resident		X	X		X	
Tim Sackton	Cambridge resident		X				
Amanda King	Somerville resident		X	X		X	
Christine Casalini	Somerville resident		X	X		X	
Jonah Petri	Somerville resident		X				
Brett LaFlamme	Somerville resident		X				
Sarah Shugars	Somerville resident		X				
Esme Blackburn	Somerville resident		X	X			
Fred Berman	Unidentified		X	X		X	
Jane Sauer	Somerville resident		X				
Bathsheba Grossman	Somerville resident		X	X		X	
Sara Zucker	Somerville resident		X				
James McGinnis	Somerville resident		X		X		
John Hostage	Watertown resident		X	X			
Kristine Lessard	Somerville resident		X				
Taryn LaFlamme	Unidentified		X				
Bill Marx	Somerville resident		X				
Carice Pingenot	Unidentified		X				
Ted Bach	Somerville resident		X				
Jeff Reese	Medford resident		X	X		X	

(CONT.)

**TABLE A-2 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011**

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Erica Schwarz	Somerville resident		X			X	
Rachel Fichtenbaum	Cambridge resident		X				
Arun Sannuti	Somerville resident		X	X		X	
Chun Ye	Somerville resident		X	X		X	
Miranda Banks	Somerville resident		X	X		X	
Rachel Gordon	Medford resident		X			X	
Katjana Ballantyne	Somerville resident		X	X			
Sarah Lim	Somerville resident		X				
John Roland Elliott	Medford Hillside resident		X	X	X		
Seth Minkoff	Unidentified		X	X			
Alan Moore	Somerville resident		X	X		X	
Ethan Haslett	Medford resident		X	X	X		
Erika Tarlin	Somerville resident		X				
William Harnois	Somerville resident		X				
Greg Kindel	Somerville resident		X	X			
Arun Sannuti	Somerville resident		X	X			
Kimberly Gosselin	Somerville resident		X	X			
Ethan Gilsdorf	Somerville resident		X				
Jeff Levine	Somerville resident		X	X			
Margaret Welgel	Medford resident		X		X		
Margaret Collins	Unidentified		X		X		
Marilyn and John MacDougall	Cambridge residents		X				
Arnold Reinhold	Cambridge resident		X				
Karin Galil, MD	Unidentified		X				

(CONT.)

**TABLE A-2 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011**

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Mary Anne Adduci	Medford resident	Does not express support for the Green Line Extension project. Expresses opposition to fully or partially fund the project with State Bonds and believes that spending should instead be dedicated to urgent needs. Expresses concern that the project cannot guarantee future economic development. States that the community of Medford has a different character and landscape than Somerville, and its residents are less dependent on public transportation. Suggests that the extension to Route 16 be reconsidered after completion to College Avenue.					In the context of the visions and policies set forth in the LRTP by the MPO, it was determined that transit projects are important. In addition, the extension of the Green Line to Medford Hillside (College Avenue)/ Union Square is part of the Air Pollution Control Regulations of the Commonwealth's Department of Environmental Protection (DEP), codified in 310 CMR 7.36, Transit System Improvements. Because the Green Line to Medford Hillside (College Avenue)/ Union Square Extension project is a legal commitment, the Boston Region MPO has included it in its Long-Range Transportation Plan and Air Quality Conformity Determination (LRTP). The MPO must include in its LRTP any new project costing over \$10 million that uses federal transportation funds, any project that adds capacity to the transportation system, and any project that is included as a Transportation Control Measure (a strategy to reduce emissions of air pollutants) in the State Implementation Plan (SIP). The MPO chose to allocate all of the MBTA's future transit and capital funding to system infrastructure maintenance, accessibility improvements, and system enhancements, to ensure that the existing system can continue to function into the future and continue to serve its existing ridership. The Commonwealth made the commitment to fund the State Implementation Plan transit expansion projects. The MPO felt that it was important to further extend the Green Line from Medford Hillside (College Avenue) to Route 16/Mystic Valley Parkway as a second phase of the extension project and "flexed" \$185 million of federal funding dedicated to highway projects to do so.
Kenneth Krause	Medford resident	GLX comments 1, 2, and 3. Also, supports reconstruction of the Revere Beach Parkway over the Malden River and reconstruction of the Cradock Bridge over the Mystic River. They will benefit all modes and the waterways beneath the spans.	X	X	X		The reconstruction of the Revere Beach Parkway over the Malden River and reconstruction of the Cradock Bridge over the Mystic River will remain part of our Universe of Projects in both the Long-Range Transportation Plan and Transportation Improvement Program.

(CONT.)



**TABLE A-2 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011**

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Mayor Joseph Curtatone	City of Somerville	Stressed the importance of the Green Line Extension for economic development. The project will unlock more than 300 acres of underutilized land in Somerville and Cambridge for transit-oriented development. The project will create 18,000 construction jobs and 26,000 permanent jobs. It will expand commerce opportunities in every municipality served by the MBTA rapid-transit system. It will reduce daily vehicle-miles traveled in the region by 25,000. States it is vital for the MPO and MassDOT to work together to establish a concrete timeline for the project.					<p>The Green Line Extension to Medford Hillside (College Avenue)/Union Square project is being funded by the Commonwealth, with funding that is not at the discretion of the MPO. However, the MPO felt that it was important to further extend the Green Line from Medford Hillside (College Avenue) to Route 16/Mystic Valley Parkway, and “flexed” \$185 million of highway funding to do so (the flexing of funds is at the discretion of the MPO).</p> <p>MassDOT announced there would be a substantial delay of the first phase of the Extension past 2014. MassDOT is currently working with the Central Transportation Planning Staff (the staff to the MPO) to project the air quality benefit that would have resulted from the Green Line Extension during the period of anticipated delay. The MPO will continue to work with the Commonwealth to update the Long-Range Transportation Plan and Transportation Improvement Program with new information on the interim measures and timelines as that information becomes available.</p>
Rafael Mares	Conservation Law Foundation Massachusetts	The CLF states that because of insufficient funding of the Green Line Extension Project in the appropriate time period, and since MassDOT has not yet petitioned the DEP to delay the project, the LRTP and the TIP are not in compliance with Transportation Conformity regulations. Until a petition of delay is submitted and approved by DEP, transportation conformity must be conducted with respect to existing transportation control measures (TCMs) and their existing deadlines in the current SIP. MassDOT has not yet received permission to eliminate the Red Line - Blue Line Connector and to delay additional parking spaces beyond the existing deadline. MassDOT also delays additional funding of the Fairmount Line Improvement Project until after the SIP deadline. Therefore, the TIP and LRTP cannot be adopted as proposed. The TIP and LRTP should also include greenhouse gas accounting for individual transportation projects. In the future, this information should be provided to the MPO and the public prior to selection of transportation projects for the TIP and LRTP.	X	X			<p>The design of the Red Line/Blue Line Connector is part of the Air Pollution Control Regulations of the Commonwealth’s Department of Environmental Protection (DEP), codified in 310 CMR 7.36, Transit System Improvements. Because the design of the Red Line/Blue Line Connector is a legal commitment, the Boston Region MPO has included it in its Long-Range Transportation Plan and Air Quality Conformity Determination (LRTP). The MPO must include any new project costing over \$10 million that uses federal transportation funds, any project that adds capacity to the transportation system, and/or any project that is included as a Transportation Control Measure (a strategy to reduce emissions of air pollutants) as part of the State Implementation Plan (SIP) in its LRTP. MassDOT has petitioned the DEP to nullify the commitment to perform final design of the Red Line/Blue Line Connector, due to the unaffordability of the eventual construction of the project. MassDOT is initiating a process to amend the SIP to permanently and completely remove the obligation to perform final design of the Red Line/Blue Line Connector. The MPO is awaiting the results of MassDOT’s proposal and potentially will revise its LRTP once that request has gone through the DEP’s process. MassDOT has also submitted a petition to delay for the Fairmount Line project. Once approved the MPO will amend the LRTP to include these interim measures. (continued on next page)</p>

(CONT.)

**TABLE A-2 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011**

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Rafael Mares (continued)	Conservation Law Foundation Massachusetts						Working closely with MassDOT, the MPO will continue to report on its actions to comply with the GWSA and to help meet the greenhouse gas reduction targets. As part of this activity, the MPO will provide further public information on the topic and will advocate for steps needed to accomplish the MPO's and state's goals for greenhouse gas reductions. The MPO will continue to analyze projects for the reductions they bring about, conducting these analyses either at the regional level (using its regional model) or at the project level when it is preparing its TIP or conducting project-level studies (using its regional model or other methods).
John G Sieber	Medford resident	Supports extending the Green Line to Route 16.					Thank you for your support. The Green Line Extension to Route 16 project is included in the list of recommended projects in Paths to a Sustainable Region in the 2016-2020 time band.
Gladys Maged	Somerville resident	Feels that her neighborhood has become increasingly unhealthy because of air pollution. Believes that the Green Line project will decrease car traffic and help with congestion issues faced by many Somerville and Boston workers.					The MPO is committed to the Green Line Extension to Route 16 project and has included it in the list of recommended projects in Paths to a Sustainable Region in the 2016-2020 time band.
Renata von Tscharnar	Charles River Conservancy, President and Founder	The Community Path will provide convenient access to the new Green Line stations and will better connect the Minuteman Path and Charles River Path Networks.	X	X		X	
Lynn Weissman and Alan Moore (with 320 attached notes of support from individuals listed below)	Friends of the Community Path, Co-Presidents	Full funding and realistic funding sources for the Green Line Extension and the Community Path should be shown in the LRTP. The LRTP fails to meet the fiscal constraint and the environmental (timely completion) requirements. MassDOT has failed to meet promised deadlines. Urge the Extension to be put back on schedule. Also urge enforcement of the legal and environmental obligations to the full extent. The Community Path should be constructed simultaneously with the Green Line Extension. They share infrastructure, right-of-way, heavy construction activities. The Green Line Extension and Path are sustainable transportation and will help more people get around without cars, reduce emissions and help economic development, connect neighborhoods to Green Line stations, increase Green Line ridership at low cost, make the project multi-modal, create a regional path network of almost 50 miles in 11 municipalities. (continued on next page)	X	X	X	X	

(CONT.)

**TABLE A-2 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011**

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Lynn Weissman and Alan Moore (continued)	Friends of the Community Path, Co-Presidents	State-funding the Green Line will alleviate delays. The Green Line and other TCMs must be given priority for completion (It has never been a state priority). This delay violated the legal requirements to give the project highest priority in all transportation planning documents. Money should be reallocated to the Green Line from optional projects. The state is legally obligated to extend the Green Line to Medford Hillside; College Avenue is not Medford Hillside. Failure to fund the extension to this point violates the existing agreement. Delaying the Green Line Extension without mitigation of pollution will negatively affect the health of Somerville and regional residents. Somerville has high exposure to traffic and diesel rail pollution. Green Line is greatly needed in environmental justice and economic justice neighborhoods in Somerville and Cambridge. There may be higher rates of mortality, lung cancer, heart attack, childhood asthma because of this exposure. The Green Line project brings access to 85% of Somerville residents and to residents of neighboring municipalities. It fully embodies the principles of GreenDOT and will help Massachusetts reach its GHG reduction goals. The delay could jeopardize the state's federal funding, increase the cost, deny a key transit link, result in loss of sales and income tax revenues, and cause the communities to miss benefits. The Governor and Lt. Governor should honor their commitment to build the Green Line Extension in their term. MassDOT has not demonstrated a funding plan and construction schedule to meet the SIP requirement using only state funding. There is a lack of transparency and seriousness in meeting the legal SIP requirements. Land acquisition is not acceptable as a primary factor for the delay. Track could be laid while acquisitions for the stations are made. The maintenance facility could be completed after the Green Line is built. The phasing suggested should only be allowed if the state is legally bound to complete the full project to Route 16 by 2018. The Fast 14 project is an example of what the state can accomplish with commitment.	X	X	X	X	

(CONT.)

TABLE A-2 (CONT.)

SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Justine Cohen, The Campe Family, Nora O'Brien, Hannah Jenkins, Elizabeth Auroden, John Wilde, Charles Denison IV, Matt Carty, Bower, Dr. Rachel Freudenburg, Kristine O'Brien, Jesse De la Rose, Patrick King, Jennifer Kapuscik, Joan Kreie, Justin Launderville, Kristine Dunn, John Lewis, Joanna Launderville, James Castignoli, Michael Quan, Catherine Anne Tweedie, Nathan Dale, F.J. Zandbergen, John Covert, Curtis Townsend, Kate Kelleher, Nancy Gittelson	Lexington, Somerville, Boston, Brookline, Cambridge, Medford, Falmouth, Winchester residents	<p>These people submitted supporting notes to the Friends of the Community Path letter. They all asked that the Community Path be in the final LRTP Investment Strategy. Asks that the LRTP include funding for the community Path with the Green Line Extension from Lowell Street to Lechmere between 2013-2015, as this is the most cost-effective and practical way to complete the project. Many have handwritten individual comments and several comments are in the form of drawings expressing enthusiasm. The individual handwritten notes convey messages about the following benefits and attributes of the Community Path:</p> <ul style="list-style-type: none"> <li>• It promote exercise, health, family activity, and fun; reduce obesity</li> <li>• Would be a cost effective way to provide access to the stations</li> <li>• Would create community and social space</li> <li>• Would support healthy transportation (including commuting)</li> <li>• Would result in a larger linked network of paths</li> <li>• Would link neighborhoods and municipalities in the region</li> <li>• Would be an asset for the region</li> <li>• Would improve air quality and quality of life</li> <li>• Would reduce roadway congestion and support economic activity</li> <li>• Would be a commitment to health and sustainability</li> <li>• Would increase safety and promote bicycling and walking</li> <li>• Would provide better access to community resources</li> <li>• Would improve mobility and save fuel</li> <li>• Would be an important transportation option for commuting and other types of trips</li> <li>• Would create a direct route (to destinations including Boston) for persons with disabilities; persons using wheelchairs or scooters</li> <li>• Would reduce neighborhood transportation impacts and support responsible growth</li> <li>• Would improve motorists level of comfort</li> </ul> <p>Some individual notes urged completion of the Community Path in conjunction with construction of the Green Line.</p>	X	X	X	X	

(CONT.)

**TABLE A-2 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011**

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Megan Sebasky, Susan Hamilton, Sarah Perlmutter, Charles Bend, Julia Malik, Marcello Murray, Gerald Hershkowitz, Rebecca Schor, John Sommerstein, Ethan Contini-Field, Lauren Mayhen, Cian Rath-Cullimore, Daniel Toner, Jeanie Mills, Judith Klausner, Stephen Pomeroy, Adam Rocha, Josh Wairi, Michael Heyman, Mark Pasmussen, Roger May, M. Halevi, Timothy Butler, Rev. Ellen Frith, Ashley Coleman-Fitch, Kim Neher, Alex Bombard-Fitch, Richard Dougherty	Cambridge, Somerville, Arlington, Medford, Boston, Fairhaven, E. Wenatchee, WA; Lexington residents	Continuation of the list of names in support of the Friends of the Community Path comment letter.	X	X	X	X	

(CONT.)



TABLE A-2 (CONT.)

SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
George Smith, Marjorie Crockett, Elizabeth Brighan, Rebecca Abbott, Patricia Cordeiro, Mark Fellenz, Christian Rodriguez, Miranda Banks, Louis Epstein, Nix Goldowsky-Dill, Maggie Kaiser, Daniel Reis, Ranga Natasujan, Dion Mraz, Christine Mraz, Susan Bloom, Cassandra Baxter, Meredith Greene, Eben Cross, Rahela Zdunic, Stephan LoVerme, Erin Genett, Becky Ernes, Paula Pomianowski, John Collins, Tim Curtin, Ariyeh Weissman Bennett, Kate Penrose, Kate Sheehan	Cambridge, Winchester, Wayland, Medford, Somerville, Arlington, Boston, Belmont, West Boylston residents	Continuation of the list of names in support of the Friends of the Community Path comment letter.	X	X	X	X	

(CONT.)

**TABLE A-2 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011**

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Rachel Fichtenbaum, David Anderson, Elizabeth Hardy, Brian Cagney, Mark Jewell, John Jackson, Meghan Misset, Seth Heidkamp, Juni Chandalia, Sam Christy, Jeff Greenwald, Janie Katz-Christy, Kelly Richburg, Chris Richburg, Rob Canuso, Zackary Weissman Bennett, Dan Brun, John Sadoff, Andrea Broggi, Joseph Keane, Kristian Varnik, Alex and Ami Feldman, Ana Olgi, N. Kumar, Ian Boardman, Adelaide Smith, Mitch Stoltz, Kate Daniel, Elizabeth Fine	Somerville, Medford, Brookline, Cambridge, Westwood residents	Continuation of the list of names in support of the Friends of the Community Path comment letter.	X	X	X	X	

(CONT.)

TABLE A-2 (CONT.)

SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Chad Laurent, Jardaena Laurent, Sasha Krushnic, Janet Wood-Spagnoli, Amy Mendoza, Mary Anna Gram, Patricia Hawkins, Enxhi Popa, Jean Monroe, Daniel G., Juan Jose C., Heather MacLean, Heidi Burke, C. Garrett Laws, Karen Edlund, David Bank, Stewart Jester, Peter Lee, Margaret W., Gianna Ericson, Dr. Keith Ericson, Michelle Vincow, James Hanley, Martin Jaspar, Michael Corso, Ember Cook, Naomi Stein, Kara S., Sarah Winaweer-Wetzel, Michael Schechter	Somerville, Medford, Belmont, Maynard, Cambridge, Boston, Waltham residents	Continuation of the list of names in support of the Friends of the Community Path comment letter.	X	X	X	X	

(CONT.)

**TABLE A-2 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011**

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Danielle Ulanet, Christopher Eschenbach, E. Wiest, Debra Lytle, Ilana Galil, Michael Edge, Kristen Irvin, Gregory Saia, Rachel Borgatti, Jennifer Gifford, Lee Stoiser, Anthony Smith-Grieco, Ulysses Lateiner, Allison Stochlic, Sally Chapman, Matthew Farrellee, Christopher Bova, Rebekah McAslin, Christina Epstein, Pallas Snider, John Bunzick, Carol Parker, Chris Hearse, Amanda Breneman, Matthew Banos, G. Schnitzler, Micah Sachs, Edward Gordon, Sarah Phillips	Somerville, Arlington, Medford, Cambridge, Boston residents	Continuation of the list of names in support of the Friends of the Community Path comment letter.	X	X	X	X	

(CONT.)

**TABLE A-2 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011**

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
James Scott Arnold, Holly Hatch, Geoff Sheinfeld, J. Rosenstock, Vita Waters, Gillian Carter, Ellin Reisner, Andrea Yakovakis, Zehra Cemile Marsan, Catherine Cabrera, Justin Haber, John Fuller, Joe Sherman, Alana Parkes, Louisa Bradberry, Beverly Hsu, Molly Swanson, Ben Gleason, Jane Gillooly, Cathy Thomason, Jack Cushman, Ryan Evans, J. Davey Duke, Kimmy Chan, Jesse Mott, C. Leonardi, Sharon Zimmerman, Alaine Thaler, Holly Parker, Ron Brunelle, Louisa Stephens	Somerville, Cambridge, Boston, Malden, Medford, Nashua, NH residents	Continuation of the list of names in support of the Friends of the Community Path comment letter.	X	X	X	X	

(CONT.)



**TABLE A-2 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011**

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Dan von Lossnitzes, Meg Rose, Charles Rose, Andy Joseph, Lucilia Valerio, Rain Robertson, Zoe Robertson, Megan Curtis, Mark Niedergang, Karen Molloy, Christopher Vaughan, Ted Bach, Kathryn Johnson, Victoria Thompson, Todd Easton, Brian Murphy, Lisa Oray, Joanne Pascar, Melanie Magnan, Kate Doiron, Laura Ma, Ryan Ma, Silvia Rimolo, D. Charbonneau, John Chamberlain, Jennifer Argiras, John Taylor, Cate LaRoche, P. Argires, Stephanie Bielagus, Ritu S., Chris Yang, Alexis Gates	Somerville, Cambridge, Newton, Belmont residents	Continuation of the list of names in support of the Friends of the Community Path comment letter.	X	X	X	X	

(CONT.)

**TABLE A-2 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011**

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Yvonne Yamanaka, James Zou, Niels LaWhite, Kyle Barrett, Matthias David Siebler, Meghan Bailey, Tiffany Knight, Evan Reynolds, Rui Zhong, Christine DiBusno, Catherine Boyson, Lisa G., Arah Schuur, Cynthia Y., Eric Krupka, Iyah Romm, Carmel Kozlov, Sylvia Thompson, Thomas Hobson, Leslie Caiola, Ellen Stoolmacher, Joanna Sebik, Kathleen Eldridge, Michelle Becker, Monica Luke, Diego Garcia, Carolyn Grantham, Maureen Strode, Harold Boll, Lakshmi Jayaraman, Zoe R., P. Gupte	Cambridge, Arlington, Somerville, Worcester, Lowell, Quincy, Medford residents	Continuation of the list of names in support of the Friends of the Community Path comment letter.	X	X	X	X	

(CONT.)

**TABLE A-2 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011**

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Amelia Ehrens, Elizabeth Bergman, Pauline Katz, Kara Morris, Kathryn Kinder, Charles Snow, Edward Below, Laura Roberts, Megan Murphy, Stuart Mendelson, Jennifer H., Glenn Patrick, Joel McKellar, Joshua Elvander, Elaine Strunk, James Barr, Galen Murton, Brian Brady, Graham Twibell, Daniel Snyder, Karen Gardner, Gabriella Cafalano, Michael Conte, Max Poulsson, Rebecca Moses, Barr Polsky, Jennifer Gutbezahl, Cindy Vojnovic, Zorangeli Ramos, Randall Winchester, Alissa Weiss, Eric Weiss, Carson Campe, Ana Barrett	Somerville, Cambridge, Boston, Hopkinton, NH residents	Continuation of the list of names in support of the Friends of the Community Path comment letter.	X	X	X	X	
Howard Muise and Jeffrey Maxtutis	Town of Arlington Transportation Advisory Committee	Concerned about the delay to the Green Line Extension. Arlington strongly supports extending the Green Line to Route 16 in Phase I. The Route 16 terminus will reduce vehicle miles traveled and have air quality, environmental, economic, and social benefits. Building the Community Path connector along with the Extension will provide Arlington residents a nonmotorized way of travel to Boston. The delay will result in additional costs.	X	X		X	

(CONT.)

**TABLE A-2 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011**

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Elsie Woodward, Chair	Concord Board of Selectmen	Supports the Crosby's Corner Project as it will address long-standing safety concerns for Route 2 travelers. Also supports the Bruce Freeman Rail Trail Project which will improve traffic flow in Concord, promote alternatives to automobile transportation, and will support West Concord businesses.					Thank you for your support. The Crosby's Corner project is included in the list of recommended projects in Paths to a Sustainable Region in the 2012-2015 time band and the Bruce Freeman Rail Trail is included in the 2021-2025 time band.
Richard A. Dimino	A Better City, President and CEO	Commends the Needs Assessment. The Current Approach Investment Strategy selected by the MPO is not the most effective strategy for achieving the MPO's goals or addressing the issues identified in the Needs Assessment. The LRTP misses an opportunity to respond to the Needs Assessment in the near-term, and to consider a big-picture, long-term view that goes beyond the current highly-constrained funding environment. Strategy Three, New Mix of Projects and Programs, would have been more effective at addressing the needs. Identifies several policies that should receive emphasis in project selection. Identifies critical needs in the Central Area, including transit reliability; capacity constraints at Ruggles Station, the Green Line Central Subway, and the Orange Line at peak hours; gaps in the transit system that limit circumferential travel in several communities; poor connectivity between points served by the Green Line and the South Boston waterfront and Logan Airport; expansion to meet future transit demand; and the transit needs of environmental justice communities. Supports including Illustrative Projects. Among those suggested are the Urban Ring early action items, Silver Line Phase III, T under D, and design of the Red Line-Blue Line connection. These projects address many issues identified in environmental justice areas. Cautions against assuming all funds available for transit will need to be spent on state of good repair projects during the time horizon of the LRTP. Urges the MPO to spend some of the 42% of the MPO's discretionary funds that are unassigned in the LRTP on low-cost projects that directly address the MPO's goals and the identified needs, including the early action items for the Urban Ring.					<p>The MPO included the development of a regional Needs Assessment as part of Paths to a Sustainable Region. The Needs Assessment revealed a tremendous number of maintenance, safety, and capacity issues that needed to vie for scarce transportation funds available to address them. In discussing the projects to be funded in the LRTP, the MPO sought to fund projects across transportation modes in order to support a transportation system that expands travel options. The particular mix of projects that have been selected allow the MPO to continue prior commitments and to achieve a modal split among roadway, strategic transit, and bicycle and pedestrian projects. The MPO left 41 percent of its discretionary funds unassigned and available to fund lower-cost projects that do not have to be specifically listed in the LRTP. It is with this funding that lower-cost projects can be programmed in the Transportation Improvement Program (TIP) and constructed in the future. The MPO will continue to apply its visions and policies (including livability, mobility, environment, and climate change) that promote sustainable, green transportation as it selects projects that will use the unassigned funds.</p> <p>The MPO also acknowledges the need for increased transit in the future; however, it also recognizes the significant backlog of maintenance and state-of-good-repair work for the existing transit system. The MPO chose to allocate all of the MBTA's future transit and capital funding to system infrastructure maintenance, accessibility improvements, and system enhancements, to ensure that the existing system can continue to function into the future and continue to serve its existing ridership. (continued on next page)</p>

(CONT.)

**TABLE A-2 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011**

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Richard A. Dimino (continued)	A Better City, President and CEO	A far greater proportion of the programmed funds should go towards transit expansion. Model results showing greater growth in transit trips than auto trips support the need to invest more funds in transit. The MPO needs to plan for additional resources that will be available in the future.					<p>The Commonwealth made the commitment to fund the State Implementation Plan transit expansion projects. The MPO felt that it was important to further extend the Green Line from Medford Hillside (College Avenue) to Route 16/Mystic Valley Parkway as a second phase of the Green Line Extension project, and “flexed” \$185 million of federal funding dedicated to highway projects to do so.</p> <p>The MPO chose not to include an Illustrative Projects chapter in this LRTP, listing projects that it would fund if new funding were to become available, because of the significant backlog of maintenance and state-of-good-repair work to be done on the highway and transit systems. The LRTP must be updated at least every four years. As new financial information becomes available, the MPO will update its list of recommended projects in future LRTPs.</p>
Robert W. Healy	City of Cambridge, City Manager	<p>Commends the Needs Assessment. States that there is a disconnect between the Needs Assessment and the where the MPO is directing resources through the LRTP.</p> <p>Disagrees with the MPO’s strategy of honoring previous commitments regardless of whether or not they address the most pressing needs.</p> <p>Projected demand for transit service resulting from MetroFuture requires investments to expand transit capacity. Red Line maintenance and bus crowding in Cambridge are not addressed by the projects in the LRTP. Urges the MPO to support the Green Line Extension. Supports continued planning for the Urban Ring, Phase II. Concerned that the LRTP does not go far enough to reduce greenhouse gas emissions.</p>					<p>The MPO included the development of a regional Needs Assessment as part of Paths to a Sustainable Region. The Needs Assessment revealed a tremendous number of maintenance, safety, and capacity issues that needed to vie for scarce transportation funds available to address them. In discussing the projects to be funded in the LRTP, the MPO sought to fund projects across transportation modes in order to support a transportation system that expands travel options. The particular mix of projects that have been selected allow the MPO to continue prior commitments and to achieve a modal split among roadway, strategic transit, and bicycle and pedestrian projects. The MPO left 41 percent of its discretionary funds unassigned and available to fund lower-cost projects that do not have to be specifically listed in the LRTP. It is with this funding that lower-cost projects can be programmed in the Transportation Improvement Program (TIP) and constructed in the future. The MPO will continue to apply its visions and policies (including livability, mobility, environment, and climate change) that promote sustainable, green transportation as it selects projects that will use the unassigned funds.</p> <p>In discussing the projects to be funded in the LRTP, the MPO sought to fund projects across transportation modes in order to support a transportation system that expands travel options. The particular mix of projects that have been selected allow the MPO to advance a modal split among roadway, strategic transit, and bicycle and pedestrian projects. (continued on next page)</p>

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TABLE A-2 (CONT.)

SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Robert W. Healy (continued)	City of Cambridge, City Manager						<p>The MPO chose to allocate all of the MBTA's future transit and capital funding to system infrastructure maintenance, accessibility improvements, and system enhancements because of the significant backlog of maintenance and state-of-good-repair work for the existing transit system. The purpose is to ensure that the system can function into the future and continue to serve existing ridership. The Commonwealth made the commitment to fund the State Implementation Plan transit expansion projects. In addition, the MPO felt that it was important to further extend the Green Line from Medford Hillside to Route 16/Mystic Valley Parkway as a second phase of the Green Line Extension project, and "flexed" \$185 million of funding dedicated to highway projects to do so.</p> <p>The 41 percent of its unassigned discretionary funds can also be used to fund the lower-cost projects that help to reduce CO2 emissions the future. The MPO will continue to apply its visions and policies (including livability, mobility, environment, and climate change) that promote sustainable, green transportation as it selects projects that will use the unassigned funds. The MPO contributes to reductions in greenhouse gas emissions through the TIP by funding projects and programs that reduce the need to drive and ease roadway congestion. It funds projects that support the use of alternative fuel sources. Many of its programs (funded through its Unified Planning Work Program) that promote livability in the region also help in reducing greenhouse gas emissions. These include livability workshops held in MPO communities, support for local pedestrian and bicycle planning to improve conditions for these modes in the region, and the community technical assistance program. A full list of the MPO's activities can be found in Chapter 5 of the L RTP.</p> <p>Working closely with MassDOT, the MPO will continue to report on its actions to comply with the GWSA and to help meet the greenhouse gas reduction targets. As part of this activity, the MPO will provide further public information on the topic and will advocate for steps needed to accomplish the MPO's and state's goals for greenhouse gas reductions. The MPO will continue to analyze projects for the reductions they bring about, conducting these analyses either at the regional level (using its regional model) or at the project level when it is preparing its TIP or conducting project-level studies (using its regional model or other methods).</p>

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**TABLE A-2 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011**

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Paul F. Matthews	495/MetroWest Partnership, Executive Director	<p>Growth in the 495/MetroWest region has led to several transportation challenges including traffic congestion, increased vehicle miles traveled, highway capacity constraints, gaps in public transit, and aging infrastructure. Disappointed by the inability to fund the I-495/I-290/Route 85 interchange project in Hudson and Marlborough. Urges the MPO to reevaluate the potential benefits of this project. It's the top interchange priority for the Partnership and the region's second worst transportation problem. Presents data supporting its inclusion in the LRTP and a favorable evaluation under the Environment and Climate Change, and Livability and Economic Benefit evaluation criteria. Appreciates the inclusion in the LRTP of the Assabet River Rail Trail, the Bruce Freeman Rail Trail, and the Route 135/126 Grade Separation. Emphasizes the importance of the 135/126 Grade Separation. It is a highly congested area and a top crash location. It will encourage redevelopment and revitalization of Framingham's downtown. Expansion of service on the Worcester/Framingham commuter rail line will make the problems worse. The Boston Region MPO should share in the funding of the I-495/Route 9 and I-495/I-90 interchange projects. Urges the Boston Region MPO to approach MassDOT and the Central Mass MPO to work on new and creative mechanisms for funding cross-jurisdictional projects. This is especially important because of current land use planning work for the MetroWest region. The movement of people and goods pays no attention to MPO boundaries. Commends the Needs Assessment, but asks why the I-495/I-290/Route 85, I-495/I-90, and I-495/Route 9 interchanges were not identified as bottlenecks. Also, the MetroWest/495 TMA is not listed in the existing conditions section. Alarmed that several projects in the MetroWest region were not identified as addressing a regional transportation need, although they appeared in the Universe of Projects.</p>					<p>As part of developing Paths to a Sustainable Region, the MPO was required to update project costs and revise the financial assumptions in the Long-Range Transportation Plan (LRTP). While the MPO worked to apportion its available funding in a way that produces the optimal benefit, many projects that would help to maintain the existing system or allow for future expansion or enhancement of the system could not be included in the fiscally constrained LRTP. In discussing the projects to be funded in the LRTP, the MPO sought to fund projects across transportation modes in order to support a transportation system that expands travel options. The particular mix of projects that have been selected allow the MPO to continue prior commitments and to achieve a modal split among roadway, strategic transit, and bicycle and pedestrian projects. The MPO did identify the I-495/I-290/Route 85 project as meeting a regional need, but due to financial constraints did not include it in the Recommended Plan. The MPO intends to continue working with state and federal partners to identify additional transportation funding in order to be prepared for the future. The project will remain in the Universe of Projects list and will be considered during the development of the next LRTP. The Assabet River Rail Trail is included in the 2016-2020 time band, Bruce Freeman Rail Trail is included in the 2021-2025 time band, and the Route 135/Route 126 Grade Separation is included in the 2026-2030 time band. The Metropolitan Area Planning Council, which is a member agency of the Boston Region MPO, is coordinating with the Central Massachusetts Regional Planning Council on issues along the I-495 corridor. The Boston Region MPO recently approved a work scope to support MassDOT in conducting a study to evaluate these I-495 interchanges. The Boston Region MPO will provide technical assistance and attend stakeholder meetings. The Central Massachusetts MPO has committed to funding the construction of these projects once the study and design are completed. The interchanges along I-495 were not identified as bottlenecks in the Needs Assessment because they did not meet the criteria under the speed index or volume to capacity methods over the three hour time periods used in the peak periods. The MetroWest/495 TMA was added to the existing conditions in the Needs Assessment. The Universe of Projects list includes all projects that have been identified to the MPO whether they meet a regional need or not, including projects that are identified through study or through the public comment process.</p>

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**TABLE A-2 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011**

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Pamela Harting-Barrat	Town of Acton, Vice Chair, Board of Selectmen	Strongly support the Assabet River Rail Trail (AART) and Bruce Freeman Rail Trail (BFRT) projects. Urges the MPO to keep the AART in the 2016-20 time band of the LRTP and the BFRT in the 2021-25 time band. Design contracts for both trails are in place.					Thank you for your support. The Assabet River Rail Trail is included in the 2016-2020 time band and the Bruce Freeman Rail Trail is included in the 2021-2025 time band.
Peter John Marquez	Community Corridor Planning Group	Urges the Green Line Extension to be constructed without delay. States that a delay in the Green Line Extension threatens to disengage people from public participation and increase a collective sense of skepticism in a way that severely undermines public planning. The Green Line Extension corridor suffers from congestion and air pollution. The project will reduce vehicle miles traveled and greenhouse gas emissions, improve access to jobs, spur economic development, and support small businesses. The delay will be costly.	X				

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**TABLE A-2 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011**

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Jim Gallagher	Somerville resident	The LRTP seems to support sustainable transportation, but the projects selected represent the status quo. Less than 1% of funding is allocated to paths. Modeling shows negligible increases in transit, walking, and biking mode shares. Urges the MPO to reject the LRTP until it can be amended to allocate resources in a way more consistent with the stated priorities. Urges the MPO to renew its commitment to build the Green Line Extension by the end of 2014. There is no difference between the No-Build scenario and the Recommended Plan. The draft LRTP includes less funding for sustainable projects than the previous one. The MPO should commit to making all communities walkable and bikeable, which would cost less than the \$200 to \$500 million devoted to one large project. Supports building the Community Path Extension concurrently with the Green Line Extension. The LRTP should commit to developing a process to expedite walking and biking projects. The draft LRTP is not consistent with the region's land use plan, MetroFuture. States there are no projects in the LRTP not already under construction that will benefit environmental justice communities. Maintaining the existing system also has the unintended consequence of maintaining the harmful health and environmental impacts of the existing system. The full document is too long and the executive summary is too short. The LRTP should have less jargon.	X			X	The MPO included the development of a regional Needs Assessment as part of Paths to a Sustainable Region. The Needs Assessment revealed a tremendous number of maintenance, safety, and capacity issues that needed to vie for scarce transportation funds available to address them. In discussing the projects to be funded in the LRTP, the MPO sought to fund projects across transportation modes in order to support a transportation system that expands travel options. The particular mix of projects that have been selected allow the MPO to continue prior commitments and to achieve a modal split among roadway, strategic transit, and bicycle and pedestrian projects. The MPO left 41 percent of its discretionary funds unassigned and available to fund lower-cost projects that do not have to be specifically listed in the LRTP. It is with this funding that lower-cost projects can be programmed in the Transportation Improvement Program (TIP) and constructed in the future. The MPO will continue to apply its visions and policies (including livability, mobility, environment, and climate change) that promote sustainable, green transportation as it selects projects that will use the unassigned funds. Many of its programs (funded through its Unified Planning Work Program) promote livability in the region and include bicycle and pedestrian projects. These include livability workshops held in MPO communities, support for local pedestrian and bicycle planning to improve conditions for these modes in the region, and the community technical assistance program. The MPO continues to work with environmental justice communities through its Transportation Equity Program. The LRTP includes the Green Line Extension project in Somerville and Medford and the Route 126/Route 135 Grade Separation project in Framingham that will benefit the environmental justice communities. The MPO also helps to administer the Coordinated Public Transit Human Services Transportation Program which provides funding to improve the mobility of the elderly, individuals with disabilities, and low-income individuals.

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**TABLE A-2 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011**

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Tom Yardley	Medical Academic and Scientific Community Organization Inc.	<p>Recognizes the need to address maintenance issues, but the LRTP misses the opportunity to prioritize projects that would address gaps in service and could be advanced in better financial times. The Needs Assessment identifies transit needs, but the “Current Approach” Investment Strategy selected by the MPO fails to fully address them. Funding should be more balance between transit and highway. The modeling for the LRTP predicts a 30% increase in transit demand between now and 2035. Several transportation gaps affecting the Longwood Medical Area (LMA) are identified in the LRTP. The LMA will be adding 2.7 million square feet. It is adding 1,200 jobs per year. It is the second largest employment center outside of downtown Boston. The LMA depends on the transit system. When the LRTP is next updated, it must include long-term recommendations for the expansion of transit services. Supports including a list of Illustrative Projects in the LRTP in order to be prepared for better financial conditions in the future. The Urban Ring should be included as an Illustrative Project. Smaller or incremental components of the Urban Ring should be modeled and included in future amendments or updates to the LRTP.</p>					<p>The MPO included the development of a regional Needs Assessment as part of Paths to a Sustainable Region. The Needs Assessment revealed a tremendous number of maintenance, safety, and capacity issues that needed to vie for scarce transportation funds available to address them. In discussing the projects to be funded in the LRTP, the MPO sought to fund projects across transportation modes in order to support a transportation system that expands travel options. The particular mix of projects that have been selected allow the MPO to continue prior commitments and to achieve a modal split among roadway, strategic transit, and bicycle and pedestrian projects. The MPO left 41 percent of its discretionary funds unassigned and available to fund lower-cost projects that do not have to be specifically listed in the LRTP. It is with this funding that lower-cost projects can be programmed in the Transportation Improvement Program (TIP) and constructed in the future. The MPO will continue to apply its visions and policies (including livability, mobility, environment, and climate change) that promote sustainable, green transportation as it selects projects that will use the unassigned funds.</p> <p>The MPO acknowledges the need for increased transit in the future; however, it also recognizes the significant backlog of maintenance and state-of-good-repair work for the existing transit system. The MPO chose to allocate all of the MBTA’s future transit and capital funding to system infrastructure maintenance, accessibility improvements, and system enhancements, to ensure that the existing system can continue to function into the future and continue to serve its existing ridership. The Commonwealth made the commitment to fund the State Implementation Plan transit expansion projects. The MPO felt that it was important to further extend the Green Line from Medford Hillside (College Avenue) to Route 16/Mystic Valley Parkway as a second phase of the Green Line Extension project, and “flexed” \$185 million of federal funding dedicated to highway projects to do so.</p> <p>The MPO recognizes that there are many mobility and capacity issues now and projected for the future. The MPO chose not to include an Illustrative Projects chapter in this LRTP, listing projects that it would fund if new funding were to become available, because there is a significant backlog of maintenance and state-of-good-repair work to be done on the highway and transit systems. The LRTP must be updated at least every four years. As new financial information becomes available, the MPO will update its list of recommended projects in future LRTPs.</p>

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**TABLE A-2 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011**

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Mayor Michael McGlynn	City of Medford	States the Green Line Extension has air quality, transportation, and economic development benefits, and that air quality benefits should be of overriding concern. Concerned that the project has been underfunded and delayed as a result. Concerned that the project is not construction ready to compete for additional economic stimulus funds. Asks the MPO to revise the LRTP and TIP to allocate necessary funds to plan and design the project so it is shovel ready and to build the project in accordance with legal commitments.	X	X			
Tony Fields	North Suburban Planning Council, Chair	States that it appears contradictory that the MPO did not add any regionally-significant projects to the LRTP, but reserved 42 percent of the discretionary funds for less regionally-significant projects funded through the TIP. There is uncertainty in the early years of the LRTP as to which projects will move forward. The "Current Approach" Investment Strategy was modified at a meeting without sufficient deliberation and consideration of the impacts. The public process should be transparent. Transparency helps communities plan their investment in transportation projects for which they are seeking MPO funding. The Council supports the following projects: I-93/I-95 Interchange in Woburn; New Boston Street Bridge in Woburn; Montvale Avenue in Woburn; West Street in Reading; Tri-Community Bikeway in Woburn, Stoneham, and Winchester; Route 3 and 38 intersections in Woburn and Winchester. Asks that the projects in the North Suburban subregion not be pushed into later time bands.					<p>The MPO included the development of a regional Needs Assessment as part of Paths to a Sustainable Region. The Needs Assessment revealed a tremendous number of maintenance, safety, and capacity issues that needed to vie for scarce transportation funds available to address them. In discussing the projects to be funded in the LRTP, the MPO sought to fund projects across transportation modes in order to support a transportation system that expands travel options. The particular mix of projects that have been selected allow the MPO to continue prior commitments and to achieve a modal split among roadway, strategic transit, and bicycle and pedestrian projects. The MPO left 41 percent of its discretionary funds unassigned and available to fund lower-cost projects that do not have to be specifically listed in the LRTP. It is with this funding that lower-cost projects can be programmed in the Transportation Improvement Program (TIP) and constructed in the future. The MPO will continue to apply its visions and policies (including livability, mobility, environment, and climate change) that promote sustainable, green transportation as it selects projects that will use the unassigned funds.</p> <p>The MPO has considered your time band request and has decided to keep its currently planned schedule for implementing these projects. The I-93/I-95 Interchange project in Woburn is in the 2026-2030 time band and the New Boston Street Bridge and Montvale Avenue projects are in the 2021-2025 time band in the LRTP.</p>

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TABLE A-2 (CONT.)

SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Pasquale Ciarabella	Old Colony Planning Council, Executive Director	States that transportation improvements to the Route 3 south corridor are a regional priority. Supports expanding the highway to six lanes from Hingham to Route 44 in Plymouth. Asks the Boston Region MPO to consider identifying the importance of improvements to the Route 3 corridor in its LRTP.					<p>As part of developing Paths to a Sustainable Region, the MPO was required to update project costs and revise the financial assumptions in the Long-Range Transportation Plan (LRTP). While the MPO worked to apportion its available funding in a way that produces the optimal benefit, many projects that would help to maintain the existing system or allow for future expansion or enhancement of the system could not be included in the fiscally constrained LRTP. In discussing the projects to be funded in the LRTP, the MPO sought to fund projects across transportation modes in order to support a transportation system that expands travel options. The particular mix of projects that have been selected allow the MPO to continue prior commitments and to achieve a modal split among roadway, strategic transit, and bicycle and pedestrian projects.</p> <p>The MPO did identify the Route 3 South project as meeting a regional need, but due to financial constraints did not include it in the Recommended Plan. The MPO intends to continue working with state and federal partners to identify additional transportation funding in order to be prepared for the future. The project will remain in the Universe of Projects list and will be considered during the development of the next LRTP.</p>
John Kyper	Sierra Club, Massachusetts Chapter, Transportation Chair	Supports alternatives to private automobile use and broadening public transportation coverage to environmental justice areas. Concerned about the Green Line Extension delay. States that the needs of the inner city population are slighted in the rush to lure suburban commuters back to transit. States that repeated delays are intolerable and urges commencement of construction. Appalled by the MassDOT proposal to abandon the design of the Red Line-Blue Line Connector. This is a missing link in the transit system that would benefit users of the entire transit system. The Commonwealth has neglected expansion to the downtown core of the transit system. The MPO did not identify mitigation for the Green Line Extension delay. Regrets the delay of the Fairmount Line Improvement Project, but encouraged that construction is proceeding on elements other than the controversial Blue Hill Avenue station.	X				<p>In discussing the projects to be funded in the LRTP, the MPO sought to fund projects across transportation modes in order to support a transportation system that expands travel options. The particular mix of projects that have been selected allow the MPO to continue prior commitments and to advance a modal split among roadway, strategic transit, and bicycle and pedestrian projects. The MPO acknowledges the need for increased transit in the future; however, it also recognizes the significant backlog of maintenance and state-of-good-repair work for the existing transit system. The MPO chose to allocate all of the MBTA's future transit and capital funding to system infrastructure maintenance, accessibility improvements, and system enhancements, to ensure that the existing system can continue to function into the future and continue to serve its existing ridership. The Commonwealth made the commitment to fund the State Implementation Plan transit expansion projects. The MPO felt that it was important to further extend the Green Line from Medford Hillside (College Avenue) to Route 16/Mystic Valley Parkway as a second phase of the Green Line Extension project, and "flexed" \$185 million of federal funding dedicated to highway projects to do so. (continued on next page)</p>

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**TABLE A-2 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011**

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
John Kyper (continued)	Sierra Club, Massachusetts Chapter, Transportation Chair		X				The design of the Red Line/Blue Line Connector is part of the Air Pollution Control Regulations of the Commonwealth's Department of Environmental Protection (DEP), codified in 310 CMR 7.36, Transit System Improvements. Because the design of the Red Line/Blue Line Connector is a legal commitment, the Boston Region MPO has included it in its Long-Range Transportation Plan and Air Quality Conformity Determination (LRTP). The MPO must include any new project costing over \$10 million that uses federal transportation funds, any project that adds capacity to the transportation system, and/or any project that is included as a Transportation Control Measure (a strategy to reduce emissions of air pollutants) as part of the State Implementation Plan (SIP) in its LRTP. MassDOT has petitioned the DEP to nullify the commitment to perform final design of the Red Line/Blue Line Connector, due to the unaffordability of the eventual construction of the project. MassDOT is initiating a process to amend the SIP to permanently and completely remove the obligation to perform final design of the Red Line/Blue Line Connector. The MPO is awaiting the results of MassDOT's proposal and potentially will revise its LRTP once that request has gone through the DEP's process.
Stephen V. Mackey	Somerville Chamber of Commerce, President and CEO	The Green Line Extension will bring economic development. The project will support development in Somerville's Green Line Extension development zone, which includes the Innerbelt, Brickbottom, Union Square, and Boynton Yards. The zone is ideally situated for transit-oriented development that would help the city be fiscally sustainable. The Green Line Extension will lead to these benefits and create short-term and long-term jobs.	X				
Sen. Patricia Jehlen, Sen. Sal N. DiDomenico, Rep. Denise Provost, Rep. Timothy Toomey, Rep. Carl Sciortino, Rep. Sean Garballey	General Court of Massachusetts	State that the Green Line Extension is an extremely high priority for environmental, economic, and legal reasons. The delay will increase the cost of the project. Asks the MPO to reject the 2018-20 time frame for completion. The delay violates the requirement to prioritize projects that are necessary to comply with the Clean Air Act. Construction on the Green Line Extension should begin while land taking issues are resolved. A phased construction approach should be utilized. Mitigation projects for the delay should benefit the Green Line Extension corridor, such as the Route 16 terminus and the Community Path.	X			X	

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TABLE A-2 (CONT.)

SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Mimi Graney and Livingston Parsons III	Union Square Main Streets	Urges timely completion of the Green Line Extension. Concerned about the project's delay. The MPO should not accept the draft LRTP because it does not satisfy Transportation Conformity regulations. The Department of Environmental Protection has not granted approval to delay the Green Line Extension. The schedule shown in the LRTP does not conform to the State Implementation Plan. Deferring the Route 128 Add-a-Lane project would open up funding for the Green Line Extension. Additionally bonding authority is needed for the project as the state's 2008 Transportation Bond Bill does not authorize enough funding, even if New Starts funds are awarded to the project. Mitigation projects for the delay will be expensive. The postponement of the economic benefits of the project will also be costly to the Commonwealth. The lack of progress and delay is unacceptable.	X	X			
Mayor Jeannette McCarthy	City of Waltham	Requests that the MPO include in the LRTP a new interchange and system of frontage roads, including Green Street, between Routes 20, 117, and 128. States that this project would reduce congestion, improve air quality and circulation, remove traffic from the Stow Street neighborhood, provide access to a potential transit station, and encourage economic development. An early action could be to widen and improve Green Street to serve as a regional connector between Routes 20 and 117.					<p>As part of developing Paths to a Sustainable Region, the MPO was required to update project costs and revise the financial assumptions in the Long-Range Transportation Plan (LRTP). While the MPO worked to apportion its available funding in a way that produces the optimal benefit, many projects that would help to maintain the existing system or allow for future expansion or enhancement of the system could not be included in the fiscally constrained LRTP. In discussing the projects to be funded in the LRTP, the MPO sought to fund projects across transportation modes in order to support a transportation system that expands travel options. The particular mix of projects that have been selected allow the MPO to continue prior commitments and to achieve a modal split among roadway, strategic transit, and bicycle and pedestrian projects.</p> <p>The MPO intends to continue working with state and federal partners to identify additional transportation funding in order to be prepared for the future. The new interchange and system of frontage roads project will remain in the Universe of Projects list and will be considered during the development of the next LRTP.</p>

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**TABLE A-2 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011**

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Mayor Scott Galvin	City of Woburn	The New Boston Street Bridge and Montvale Avenue projects were shifted into the next decade. Urges the MPO to reconsider this decision. The policy decision to leave 42 percent of discretionary funds unassigned in the LRTP has negatively affected these two projects. Woburn has invested funds in design of the projects and it's unacceptable to push them further into the future. This decision was made without sufficient deliberation and consideration of the impacts. The public process should be more transparent. The first years of the LRTP are less clear because projects were pushed into later years. Requests that the MPO move the two projects back into this decade.					The MPO has considered your request and has decided to keep its currently planned schedule for implementing these projects. The New Boston Street Bridge and Montvale Avenue projects are in the 2021-2025 time band in the LRTP. In discussing the projects to be funded in the LRTP, the MPO sought to fund projects across transportation modes in order to support a transportation system that expands travel options. The particular mix of projects that have been selected allow the MPO to continue its prior commitments and advance a modal split among roadway, strategic transit, and bicycle and pedestrian projects. The MPO chose to leave the higher proportion of 41 percent of its discretionary funds unassigned and available to fund lower-cost projects that do not have to be specifically listed in the LRTP because of the significant backlog of maintenance and state-of-good-repair work to be done on both the highway and transit systems. These projects will be chosen as part of the Transportation Improvement Program process.
Michelle Ciccolo	Town of Hudson	Thanks the Boston Region MPO for keeping the Assabet River Rail Trail in the draft LRTP. Urges the MPO to keep the project in the final LRTP in the earliest possible time band. States that the Trail is a valuable transportation route connecting many activity centers. Large investments have been made in local, state, and federal funds to design the trail and build other portions. 5.5 miles in Hudson and Marlborough have been built. The Town supports completion of the full 12-mile Trail.					Thank you for your support. The Assabet River Rail Trail is included in the 2016-2020 time band in the LRTP.
Ted Alexiades, Town Administrator	Town of Hingham	Asks the MPO to include the Derby Street Corridor Improvement Project and proposed improvements to Route 3A and the Hingham Rotary in the next version of the LRTP. The Derby Street project is the Town's top priority. It will support commercial and industrial development along Derby Street. The Town is moving forward with design for the project. The corridor has safety and capacity issues. The Route 3A and Hingham Rotary project will address hazards and support regional economic development.					As part of developing Paths to a Sustainable Region, the MPO was required to update project costs and revise the financial assumptions in the Long-Range Transportation Plan (LRTP). While the MPO worked to apportion its available funding in a way that produces the optimal benefit, many projects that would help to maintain the existing system or allow for future expansion or enhancement of the system could not be included in the fiscally constrained LRTP. In discussing the projects to be funded in the LRTP, the MPO sought to fund projects across transportation modes in order to support a transportation system that expands travel options. The particular mix of projects that have been selected allow the MPO to continue prior commitments and to achieve a modal split among roadway, strategic transit, and bicycle and pedestrian projects.

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TABLE A-2 (CONT.)

SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Ted Alexiades, Town Administrator (continued)	Town of Hingham						The MPO intends to continue working with state and federal partners to identify additional transportation funding in order to be prepared for the future. The Derby Street Corridor Improvement project will remain in the Universe of Projects list and will be considered during the development of the next LRTP.
Laura Wiener and Schuyler Larrabee	Regional Transportation Advisory Council, Chair; and the Advisory Council's Plan Committee Chair	Commends the MPO for the Needs Assessment. Offers several policy recommendations to help the MPO make choices about difficult tradeoffs: maintenance should be the highest priority; for expansion favor rail, transit, bicycle, and pedestrian projects over highway projects; use statistical data and quantifiable performance measures to select projects; and the MPO should include a list of Illustrative Projects in the LRTP. Inclusion of Illustrative Projects allows the MPO to express a compelling vision of the future. Supports including the following as Illustrative Projects: the Urban Ring, the Blue Line Extension to Lynn, the North-South Rail Link, and electrification of the commuter rail system. Offered several other suggestions by mode. For transit, supports flexing highway funds to transit, urges the state to reverse the delay of the Green Line Extension, close transit gaps, and support high-speed rail. For freight, suggests the MPO include a chapter dedicated to the topic in the LRTP, describe the freight benefits and drawbacks of each project, and urges the MPO to support the Conley Terminal Bypass Road, Track 61 rehabilitation, improvements to the Framingham subdivision line of CSX, and the addition of a modern truck stop on I-495. For highways, the Advisory Council supports better management and operations and a regional HOV system. For bicycle and pedestrian planning, the Advisory Council supports a complete streets design policy where the MPO will only fund projects that serve all street users. The Advisory Council also urges the MPO to develop criteria for the evaluation of shared-use paths so that projects that will receive the most use, and do the most to remove automobiles from streets, will be prioritized.					In discussing the projects to be funded in the LRTP, the MPO sought to fund projects across transportation modes in order to support a transportation system that expands travel options. The particular mix of projects that have been selected allow the MPO to continue prior commitments and to advance a modal split among roadway, strategic transit, and bicycle and pedestrian projects. The MPO acknowledges the need for increased transit in the future; however, it also recognizes the significant backlog of maintenance and state-of-good-repair work for the existing transit system. The MPO chose to allocate all of the MBTA's future transit and capital funding to system infrastructure maintenance, accessibility improvements, and system enhancements, to ensure that the existing system can continue to function into the future and continue to serve its existing ridership. The Commonwealth made the commitment to fund the State Implementation Plan transit expansion projects. The MPO felt that it was important to further extend the Green Line from Medford Hillside (College Avenue) to Route 16/Mystic Valley Parkway as a second phase of the Green Line Extension project, and "flexed" \$185 million of federal funding dedicated to highway projects to do so. (continued on next page)

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**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011**

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
<p>Laura Wiener and Schuyler Larrabee (continued)</p>	<p>Regional Transportation Advisory Council, Chair; and the Advisory Council's Plan Committee Chair</p>						<p>The MPO recognizes that there are a tremendous number of maintenance and capacity issues vying for scarce transportation funds. It also recognizes that there are many mobility and capacity issues now and projected for the future. The MPO chose not to include an Illustrative Projects chapter in this LRTP, listing projects that it would fund if new funding were to become available, because there is a significant backlog of maintenance and "state-of-good-repair work to be done on the highway and transit systems. The LRTP must be updated at least every four years. As new financial information becomes available, the MPO will update its list of recommended projects in future LRTPs. This LRTP does not include separate chapters on each mode but is designed to address the different vision topic areas and discusses each mode, including freight in each of the chapters. The Conley Terminal Bypass Road is included in the LRTP and the Track 61 rehabilitation, improvements to the Framingham line, additional truck stops, and a regional HOV system will remain part of the LRTP's Universe of projects and programs.</p> <p>The MPO has committed to develop performance measures as part of the next phase in the LRTP process. Examples of performance measures that will be examined are included at the end of Chapter 4 (Transportation System Operations and Management), Chapter 5 (Livability and Environment), and Chapter 6 (Transportation Equity).</p>
<p>Jim Nigrelli</p>	<p>Sudbury Citizens for Responsible Land Stewardship</p>	<p>States that the construction of the Bruce Freeman Rail Trail in Acton and Concord, with a bridge over Route 2 included, will cost about \$4.5 million per mile. Questions spending funds on non-essential amenities that will be used primarily for recreation. The LRTP should allocate funds to projects that improve air quality and reduce congestion. On-road bicycle facilities, which cost must less, should be considered in all road projects.</p>					<p>In the context of the visions and policies set forth in the LRTP by the MPO, it was determined that bicycle and pedestrian projects are important. Several of the vision topics address this. Specifically, bicycle and pedestrian facilities are addressed under the livability (promote healthy transportation), mobility (improve access to transit; expand bicycle and pedestrian networks), environment (support nonmotorized modes; support greenhouse gas emission reductions), and climate change (increase transit/bicycle/pedestrian options) visions and policies.</p> <p>In discussing the projects to be funded in the LRTP, the MPO sought to fund projects across transportation modes in order to support a transportation system that expands travel options. The particular mix of projects that have been selected allow the MPO to continue prior commitments and to achieve a modal split among roadway, strategic transit, and bicycle and pedestrian projects. On-road bicycle facilities continue to be considered as part of the Transportation Improvement Program process.</p>

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**TABLE A-2 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011**

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Cathy Ann Buckley	Unidentified	<p>Concerned about climate change. Table 5-2 in the LRTP shows carbon dioxide emissions increasing if the projects in the LRTP are built, compared to a scenario in which they are not built. A business-as-usual approach will not work for reducing greenhouse gas emissions. The use of single-occupant vehicles must be dramatically reduced. Urges the MPO to take a stand and fight against climate change. Requests the LRTP include simple tables in the finance chapter that describe how much total money comes to the state from the federal government, how much is collected at the state level, and where it is spent. The tables should also show how much is at the MPO's discretion. Historic information should also be included.</p>					<p>In discussing the projects to be funded in the LRTP, the MPO sought to fund projects across transportation modes in order to support a transportation system that expands travel options. The particular mix of projects that have been selected allow the MPO to advance a modal split among roadway, strategic transit, and bicycle and pedestrian projects. The MPO chose to allocate all of the MBTA's future transit and capital funding to system infrastructure maintenance, accessibility improvements, and system enhancements because of the significant backlog of maintenance and state-of-good-repair work for the existing transit system. The purpose is to ensure that the system can function into the future and continue to serve existing ridership. The Commonwealth made the commitment to fund the State Implementation Plan transit expansion projects. In addition, the MPO felt that it was important to further extend the Green Line from Medford Hillside to Route 16/ Mystic Valley Parkway as a second phase of the Green Line Extension project, and "flexed" \$185 million of funding dedicated to highway projects to do so.</p> <p>The MPO left 41 percent of its discretionary funds unassigned and available to fund lower-cost projects that do not have to be specifically listed in the LRTP. It is with this funding that lower-cost projects that can help to reduce CO2 emissions can be programmed in the Transportation Improvement Program (TIP) and constructed in the future. The MPO will continue to apply its visions and policies (including livability, mobility, environment, and climate change) that promote sustainable, green transportation as it selects projects that will use the unassigned funds. The MPO contributes to reductions in greenhouse gas emissions through the TIP by funding projects and programs that reduce the need to drive and ease roadway congestion. It funds projects that support the use of alternative fuel sources. Many of its programs (funded through its Unified Planning Work Program) that promote livability in the region also help in reducing greenhouse gas emissions. These include livability workshops held in MPO communities, support for local pedestrian and bicycle planning to improve conditions for these modes in the region, and the community technical assistance program. A full list of the MPO's activities can be found in Chapter 5 of the LRTP. (continued on next page)</p>

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**TABLE A-2 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011**

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Cathy Ann Buckley (continued)	Unidentified						<p>Working closely with MassDOT, the MPO will continue to report on its actions to comply with the GWSA and to help meet the greenhouse gas reduction targets. As part of this activity, the MPO will provide further public information on the topic and will advocate for steps needed to accomplish the MPO's and state's goals for greenhouse gas reductions. The MPO will continue to analyze projects for the reductions they bring about, conducting these analyses either at the regional level (using its regional model) or at the project level when it is preparing its TIP or conducting project-level studies (using its regional model or other methods).</p> <p>The MPO is limited to funding the components of the regional transportation system over which the MPO has programming and geographic jurisdiction. The LRTP includes only funding of federal transportation money for the Statewide Road and Bridge Program, the Central Artery/Tunnel project, the Accelerated Bridge Program, and the public transportation system. The only state funding included in the LRTP is the Commonwealth's portion of the funding of projects that cost over \$10 million and its funding of State Implementation Plan projects. Chapter 7 of the LRTP shows the federal funds that are available to the MPO to program at its discretion. The MPO is looking into the use of Chapter 90 funds as part of its Pavement Management Study that is currently underway. Historic information on transportation spending can be found in other statewide documents, including the Statewide Capital Investment Plan.</p>

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**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011**

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Tom Michelman	Friends of the Bruce Freeman Rail Trail, President	Supports the Bruce Freeman Rail Trail in the LRTP for the 2021-25 time band. Phase I in Chelmsford and Westford has been very successful. Phase 2, which will bring the Trail through Westford, Carlisle, Acton, Concord, and Sudbury will improve access to commuter rail and bus services, decrease congestion and offer alternatives to driving, provide safe access to schools, and increase economic vitality. It is important to include the Trail in the 2021-25 time band because it must be planned for construction in the next 10 years in order to access federal design funds, a kick-off meeting for final design of Phases 2A and 2C was held on September 14, and the Trail will reduce the cost of travel for users; it will contribute to a network of paths; large increases in bicycle and pedestrian use should be expected because of a better network, higher gas prices, more congestion, and investments such as the Boston Bike Share; it will encourage exercise; and voters love community paths.					The Bruce Freeman Rail Trail project is included in the list of recommended projects in Paths to a Sustainable Region in the 2021-2025 time band.
Tom Bailey	Concord resident	Supports Phase II of the Bruce Freeman Rail Trail in the 2021-25 time slot of the LRTP.					The Bruce Freeman Rail Trail project is included in the list of recommended projects in Paths to a Sustainable Region in the 2021-2025 time band.
Matt Straayer	Acton resident	Supports the Bruce Freeman Rail Trail. The Trail offers a safe place for commuters and families to ride.					The Bruce Freeman Rail Trail project is included in the list of recommended projects in Paths to a Sustainable Region in the 2021-2025 time band.
Judith Sprott	Concord resident	Opposed to the Bruce Freeman Rail Trail. States that the Trail comes from nowhere and goes nowhere. It may lead to further damage to White Pond and other environmentally sensitive areas. Supports improving the existing street network for cyclists. There are dangerous street and rail crossings on the Trail. The Trail has not been accepted by Sudbury.					<p>"In the context of the visions and policies set forth in the LRTP by the MPO, it was determined that bicycle and pedestrian projects are important. Several of the vision topics address this. Specifically, bicycle and pedestrian facilities are addressed under the livability (promote healthy transportation), mobility (improve access to transit; expand bicycle and pedestrian networks), environment (support nonmotorized modes; support greenhouse gas emission reductions), and climate change (increase transit/bicycle/pedestrian options) visions and policies.</p> <p>In discussing the projects to be funded in the LRTP, the MPO sought to fund projects across transportation modes in order to support a transportation system that expands travel options. The particular mix of projects that have been selected allow the MPO to continue prior commitments and to achieve a modal split among roadway, strategic transit, and bicycle and pedestrian projects.</p>

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NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Sally Elliott	Unidentified	Opposed to the Bruce Freeman Rail Trail. It is cost prohibitive and funds are not available for maintenance. States that funds would be better spent to upgrade existing roads so bike riders can use them to commute.					<p>In the context of the visions and policies set forth in the LRTP by the MPO, it was determined that bicycle and pedestrian projects are important. Several of the vision topics address this. Specifically, bicycle and pedestrian facilities are addressed under the livability (promote healthy transportation), mobility (improve access to transit; expand bicycle and pedestrian networks), environment (support nonmotorized modes; support greenhouse gas emission reductions), and climate change (increase transit/bicycle/ pedestrian options) visions and policies.</p> <p>In discussing the projects to be funded in the LRTP, the MPO sought to fund projects across transportation modes in order to support a transportation system that expands travel options. The particular mix of projects that have been selected allow the MPO to continue prior commitments and to achieve a modal split among roadway, strategic transit, and bicycle and pedestrian projects.</p>
Dan Latham	Concord resident	Opposed to including the Bruce Freeman Rail Trail and the Assabet River Rail Trail in the LRTP. Does not think the proposed trails will reduce congestion. They are mostly for recreation. Asks the MPO to prioritize projects that have a transportation purpose.					<p>In the context of the visions and policies set forth in the LRTP by the MPO, it was determined that bicycle and pedestrian projects are important. Several of the vision topics address this. Specifically, bicycle and pedestrian facilities are addressed under the livability (promote healthy transportation), mobility (improve access to transit; expand bicycle and pedestrian networks), environment (support nonmotorized modes; support greenhouse gas emission reductions), and climate change (increase transit/bicycle/ pedestrian options) visions and policies.</p> <p>In discussing the projects to be funded in the LRTP, the MPO sought to fund projects across transportation modes in order to support a transportation system that expands travel options. The particular mix of projects that have been selected allow the MPO to continue prior commitments and to achieve a modal split among roadway, strategic transit, and bicycle and pedestrian projects."</p>

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SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Kevin Smith	Unidentified	Questions why two bicycle trails are included in Table 8-3, which lists the major infrastructure and expansion highway projects included in the LRTP. Would rather see these funds spent on other bicycle access projects.					<p>In the context of the visions and policies set forth in the LRTP by the MPO, it was determined that bicycle and pedestrian projects are important. Several of the vision topics address this. Specifically, bicycle and pedestrian facilities are addressed under the livability (promote healthy transportation), mobility (improve access to transit; expand bicycle and pedestrian networks), environment (support nonmotorized modes; support greenhouse gas emission reductions), and climate change (increase transit/bicycle/ pedestrian options) visions and policies.</p> <p>In discussing the projects to be funded in the LRTP, the MPO sought to fund projects across transportation modes in order to support a transportation system that expands travel options. The particular mix of projects that have been selected allow the MPO to continue prior commitments and to achieve a modal split among roadway, strategic transit, and bicycle and pedestrian projects.</p>
Carole Wolfe	Unidentified	Questions air quality benefits and congestion mitigation resulting from suburban bike trails. The Acton and Concord sections of the Bruce Freeman Rail Trail travel mostly through woods and wetlands. Questions how many people will use the Trail to access a transit station or other activity centers. States that there appears to be a lack of quantitative analyses demonstrating that trails are cost-effective as either transportation or recreation projects.					<p>In the context of the visions and policies set forth in the LRTP by the MPO, it was determined that bicycle and pedestrian projects are important. Several of the vision topics address this. Specifically, bicycle and pedestrian facilities are addressed under the livability (promote healthy transportation), mobility (improve access to transit; expand bicycle and pedestrian networks), environment (support nonmotorized modes; support greenhouse gas emission reductions), and climate change (increase transit/bicycle/ pedestrian options) visions and policies.</p> <p>In discussing the projects to be funded in the LRTP, the MPO sought to fund projects across transportation modes in order to support a transportation system that expands travel options. The particular mix of projects that have been selected allow the MPO to continue prior commitments and to achieve a modal split among roadway, strategic transit, and bicycle and pedestrian projects.</p>

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**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011**

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Donna DeAngelis	Concord resident	Opposed to including the Bruce Freeman Rail Trail in the LRTP. The MPO should prioritize projects that will get more people to use public transportation. The Trail will be primarily a recreational pathway.					<p>In the context of the visions and policies set forth in the LRTP by the MPO, it was determined that bicycle and pedestrian projects are important. Several of the vision topics address this. Specifically, bicycle and pedestrian facilities are addressed under the livability (promote healthy transportation), mobility (improve access to transit; expand bicycle and pedestrian networks), environment (support nonmotorized modes; support greenhouse gas emission reductions), and climate change (increase transit/bicycle/ pedestrian options) visions and policies.</p> <p>In discussing the projects to be funded in the LRTP, the MPO sought to fund projects across transportation modes in order to support a transportation system that expands travel options. The particular mix of projects that have been selected allow the MPO to continue prior commitments and to achieve a modal split among roadway, strategic transit, and bicycle and pedestrian projects.</p>
Marianne Maurer	Unidentified	Opposed to the Bruce Freeman Rail Trail. The overgrown right of way is home to wildlife that will be disturbed if the Trail is built. Construction will remove many trees, which is bad for the environment.					<p>In the context of the visions and policies set forth in the LRTP by the MPO, it was determined that bicycle and pedestrian projects are important. Several of the vision topics address this. Specifically, bicycle and pedestrian facilities are addressed under the livability (promote healthy transportation), mobility (improve access to transit; expand bicycle and pedestrian networks), environment (support nonmotorized modes; support greenhouse gas emission reductions), and climate change (increase transit/bicycle/ pedestrian options) visions and policies.</p> <p>In discussing the projects to be funded in the LRTP, the MPO sought to fund projects across transportation modes in order to support a transportation system that expands travel options. The particular mix of projects that have been selected allow the MPO to continue prior commitments and to achieve a modal split among roadway, strategic transit, and bicycle and pedestrian projects. This project will go through the environmental and design phases to ensure the environment is not harmed.</p>

(CONT.)

TABLE A-2 (CONT.)

SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Daniel De Pompei	Sudbury resident	Supports bicycle transportation, but does not support the design or construction of shared-use paths that do not reduce automotive traffic. Does not support paths that go through environmentally-sensitive areas. Does not support the Bruce Freeman Rail Trail because it will not mitigate traffic congestion and will affect environmentally-sensitive areas.					<p>In the context of the visions and policies set forth in the LRTP by the MPO, it was determined that bicycle and pedestrian projects are important. Several of the vision topics address this. Specifically, bicycle and pedestrian facilities are addressed under the livability (promote healthy transportation), mobility (improve access to transit; expand bicycle and pedestrian networks), environment (support nonmotorized modes; support greenhouse gas emission reductions), and climate change (increase transit/bicycle/ pedestrian options) visions and policies.</p> <p>In discussing the projects to be funded in the LRTP, the MPO sought to fund projects across transportation modes in order to support a transportation system that expands travel options. The particular mix of projects that have been selected allow the MPO to continue prior commitments and to achieve a modal split among roadway, strategic transit, and bicycle and pedestrian projects. On-road bicycle facilities continue to be considered as part of the Transportation Improvement Program process.</p>
Tammy Quirk	Sudbury resident	Opposed to construction of the Bruce Freeman Rail Trail and Assabet River Rail Trail. The Trails are not cost effective. They will not be well maintained. The Trails will be used largely for recreation.					<p>In the context of the visions and policies set forth in the LRTP by the MPO, it was determined that bicycle and pedestrian projects are important. Several of the vision topics address this. Specifically, bicycle and pedestrian facilities are addressed under the livability (promote healthy transportation), mobility (improve access to transit; expand bicycle and pedestrian networks), environment (support nonmotorized modes; support greenhouse gas emission reductions), and climate change (increase transit/bicycle/ pedestrian options) visions and policies.</p> <p>In discussing the projects to be funded in the LRTP, the MPO sought to fund projects across transportation modes in order to support a transportation system that expands travel options. The particular mix of projects that have been selected allow the MPO to continue prior commitments and to achieve a modal split among roadway, strategic transit, and bicycle and pedestrian projects.</p>

(CONT.)

**TABLE A-2 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011**

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Candace Young	Concord resident	Opposed to the Bruce Freeman Rail Trail. States that the Trail should be funded locally. The state should focus on making roads safe and accessible to all people.					<p>In the context of the visions and policies set forth in the L RTP by the MPO, it was determined that bicycle and pedestrian projects are important. Several of the vision topics address this. Specifically, bicycle and pedestrian facilities are addressed under the livability (promote healthy transportation), mobility (improve access to transit; expand bicycle and pedestrian networks), environment (support nonmotorized modes; support greenhouse gas emission reductions), and climate change (increase transit/bicycle/ pedestrian options) visions and policies.</p> <p>In discussing the projects to be funded in the L RTP, the MPO sought to fund projects across transportation modes in order to support a transportation system that expands travel options. The particular mix of projects that have been selected allow the MPO to continue prior commitments and to achieve a modal split among roadway, strategic transit, and bicycle and pedestrian projects.</p>
Lydia Rogers	Unidentified	Opposed to the Bruce Freeman Rail Trail. Funds would be better spent on making it safer and easier to bike in congested areas and along streets.					<p>In the context of the visions and policies set forth in the L RTP by the MPO, it was determined that bicycle and pedestrian projects are important. Several of the vision topics address this. Specifically, bicycle and pedestrian facilities are addressed under the livability (promote healthy transportation), mobility (improve access to transit; expand bicycle and pedestrian networks), environment (support nonmotorized modes; support greenhouse gas emission reductions), and climate change (increase transit/bicycle/ pedestrian options) visions and policies.</p> <p>In discussing the projects to be funded in the L RTP, the MPO sought to fund projects across transportation modes in order to support a transportation system that expands travel options. The particular mix of projects that have been selected allow the MPO to continue prior commitments and to achieve a modal split among roadway, strategic transit, and bicycle and pedestrian projects.</p>

(CONT.)



**TABLE A-2 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011**

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
The Dimauro's	Sudbury residents	Opposed to the Bruce Freeman Rail Trail. It would pass through environmentally-sensitive areas.					<p>In the context of the visions and policies set forth in the LRTP by the MPO, it was determined that bicycle and pedestrian projects are important. Several of the vision topics address this. Specifically, bicycle and pedestrian facilities are addressed under the livability (promote healthy transportation), mobility (improve access to transit; expand bicycle and pedestrian networks), environment (support nonmotorized modes; support greenhouse gas emission reductions), and climate change (increase transit/bicycle/ pedestrian options) visions and policies.</p> <p>In discussing the projects to be funded in the LRTP, the MPO sought to fund projects across transportation modes in order to support a transportation system that expands travel options. The particular mix of projects that have been selected allow the MPO to continue prior commitments and to achieve a modal split among roadway, strategic transit, and bicycle and pedestrian projects. This project will go through the environmental and design phases to ensure the environment is not harmed.</p>
Gail Bucher	Concord resident	Opposed to the Bruce Freeman Rail Trail. It is costly and will not reduce congestion or emissions. It is mainly recreational. Funds should be spent making it easier and safer to bike in congested areas and along streets.					<p>In the context of the visions and policies set forth in the LRTP by the MPO, it was determined that bicycle and pedestrian projects are important. Several of the vision topics address this. Specifically, bicycle and pedestrian facilities are addressed under the livability (promote healthy transportation), mobility (improve access to transit; expand bicycle and pedestrian networks), environment (support nonmotorized modes; support greenhouse gas emission reductions), and climate change (increase transit/bicycle/ pedestrian options) visions and policies.</p> <p>In discussing the projects to be funded in the LRTP, the MPO sought to fund projects across transportation modes in order to support a transportation system that expands travel options. The particular mix of projects that have been selected allow the MPO to continue prior commitments and to achieve a modal split among roadway, strategic transit, and bicycle and pedestrian projects.</p>
Emily and Dave	Unidentified	Supports the Bruce Freeman Rail Trail. They support public health.					The Bruce Freeman Rail Trail project is included in the list of recommended projects in Paths to a Sustainable Region in the 2021-2025 time band.
Anne Anderson	Acton resident	Supports the Bruce Freeman Rail Trail. There is high demand for bicycle transportation, as Hubway has demonstrated. The Trail will make bicycling safer. It will connect activity centers. It will support fitness.					The Bruce Freeman Rail Trail project is included in the list of recommended projects in Paths to a Sustainable Region in the 2021-2025 time band.

(CONT.)

**TABLE A-2 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011**

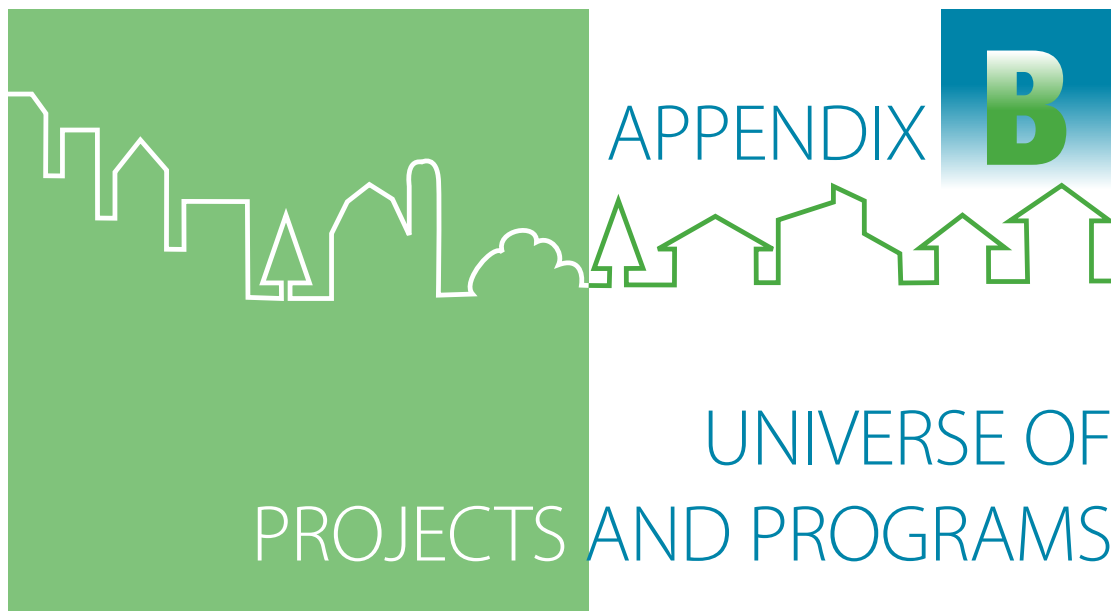
NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Frederick Salvucci	Unidentified	States that it is important for the Department of Environmental Protection to hold MassDOT to a high standard of mitigation for the delay to the State Implementation Plan commitments. It would be appropriate for MassDOT to purchase or lease diesel multiple units (DMUs) and initiate 10-minute service frequency on the Fairmount Line as a result of the slippage of the Fairmount Line improvements. To mitigate the delay of the Revere parking facility, the MassDOT should conduct a planning analysis of how to effectively use the newly increased capacity on the Blue Line. In the long-range, a connection between the Red and Blue lines and the extension of the Blue Line to Lynn should be considered. MassDOT should conduct a value engineering review of the current state of design for the Red Line-Blue Line Connector, prepare design-build documents, and include the project's construction in the design-build package for the Green Line Extension. Regarding the Green Line Extension, the first obligation of MassDOT should be to mitigate the delay. An early action item MassDOT should move forward with is the bridge connecting Inner Belt Road to North Point Boulevard, which could facilitate circumferential bus service. Air quality impacts should be measured by estimating vehicle hours of travel rather than vehicle miles traveled. This allows better consideration of congestion impacts. The emissions estimated in 1990 for 2010 should be compared to what actually transpired. Additional mitigation may be necessary. Suggests a Big Dig assessment on Massport to help pay for the SIP commitments as they were a major beneficiary of the Big Dig. Flexing of highway funds and creative finance should also be considered. The region has been stuck in a rut of planning and priority revision with little implementation. Planning is needed to develop the next generation of transit investment.	X				<p>This comment has been forwarded to MassDOT to consider the comments that have been specifically addressed to MassDOT.</p> <p>The MPO acknowledges the need for increased transit in the future; however, it also recognizes the significant backlog of maintenance and state-of-good-repair work for the existing transit system. The MPO chose to allocate all of the MBTA's future transit and capital funding to system infrastructure maintenance, accessibility improvements, and system enhancements, to ensure that the existing system can continue to function into the future and continue to serve its existing ridership. The Commonwealth made the commitment to fund the State Implementation Plan transit expansion projects. The MPO felt that it was important to further extend the Green Line from Medford Hillside (College Avenue) to Route 16/Mystic Valley Parkway as a second phase of the Green Line Extension project, and "flexed" \$185 million of federal funding dedicated to highway projects to do so.</p>

(CONT.)

**TABLE A-2 (CONT.)**

**SUMMARY OF WRITTEN COMMENTS RECEIVED DURING THE OFFICIAL PUBLIC COMMENT PERIOD: AUGUST 15 - SEPTEMBER 13, 2011**

NAME	AFFILIATION	SUMMARY OF COMMENTS	GLX 1	GLX 2	GLX 3	GLX 4	MPO RESPONSE
Stephen Kaiser	Association of Cambridge Neighborhoods	Suggested several means for raising additional revenue for transportation. Among them were a tax on fiber-optic cables installed in railroad rights of way, a gas tax explicitly for paying off debt associated with the Big Dig project, the sale of 13 acres of state-owned land at NorthPoint, possible energy savings, and avoidance of a taking of the Walker Building in the Inner Belt Industrial Park. These could raise \$550 to \$850 million over the next 10 years.					Thank you for your suggestions for raising additional revenue. These will be considered in the future in the development of future Long-Range Transportation Plans and Transportation Improvement Programs.
Lynn Weissman	Friends of the Community Path, Co-President	Asked the MPO to support future funding for the Community Path as it will connect nearly 50 miles of existing paths. States that the LRTP and the TIP are non-conforming to the federal Transportation Conformity regulations. Urged federal and state entities to fully enforce the legal and environmental obligations of the Green Line Extension. Disappointed that delaying the Green Line Extension will also delay the Community Path connector and the potential to compete for TIGER grant funds.	X			X	
Wig Zamore	Somerville Transportation Equity Partnership	The certification documents are non-conforming to Transportation Conformity regulations. They also do not show interim replacement projects. The highways and diesel rail that run through Somerville represent more VMT per square mile than in any of the other 350 Massachusetts municipalities. The environmental and health impacts remain an extraordinary burden on the densest population and second densest immigrant population in the state. Shared findings of several studies on the impacts of air pollution on human health.	X				



## INTRODUCTION

One of the primary outcomes of the Long-Range Transportation Plan is the development of a list of major capital expansion projects for implementation over the next 23 years. For use in selecting these projects, the MPO created a Universe of Projects and Programs list for identifying all possible projects and potential programs. This appendix provides a Universe of Projects and Programs for both highway and transit.

The highway Universe of Projects and Programs is composed of projects that were included in a previously adopted Long-Range Transportation Plan; projects identified through the MPO's Congestion Management Process; projects previously studied or currently being studied; projects included in comments received during the public outreach process for the 2000–25 and 2004–25 LRTPs and JOURNEY TO 2030; projects over \$10 million that are in the current TIP; and projects over \$10 million included in the FFYs 2011–14 TIP Universe of Projects. The highway Universe of Projects and Programs lists projects by the corridors identified in the Needs Assessment, along with information on each project's status. Each project that was found to meet a regional need as identified in the Needs Assessment was then evaluated based on the MPO's visions and policies.

The transit Universe of Projects and Programs was derived from the MBTA's Program for Mass Transportation (PMT) as well as from the MBTA Capital Investment Program (CIP), the MBTA's five-year fiscally constrained plan for investing in the transit system, which currently includes only maintenance projects. The transit Universe of Projects and Programs lists projects by the corridors identified in the Needs Assessment, along with information on each project's status. Each project that was found to meet a regional need as identified in the Regional Needs Assessment was then evaluated based on the MPO's visions and policies.

CENTRAL AREA HIGHWAY UNIVERSE OF PROJECTS	CTPS CORRIDOR STUDY AND/OR RECOMMENDATION, OR OTHER STUDY	HWY. PROJECT WITH PRC APPROVAL	PROJECT UNDER MASSDOT ENVIRONMENTAL REVIEW	MAJOR HWY. PROJECT PENDING, ON HOLD OR INACTIVE	PROJECT PROGRAMMED IN JOURNEY TO 2030	CONSTRUCTION FUNDS IN FFYS 2011-14 TIP	CORRIDOR(S)	PUBLIC COMMENT	MASSDOT CIP HIGH PRIORITY PATH	MEETS PLAN IDENTIFIED NEED	COST (IN MILLIONS)
<b>LONG RANGE TRANSPORTATION PLAN PROJECTS CURRENTLY PROGRAMMED AND/OR UNDER CONSTRUCTION</b>											
Consolidated Rental Car Facility Logan Airport (Boston)		x			x		NE				\$337.0
Rte. 16/Revere Beach Pkwy. Bridges (Everett, Medford, and Revere)		x			x	x	NE/N				\$41.3
Assembly Square Roadway Improvements (Somerville)		x			x	x	NW	x			\$15.4
East Boston Haul Rd. (Boston)	x			x	x		NE			x	\$19.5
<b>LONG RANGE TRANSPORTATION PLAN UNIVERSE ROADWAY PROJECTS</b>											
Rte. 1 Add-a-Lane (Malden, Saugus, and Revere)		x	x		x		NE/N	x		x	\$175.2
I-93 Capacity Improvements (Somerville to Woburn)	x						N			x	
Rte. 1/Rte. 16 Interchange (Revere)	x						NE			x	\$7.4
Rte. 1A/Rte. 16 (Revere)	x						NE			x	\$109.7
Rte. 1A/Chelsea St. Bridge Connection (Boston)	x						NE			x	
Rte. 1A/Boardman St. Grade Separation (Boston)	x			x			NE			x	\$16.0
Mahoney Circle Grade Separation (Revere)				x			NE			x	\$35.6
Rte. 16/Revere Beach Parkway Roadway Improvements (Everett, Medford, and Revere)							NE/N	x		x	\$109.5
Telecom City Boulevard (Everett, Malden, and Medford)							N	x			\$17.8
Rte. 16/I-93 Connection (Medford)							N	x			\$20.8
Sullivan Square (Boston)	x	x			x		N	x		x	\$43.3
Rutherford Ave. (Boston)	x	x			x		N	x			\$49.2
Charlestown Haul Rd. (Boston)	x						N	x		x	
Rte. 60 Improvements (Malden, Medford)	x						N			x	
McGrath Hwy.-Gilman St. Bridge (Somerville)	x						NW	x			
Rte. 9 Capacity Improvements (Brookline, Newton)	x						W	x		x	
Rte. 20 (Boston, Watertown, Waltham)	x						NW			x	
Rte. 2/Rte. 16 Interchange (Arlington and Cambridge)	x						NW	x		x	
Depress I-93 (Somerville)							NW	x			
I-93/Mystic Ave. Interchange (Somerville)	x						NW			x	\$138.6
Longfellow Bridge (Boston, Cambridge)	x		x		x		NW			x	\$310.0
Extend I-93 HOV Lane into the City (Somerville)							NW	x		x	
I-93 Capacity Improvements (Boston to Braintree)	x						SE			x	
Conley Rail Service (South Boston) (Massport Study)	x						SE			x	
South Boston Roadway Improvements (State Freight Plan)	x						SE			x	\$40.0
T Under D (South Boston) (Massport Study)	x						SE			x	
Track 61 Rail Improvement (Boston) (State Freight Plan)	x						SE	x		x	\$9.5
Port of Boston Improvement Dredging Project (Boston, Chelsea) (State Freight Plan)	x						SE			x	\$308.0
Fenway Park Improvements (Boston)							W	x			\$35.1
Improvements to Commonwealth Ave (Boston)		x					W	x			\$23.0
Reconstruction of Causeway St. (Boston)		x					BP	x			\$10.4
Boylston St. (Boston)							BP	x			\$15.0
Northern Ave. Rd. ways (Boston)							BP	x			
I-90 Bridge Deck Reconstruction - Boston Viaduct*					x		W			x	\$65.0
Sumner Tunnel Plenum/Ceiling Rehab (Boston)*					x		BP			x	\$25.0
<b>LONG RANGE TRANSPORTATION PLAN UNIVERSE OF BICYCLE AND PEDESTRIAN PROJECTS</b>											
Northern Strand (Revere, Saugus, Lynn, Everett, Malden)	x						NE/N		x	x	
Bicycle and Pedestrian Improvements in the vicinity of Forest Hills Sta. (Jamaica Plain)	x						SW				
Border to Boston Trail (Newburyport to Boston)	x						NE	x		x	



CENTRAL AREA HIGHWAY NEEDS EVALUATION	MAINTENANCE, MODERNIZATION AND EFFICIENCY	LIVABILITY AND ECONOMIC BENEFIT	MOBILITY	ENVIRONMENT AND CLIMATE CHANGE	TRANSPORTATION EQUITY	SAFETY AND SECURITY
LONG RANGE TRANSPORTATION PLAN PROJECTS CURRENTLY PROGRAMMED AND/OR UNDER CONSTRUCTION						
LONG RANGE TRANSPORTATION PLAN UNIVERSE OF ROADWAY PROJECTS						
<b>Rte. 1 Add-a-Lane (Malden, Saugus, and Revere)</b>	x	x	x		x	x
I-93 Capacity Improvements (Somerville to Woburn)			x			x
Rte. 16/Revere Beach Parkway Rd. way Improvements (Everett, Medford, and Revere)	x		x		x	x
<b>Sullivan Square (Boston)</b>	x	x	x		x	x
Rte. 60 Improvements (Malden, Medford)	x		x			
Charlestown Haul Rd. (Boston)	x	x	x		x	
<i>Rutherford Ave. (Boston)</i>		x				x
Rte. 1/Rte. 16 Interchange (Revere)	x		x		x	
Rte. 1A/Rte. 16 (Revere)	x		x		x	
Rte. 1A/Chelsea St. Bridge Connection (Boston)	x		x			
Rte. 1A/Boardman St. Grade Separation (Boston)	x		x			
Mahoney Circle Grade Separation (Revere)	x		x		x	x
Rte. 9 Capacity Improvements (Brookline, Newton)	x	x	x			
Rte. 20 (Boston, Watertown, Waltham)	x		x			x
Rte. 2/Rte. 16 Interchange (Arlington and Cambridge)	x		x			x
I-93/Mystic Ave. Interchange (Somerville)	x	x	x		x	
Extend I-93 High-Occupancy Vehicle Lane into the City (Somerville)			x	x		
<b>Longfellow Bridge (Boston, Cambridge)</b>	x					x
I-93 Capacity Improvements (Boston to Braintree)			x			
South Boston Rd. way Improvements (State Freight Plan)		x	x			
Conley Rail Service (South Boston) (Massport Study)		x	x			
T Under D (South Boston) (Massport Study)	x	x	x	x		
Track 61 Rail Improvement (Boston)		x	x			
Port of Boston Improvement Dredging Project	x	x	x			
I-90 Bridge Deck Reconstruction - Boston Viaduct*	x		x			x
Sumner Tunnel Plenum/Ceiling Rehab (Boston)*	x					x
LONG RANGE TRANSPORTATION PLAN UNIVERSE OF BICYCLE AND PEDESTRIAN PROJECTS						
Northern Strand (Revere, Saugus, Lynn, Everett, Malden)		x		x		
Border to Boston Trail (Newburyport to Boston)		x		x		

\* Included as an Illustrative Project in JOURNEY to 2030 BP is Boston Proper

The projects included in this table are those from this corridor’s Highway Universe that meet a Plan identified regional need. An initial evaluation was performed using criteria derived from the MPO’s visions and policies.

Projects that are indicated in **bold**, are projects that were included in the JOURNEY to 2030 Plan as a recommended project or illustrative project.

Projects that are indicated in italics, are projects that were included in the JOURNEY to 2030 Plan but did not address a need identified in the Needs Assessment.

CENTRAL AREA TRANSIT UNIVERSE OF PROJECTS	PMT TRANSIT ENHANCEMENT PROJECT	PMT TRANSIT EXPANSION PROJECT	PMT TRANSIT SGR PROJECT	IN MBTA'S DRAFT FY 2012-2016 CIP SGR LIST	IN MBTA'S DRAFT FY 2012-2016 CIP ENHANCEMENT PROJECT LIST	IN MBTA'S DRAFT FY 2012-2016 CIP EXPANSION PROJECT LIST	TRANSIT PROJECT RECOMMENDED FROM MPO'S CMP	TRANSIT PROJECT IN JOURNEY TO 2030	CORRIDOR(S)	PUBLIC COMMENT	MEETS PLAN IDENTIFIED NEED	COST (IN MILLIONS)
<b>ACCESSIBILITY</b>												
Light Rail Accessibility Program - Boston College Station					x				W/C		x	\$3.0
Light Rail Accessibility Program - Phase II - Surface Stations	x				x				W/C		x	\$5.0
Science Park Station Accessibility	x				x				NW/C		x	\$10.5
<b>COMMUNICATIONS/TECHNOLOGY</b>												
<b>ENHANCEMENTS</b>												
BRT on Bus Route 23, 28, 31, 32, 39	x				x				SW/SE/C		x	
Fairmount Line Improvements Phase II	x				x				SE/C		x	\$45.2
Green Line Improvements (use of 3-car trains)	x								W/C		x	
<b>EXPANSION</b>												
Green Line Extension to Medford Hillside/Union Square		x				x		x	NW/C		x	\$1,120
Urban Ring, Phase 2*		x						x*	All	x	x	\$2,920.3
South Station Track Expansion*								x*	C		x	\$150.0
Silver Line 3*		x						x*	C	x	x	\$1,900.0
North-South Rail Link									C	x	x	
<b>MAINTENANCE FACILITIES</b>												
Orient Heights Maintenance Facility Renovation Phase III				x					NE/C		x	\$7.5
<b>PARKING</b>												
Alewife Garage Improvements	x				x				NW/C		x	\$16.4
Lechmere Parking Improvements	x								NW/C		x	
Parking Capacity Increases at 2 Orange Line Stations	x								SW/C		x	
Parking Capacity Increases at 2 Blue Line Stations	x								NE/C		x	
Wonderland TOD Parking Garage	x				x				NE/C		x	\$52.0
<b>STATIONS</b>												
New Worcester Line Commuter Rail Station in Allston	x								W/C	x	x	
Add Northbound Commuter Rail Platform at Ruggles Station	x								SW/C		x	
Ashmont Station Upgrade Phase II					x				SE/C			\$13.8
Back Bay Station Lobby Ventilation			x	x					SW/C		x	\$1.4
Back Bay Station Roofing Project			x	x					SW/C		x	
Blue Line Platform Rehabilitation				x					NE/C		x	\$3.6
Blue Line Government Center Station Modernization					x				NE/C			\$44.0
Blue Line Orient Heights Station Modernization					x				NE/C			\$23.0
Blue Line Station Infrastructure Improvements					x				NE/C			\$3.5
Dudley Square Station Improvements	x				x				SW/C			\$0.3
Wonderland Transit Plaza					x				NE/C		x	\$13.0
Yawkey Station Enhancements	x				x				W/C			\$9.4

CENTRAL AREA TRANSIT UNIVERSE OF PROJECTS	PMT TRANSIT ENHANCEMENT PROJECT	PMT TRANSIT EXPANSION PROJECT	PMT TRANSIT SGR PROJECT	IN MBTA'S DRAFT FY 2012-2016 CIP SGR LIST	IN MBTA'S DRAFT FY 2012-2016 CIP ENHANCEMENT PROJECT LIST	IN MBTA'S DRAFT FY 2012-2016 CIP EXPANSION PROJECT LIST	TRANSIT PROJECT RECOMMENDED FROM MPO'S CMP	TRANSIT PROJECT IN JOURNEY TO 2030	CORRIDOR(S)	PUBLIC COMMENT	MEETS PLAN IDENTIFIED NEED	COST (IN MILLIONS)
<b>SUPPORT INFRASTRUCTURE</b>												
Boston Midday Commuter Rail Layover*								x	C		x	
Green Line Catenary Replacement			x						W/C		x	
Green Line Power Study				x					W/C		x	\$1.9
Orange Line AC and DC Breaker Upgrade			x	x					SW/C		x	\$40.2
Orange Line Power Improvements			x	x					SW/C		x	\$6.5
Red Line DC Cable Upgrade Phase I Andrew-Kendall			x	x					NW/SE/C		x	\$25.1
Red Line Traction Power Upgrade			x	x					NW/SE/C		x	\$16.4
Trackless Trolley Catenary improvements			x	x					NW/C		x	\$1.2
Trackless Trolley Overhead Replacement			x	x					NW/C		x	\$35.4
<b>TRACK AND SIGNALS</b>												
Columbia Junction Upgrades			x	x					SE/C		x	\$57.9
Grand Junction Reconstruction*								x	NW/C		x	\$10.0
Green Line Frog Replacement Program			x	x					W/C		x	\$5.0
Green Line Grade Crossing Upgrades			x						W/C		x	
Green Line Lechmere Signals			x	x					NW/C		x	\$3.7
Green Line Positive Train Control	x				x				W/C			\$1.1
Green Line Signal Replacement			x						W/C		x	
Green Line Tie Replacement			x						W/C		x	
Orient Heights Track Work			x	x					NE/C		x	\$10.8
Red Line Floating Slab Work			x	x					NW/C		x	\$27.5
Red Line Signal Cable Replacement			x	x					NW/SE/C		x	\$12.4
Red Line Track and Switch Upgrades			x						NW/C		x	
<b>VEHICLES</b>												
Green Line No. 7 Overhaul			x	x							x	\$92.2
Green Line No. 8 Car Upgrades			x	x					W/C		x	\$11.8
New Orange and Red Line Car Design and Engineering			x	x					N/NW/ SW/SE/C		x	\$13.7
New Red and Orange Line Car Procurements			x						N/NW/ SW/SE/C		x	
Red Line No. 1 Car Reinvest.			x	x					NW/SE/C		x	\$6.9
Red Line No. 2 Car Overhaul			x	x					NW/SE/C		x	\$10.6

\* Included as an Illustrative Project

CENTRAL AREA TRANSIT NEEDS EVALUATION	MAINTENANCE, MODERNIZATION AND EFFICIENCY	LIVABILITY AND ECONOMIC BENEFIT	MOBILITY	ENVIRONMENT AND CLIMATE CHANGE	TRANSPORTATION EQUITY	SAFETY AND SECURITY
<b>ACCESSIBILITY</b>						
Light Rail Accessibility Program - Boston College Station	x	x				x
Light Rail Accessibility Program - Phase II - Surface Stations	x	x				x
Science Park Station Accessibility	x	x				x
<b>COMMUNICATIONS/TECHNOLOGY</b>						
<b>ENHANCEMENTS</b>						
BRT on Bus Route 23, 28, 31, 32, 39	x	x	x		x	
Fairmount Line Improvements Phase II		x	x	x	x	
Green Line Improvements (use of 3-car trains)	x		x			
<b>EXPANSION</b>						
Green Line Extension to Medford Hillside/Union Square		x	x	x	x	
Urban Ring, Phase 2*		x	x	x	x	
South Station Track Expansion*		x	x	x		
Silver Line 3*		x	x	x	x	
Maintenance Facilities						
Orient Heights Maintenance Facility Renovation Phase III	x					
<b>PARKING</b>						
Alewife Garage Improvements	x					
Lechmere Parking Improvements	x					
Parking Capacity Increases at 2 Orange Line Stations		x	x	x		
Parking Capacity Increases at 2 Blue Line Stations		x	x	x	x	
Wonderland TOD Parking Garage		x	x	x	x	
<b>STATIONS</b>						
New Worcester Line Commuter Rail Station in Allston		x	x		x	
Add Northbound Commuter Rail Platform at Ruggles Station	x		x		x	
Back Bay Station Lobby Ventilation	x					x
Back Bay Station Roofing Project	x					
Blue Line Platform Rehabilitation	x					
Wonderland Transit Plaza		x			x	
<b>SUPPORT INFRASTRUCTURE</b>						
Boston Midday Commuter Rail Layover*	x					
Green Line Catenary Replacement	x					x
<b>GREEN LINE POWER STUDY</b>						
Orange Line AC and DC Breaker Upgrade	x					
Orange Line Power Improvements	x					
Red Line DC Cable Upgrade Phase I Andrew-Kendall	x					
Red Line Traction Power Upgrade	x					
Trackless Trolley Catenary improvements	x					x
Trackless Trolley Overhead Replacement	x					x
<b>TRACK AND SIGNALS</b>						
Columbia Junction Upgrades	x					x
Grand Junction Reconstruction*	x	x	x	x		
Green Line Frog Replacement Program	x					x
Green Line Grade Crossing Upgrades	x					x

CONT.

CENTRAL AREA TRANSIT NEEDS EVALUATION (CONT.)	MAINTENANCE, MODERNIZATION AND EFFICIENCY	LIVABILITY AND ECONOMIC BENEFIT	MOBILITY	ENVIRONMENT AND CLIMATE CHANGE	TRANSPORTATION EQUITY	SAFETY AND SECURITY
<b>TRACK AND SIGNALS</b>						
Green Line Lechmere Signals	x					x
Green Line Signal Replacement	x					x
Green Line Tie Replacement	x					x
Orient Heights Track Work	x					x
Red Line Floating Slab Work	x					x
Red Line Signal Cable Replacement	x					
Red Line Track and Switch Upgrades	x					x
<b>VEHICLES</b>						
Green Line No. 7 Overhaul	x					
Green Line No. 8 Car Upgrades	x					
<b>NEW ORANGE AND RED LINE CAR DESIGN AND ENGINEERING</b>						
New Red and Orange Line Car Procurements	x					
Red Line No. 1 Car Reinvest.	x					
Red Line No. 2 Car Overhaul	x					

\* Included as an Illustrative Project

The projects included in this table are those from this corridor's Transit Universe that meet a Plan-identified regional need. An initial evaluation was performed using criteria derived from the MPO's visions and policies.



NORTHEAST CORRIDOR HIGHWAY UNIVERSE OF PROJECTS	CTPS CORRIDOR STUDY AND/OR RECOMMENDATION	HIGHWAY PROJECT WITH PRC APPROVAL	PROJECT UNDER MASSDOT ENVIRONMENTAL REVIEW	MAJOR HIGHWAY PROJECT PENDING, ON HOLD OR INACTIVE	PROJECT PROGRAMMED IN JOURNEY TO 2030	CONSTRUCTION FUNDS IN FFYS 2011-14 TIP	PUBLIC COMMENT	MASSDOT CIP HIGH PRIORITY PATH	MEETS PLAN IDENTIFIED NEED	COST (IN MILLIONS)
<b>LONG RANGE TRANSPORTATION PLAN PROJECTS CURRENTLY PROGRAMMED AND/OR UNDER CONSTRUCTION</b>										
Rte. 128/Rte. 35 and Rte. 62 (Danvers)		x			x	x				\$27.1
Consolidated Rental Car Facility Logan Airport (Boston)		x			x					\$337.0
Rte. 16/Revere Beach Pkwy. Bridges (Everett, Medford, and Revere)		x			x	x				\$41.3
East Boston Haul Rd. (Boston)	x			x	x				x	\$19.5
<b>LONG RANGE TRANSPORTATION PLAN UNIVERSE OF ROADWAY PROJECTS</b>										
Rte. 1 add-a-lane (Malden, Saugus, Revere)		x	x		x		x		x	\$175.2
Rte. 1 Capacity Improvements (Lynnfield, Peabody, Saugus)	x								x	
Rte. 1/Rte. 114 Corridor (Danvers, Peabody)							x		x	\$110.9
Rte. 1/Rte. 16 Interchange (Revere)	x								x	\$7.4
Rte. 1A/Rte. 16 (Revere)	x								x	\$109.7
Rte. 1A/Chelsea St. Bridge Connection (Boston)	x								x	
Rte. 1A/Boardman St. Grade Separation (Boston)	x			x					x	\$16.0
Gloucester Rotary (Gloucester)							x			
Rte. 128 Capacity Improvements (Beverly to Peabody)	x								x	
Rte. 16/Revere Beach Pkwy. Roadway Improvements (Everett, Medford, and Revere)							x		x	\$109.5
Mahoney Circle Grade Separation (Revere)				x					x	\$35.6
Commercial St./Tremont St. (Salem)							x			\$0.8
Essex St. Conversion (Salem, Beverly)							x			\$2.3
Rte. 128/Brimbal Ave. Interchange (Beverly)		x		x			x			\$26.0
Rte. 114/I-95 Improvements (Danvers)				x					x	\$68.2
Bridge St. (Salem)	x	x	x		x					\$10.8
<b>LONG RANGE TRANSPORTATION PLAN UNIVERSE OF BICYCLE AND PEDESTRIAN PROJECTS</b>										
Northern Strand (Revere, Saugus, Lynn, Everett, Malden)	x							x	x	
Border to Boston Trail (Newburyport to Boston)	x							x	x	

NORTHEAST CORRIDOR HIGHWAY NEEDS EVALUATION	MAINTENANCE, MODERNIZATION AND EFFICIENCY	LIVABILITY AND ECONOMIC BENEFIT	MOBILITY	ENVIRONMENT AND CLIMATE CHANGE	TRANSPORTATION EQUITY	SAFETY AND SECURITY
LONG RANGE TRANSPORTATION PLAN PROJECTS CURRENTLY PROGRAMMED AND/OR UNDER CONSTRUCTION						
LONG RANGE TRANSPORTATION PLAN UNIVERSE OF ROADWAY PROJECTS						
<b>Rte. 1 Add-a-Lane (Malden, Saugus, and Revere)</b>	x	x	x		x	x
Rte. 1 Capacity Improvements (Lynnfield, Peabody, Saugus)			x			
Rte. 1/Rte. 114 Corridor (Danvers, Peabody)	x		x		x	x
Rte. 1/Rte. 16 Interchange (Revere)	x		x		x	
Rte. 1A/Rte. 16 (Revere)	x		x		x	
Rte. 1A/Chelsea St. Bridge Connection (Boston)	x		x			
Rte. 1A/Boardman St. Grade Separation (Boston)	x		x			
Rte. 128 Capacity Improvements (Beverly to Peabody)			x			x
Rte. 16/Revere Beach Parkway Roadway Improvements (Everett, Medford, and Revere)	x		x		x	x
Mahoney Circle Grade Separation (Revere)	x		x		x	x
Rte. 114/I-95 (128) Improvements (Peabody)			x		x	x
<i>Bridge St. (Salem)</i>		x	x			
Long Range Transportation Plan Universe of Bicycle and Pedestrian Projects						
Northern Strand (Revere, Saugus, Lynn, Everett, Malden)		x		x		
Border to Boston Trail (Newburyport to Boston)		x		x		

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Projects that are indicated in **bold**, are projects that were included in the JOURNEY TO 2030 Plan as a recommended project or illustrative project.

Projects that are indicated in *italics*, are projects that were included in the JOURNEY TO 2030 Plan but did not address a need identified in the Needs Assessment.

NORTHEAST CORRIDOR TRANSIT UNIVERSE OF PROJECTS	PMT TRANSIT ENHANCEMENT PROJECT	PMT TRANSIT EXPANSION PROJECT	PMT TRANSIT SGR PROJECT	IN MBTA'S DRAFT FY 2012- 2016 CIP SGR LIST	IN MBTA'S DRAFT FY 2012- 2016 CIP ENHANCEMENT PROJECT LIST	IN MBTA'S DRAFT FY 2012-2016 CIP EXPANSION PROJECT LIST	TRANSIT PROJECT RECOM- MENDED FROM MPO'S CMP	TRANSIT PROJECT IN JOURNEY TO 2030	PUBLIC COMMENT	MEETS PLAN IDENTIFIED NEED	COST (IN MILLIONS)
	<b>ACCESSIBILITY</b>										
<b>COMMUNICATIONS/TECHNOLOGY</b>											
Enhancements											
BRT on Route 111	x									x	
<b>EXPANSION</b>											
Extend Blue Line to Lynn		x						x*		x	\$782.5
Extend Blue Line from Lynn to Salem									x		
Commuter Rail Line from Salem to Danvers									x		
New Station at South Salem on Rockport/Newburyport Line									x		
Restore East Boston Ferry									x		
Wonderland Connector (Revere)									x		
<b>MAINTENANCE FACILITIES</b>											
Newburyport Layover Facility Ventilation Fans			x							x	
Orient Heights Maintenance Facility Renovation Phase III				x						x	\$7.5
<b>PARKING</b>											
Beverly Parking Garage Improvements	x				x						\$16.0
Parking Capacity Increases at 4 Commuter Rail Stations	x									x	
Parking Capacity Increases at 2 Blue Line Stations	x									x	
Salem Parking Garage Improvements	x				x						\$28.0
Wonderland TOD Parking Garage	x				x			x		x	\$52.0
<b>STATIONS</b>											
Blue Line Platform Rehabilitation				x							\$3.6
Blue Line Government Center Station Modernization					x						\$44.0
Blue Line Orient Heights Station Modernization					x						\$23.0
Blue Line Station Infrastructure Improvements					x						\$3.5
Rockport Station Improvements	x				x						\$0.5
Wonderland Transit Plaza					x					x	\$13.0
<b>SUPPORT INFRASTRUCTURE</b>											
Beverly Draw Bridge Rehabilitation			x	x						x	\$6.6
Track and Signals											
Newburyport/Rockport Line Signal Upgrades			x								
Orient Heights Track Work			x	x						x	\$10.8
<b>VEHICLES</b>											

\* Included as an Illustrative Project

NORTHEAST CORRIDOR TRANSIT NEEDS EVALUATION	MAINTENANCE MODERNIZATION AND EFFICIENCY	LIVABILITY AND ECONOMIC BENEFIT	MOBILITY	ENVIRONMENT AND CLIMATE CHANGE	TRANSPORTATION EQUITY	SAFETY AND SECURITY
<b>ACCESSIBILITY</b>						
<b>COMMUNICATIONS/TECHNOLOGY</b>						
<b>ENHANCEMENTS</b>						
BRT on Route 111	x	x	x		x	
<b>EXPANSION</b>						
<b>Extend Blue Line to Lynn*</b>		x	x	x	x	
<b>MAINTENANCE FACILITIES</b>						
Newburyport Layover Facility Ventilation Fans	x					
Orient Heights Maintenance Facility Renovation Phase III	x					
<b>PARKING</b>						
Parking Capacity Increases at 4 Commuter Rail Stations		x	x	x		
Parking Capacity Increases at 2 Blue Line Stations		x	x	x	x	
<b>Wonderland TOD Parking Garage</b>		x	x	x	x	
<b>STATIONS</b>						
Wonderland Transit Plaza		x			x	
<b>SUPPORT INFRASTRUCTURE</b>						
Beverly Draw Bridge Rehabilitation	x		x			x
<b>TRACK AND SIGNALS</b>						
Orient Heights Track Work	x					x
<b>VEHICLES</b>						

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NORTH CORRIDOR HIGHWAY UNIVERSE OF PROJECTS	CTPS CORRIDOR STUDY AND/OR RECOMMENDATION, OR OTHER STUDY	HWY. PROJECT WITH PRC APPROVAL	PROJECT UNDER MASSDOT ENVIRONMENTAL REVIEW	MAJOR HWY. PROJECT PENDING, ON HOLD OR INACTIVE	PROJECT PROGRAMMED IN JOURNEY TO 2030	CONSTRUCTION FUNDS IN FFYS 2011-14 TIP	PUBLIC COMMENT	MASSDOT CIP HIGH PRIORITY PATH	MEETS PLAN IDENTIFIED NEED	COST (IN MILLIONS)
<b>LONG RANGE TRANSPORTATION PLAN PROJECTS CURRENTLY PROGRAMMED AND/OR UNDER CONSTRUCTION</b>										
Rte. 16/Revere Beach Pkwy. Bridges (Everett, Medford, and Revere)		x			x	x				\$41.3
<b>LONG RANGE TRANSPORTATION PLAN UNIVERSE ROADWAY PROJECTS</b>										
I-93/I-95 Interchange (Woburn, Reading, Stoneham, and Wakefield)		x	x		x		x		x	\$276
Rte. 1 Add-a-Lane (Malden, Saugus, and Revere)		x	x		x		x		x	\$175.2
Middlesex Turnpike Phase III (Bedford, Burlington, Billerica)		x	x		x		x		x	\$20.8
I-93/Rte. 129 Interchange Improvements (Wilmington and Reading)				x						\$20.5
I-93 Capacity Improvements (Somerville to Woburn)	x								x	
Rte. 16/Revere Beach Pkwy. Roadway Improvements (Everett, Medford, and Revere)							x		x	\$109.5
I-93/Rte. 125/Ballardvale Rd. (Wilmington)		x		x						
Tri Town I-93/Lowell Junction Interchange (Andover, Tewksbury, and Wilmington)		x	x				x			
New Boston Street Bridge (Woburn)		x			x		x			\$4.9
Montvale Ave. (Woburn)		x			x		x			\$3.7
Telecom City Boulevard (Everett, Malden, and Medford)							x			\$17.8
Rte. 128 Capacity Improvements (Lynnfield to Reading)	x								x	
Rte. 128 HOV (Wellesley to Woburn)	x								x	
Rte. 16/I-93 Connection (Medford)							x			\$20.8
Cambridge Street Improvements (Burlington, Woburn, Winchester)	x						x		x	\$4.3
Sullivan Sq. (Boston)	x	x			x		x		x	\$43.3
Rutherford Ave. (Boston)	x	x			x		x			\$49.2
Charlestown Haul Rd. (Boston)	x						x		x	
Rte. 60 Improvements (Malden, Medford)	x								x	
<b>LONG RANGE TRANSPORTATION PLAN UNIVERSE OF BICYCLE AND PEDESTRIAN PROJECTS</b>										
Northern Strand (Revere, Saugus, Lynn, Everett, Malden)	x							x	x	



NORTH CORRIDOR HIGHWAY NEEDS EVALUATION	MAINTENANCE, MODERNIZATION AND EFFICIENCY	LIVABILITY AND ECONOMIC BENEFIT	MOBILITY	ENVIRONMENT AND CLIMATE CHANGE	TRANSPORTATION EQUITY	SAFETY AND SECURITY
<b>LONG RANGE TRANSPORTATION PLAN PROJECTS CURRENTLY PROGRAMMED AND/OR UNDER CONSTRUCTION</b>						
<b>LONG RANGE TRANSPORTATION PLAN UNIVERSE OF ROADWAY PROJECTS</b>						
<b>I-93/I-95 Interchange (Woburn, Reading, Stoneham, and Wakefield)</b>	x		x			x
<b>Rte. 1 Add-a-Lane (Malden, Saugus, and Revere)</b>	x	x	x		x	x
<b>Middlesex Turnpike Phase III (Bedford, Burlington, Billerica)</b>	x	x	x			x
<i>I-93 Capacity Improvements (Somerville to Woburn)</i>			x			x
<i>Rte. 16/Revere Beach Pkwy. Roadway Improvements (Everett, Medford, and Revere)</i>	x		x		x	x
<i>Rte. 128 Capacity Improvements (Lynnfield to Reading)</i>			x			x
<i>Rte. 128 HOV (Wellesley to Woburn)</i>			x	x		
<i>Cambridge Street Improvements (Burlington, Woburn, Winchester)</i>			x			
<b>Sullivan Sq. (Boston)</b>	x	x	x		x	x
<i>Rte. 60 Improvements (Malden, Medford)</i>	x		x			
<i>Charlestown Haul Rd. (Boston)</i>	x	x	x		x	
<i>New Boston Street Bridge (Woburn)</i>			x			
<i>Montvale Ave. (Woburn)</i>			x			
<i>Rutherford Ave. (Boston)</i>		x				x
<b>LONG RANGE TRANSPORTATION PLAN UNIVERSE OF BICYCLE AND PEDESTRIAN PROJECTS</b>						
<i>Northern Strand (Revere, Saugus, Lynn, Everett, Malden)</i>		x		x		

The projects included in this table are those from this corridor’s Highway Universe that meet a Plan-identified regional need. An initial evaluation was performed using criteria derived from the MPO’s visions and policies.

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Projects that are indicated in italics, are projects that were included in the JOURNEY TO 2030 Plan but did not address a need identified in the Needs Assessment.

NORTH CORRIDOR TRANSIT UNIVERSE OF PROJECTS	PMT TRANSIT ENHANCEMENT PROJECT	PMT TRANSIT EXPANSION PROJECT	PMT TRANSIT SGR PROJECT	IN MBTA'S DRAFT FY 2012-2016 CIP SGR LIST	IN MBTA'S DRAFT FY 2012-2016 CIP ENHANCEMENT PROJECT LIST	IN MBTA'S DRAFT FY 2012-2016 CIP EXPANSION PROJECT LIST	TRANSIT PROJECT RECOMMENDED FROM MPO'S CMP	TRANSIT PROJECT IN JCURRENT LRTP	PUBLIC COMMENT	MEETS PLAN IDENTIFIED NEED	COST (IN MILLIONS)
	<b>ACCESSIBILITY</b>										
Station Elevator/Escalator Replacement and Modernization Program					x					x	\$118.4
Wedgemere Station access					x					x	\$1.3
<b>COMMUNICATIONS/TECHNOLOGY</b>											
Automated Fair Collection, Phase II (CharlieCards on commuter rail)					x						\$10.0
<b>ENHANCEMENTS</b>											
Improved Bus Amenities and System Identity for Bus Routes Centered on Malden	x									x	
<b>EXPANSION</b>											
Green Line Ext. College Ave to Route 16		x				x		x		x	\$136.6
Lowell Commuter Rail Line Ext. (Nashua/Manchester)		x								x	
Urban Ring, Phase 2*		x						x*	x	x	\$2,920.3
Extend Blue Line from Bowdoin to West Medford									x		
Orange Line North Ext. from Oak Grove to Reading/Route 128									x		
<b>MAINTENANCE FACILITIES</b>											
Move Bradford Layover Facility on Haverhill Line with Plaistow Ext.		x								x	
Wellington Maintenance Facility Improvements				x						x	
<b>PARKING</b>											
<b>STATIONS</b>											
Rapid transit station midlife rehab upgrades				x						x	\$12.1
Winchester Station Renovation				x						x	
<b>SUPPORT INFRASTRUCTURE</b>											
Haverhill Line (Andover Station) - Bike Signage and Shelter							x				
Haverhill Line (Bradford Station) - Bike Signage							x				
Lowell Line (Lowell Station) - Bike Racks and Shelter							x				
Lowell Line (Winchester Center Station) - Bike Racks							x				
Merrimack River Bridge Rehab				x						x	\$8.6
Orange Line (Oak Grove Station) - Bike Shelter Improvements							x				
Orange Line Power Improvements					x					x	\$6.5
Rehab of Three Shawsheen River Bridges				x						x	\$13.1
<b>TRACK AND SIGNALS</b>											
Haverhill Line Double Tracking	x									x	\$17.0
Additional Haverhill Line Double Tracking					x					x	\$9.7
Orange Line North Signal System Upgrade					x					x	
<b>VEHICLES</b>											
Orange Line Car Procurement			x							x	

\* Included as an Illustrative Project

NORTH CORRIDOR TRANSIT NEEDS EVALUATION	MAINTENANCE, MODERNIZATION AND EFFICIENCY	LIVABILITY AND ECONOMIC BENEFIT	MOBILITY	ENVIRONMENT AND CLIMATE CHANGE	TRANSPORTATION EQUITY	SAFETY AND SECURITY
	<b>ACCESSIBILITY</b>					
Station Elevator/Escalator Replacement and Modernization Program	X					X
Wedgemere Station access	X	X				X
<b>COMMUNICATIONS/TECHNOLOGY</b>						
<b>ENHANCEMENTS</b>						
Improved Bus Amenities and System Identity for Bus Routes Centered on Malden	X	X			X	
<b>EXPANSION</b>						
<b>Green Line Ext. College Ave to Route 16</b>		<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	
Lowell Commuter Rail Line Ext. (Nashua/Manchester)			X	X		
<b>Urban Ring, Phase 2*</b>		<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	
<b>MAINTENANCE FACILITIES</b>						
Move Bradford Layover Facility on Haverhill Line with Plaistow Ext.	X					
Wellington Maintenance Facility Improvements	X					
<b>PARKING</b>						
<b>STATIONS</b>						
Rapid transit station midlife rehab upgrades	X					X
Winchester Station Renovation	X					
<b>SUPPORT INFRASTRUCTURE</b>						
Merrimack River Bridge Rehab	X					X
Orange Line Power Improvements	X					
Rehab of Three Shawsheen River Bridges	X					X
<b>TRACK AND SIGNALS</b>						
Haverhill Line Double Tracking	X		X	X		
Additional Haverhill Line Double Tracking	X		X	X		
Orange Line North Signal System Upgrade	X					X
<b>VEHICLES</b>						
Orange Line Car Procurement	X					X

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\* Included as an Illustrative Project

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NORTHWEST CORRIDOR HIGHWAY UNIVERSE OF PROJECTS	CTPS CORRIDOR STUDY AND/OR RECOMMENDATION	HIGHWAY PROJECT WITH PRC APPROVAL	PROJECT UNDER MASSDOT ENVIRONMENTAL REVIEW	MAJOR HIGHWAY PROJECT PENDING, ON HOLD OR INACTIVE	PROJECT PROGRAMMED IN JOURNEY TO 2030	CONSTRUCTION FUNDS IN FFYS 2011-14 TIP	PUBLIC COMMENT	MASSDOT CIP HIGH PRIORITY PATH	MEETS PLAN IDENTIFIED NEED	COST (IN MILLIONS)
	<b>FORMER LONG RANGE TRANSPORTATION PLAN PROJECTS CURRENTLY PROGRAMMED AND/OR UNDER CONSTRUCTION</b>									
Crosby's Corner (Concord and Lincoln)		x	x		x	x	x			\$65.1
Assembly Square Roadway Improvements (Somerville)		x			x	x	x			\$15.4
<b>FORMER LONG RANGE TRANSPORTATION PLAN UNIVERSE OF ROADWAY PROJECTS</b>										
Middlesex Turnpike Phase III (Bedford, Billerica, Burlington)		x	x		x		x		x	\$20.8
Trapelo Road (Belmont)		x			x		x			\$11.5
McGrath Highway-Gilman St. Bridge (Somerville)	x						x			
Rte. 20 (Boston, Watertown, Waltham)	x								x	
Rte. 128 HOV (Wellesley to Woburn)	x								x	
Concord Rotary/Rte. 2 (Concord)*	x	x		x	x*		x		x	\$43.3
Rte. 2 Interchange (Littleton)							x		x	
Rte. 2/Rte. 16 Interchange (Arlington and Cambridge)	x						x		x	
Rte. 2 Capacity Improvements (Acton to Lexington)	x								x	
Wiggins Ave. Extension (Bedford)							x			
Depress I-93 (Somerville)							x			
I-93/Mystic Ave. Interchange (Somerville)	x								x	\$138.6
Longfellow Bridge (Boston, Cambridge)	x		x		x				x	\$310.0
Extend I-93 High-Occupancy Vehicle Lane into the City (Somerville)							x		x	
I-495 Capacity Improvements (Littleton to Wrentham)	x						x			
<b>FORMER LONG RANGE TRANSPORTATION PLAN UNIVERSE OF BICYCLE AND PEDESTRIAN PROJECTS</b>										
Bruce Freeman Rail Trail		x			x		x	x	x	\$18.7
Assabet River Rail Trail		x			x		x		x	\$18.1
Somerville Community Path (Somerville)**		x**				x**	x	x	x	

\* Included as an Illustrative Project.

\*\* Phase I of Somerville Community Path only

NORTHWEST CORRIDOR HIGHWAY NEEDS EVALUATION	MAINTENANCE, MODERNIZATION AND EFFICIENCY	LIVABILITY AND ECONOMIC BENEFIT	MOBILITY	ENVIRONMENT AND CLIMATE CHANGE	TRANSPORTATION EQUITY	SAFETY AND SECURITY
	FORMER LONG RANGE TRANSPORTATION PLAN PROJECTS CURRENTLY PROGRAMMED AND/OR UNDER CONSTRUCTION					
FORMER LONG RANGE TRANSPORTATION PLAN UNIVERSE OF ROADWAY PROJECTS						
<b>Middlesex Turnpike Phase III (Bedford, Billerica, Burlington)</b>	X	X	X			X
Rte. 20 (Boston, Watertown, Waltham)	X		X			X
Rte. 128 HOV (Wellesley to Woburn)			X	X		
<b>Concord Rotary/Rte. 2 (Concord)*</b>	X		X			X
Rte. 2 Interchange (Littleton)			X			
Rte. 2/Rte. 16 Interchange (Arlington and Cambridge)	X		X			X
Rte. 2 Capacity Improvements (Acton to Lexington)			X			
I-93/Mystic Ave. Interchange (Somerville)	X	X	X		X	
Extend I-93 High-Occupancy Vehicle Lane into the City (Somerville)			X	X		
<b>Longfellow Bridge (Boston, Cambridge)</b>	X					X
<i>Trapelo Road (Belmont)</i>	X	X		X		X
FORMER LONG RANGE TRANSPORTATION PLAN UNIVERSE OF BICYCLE AND PEDESTRIAN PROJECTS						
<b>Bruce Freeman Rail Trail</b>		X		X		
<b>Assabet River Rail Trail</b>		X		X		
Somerville Community Path (Somerville)		X		X	X	

\* Included as an Illustrative Project in JOURNEY to 2030.

The projects included in this table are those from this corridor's Highway Universe that meet a Plan-identified regional need. An initial evaluation was performed using criteria derived from the MPO's visions and policies.

Projects that are indicated in **bold**, are projects that were included in the JOURNEY to 2030 Plan as a recommended project or illustrative project.

Projects that are indicated in *italics*, are projects that were included in the JOURNEY to 2030 Plan but did not address a need identified in the Needs Assessment.



NORTHWEST CORRIDOR TRANSIT UNIVERSE OF PROJECTS	PMT TRANSIT ENHANCEMENT PROJECT	PMT TRANSIT EXPANSION PROJECT	PMT TRANSIT SGR PROJECT	IN MBTA'S DRAFT FY 2012- 2016 CIP SGR LIST	IN MBTA'S DRAFT FY 2012- 2016 CIP ENHANCEMENT PROJECT LIST	IN MBTA'S DRAFT FY 2012-2016 CIP EXPANSION PROJECT LIST	TRANSIT PROJECT RECOMMENDED FROM MPO'S CMP	TRANSIT PROJECT IN JOURNEY TO 2030	PUBLIC COMMENT	MEETS PLAN IDENTIFIED NEED	COST (IN MILLIONS)
	<b>ACCESSIBILITY</b>										
Science Park Station Accessibility	x				x					x	\$10.5
<b>COMMUNICATIONS/TECHNOLOGY</b>											
<b>ENHANCEMENTS</b>											
Fitchburg Line Improvements	x				x						\$90.1
BRT on Routes 1,71,73,77										x	
<b>EXPANSION</b>											
Green Line Extension to Medford Hillside/Union Square		x				x		x		x	\$949.8
New Orange Line Station at Assembly Square	x							x		x	\$53.0
Red Line Extension to Arlington/Lexington		x									
Fitchburg Line Extension to Gardner		x								x	
Build New Busways to Alewife Station (Cambridge)										x	
Connect Fitchburg Commuter Rail with Red Line at Alewife										x	
Extend Trackless Trolley #71 from Watertown to Newton Corner										x	
<b>MAINTENANCE FACILITIES</b>											
<b>PARKING</b>											
Alewife Garage Improvements	x				x					x	\$16.4
Lechmere Parking Improvements	x									x	
Parking Improvements at 11 Commuter Rail Stations	x									x	
<b>STATIONS</b>											
<b>SUPPORT INFRASTRUCTURE</b>											
Red Line Traction Power Upgrade			x	x						x	\$16.4
Red Line DC Cable Upgrade Phase I, Andrew-Kendall			x	x						x	\$25.1
Trackless Trolley Overhead Replacement			x	x						x	\$35.4
Trackless Trolley Catenary Improvements			x	x						x	\$1.2
Fitchburg Line Main Street Bridge Repair in Concord			x	x						x	\$6.2
Fitchburg Line Red Bridge Replacement			x	x						x	\$10.0
Fitchburg Line Layover Facility Upgrades			x							x	
<b>TRACK AND SIGNALS</b>											
Grand Junction Reconstruction*								x			\$10
Red Line Signal Cable Replacement			x	x						x	\$12.4
Red Line Track and Switch Upgrades			x							x	
Green Line Lechmere Signals			x	x						x	\$3.7
Fitchburg Line Interlocking Project	x				x						\$2.3
Fitchburg Line Double Tracking		x			x					x	\$15.9
Red Line Floating Slab Work			x	x						x	\$27.5
<b>VEHICLES</b>											
Red Line No. 1 Car Reinvestment			x	x						x	\$6.9
Red Line No. 2 Car Overhaul			x	x						x	\$10.6
New Red Line Car Design and Engineering			x	x						x	\$13.7
New Red Line Car Procurement			x							x	

\*Included an an Illustrative Project in JOURNEY to 2030

NORTHWEST CORRIDOR TRANSIT NEEDS EVALUATION	MAINTENANCE, MODERNIZATION AND EFFICIENCY	LIVABILITY AND ECONOMIC BENEFIT	MOBILITY	ENVIRONMENT AND CLIMATE CHANGE	TRANSPORTATION EQUITY	SAFETY AND SECURITY
<b>ACCESSIBILITY</b>						
Science Park Station Accessibility	x	x				x
<b>COMMUNICATIONS/TECHNOLOGY</b>						
<b>ENHANCEMENTS</b>						
BRT on Routes 1,71,73,77	x	x	x		x	
<b>EXPANSION</b>						
<b>Green Line Extension to Medford Hillside/Union Square</b>		<b>x</b>	<b>x</b>	<b>x</b>	<b>x</b>	
<b>New Orange Line Station at Assembly Square</b>		<b>x</b>	<b>x</b>	<b>x</b>	<b>x</b>	
<b>MAINTENANCE FACILITIES</b>						
<b>PARKING</b>						
Alewife Garage Improvements	x					
Lechmere Parking Improvements	x					
Parking Expansion at 11 Commuter Rail Stations	x		x			
<b>STATIONS</b>						
<b>SUPPORT INFRASTRUCTURE</b>						
Grand Junction Reconstruction*	x	x	x	x		
Red Line Traction Power Upgrade	x					
Red Line DC Cable Upgrade Phase I, Andrew-Kendall	x					
Trackless Trolley Overhead Replacement	x					x
Trackless Trolley Catenary Improvements	x					x
Fitchburg Line Main Street Bridge Repair in Concord	x					x
Fitchburg Line Red Bridge Replacement	x					x
Fitchburg Line Layover Facility Upgrades	x					
<b>TRACK AND SIGNALS</b>						
Red Line Signal Cable Replacement	x					
Red Line Track and Switch Upgrades	x					x
Green Line Lechmere Signals	x					x
Fitchburg Line Double Tracking	x		x	x		
Red Line Floating Slab Work	x					x
<b>VEHICLES</b>						
Red Line No. 1 Car Reinvestment	x					
Red Line No. 2 Car Overhaul	x					
New Red Line Car Design and Engineering						
New Red Line Car Procurement	x					

\* Included as an Illustrative Project in JOURNEY TO 2030

The projects included in this table are those from this corridor's Transit Universe that meet a Plan-identified regional need. An initial evaluation was performed using criteria derived from the MPO's visions and policies.

Projects that are indicated in **bold**, are projects that were included in the JOURNEY TO 2030 Plan.

WEST CORRIDOR HIGHWAY UNIVERSE OF PROJECTS	CTPS CORRIDOR STUDY AND/ OR RECOMMENDATION	HIGHWAY PROJECT WITH PRC APPROVAL	PROJECT UNDER MASSDOT ENVIRONMENTAL REVIEW	MAJOR HIGHWAY PROJECT PENDING, ON HOLD OR INACTIVE	PROJECT PROGRAMMED IN JOURNEY TO 2030	CONSTRUCTION FUNDS IN FPYS 2011-14 TIP	PUBLIC COMMENT	MASSDOT CIP HIGH PRIORITY PATH	MEETS PLAN IDENTIFIED NEED	COST (IN MILLIONS)
<b>FORMER LONG RANGE TRANSPORTATION PLAN PROJECTS CURRENTLY PROGRAMMED AND/OR UNDER CONSTRUCTION</b>										
Rte. 128 Additional Lanes (Randolph to Wellesley)		x			x	x				\$16.7
Rte. 85 (Washington St.) Upgrade (Hudson)		x			x	x	x			\$10.7
Resurfacing and related work on Rte. 9 (Framingham and Natick)		x			x					\$12.0
<b>FORMER LONG RANGE TRANSPORTATION PLAN UNIVERSE OF ROADWAY PROJECTS</b>										
Rte. 126/Rte. 135 Grade Separation (Framingham)			x		x		x		x	\$58.5
Needham St./Highland Ave. (Newton)		x			x		x		x	\$18.4
Rte. 126 (Bellingham to Framingham)	x								x	
Rte. 9/Rte. 126 Interchange (Framingham)							x		x	
I-495/I-290/Rte. 85 Interchange (Marlborough, Hudson)*		x		x	x*		x		x	\$37.4
Boundary St./Goddard St. (Marlborough, Northborough)		x					x			\$3.5
Rte. 128 HOV (Wellesley to Woburn)	x								x	
Rte. 135 Grade Separation (Ashland)									x	
Rte. 9/Temple St. (Framingham)									x	
I-495/South St. New Interchange (Hopkinton)							x			
New Rte. 128 Ramp to Riverside Station (Newton)							x			
Rte. 16/27 (Sherborn)		x					x			
Rte. 9/I-495 Interchange (Westborough)							x			
I-495 Capacity Improvements (Littleton to Wrentham)	x						x			
I-90/Interchange 17 (Newton)	x									
I-95/Kendrick St. Interchange (Needham)										
Rte. 30/I-90 Interchange (Weston)							x			
Rte. 9/Rte. 27 (Natick)		x					x		x	\$20.7
Rte. 9 Capacity Improvements (Brookline, Newton)	x						x		x	
Fenway Park Improvements (Boston)							x			\$35.1
I-90 Bridge Deck Reconstruction - Boston Viaduct*					x					\$65.0
I-90 Bridge Deck Widening/Reconstruction over I-95 and Charles River*					x					\$45.0
<b>FORMER LONG RANGE TRANSPORTATION PLAN UNIVERSE OF BICYCLE AND PEDESTRIAN PROJECTS</b>										
Assabet River Rail Trail (Hudson to Acton)		x			x		x		x	\$18.1
Cordaville Road/Rte. 85 Rehabilitation (Southborough)										

\* Included as an Illustrative Project in JOURNEY to 2030

WEST CORRIDOR HIGHWAY NEEDS EVALUATION	MAINTENANCE, MODERNIZATION AND EFFICIENCY	LIVABILITY AND ECONOMIC BENEFIT	MOBILITY	ENVIRONMENT AND CLIMATE CHANGE	TRANSPORTATION EQUITY	SAFETY AND SECURITY
<b>FORMER LONG RANGE TRANSPORTATION PLAN PROJECTS CURRENTLY PROGRAMMED AND/OR UNDER CONSTRUCTION</b>						
<b>FORMER LONG RANGE TRANSPORTATION PLAN UNIVERSE OF ROADWAY PROJECTS</b>						
<b>Rte. 126/Rte. 135 Grade Separation (Framingham)</b>	X	X	X	X	X	X
<b>Needham St. /Highland Ave. (Newton)</b>	X	X	X			
Rte. 126 (Bellingham to Framingham)	X	X	X			
Rte. 9/Rte. 126 Interchange (Framingham)	X		X			
<b>I-495/I-290/Rte. 85 Interchange (Marlborough, Hudson)*</b>	X		X			X
Rte. 128 HOV (Wellesley to Woburn)			X	X		
Rte. 135 Grade Separations (Ashland)	X		X			X
Rte. 9/Temple St. (Framingham)	X		X			
Rte. 9/Rte. 27 (Natick)	X		X			X
Rte. 9 Capacity Improvements (Brookline, Newton)	X	X	X			
I-90 Bridge Deck Reconstruction - Boston Viaduct*	X		X			X
I-90 Bridge Deck Widening/Reconstruction over I-95 and Charles River*	X					X
<b>FORMER LONG RANGE TRANSPORTATION PLAN UNIVERSE OF BICYCLE AND PEDESTRIAN PROJECTS</b>						
<b>Assabet River Rail Trail (Hudson to Acton)</b>		X		X		

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The projects included in this table are those from this corridor’s Highway Universe that meet a Plan-identified regional need. An initial evaluation was performed using criteria derived from the MPO’s visions and policies.

Projects that are indicated in **bold**, are projects that were included in the JOURNEY TO 2030 Plan as a recommended project or illustrative project.

WEST CORRIDOR TRANSIT UNIVERSE OF PROJECTS	PMT TRANSIT ENHANCEMENT PROJECT	PMT TRANSIT EXPANSION PROJECT	PMT TRANSIT SGR PROJECT	IN MBTA'S DRAFT FY 2012-2016 CIP SGR LIST	IN MBTA'S DRAFT FY 2012-2016 CIP ENHANCEMENT PROJECT LIST	IN MBTA'S DRAFT FY 2012-2016 CIP EXPANSION PROJECT LIST	TRANSIT PROJECT RECOM- MENDED FROM MPO'S CMP	TRANSIT PROJECT IN JOURNEY TO 2030	PUBLIC COMMENT	MEETS PLAN IDENTIFIED NEED	COST (IN MILLIONS)
<b>ACCESSIBILITY</b>											
Light Rail Accessibility Program - Boston College Station					x					x	\$3.0
Light Rail Accessibility Program - Phase II - Surface Stations	x				x					x	\$5.0
<b>ENHANCEMENTS</b>											
Green Line Improvements (use of 3-car trains)	x									x	
BRT on Route 57	x									x	
Worcester Commuter Rail Improvements	x									x	
<b>EXPANSION</b>											
Green Line D Branch Extension to Needham Junction Commuter Rail Station		x								x	
New Worcester Line Commuter Rail Station in Allston	x									x	x
Silver Line West Extension to Allston and Longwood Medical Area (Boston)										x	
Commuter Rail Station on I-495 in MetroWest Area (Westborough)										x	
Commuter Rail from Framingham to Leominster										x	
Orange Line Extension from Forest Hills to Needham										x	x
Operate High Frequency Service from Riverside to South Station and JFK Station										x	
<b>MAINTENANCE FACILITIES</b>											
Riverside Car House Improvements				x						x	\$4.3
<b>PARKING</b>											
Parking improvements at 13 Commuter Rail Stations	x									x	
Parking improvements at 3 Green Line Stations	x									x	
<b>STATIONS</b>											
Yawkey Station Enhancements	x				x						\$9.4
Support Infrastructure											
Green Line Catenary Replacement			x							x	
Green Line Power Study				x						x	\$1.9
<b>TRACK AND SIGNALS</b>											
Green Line Frog Replacement Program			x	x						x	\$5.0
Green Line Grade Crossing Upgrades			x							x	
Green Line Positive Train Control	x				x						\$1.1
Green Line Signal Replacement			x							x	
Green Line Tie Replacement			x							x	
Worcester Commuter Rail Signal Improvements	x									x	
<b>VEHICLES</b>											
Green Line No. 7 Car Overhaul			x	x						x	\$92.2
Green Line No. 8 Car Upgrades			x	x						x	\$11.8



WEST CORRIDOR TRANSIT NEEDS EVALUATION	MAINTENANCE, MODERNIZATION AND EFFICIENCY	LIVABILITY AND ECONOMIC BENEFIT	MOBILITY	ENVIRONMENT AND CLIMATE CHANGE	TRANSPORTATION EQUITY	SAFETY AND SECURITY
<b>ACCESSIBILITY</b>						
Light Rail Accessibility Program - Boston College Station	x	x				x
Light Rail Accessibility Program - Phase II - Surface Stations	x	x				x
<b>ENHANCEMENTS</b>						
Green Line Improvements (use of 3-car trains)	x		x			
BRT on Route 57	x	x	x		x	
Worcester Commuter Rail Improvements	x		x	x		
<b>EXPANSION</b>						
New Worcester Line Commuter Rail Station in Allston		x	x		x	
Orange Line Extension from Forest Hills to Needham			x			
<b>MAINTENANCE FACILITIES</b>						
Riverside Car House Improvements	x					
<b>PARKING</b>						
Parking improvements at 13 Commuter Rail Stations	x		x			
Parking improvements at 3 Green Line Stations	x		x			
<b>STATIONS</b>						
<b>SUPPORT INFRASTRUCTURE</b>						
Green Line Catenary Replacement	x					x
Green Line Power Study						
<b>TRACK AND SIGNALS</b>						
Green Line Frog Replacement Program	x					x
Green Line Grade Crossing Upgrades	x					x
Green Line Signal Replacement	x					x
Green Line Tie Replacement	x					x
Worcester Commuter Rail Signal Improvements	x					x
<b>VEHICLES</b>						
Green Line No. 7 Car Overhaul	x					
Green Line No. 8 Car Upgrades	x					

The projects included in this table are those from this corridor's Transit Universe that meet a Plan-identified regional need. An initial evaluation was performed using criteria derived from the MPO's visions and policies.

SOUTHWEST CORRIDOR HIGHWAY UNIVERSE OF PROJECTS	CTPS CORRIDOR STUDY AND/OR RECOMMENDATION	HIGHWAY PROJECT WITH PRC APPROVAL	PROJECT UNDER MASSDOT ENVIRONMENTAL REVIEW	MAJOR HIGHWAY PROJECT PENDING, ON HOLD OR INACTIVE	PROJECT PROGRAMMED IN JOURNALLY TO 2030	CONSTRUCTION FUNDS IN FFYS 2011-14 TIP	PUBLIC COMMENT	MASSDOT CIP HIGH PRIORITY PATH	MEETS PLAN IDENTIFIED NEED	COST
<b>FORMER LONG RANGE TRANSPORTATION PLAN PROJECTS CURRENTLY PROGRAMMED AND/OR UNDER CONSTRUCTION</b>										
Rte. 128 Additional Lanes (Randolph to Wellesley)		x			x	x				\$167.7
Pulaski Blvd (Bellingham)		x			x					\$9.5
<b>FORMER LONG RANGE TRANSPORTATION PLAN UNIVERSE OF ROADWAY PROJECTS</b>										
I-95/I-93 Interchange (Canton)	x	x	x		x		x		x	\$235.5
I-95 Northbound/Dedham St. Ramp/Dedham St. Corridor (Dedham)	x	x			x		x		x	\$35
Rte. 126 (Corridorwide) (meets need in Bellingham)							x		x	
Rte. 27 (Corridorwide) (meets need in Sharon)							x		x	
Rte. 1 Intersection Signalization (Corridorwide)	x						x		x	
Rte. 138 (Canton, Milton, Stoughton)	x								x	
Rte. 1 South (Dedham, Norwood, Westwood, West Roxbury)	x								x	
I-95 Capacity Improvements (Canton to Foxborough)	x								x	
I-495 Capacity Improvements (Littleton to Wrentham)	x						x			
Rte. 24/I-93 Interchange (Randolph)	x						x		x	
Veteran's Memorial Dr. Ext./Rte. 16 Bypass (Milford)							x		x	\$5.0
Rte. 109 (Medway)		x					x			\$10.9
East-West Connector Road (Canton)							x			\$8.0
<b>FORMER LONG RANGE TRANSPORTATION PLAN UNIVERSE OF BICYCLE AND PEDESTRIAN PROJECTS</b>										
Bicycle and Pedestrian Improvements in the vicinity of Forest Hills Station (Jamaica Plain)	x									
Bicycle and Pedestrian Improvements in the vicinity of Norfolk Commuter Rail (Norfolk)	x									
Bicycle and Pedestrian Improvements in downtown Franklin (Franklin)	x									

SOUTHWEST CORRIDOR HIGHWAY NEEDS ASSESSMENT	MAINTENANCE MODERNIZATION AND EFFICIENCY	LIVABILITY AND ECO- NOMIC BENEFIT	MOBILITY	ENVIRONMENT AND CLIMATE CHANGE	TRANSPORTATION EQUITY	SAFETY AND SECURITY
<b>FORMER LONG RANGE TRANSPORTATION PLAN PROJECTS CURRENTLY PROGRAMMED AND/OR UNDER CONSTRUCTION</b>						
Rte. 128 Additional Lanes (Randolph to Wellesley)						
Pulaski Blvd (Bellingham)						
<b>FORMER LONG RANGE TRANSPORTATION PLAN UNIVERSE OF ROADWAY PROJECTS</b>						
<b>I-95/I-93 Interchange (Canton)</b>	x	x	x			x
<b>I-95 Northbound/Dedham St. Ramp/Dedham St. Corridor (Dedham)</b>		x	x			
Rte. 126 (Corridorwide)	x	x	x			
Rte. 27 (Corridorwide)	x		x			
Rte. 1 Intersection Signalization (Corridorwide)	x		x			
Rte. 138 (Canton, Milton, Stoughton)	x	x	x			
Rte. 1 South (Dedham, Norwood, Westwood, West Roxbury)	x	x	x			
I-95 Capacity Improvements (Canton to Foxborough)			x			
Rte. 24/I-93 Interchange (Randolph)	x		x			x
Veteran's Memorial Dr. Ext./Rte. 16 Bypass (Milford)			x			
<b>FORMER LONG RANGE TRANSPORTATION PLAN UNIVERSE OF BICYCLE AND PEDESTRIAN PROJECTS</b>						

The projects included in this table are those from this corridor's Highway Universe that meet a Plan-identified regional need. An initial evaluation was performed using criteria derived from the MPO's visions and policies.

Projects that are indicated in **bold**, are projects that were included in the JOURNEY to 2030 Plan as a recommended project or illustrative project.

SOUTHWEST CORRIDOR TRANSIT UNIVERSE OF PROJECTS	PMT TRANSIT ENHANCEMENT PROJECT	PMT TRANSIT EXPANSION PROJECT	PMT TRANSIT SGR PROJECT	IN MBTA'S DRAFT FY 2012-2016 CIP SGR LIST	IN MBTA'S DRAFT FY 2012-2016 CIP ENHANCEMENT PROJECT LIST	IN MBTA'S DRAFT FY 2012-2016 CIP EXPANSION PROJECT LIST	TRANSIT PROJECT RECOMMEND- ED FROM MPO'S CMP	TRANSIT PROJECT IN JOURNEY TO 2030	PUBLIC COMMENT	MEETS PLAN IDENTIFIED NEED	COST (IN MILLIONS)
<b>ACCESSIBILITY</b>											
<b>ENHANCEMENTS</b>											
BRT on Bus Routes 23, 28, 31, 32, 39	x				x					x	
<b>EXPANSION</b>											
Attleboro Third Track*								x			\$96.0
Extend Fairmount Commuter Rail Line to Route 128		x									
Extend Franklin Commuter Rail Line to Milford		x								x	
Operate Weekday Commuter Rail Service to Foxboro		x								x	
Replace 3 Insufficient Freight Bridges on New Bedford/Fall River Freight Line		x				x				x	\$19.6
South Coast Rail Design and Engineering		x				x				x	
Orange Line Extension from Forest Hills to Needham									x		
Commuter Rail Line from Needham Junction to Millis									x		
<b>MAINTENANCE FACILITIES</b>											
Commuter Rail Readville Facility Remediation				x						x	\$4.8
<b>PARKING</b>											
Parking Capacity Increases at 15 Commuter Rail Stations	x									x	
Parking Capacity Increases at 2 Orange Line Stations	x									x	
<b>STATIONS</b>											
Add Northbound Commuter Rail Platform at Ruggles Station	x									x	
Back Bay Station Lobby Ventilation			x	x						x	\$1.4
Dudley Square Station Improvements	x				x						\$0.3
Back Bay Station Roofing Project			x	x						x	
<b>SUPPORT INFRASTRUCTURE</b>											
Orange Line AC & DC Breaker Upgrade			x	x						x	\$40.2
Orange Line Power Improvements			x	x						x	\$6.5
Rehabilitate 2 Neponset River Bridges			x	x						x	\$17.5
Shoreline Bridge Rehabilitation (Providence Line)			x	x						x	\$1.0
<b>TRACK AND SIGNALS</b>											
Add Second Track to Single-Track Commuter Rail Segments on Franklin and Stoughton Lines	x									x	
Timber Tie Replacement at Interlocking on the Attleboro Line				x						x	\$0.6
<b>VEHICLES</b>											
New Orange Car Design and Engineering			x	x						x	\$13.7
New Orange Line Car Procurement			x							x	

\*Included as an Illustrative Project in JOURNEY to 2030

SOUTHWEST CORRIDOR TRANSIT NEEDS EVALUATION	MAINTENANCE, MODERNIZATION AND EFFICIENCY	LIVABILITY AND ECONOMIC BENEFIT	MOBILITY	ENVIRONMENT AND CLIMATE CHANGE	TRANSPORTATION EQUITY	SAFETY AND SECURITY
	<b>ACCESSIBILITY</b>					
<b>ENHANCEMENTS</b>						
BRT on Bus Routes 23, 28, 31, 32, 39	X	X	X		X	
<b>EXPANSION</b>						
Extend Franklin Commuter Rail Line to Milford			X			
Operate Weekday Commuter Rail Service to Foxboro		X	X			
Replace 3 Insufficient Freight Bridges on New Bedford/Fall River Freight Line	X		X			X
South Coast Rail Design and Engineering						
<b>MAINTENANCE FACILITIES</b>						
Commuter Rail Readville Facility Remediation	X					
<b>PARKING</b>						
Parking Capacity Increases at 15 Commuter Rail Stations		X	X	X		
Parking Capacity Increases at 2 Orange Line Stations		X	X	X		
<b>STATIONS</b>						
Add Northbound Commuter Rail Platform at Ruggles Station	X		X		X	
Back Bay Station Lobby Ventilation	X					X
Back Bay Station Roofing Project	X					
<b>SUPPORT INFRASTRUCTURE</b>						
Orange Line AC & DC Breaker Upgrade	X					
Orange Line Power Improvements	X					
Rehabilitate 2 Neponset River Bridges	X					X
Shoreline Bridge Rehabilitation (Providence Line)	X					X
<b>TRACK AND SIGNALS</b>						
Add Second Track to Single-Track Commuter Rail Segments on Franklin and Stoughton Lines	X		X		X	
Timber Tie Replacement at Interlocking on the Attleboro Line	X					X
<b>VEHICLES</b>						
New Orange Car Design and Engineering						
New Orange Line Car Procurement	X					

The projects included in this table are those from this corridor's Transit Universe that meet a Plan-identified regional need. An initial evaluation was performed using criteria derived from the MPO's visions and policies.



SOUTHEAST CORRIDOR HIGHWAY UNIVERSE OF PROJECTS	CTPS CORRIDOR STUDY AND/OR RECOMMENDATION	HIGHWAY PROJECT WITH PRC APPROVAL	PROJECT UNDER MASSDOT ENVI- RONMENTAL REVIEW	MAJOR HIGHWAY PROJECT PEND- ING, ON HOLD OR INACTIVE	PROJECT PROGRAMMED IN JOUR- NEY TO 2030	CONSTRUCTION FUNDS IN FFYS 2011-14 TIP	PUBLIC COMMENT	MASSDOT CIP HIGH PRIORITY PATH	MEETS PLAN IDENTIFIED NEED	COST (IN MILLIONS)
<b>FORMER LONG RANGE TRANSPORTATION PLAN PROJECTS CURRENTLY PROGRAMMED AND/OR UNDER CONSTRUCTION</b>										
Rte. 18 (Weymouth)		x	x		x	x				\$31.3
Rte. 139 (Marshfield)		x			x	x				\$5.7
East-West Connector Road (Weymouth)		x	x		x	x				\$15.0
Fore River Bridge (Quincy and Braintree)		x	x		x	x				\$255.0
<b>FORMER LONG RANGE TRANSPORTATION PLAN UNIVERSE OF ROADWAY PROJECTS</b>										
Rte. 3 Add-A-Lane (Weymouth to Duxbury)*				x	x*		x		x	\$227.8
I-93/Rte. 3 Interchange (Braintree Split)	x				x		x		x	\$36.0
Rte. 53 Final Phase (Hanover)		x			x		x		x	\$1.0
Completion of the S. Weymouth Naval Air Station - Widening Reservoir Park Drive and Hingham St. (Rockland)	x								x	
I-93/Rte. 24 Interchange (Randolph)	x						x		x	
Rte. 3/Union St. (Braintree)							x		x	
Rte. 24 Capacity Improvements (Raynham to Randolph)	x								x	
I-93 Capacity Improvements (Boston to Braintree)	x								x	
Rte. 138 Corridor (Canton, Milton, Stoughton)	x								x	
Rte. 53 (Quincy, Braintree, Weymouth, Hingham, Norwell, Hanover, Pembroke, Duxbury, Kingston)	x								x	
South Boston Roadway Improvements (State Freight Plan)	x								x	\$40.0
Conley Rail Service (South Boston) (Massport Study)	x								x	
T Under D (South Boston) (Massport Study)	x								x	
Clivendon Extension Bridge (Quincy)							x			
Track 61 Rail Improvement (Boston) (State Freight Plan)							x		x	\$9.5
Port of Boston Improvement Dredging Project (Boston, Everett, Chelsea) (State Freight Plan)									x	\$308.0
<b>FORMER LONG RANGE TRANSPORTATION PLAN UNIVERSE OF BICYCLE AND PEDESTRIAN PROJECTS</b>										
Bicycle and Pedestrian Improvements in Duxbury Village (Duxbury)	x									
Bicycle and Pedestrian Improvements in Holbrook Town Center (Holbrook)	x									
Bicycle and Pedestrian Improvements in Jackson Square (Weymouth)	x									

\* Included as an Illustrative Project in JOURNEY to 2030

SOUTHEAST CORRIDOR HIGHWAY NEEDS EVALUATION	MAINTENANCE, MODERNIZATION AND EFFICIENCY	LIVABILITY AND ECONOMIC BENEFIT	MOBILITY	ENVIRONMENT AND CLIMATE CHANGE	TRANSPORTATION EQUITY	SAFETY AND SECURITY
	<b>FORMER LONG RANGE TRANSPORTATION PLAN PROJECTS CURRENTLY PROGRAMMED AND/OR UNDER CONSTRUCTION</b>					
<b>FORMER LONG RANGE TRANSPORTATION PLAN UNIVERSE OF ROADWAY PROJECTS</b>						
<b>Rte. 3 Add-A-Lane (Weymouth to Duxbury)*</b>	x		x			
<b>I-93/Rte. 3 Interchange (Braintree Split)</b>	x		x			x
<b>Rte. 53 Final Phase (Hanover)</b>	x		x			
Completion of the S. Weymouth Naval Air Station - Widening Reservoir Park Drive and Hingham St. (Rockland)		x	x			
I-93/Rte. 24 Interchange (Braintree)	x		x			x
Rte. 3/Union St. (Braintree)	x					x
Rte. 24 Capacity Improvements (Raynham to Randolph)			x			
I-93 Capacity Improvements (Boston to Braintree)			x			
Rte. 138 Corridor (Canton, Milton, Stoughton)	x	x	x			
Rte. 53 (Quincy, Braintree, Weymouth, Hingham, Norwell, Hanover, Pembroke, Duxbury, Kingston)	x		x			
South Boston Roadway Improvements (State Freight Plan)		x	x			
Conley Rail Service (South Boston) (Massport Study)		x	x			
T Under D (South Boston) (Massport Study)	x	x	x	x		
Track 61 Rail Improvement (Boston)		x	x			
Port of Boston Improvement Dredging Project	x	x	x			
<b>FORMER LONG RANGE TRANSPORTATION PLAN UNIVERSE OF BICYCLE AND PEDESTRIAN PROJECTS</b>						

\* Included as an Illustrative Project in JOURNEY TO 2030.

The projects included in this table are those from this corridor's Highway Universe that meet a Plan-identified regional need. An initial evaluation was performed using criteria derived from the MPO's visions and policies.

Projects that are indicated in **bold**, are projects that were included in the JOURNEY TO 2030 Plan as a recommended project or illustrative project.

SOUTHEAST CORRIDOR TRANSIT UNIVERSE OF PROJECTS	PMT TRANSIT ENHANCEMENT PROJECT	PMT TRANSIT EXPANSION PROJECT	PMT TRANSIT SGR PROJECT	IN MBTA'S DRAFT FY 2012- 2016 CIP SGR LIST	IN MBTA'S DRAFT FY 2012- 2016 CIP ENHANCEMENT PROJECT LIST	IN MBTA'S DRAFT FY 2012-2016 CIP EXPANSION PROJECT LIST	TRANSIT PROJECT RECOM- MENDED FROM MPO'S GMP	TRANSIT PROJECT IN JOUR- NEY TO 2030	PUBLIC COMMENT	MEETS PLAN IDENTIFIED NEED	COST (IN MILLIONS)
<b>ACCESSIBILITY</b>											
Wollaston Accessibility	x				x					x	\$0.75
<b>COMMUNICATIONS/TECHNOLOGY</b>											
<b>ENHANCEMENTS</b>											
BRT on Bus Routes 23 and 28	x				x					x	
Fairmount Line Improvements Phase II	x				x					x	\$45.2
<b>EXPANSION</b>											
Extend Commuter Rail from Middleborough to Wareham	x								x	x	
South Coast Rail Design and Engineering		x				x				x	
Replace 3 Insufficient Freight Bridges on New Bedford/Fall River Freight Line		x				x				x	\$19.6
Improved Ferry Service from South Shore Communities to Boston									x		
Red Line Extension to Weymouth									x		
<b>MAINTENANCE FACILITIES</b>											
<b>PARKING</b>											
Parking Capacity Increase at Hingham Ferry Terminal	x										
Parking Capacity Increases at 4 Red Line Stations	x									x	
Parking Capacity Increases at 5 Commuter Rail Stations	x									x	
Red Line South Shore Parking Garage Rehabilitation at 3 Stations			x	x						x	\$28.1
<b>STATIONS</b>											
Ashmont Station Upgrade Phase II					x						\$13.8
<b>SUPPORT INFRASTRUCTURE</b>											
MBTA Ferry System Dock Improvements			x	x						x	\$1.3
Red Line DC Cable Upgrade Phase I Andrew-Kendall			x	x						x	\$25.1
Red Line Traction Power Upgrade			x	x						x	\$16.4
<b>TRACK AND SIGNALS</b>											
Add Second Track to Single-Track Commuter Rail Segments on Old Colony Lines	x									x	
Columbia Junction Upgrades			x	x						x	\$57.9
Old Colony Line Tie Replacement Project			x	x						x	\$57.3
Red Line Signal Cable Replacement			x	x						x	\$12.4
<b>VEHICLES</b>											
Catamaran for Quincy Harbor			x	x						x	\$4.2
Ferry Boat Improvements			x	x						x	\$1.3
New Red Line Cars Design and Engineering			x	x						x	\$13.7
New Red Line Car Procurement	x		x							x	
Red Line No. 1 Car Reinvest.			x	x						x	\$6.9
Red Line No. 2 Car Overhaul			x	x						x	\$10.6

SOUTHEAST CORRIDOR TRANSIT NEEDS EVALUATION	MAINTENANCE, MODERNIZATION AND EFFICIENCY	LIVABILITY AND ECONOMIC BENEFIT	MOBILITY	ENVIRONMENT AND CLIMATE CHANGE	TRANSPORTATION EQUITY	SAFETY AND SECURITY
<b>ACCESSIBILITY</b>						
Wollaston Accessibility	x	x				x
<b>COMMUNICATIONS/TECHNOLOGY</b>						
<b>ENHANCEMENTS</b>						
BRT on Bus Routes 23 and 28	x	x	x		x	
Fairmount Line Improvements Phase II		x	x	x	x	
Expansion						
Extend Commuter Rail from Middleborough to Wareham			x			
South Coast Rail Design and Engineering						
Replace 3 Insufficient Freight Bridges on New Bedford/Fall River Freight Line	x		x			x
<b>MAINTENANCE FACILITIES</b>						
<b>PARKING</b>						
Parking Capacity Increases at 4 Red Line Stations		x	x	x		
Parking Capacity Increases at 5 Commuter Rail Stations		x	x	x		
Red Line South Shore Parking Garage Rehabilitation at 3 Stations	x					
<b>STATIONS</b>						
<b>SUPPORT INFRASTRUCTURE</b>						
MBTA Ferry System Dock Improvements	x					
Red Line DC Cable Upgrade Phase I Andrew-Kendall	x					
Red Line Traction Power Upgrade	x					
<b>TRACK AND SIGNALS</b>						
Add Second Track to Single-Track Commuter Rail Segments on Old Colony Lines	x		x			
Columbia Junction Upgrades	x					x
Old Colony Line Tie Replacement Project	x					x
Red Line Signal Cable Replacement	x					x
<b>VEHICLES</b>						
Catamaran for Quincy Harbor	x					
Ferry Boat Improvements	x					
New Red Line Cars Design and Engineering						
New Red Line Car Procurement	x					
Red Line No. 1 Car Reinvest.	x					
Red Line No. 2 Car Overhaul	x					

The projects included in this table are those from this corridor's Transit Universe that meet a Plan-identified regional need. An initial evaluation was performed using criteria derived from the MPO's visions and policies.

SYSTEMWIDE TRANSIT UNIVERSE OF PROJECTS	PMT TRANSIT ENHANCEMENT PROJECT	PMT TRANSIT EXPANSION PROJECT	PMT TRANSIT SGR PROJECT	IN MBTA'S DRAFT FY 2012-2016 CIP SGR LIST	IN MBTA'S DRAFT FY 2012-2016 CIP ENHANCEMENT PROJECT LIST	IN MBTA'S DRAFT FY 2012-2016 CIP EXPANSION PROJECT LIST	TRANSIT PROJECT RECOMMEND- ED FROM MPO'S CMP	TRANSIT PROJECT IN JOURNEY TO 2030	MEETS PLAN IDENTIFIED NEED
<b>ACCESSIBILITY</b>									
Accessibility Program	x				x				x
Elevator Program	x				x				x
Escalator Program	x				x				x
Wayfinding Program	x				x				
<b>COMMUNICATIONS/TECHNOLOGY</b>									
Automated Bus Passenger Counters		x			x				
Bid/Dispatch - Advanced Scheduling System	x				x				
Computer Technology Upgrades	x				x				
Train & Bus Arrival Announcements	x				x				
<b>ENHANCEMENTS</b>									
Daily Operations Resource Management System		x			x				
Homeland Security	x				x				
Key Bus Routes Project	x				x				x
<b>EXPANSION</b>									
<b>MAINTENANCE FACILITIES</b>									
Bus Facilities Upgrade			x	x					x
Bus Facility Analysis					x				x
Carwash Upgrades Systemwide			x	x					x
Commuter Rail Maintenance Facilities Upgrades			x	x					x
Maintenance Facilities Upgrades			x	x					x
MBTA Bus Facility Rehab & Improvements			x	x					x
Subway Facility Improvements			x	x					x
<b>PARKING</b>									
Enhanced Bicycle Parking Facilities	x				x				x
Parking Upgrades	x				x				
<b>STATIONS</b>									
Commuter Rail - Various Stations Projects	x				x				
Commuter Rail Stations Upgrades			x	x					x
Emergency Station Lighting Program			x	x					x
Station Management Project - Phase II	x				x				
Subway Station Platform Improvement Program			x	x					x
Subway Station Rehabilitation			x	x					x
<b>SUPPORT INFRASTRUCTURE</b>									
Bridge Program			x	x					x
Commuter Rail - Bridge Projects			x	x					x
Environmental Compliance Management	x				x				
Groundwater Remediation			x	x					x
MBTA Systemwide Fencing			x	x					x



SYSTEMWIDE TRANSIT UNIVERSE OF PROJECTS (CONT.)	PMT TRANSIT ENHANCEMENT PROJECT	PMT TRANSIT EXPANSION PROJECT	PMT TRANSIT SGR PROJECT	IN MBTA'S DRAFT FY 2012-2016 CIP SGR LIST	IN MBTA'S DRAFT FY 2012-2016 CIP ENHANCEMENT PROJECT LIST	IN MBTA'S DRAFT FY 2012-2016 CIP EXPANSION PROJECT LIST	TRANSIT PROJECT RECOMMENDED FROM MPO'S CMP	TRANSIT PROJECT IN JOURNEY TO 2030	MEETS PLAN IDENTIFIED NEED
<b>SUPPORT INFRASTRUCTURE (CONT.)</b>									
MBTA Tunnel Signage Project	X				X				
Power Program			X	X					X
Rectifier Transformer Replacement			X	X					X
Rehab Traction Power Substations			X	X					X
Renewable Wind Energy Project					X				
Substation Control Battery Set Replacement Program			X	X					X
Systemwide Fire Suppression Systems			X	X					X
Systemwide Tunnel Lighting			X	X					X
Tunnel Dewatering Pump Station Rehabilitation Program			X	X					X
Tunnel Rehabilitation			X	X					X
Unit Substation Upgrades			X	X					X
<b>TRACK AND SIGNALS</b>									
Systemwide Signal Maintenance			X	X					X
Systemwide Track Maintenance			X	X					X
Yard Switch Replacement and Track Reconstruction			X	X					X
<b>VEHICLES</b>									
Bus Fleet Rehabilitation (2004/2005 fleet)			X	X					X
Commuter Rail Coach Procurement			X	X					X
Commuter Rail Locomotive Procurement			X	X					X
Commuter Rail Locomotive Top Deck Overhaul			X	X					X
Commuter Rail Positive Train Control Efforts	X				X				
Kawasaki Commuter Rail Coach Overhaul			X	X					X
Procurement of 480 Buses			X	X					X
RIDE Vehicle Program			X	X					X
Snow Fighting Equipment			X	X					X
Systemwide Non-Revenue Vehicle Program			X	X					X

SYSTEMWIDE TRANSIT NEEDS EVALUATION	MAINTENANCE, MODERNIZATION AND EFFICIENCY	LIVABILITY AND ECONOMIC BENEFIT	MOBILITY	ENVIRONMENT AND CLIMATE CHANGE	TRANSPORTATION EQUITY	SAFETY AND SECURITY
<b>ACCESSIBILITY</b>						
Accessibility Program	x	x				x
Elevator Program	x	x				x
Escalator Program	x	x				x
<b>COMMUNICATIONS/TECHNOLOGY</b>						
<b>ENHANCEMENTS</b>						
Key Bus Routes Project - bus stop amenities and customer service enhancements	x	x				
<b>EXPANSION</b>						
<b>MAINTENANCE FACILITIES</b>						
Bus Facilities Upgrade and Rehabilitation	x					
Bus Facility Needs Assessment	x					
Carwash Upgrades Systemwide	x					
Commuter Rail Maintenance Facilities Upgrades	x					
Maintenance Facilities Upgrades	x					
MBTA Bus Facility Rehab & Improvements	x					
Subway Facility Improvements	x					
<b>PARKING</b>						
Enhanced Bicycle Parking Facilities		x	x	x		
<b>STATIONS</b>						
Commuter Rail Stations Upgrades and Renovation	x	x				
Emergency Station Lighting Program	x					x
Subway Station Platform Improvement Program	x					x
Subway Station Rehabilitation	x	x				
<b>SUPPORT INFRASTRUCTURE</b>						
Bridge Program	x					x
Commuter Rail - Bridge Projects	x					x
Groundwater Remediation				x		
MBTA Systemwide Fencing	x					x
Power Program	x					
Rectifier Transformer Replacement	x					
Rehab Traction Power Substations	x					
Substation Control Battery Set Replacement Program	x					
Systemwide Fire Suppression Systems	x					x
Systemwide Tunnel Lighting	x					x
Tunnel Dewatering Pump Station Rehabilitation Program	x					x
Tunnel Rehabilitation	x					x
Unit Substation Upgrades	x					

SYSTEMWIDE TRANSIT NEEDS EVALUATION (CONT.)	MAINTENANCE, MODERNIZATION AND EFFICIENCY	LIVABILITY AND ECONOMIC BENEFIT	MOBILITY	ENVIRONMENT AND CLIMATE CHANGE	TRANSPORTATION EQUITY	SAFETY AND SECURITY
<b>TRACK AND SIGNALS</b>						
Systemwide Signal Maintenance	X					X
Systemwide Track Maintenance	X					X
Yard Switch Replacement and Track Reconstruction	X					
<b>VEHICLES</b>						
Bus Fleet Rehabilitation (2004/2005 fleet)	X					X
Commuter Rail Coach Procurement	X		X			
Commuter Rail Locomotive Procurement	X			X		
Commuter Rail Locomotive Top Deck Overhaul	X					
Kawasaki Commuter Rail Coach Overhaul	X	X				
Procurement of 480 Buses	X					
RIDE Vehicle Program	X	X				
Snow Fighting Equipment	X					
Systemwide Non-Revenue Vehicle Program	X					

The projects included in this table are those from this corridor's Transit Universe that meet a Plan-identified regional need. An initial evaluation was performed using criteria derived from the MPO's visions and policies.



# APPENDIX C

## TRAVEL DEMAND FORECASTS AND NO-BUILD PROJECT DESCRIPTIONS

### TRAVEL DEMAND FORECASTS

In developing Paths to a Sustainable Region, the MPO conceptualized the region's transportation needs over the next 23 years. Land use patterns, growth in employment and population, and trends in travel patterns differ in how they affect demands on the region's transportation system. In order to estimate future demands on the system for this Long-Range Transportation Plan (LRTP), the MPO utilized a regional travel-demand forecast model. The model is a planning tool used to evaluate the impacts of transportation alternatives given varying assumptions with regard to population, employment, land use, and traveler behavior. The model is used to assess potential projects in terms of air quality benefits, travel-time savings, and congestion reduction.

#### Travel-Demand Model Characteristics

The travel model set simulates existing travel conditions and forecasts future-year travel on the eastern Massachusetts transit and highway systems. To get a more accurate picture of the travel demands in the Boston region, all communities within the commuting shed (the area from which people commute) for eastern Massachusetts are included in the modeled area. This area includes an additional 63 communities that are outside the 101-municipality MPO region.

The model represents all MBTA rail and bus lines, all private express-bus carriers, all commuter boat services, all limited-access highways and principal arterials, and many minor arterials and local roadways. The region is subdivided into over 2,700 transportation analysis zones (TAZs). The model set is made up of several models, each of which simulates a step in the travel decision-making process. The model set simulates transportation supply characteristics and transportation demand for travel from every TAZ to every other TAZ. This simulation is the result of several inputs (different categories of data); the most important include population, employment, auto ownership, transit fares, automobile operating costs, and highway and transit levels

of service. These inputs are updated on a regular basis to ensure the reliability of the forecasts. The model set, which is similar in nature to those used in most other large urban areas in North America, also incorporates many new procedures, including the ability to forecast nonmotorized trips and to limit trips based on parking capacities at MBTA stations.

### **Travel Demand under 2009 Base Year, 2035 No-Build, and 2035 Build Conditions**

The travel model analysis for the LRTP consisted of several steps. First, an existing conditions network was tested to simulate recent (2009) travel conditions. A list that describes all major highway and transit projects open for public use by December 31, 2009 is included in this appendix. Projects included for analysis in the model were “regionally significant” as defined by the federal government, because of their being regional in nature, adding capacity, and having air quality impacts for the region as measured by the model.

A 2035 No-Build alternative was then represented in the model. The 2035 No-Build alternative built upon the 2009 Base Year and added projects that were constructed between 2009 and 2011, projects that are currently under construction, and projects that were programmed in the first year of the 2011–2014 Transportation Improvement Program (TIP). Descriptions of the 2035 No-Build projects are also included in this appendix. The 2009 Base Year and 2035 No-Build scenarios provided a baseline against which the predicted effects of potential future investments in the transportation system were measured.

Next, an alternative set of projects (called the 2035 Build Scenario) was developed and then compared to the 2035 No-Build scenario as described under Project Selection. Several important travel statistics are reported for these forecasts, including:

- Total vehicle-miles of travel (VMT) and vehicle-hours of travel (VHT) on a typical weekday
- Average speed of highway traffic
- Amount of air pollution produced by automobiles and transit vehicles
- Total number of daily trips made by auto and transit
- Average daily fixed-route transit ridership by mode (rapid transit, bus, commuter rail, commuter boat, and express bus)
- Percentage of people traveling by each of the travel modes

Project descriptions for the 2035 Build Projects in the recommended plan are included in Chapter 8 – The Recommended Plan. Selected travel modeling results for the 2009 Base Year and 2035 No-Build and 2035 Build alternatives are shown in Table C-1 and in Chapter 8, The Recommended Plan.

**TABLE C-1**

**2009 BASE YEAR, 2035 NO-BUILD, AND 2035 RECOMMENDED PLAN TRANSPORTATION NETWORK MODEL RESULTS**

SOCIOECONOMIC MEASURES	2009 BASE YEAR	2035 NO-BUILD	PERCENTAGE CHANGE FROM 2009 TO 2035 NO-BUILD	2035 RECOMMENDED PLAN	PERCENTAGE CHANGE FROM 2035 NO-BUILD TO 2035 RECOMMENDED PLAN
Population	4,421,100	4,943,600	11.8%	4,943,600	0%
Households	1,771,300	2,013,500	13.7%	2,013,500	0%
Employment	2,324,600	2,528,200	8.8%	2,528,200	0%
Average household size	2.50	2.46	-1.6%	2.46	0%
<b>TRIP GENERATION RESULTS (AVERAGE WEEKDAY)</b>					
Person-trip total	16,987,600	18,979,800	11.7%	18,979,800	0%
Person-trips into and out of the region	1,699,300	2,131,900	25.5%	2,131,900	0%
Intraregional person trips within the region	15,288,300	16,847,900	10.2%	16,847,900	0%
<b>MODE CHOICE RESULTS (AVERAGE WEEKDAY)</b>					
Total person-trips	14,709,500	16,210,300	10.2%	16,210,300	0%
Linked transit trips	899,100	1,169,300	30.1%	1,190,800	2%
Walk access	774,700	1,036,200	33.8%	1,056,100	2%
Drive access	124,400	133,100	7.0%	134,700	1%
Auto person-trips	11,385,700	12,205,400	7.2%	12,196,600	0%
Nonmotorized trips	2,424,700	2,835,600	16.9%	2,822,900	0%
Transit mode share	6.11%	7.21%	18.0%	7.35%	2%
Auto mode share	77.40%	75.29%	-2.7%	75.24%	0%
Nonmotorized mode share	16.48%	17.49%	6.1%	17.41%	0%
<b>TRANSIT ASSIGNMENT RESULTS (AVERAGE WEEKDAY)</b>					
Unlinked transit trips	1,216,500	1,575,000	29.5%	1,607,000	2%
Rapid transit lines	692,400	881,500	27.3%	933,400	6%
Commuter rail lines	104,900	131,700	25.5%	132,500	1%
Local buses	355,500	461,100	29.7%	439,900	-5%
Downtown Shuttle Bus	8,500	9,200	8.2%	9,300	1%
Express buses	25,200	30,900	22.6%	30,200	-2%
Ferry	4,400	4,500	2.3%	4,500	0%
Bus rapid transit	25,600	56,100	119.1%	57,200	2%
Transfer rate (unlinked/linked trips)	1.35	1.35	-0.4%	1.35	0%
<b>HIGHWAY ASSIGNMENT RESULTS (AVERAGE WEEKDAY)</b>					
Vehicle-trips assigned	12,833,900	14,145,900	10.2%	14,139,300	0%
Vehicle-miles of travel	108,933,700	119,492,700	9.7%	119,549,600	0%
Average trip length	8.49	8.45	-0.5%	8.46	0%
Vehicle-hours of travel	3,186,800	3,782,200	18.7%	3,772,300	0%
Average travel time	15.68	16.01	2.1%	16.01	0%
Average speed	34.18	31.59	-7.6%	31.69	0%



## 2009 BASE YEAR PROJECTS

### Highway Projects

**Route 53, Phase I (Hanover):** Widening of Route 53 from Route 3 to Mill Street (Hanover) was completed by MassDOT in 1994. This project widened Route 53 from a two-lane to a five-lane roadway segment.

**Route 53, Phase II (Hanover):** This project widened the one-mile section of Route 53 between Mill Street and Rawson Road from two lanes to five lanes: two lanes in each direction and a two way center turn lane. It also added six-foot sidewalk to the west side of the roadway. Pond Street was relocated and realigned, approximately 210 feet north of its current location, to intersect Route 53 opposite Old Washington Street, creating a four-way intersection. The existing traffic signal at the Route 53/Old Washington Street intersection was upgraded to accommodate this new configuration.



#### **High-Occupancy Vehicle (HOV) Lane on I-93 (Mystic Avenue):**

This MassDOT project consisted of an extension of the existing southbound HOV lane to the Sullivan Square (Somerville) off-ramp. The HOV lane is for vehicles with two or more occupants and is a total of 2.03 miles in length. The extension was opened in September 1994.

#### **High-Occupancy Vehicle (HOV) Lane on the Southeast Expressway:**

This six-mile HOV lane is between Furnace Brook Parkway (Quincy) and Freeport Street (Dorchester-Boston). The facility opened in November 1995. It uses contra-flow technology, in which a travel lane is reallocated from the off-peak side of the expressway to the peak side for the duration of the peak period. The HOV lane is for vehicles with two or more occupants.

**Ted Williams Tunnel:** The Ted Williams Tunnel (aka/ Third Harbor Tunnel) extends 1.6 miles (0.75 miles under water) from South Boston (Boston) to Logan Airport property (East Boston). It opened for commercial traffic only on December 15, 1995. The approximate cost for the tunnel was \$1.5 billion.

**South Boston Bypass Road (aka/Haul Road):** The roadway segment runs from the Ted Williams Tunnel (South Boston) to near the I-93/Massachusetts Avenue interchange (Boston). The roadway is restricted to commercial vehicles only. It was opened in July 1993. Construction of this roadway project was part of the Central Artery project.

**Blue Hill Avenue Signal Coordination:** This MassDOT project involved the coordination of signals along the Blue Hill Avenue corridor in Boston.

**Brighton Avenue Signal Coordination:** This MassDOT project involved the coordination of signals along the Brighton Avenue corridor in Boston.

**Marrett Road Signal Coordination:** This MassDOT project consists of reconstructing Route 2A (Marrett Road) from I-95 (Route 128) west to beyond the Massachusetts Avenue extension.

**Beverly/Salem Bridge:** This project involved the replacement of a drawbridge over the Danvers River/ Beverly Harbor connecting the cities of Beverly and Salem with an elevated fixed structure. The bridge opened for traffic on August 2, 1996.

**Route 20, Segment 1 (Marlborough):** This project involved widening a 1.1-mile section of Route 20 from 2 lanes to 4 lanes. The project extended from just west of Farm Road to the Raytheon traffic lights just east of DiCenzo Boulevard. The project included the replacement of traffic signals at the intersection of Route 20 and Farm Road & Wilson Street, the installation of traffic signals at DiCenzo Boulevard (West), and the coordination of these two signals and existing signals at Hager Street and Raytheon Company Drive. This project opened to traffic in October 1999.



**Leverett Circle Bridge (Charlestown):** A part of the Central Artery/Tunnel project, these new ramps connect the Tobin Bridge via a parallel four-lane bridge with Storrow Drive and Leverett Circle area on the north-western edge of downtown Boston with points north of the Charles River.

**I-495 Interchange (Marlborough/Southborough):** This project involved the construction of an interchange to Interstate 495 between Route 9 and Route 20. Major elements of the work include the construction of four entrance/exit ramps for I-495 with two bridges and a connector road from the ramps to Crane Meadow Road, as well as the reconstruction and signalization of Crane Meadow Road.

**I-93/Industriplex Interchange (Woburn):** This project involved the construction of an interchange to Interstate 93 between Interstate 95 and Route 129. Major elements of the work included the construction of four entrance/exit ramps for I-93 with two bridges and a connector road from the ramps to Commerce Way, as well as the reconstruction and signalization of the Commerce Way intersection. This project opened to traffic in October 2000.

**Quincy Center Concourse, Phase I (Quincy):** This project involved the construction of the Quincy Center Concourse Bridge connecting Burgin Parkway to Parking Way. The work also included the reconstruction of sections of Burgin Parkway, the Granite Street Connector, and Parking Way, including the installation of an interconnected traffic signal system.

**Route 62 and Middlesex Turnpike (Burlington):** This project involved traffic safety improvements to Route 62 between the Route 3 overpass and Network Drive (formerly Kent Road) and to Middlesex Turnpike from Lexington Street to Terrace Hall Avenue and Network Drive. The improvements to Route 62 included the installation of a traffic signal and

the reconstruction of two others, widening of the roadway from two to four lanes, and installation of a sidewalk along one side of the roadway. Work on Middlesex Turnpike includes the installation of two traffic signals and the reconstruction of two others, the widening of the roadway from two to four lanes and an additional left turn lane at three separate locations, and the installation of a sidewalk along one side of the roadway.

**Route 9 (Wellesley):** This project widened Route 9 from 4 lanes to 6 lanes from Willow Street to the Interstate 95 (Route 128) northbound on-ramp. This project was completed in 2000.

**Route 138 (Canton):** This project widened Route 138 from 2 lanes to 4 lanes from the Route 128 Interchange (the northern limit of the Washington Street Bridge) to 200 meters north of the intersection of Route 138 and Royal Street/Blue Hill River Road. This project was open to traffic in October 2000.



**Bridge Street (Salem):** This project involved widening of Bridge Street from Flint Street to St. Peter Street to two lanes in each direction, including the reconstruction of the Washington Street rotary. The benefits of the project included a lessening of traffic congestion, operational improvements, improved access to the commuter rail station, and improved safety.

**Central Artery:** The Central Artery/Tunnel project was the largest, most complex and technologically challenging highway project in American history. The project cost approximately \$14 billion and was completed in 2005. This project is highlighted by the construction of an 8-to-10 lane, limited access, 1.5 mile underground expressway to replace

the existing elevated I-93 highway. Other components of the project include the Ted Williams Tunnel from South Boston to Logan Airport, an extension of I-90 from near South Station to Logan Airport and Route 1A in East Boston, four major highway interchanges, a cable-stayed bridge across the Charles River, and the reconstruction of an additional 2.1 mile segment of I-93. The project built or rebuilt 161 lane miles of urban highway, about half in tunnels, in a 7.5 mile corridor. Approximate completion dates were:

- Ted Williams Tunnel - December 15, 1995
- South Boston Bypass Road - 1993
- Charlestown/Leverett Circle Bridge - October 7, 1999
- I-90 Extension to the Ted Williams Tunnel - January 2003
- I-93 Northbound - March 2003
- I-93 Southbound - April 2004

**Massachusetts Avenue/Lafayette Square, (Cambridge):** This project realigned the intersection of Massachusetts Avenue, Main Street, and Columbia Street. The signalized intersection was moved to a realigned 4-way intersection opposite Sidney Street on the south.

**Cambridgeport Roadways (Cambridge):** Street patterns in Cambridgeport from Massachusetts Avenue to Memorial Drive were realigned. The streets involved were Sidney Street, Waverly Street, Albany Street and Brookline Street. The benefits of the project include the diversion of traffic away from neighborhood streets, traffic flow improvements, and economic development opportunities.

**I-95 (SB)/Dedham Street Onramp (Canton):** This project built a new southbound ramp to I-95 from Dedham Street. There is no signal at the onramp. This project will provide direct access to Interstate 95 (South) from Westwood's University Avenue industrial area. The benefits of the project include a reduction in congestion and delays at the current access point (Blue Hill Drive) and improved access for commuters wishing to use the Route 128 commuter rail station.

**Route 140 (Franklin):** Route 140 was widened from one lane in each direction to two lanes from I-495 to Garelick Farms. The alignment of Route 140 was altered to accommodate an improved diamond interchange. The length of Route 140 affected is 1.2 miles. The benefits of the project include a lessening of traffic congestion, operational improvements at the affected interchange, associated travel time savings, and economic development opportunities.

**Route 139 (Marshfield):** This MassDOT project consisted of the reconstruction, widening and installation of traffic signals on Route 139 in Marshfield from the Route 3 off-ramp to the Pembroke town line.

**Route 20, Segments 2&3 (Marlborough):** From Farm Road to the Sudbury line, Route 20 was widened from one lane in each direction to two. The 0.9-mile portion of Route 20 from Felton Street to Ames Street was also widened from one lane in each direction to two lanes in each direction. A new signal was installed at the intersection of Route 20 and Williams Street.

**Bridge Street Bypass (Salem):** This project involved construction of a new road along the North River from Veteran's Memorial Bridge to the vicinity of St. Peter Street and Bridge Street.

**Route 38 (Wilmington):** This MassDOT project consisted of widening and reconstructing Route 38 from Route 129 (Richmond Street) to Middlesex Avenue. Signalization improvements were made at the intersections of Route 38/Clark Street, Route 38/Wilmington Plaza and Route 38/Richmond Street.

**Route 1 and Associated Improvements (Foxborough):** This project improved the area from the intersection between Route 1 and North Street to the intersection of Route 1 and Pine Street in the town of Foxborough. It involved a grade-separated interchange at the north end of the stadium on Route 1 and a flyover bridge/ramp on the south side of the stadium to Route 1. A new access drive was built from North Street into the stadium. A second contract dealt with improvements along Route 1 between the two nearest interstate highways including a new slip ramp at the Route 1/Interstate 95 interchange in Sharon. New sidewalks were built on North Street from the access road to the Walpole town



line. The shoulder along Route 1 in Foxborough and the Route 1/Interstate 495 ramps in Plainville were widened. Regional and local signage improvements were also part of this contract.



**Route 3 North:** The project widened Route 3 along a 21-mile stretch from Burlington to the New Hampshire border. The affected towns were Bedford, Billerica, Chelmsford, Westford, Tyngsborough, and Burlington. The highway was expanded from 2 to 3 lanes in each direction with full right and left shoulders. All of the bridges along the corridor were reconstructed to accommodate a potential fourth lane in each direction. This project was programmed in the Northern Middlesex Council of Governments' Transportation Plan.

**Burgin Parkway (Quincy):** The project created new ramps at the Route 3/Burgin Parkway interchange and a grade separation for the Burgin Parkway southbound movement (toward Route 3) over Centre Street. Beginning on Burgin Parkway just south of Penn Street, the

outbound roadway splits. Southbound traffic staying left continues to the existing at-grade intersection at Centre Street. Traffic bearing right and continuing south along Burgin Parkway passes over Centre Street en route to the Route 3/Route 128/I-93 ramp system. The grade-separated section provides two travel lanes and will be constructed with a maximum grade of less than 7%. A viaduct section will be constructed over Centre Street. The viaduct will merge with the existing viaduct carrying outbound traffic from the Quincy Adams MBTA station.

A new ramp from Crown Colony Drive at its intersection with Congress Street carries traffic from Centre Street to I-93 north and Route 128. The ramp joins the southbound flow from Burgin Parkway downstream of the MBTA ramp and the Burgin Parkway merge location. Traffic using this ramp will not be required to weave with other traffic using Burgin Parkway, which will minimize traffic weaving conditions on the Route 128/I-93 ramps. Construction of a channelized ramp allows northbound Crown Colony Drive traffic to bypass the Crown Colony Drive/Centre Street and Burgin Parkway/Centre Street intersections and connect with southbound Burgin Parkway ramps.

**Route 53/228 (Hingham & Norwell):** This project reconstructed the Route 53/Route 228 intersection in Hingham (Queen Anne's Corner) to widen all four approaches to three-lane roadways, including a center left-turn lane. Improvements were also made at the High Street/Grove Street intersection in Norwell. A center left-turn lane was added between the two intersections (approximately one-half mile).

**Crosby Drive (Bedford):** This project involved widening of Crosby Drive from one to two lanes in each direction with a shared center left-turn lane. The roadway cross-section width increased to 66 feet, and the total right-of-way width to 80 feet. Each direction consists of a 14-foot outside travel lane and a 12-foot inside lane, with a 14-foot shared

turning lane. The north side of the roadway has a 3-foot grass strip with a 5-foot sidewalk. The south side has a 6-foot grass strip.

**Interstate 93/Ballardvale Interchange (Wilmington):** The project involved the construction of a new northbound I-93 on-ramp from Route 125 west. Route 125 was widened to accommodate the new ramp between Ballardvale Street and the interchange.

## Transit Projects

**Urban Ring bus service:** This MBTA cross-town bus service began in 1994. It consists of three limited stop bus routes providing connections among the Red Line, the Orange Line and the Green Line branches. The three services are:

- CT1: Central Square (Cambridge) to B.U. Medical Center (Boston)
- CT2: Kendall Square (Cambridge) to Ruggles Station (Boston) via Longwood Medical area. The service extension to Sullivan Square began in 2000.
- CT3: Andrew Station (South Boston) to Longwood Medical area (Boston) via Ruggles Station.

**Additional Park and Ride Spaces:** 20,330 parking spaces were added between January 1, 1991 and April 28, 2001 at stations on rapid transit and commuter rail lines in the MBTA service area, including along the Old Colony, Worcester, and Newburyport commuter rail lines.

**South Station Transportation Center:** An intercity bus terminal was added above the commuter rail tracks and platforms at South Station. The facility was opened in October 1995. The facility serves intercity bus carriers, major regional carriers and commuter bus operators. The bus concourse has 23 sawtooth docks, four pull-through docks and two airport link docks.

**Amtrak Northeast Corridor Electrification:** This Federal Railroad Administration/Amtrak project involves the electrification of the Northeast Corridor rail line from Boston to New Haven, CT; the purchase of high-speed train sets; and expansion of passenger train service between Boston and New York. Acela high-speed service began in December 2000.

**Newburyport Commuter Rail Service:** This project involved the extension of the MBTA commuter rail line from Ipswich station (Ipswich) to Newburyport, a total length of 9.6 miles. There is an intermediate stop with a new station and associated parking at Rowley. The service opened in October 1998. The additional parking at Rowley and Newburyport stations is included in the 20,330 New Parking Spaces. The service includes 13 inbound and 13 outbound trips during the week and 6 inbound and 6 outbound trips on the weekend.





**Old Colony Commuter Rail (two lines):** This MBTA commuter rail project involved the restoration of two of the Old Colony lines. Service runs from South Station to Middleborough/Lakeville with six intermediate stops and from South Station to Kingston and Cordage/Plymouth with six intermediate stops. Service on the two lines began in September 1997. The additional parking at the stations is included in the 20,330 New Parking Spaces. This project does not include the Greenbush branch of the Old Colony commuter rail line.

**Greenbush Commuter Rail Service:** This project restored rail service on a third branch of the Old Colony lines, diverging from the route of the Middleborough/Lakeville and Plymouth/Kingston lines in Braintree and following a combination of active and inactive rail freight routes to the Greenbush section of Scituate.



**Route 128 Amtrak Station:** This joint Amtrak and MBTA project consisted of a new station for the Northeast Corridor Amtrak service and the MBTA Attleboro service. Electrified trains (Amtrak) began serving the station in 2000. Full build was completed in 2005 with the completion of an access road to Route 128.

**Hingham Ferry:** The Hingham Ferry provides commuter boat service from the Hingham Shipyard to Rowes Wharf in downtown Boston. Service has been provided since the late 1970s, and in the late 1990s, high-speed catamarans were introduced to the service.

**Improved service on the Haverhill Commuter Rail Line:** In July 1997, increased service was enacted on the Haverhill commuter rail line. Increased service included the running of eight additional trains each day, including express trains that shorten peak period travel time.

**Salem-Boston Express Bus:** Express bus service between Salem and Boston was introduced in the fall of 1997. Service is provided from the North Shore via Lynn Central Square and Logan Airport's Terminal C providing direct, one-seat service between the North Shore and the South Boston Piers area, the Financial District, and Downtown Crossing.

**North Station Improvements:** This MBTA project includes the relocation of the above ground portion of the Green Line to Lechmere to underground. The new rapid transit station includes a superstation platform with direct transfers between the Green and Orange lines.

**Worcester Commuter Rail, full service including new stations:** This MBTA service includes intermediate stops in Westborough, Southborough, Ashland, and Grafton. Each stop includes a new commuter rail station with associated parking. This service replaced the interim service provided between Framingham and Worcester. The stations were opened in 2002.

**Silver Line – Washington Street, Phase 1:** The MBTA's Silver Line runs along Washington Street from Dudley Square in Roxbury to Downtown Crossing in the city of Boston. The vehicles used on the route are 60-foot articulated compressed natural gas buses and their

low-floor design makes them handicapped accessible. The buses operate in mixed traffic from Dudley Square to Melnea Cass Boulevard where they then enter a reserved lane. At the Massachusetts Turnpike, the reserved lane ends and the vehicles enter mixed traffic again. Silver Line stations include Dudley Square, Melnea Cass Boulevard, Lenox Street, Newton Street, Union Park Street, and East Berkeley Street. Additionally, the vehicle makes stops at Herald Square, New England Medical Center, Chinatown, and Downtown Crossing. This project was a Central Artery/Tunnel commitment.

**Silver Line – Transitway, Phase 2:** This MBTA transitway provides service via tunnel from South Station (Boston) to the World Trade Center (in the vicinity of Viaduct Street) with an intermediate station stop at Courthouse Station (in the vicinity of Northern Avenue and Farnsworth). Service began in 2003. It also includes a surface route from the D Street portal to City Point (South Boston).

**Silver Line Service to Logan Airport (formerly called the Airport Intermodal Transit Connector):** This project provided a new transit service in Boston from South Station Intermodal Center to the Logan Airport terminals. The service uses the MBTA South Boston Piers Transitway tunnel from South Station to South Boston and then the Ted Williams Tunnel to the four Logan Airport terminals. The service enhances the connection between the Red Line and Logan Airport.



**Mattapan Refurbishment:** This MBTA project involved the refurbishment of the existing PCC (Presidential Conference Committee) cars currently running on the Mattapan High-Speed line (Boston-Mattapan-Milton). There were no scheduled run time or frequency improvements associated with this project.

**Industriplex Intermodal Center (Woburn):** This is a joint agency (MassDOT, Massport, MBTA) project. The Industriplex in Woburn provides an intermodal facility for the northern suburbs that combines MBTA commuter rail, Massport's Logan Express shuttles, a 2,400-space parking lot, and a station on Amtrak's service to Portland, Maine. The project also included a new interchange with Interstate 93 that improved access to the facility.

**New Commuter Rail Station at JFK/UMASS Station:** This station was added to the Old Colony commuter rail service lines and provides connections to the MBTA Red Line, local bus service, and shuttle service. Access is also provided to UMASS and the JFK Library.

**Mishawum Station Open for Outbound Service:** Outbound service was added at Mishawum Station at 7:07 AM, 7:49 AM, and 8:34 AM and inbound service was added at 4:36, 5:31, and 6:06 PM.

## 2035 NO-BUILD PROJECTS

### Highway Projects

**Route 128 Additional Lanes (Randolph to Wellesley):** This project involves widening Route 128 from three lanes in each direction to four lanes from Randolph to Wellesley. The lane volumes for this corridor are the highest on any portion of Route 128.

**Massachusetts Turnpike U-Turn:** This project constructed a new U-turn ramp at the Allston exit of the Massachusetts Turnpike that allows westbound Turnpike drivers to reverse direction traveling eastbound toward Downtown Boston and Logan Airport.

**Middlesex Turnpike Improvements Phases I and II:** This project included widening Middlesex Turnpike from a two-lane to a five-lane roadway with two travel lanes in each direction. The improvements were from approximately 375 feet north of Route 62 to the Crosby Drive/Middlesex Turnpike intersection.

**East Boston Haul Road (Boston):** This project reduces truck and airport-related traffic such as shuttles and buses in East Boston by creating a new grade-separated roadway connecting the City of Chelsea and the harbor tunnels/Logan Airport using an abandoned below-grade railroad right-of-way. It will provide a roadway passing beneath Neptune Road, Bennington Street, and Saratoga Street, and connect to Chelsea Street south of the Chelsea Street Bridge.



**Crosby's Corner:** The project involves the construction of a bridge for Route 2 over the congested Crosby's Corner area. The current Route 2 will be converted into a frontage road for local homes and businesses.

**Route 128/Route 35 and Route 62 (Danvers):** This project involves the reconstruction of two interchanges on Route 128 in Danvers (Routes 35 and 62) and replacement of a bridge.

**Route 85 (Hudson):** This project involves widening and/or reconstructing 1.52 miles of Route 85 from the Hudson/Marlborough line to Route 62 (Main St.). Sidewalk upgrades associated with

the project will improve connectivity to the Assebet River Rail Trail.

**Route 139 (Marshfield):** This project removes a congested bottleneck on Route 139 between School and Furnace Streets through roadway widening, and adds bicycle and pedestrian accommodations.

**Quincy Center Concourse (Quincy):** This project continues work from Phase 1, which was the construction of a bridge over the MBTA tracks between Burgin Parkway and Parkingway completed in 2002. Phase 2 of this project consists of a new roadway from Parkingway to Hancock Street, the realignment of Revere Road between Hancock Street and Mechanic Street, and the reconstruction of Revere Road from Mechanic Street to just beyond Miller Style Road where the road will link up with Concourse Phase 3 (McGrath Highway reconstruction). The new four-lane road will improve east-west

vehicular access through Quincy Center while promoting economic development and revitalization of the city's urban core.

**Assembly Square Roadway (Somerville):** This project consists of the reconstruction of a 1.2 mile road (Assembly Square Drive) that will serve as the primary north-south thoroughfare within the Assembly Square District, and a series of intersection and roadway improvements that will address vehicular access and public safety associated with new development opportunities planned within Assembly Square in Somerville.

**South Weymouth Naval Access Improvements (Weymouth):** This project involves several improvements that will support the redevelopment of the South Weymouth Naval Air Station. The improvements include a new East-West Parkway to connect Routes 18 and 3. It will be a median-divided, limited-access boulevard consisting of four lanes in each direction from Route 18 to approximately Union Street and two lanes from Union Street to Weymouth Street. Reservoir Park Drive and Hingham Street will be widened to Commerce Drive. There will be minor changes to the Route 3/Route 228 interchange ramps to create a consistent four-lane cross-section between the proposed parkway and Route 3. Also included in the project is the relocation and improvement of the South Weymouth commuter rail station.

**Logan Airport Intermodal Transportation Initiative, Including a Consolidated Rental Car Facility (Boston):**

The Logan Airport Intermodal Transportation Initiative features constructing a Consolidated Rental Car Facility (ConRAC) served by an alternative-fuel shuttle bus system connecting it with MBTA transit service (at the Airport MBTA station), as well as with airline terminals. The ConRAC will be a four-level garage for 3,200 vehicles and will be constructed on airport property known as the Southwest Service Area.

Other components of this project include:

- A unified shuttle bus system for Logan, employing 28 new 60-foot articulated diesel-electric buses
- A green bus depot to service 50 alternative-fuel buses
- Bicycle and pedestrian paths with connections to the existing Logan Airport and East Boston path systems
- Expansion of the Airport Edge Buffer

Massport will be seeking federal Transportation Infrastructure Finance and Innovation Act (TIFIA) financing assistance for this project.

## Transit Projects

**Blue Line Modernization:** This program is a modernization program to allow for six-car operation on the Blue Line.

**Assembly Square Orange Line Station:** This project will add a new Orange Line station at Assembly Square. The station will support the redevelopment project at Assembly Square in Somerville.

**Fairmount Line Improvements:** This project will include improvements to the Uphams Corner and Morton Street stations and adds four new stations – Newmarket, Four



Corners, Talbot Avenue, and Blue Hill Avenue. It also includes the reconstruction of six bridges, a new interlocking, and an upgraded signal system.

**1000 Parking Spaces:** The addition of 1,000 new parking spaces at Wonderland Station on the Blue Line, Beverly Depot on the Newburyport Line, Savin Hill on the Red Line, Woodland Station on the Green Line, and Quincy Shipyard for ferry service.

## CAPITAL INVESTMENTS NOT AFFECTING THE TRAVEL MODEL

**Green Line Vehicles-Type 8:** In 2006, the MBTA completed the procurement of 85 new Green Line vehicles. The vehicles feature a low-floor design that allows mobility-impaired riders to access them at any of the Green Line stations that have been designated as key stations. The Type 8 vehicles also feature interior message displays, electronic exterior route indicators, and recorded station announcements.

**Blue Line Vehicles:** The MBTA purchased new six-car train sets for the Blue Line for use once the reconstruction of stations was completed. Reconstruction of the existing stations involved the lengthening of platforms so that the longer trains could be accommodated.



**Low Emission Buses:** The MBTA is committed to the purchase of 314 compressed natural gas (CNG) buses for use systemwide.

**Dorchester Branch Modernization:** The MBTA reconstructed four stations on the Dorchester branch of the Red Line. The four stations included in the project were Savin Hill, Field's Corner, Shawmut, and Ashmont, all located within the Boston neighborhood of Dorchester. In addition to the station work, some older bridges along the Ashmont branch will be rehabilitated.

**Charles Street Station Modernization:** This project involved the reconstruction of the Charles Street station on the Red Line. The project made the station accessible and improved its relationship to the surrounding Charles Circle/Cambridge Street area.

**Bus Maintenance Facilities:** The MBTA's purchase of 314 new CNG buses marks the first time this type of vehicle will be used in the system. In order to service these alternative fuel vehicles, the MBTA will build new and retrofit existing facilities to maintain the CNG fleet.

**Automated Fare Collection:** This project replaced the MBTA's fare collection equipment on all subway, trolley, trackless trolley and bus vehicles. The new automated fare collection (AFC) equipment provides several benefits to the MBTA and its riders. In addition to the monthly pass system, riders were able to purchase stored value cards (CharlieCard). They reduced the amount of cash transactions in the system. Additionally, AFC turnstiles are better able to provide accurate data on fare collection and revenue for the MBTA. They also made transfers more convenient.

**Green Line Accessibility:** This project involves the completion of the Green Line's key station program. The key station program will put the Green Line in compliance with the Americans with Disabilities Act (ADA). Copley and Arlington stations have been made accessible, and Government Center station will soon be improved. In addition, several key stations along the Green Line's surface routes will be made accessible through elevated platforms.

**AMTRAK Service to Portland, Maine:** In 2001, Amtrak reintroduced service between Boston and Portland, Maine. The service uses North Station as its Boston terminus. Other stops include Haverhill, MA; Exeter, Dover and Durham, NH; and Old Orchard Beach, Wells and Saco, ME. Travel time between Boston and Portland is approximately two and half hours.

**Orange Line Signal Improvements and Additional Coaches:** Signal improvements along the Orange Line to allow for an additional 18 coaches have been completed by the MBTA. The MBTA is looking into options for additional Orange Line coaches.