

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.

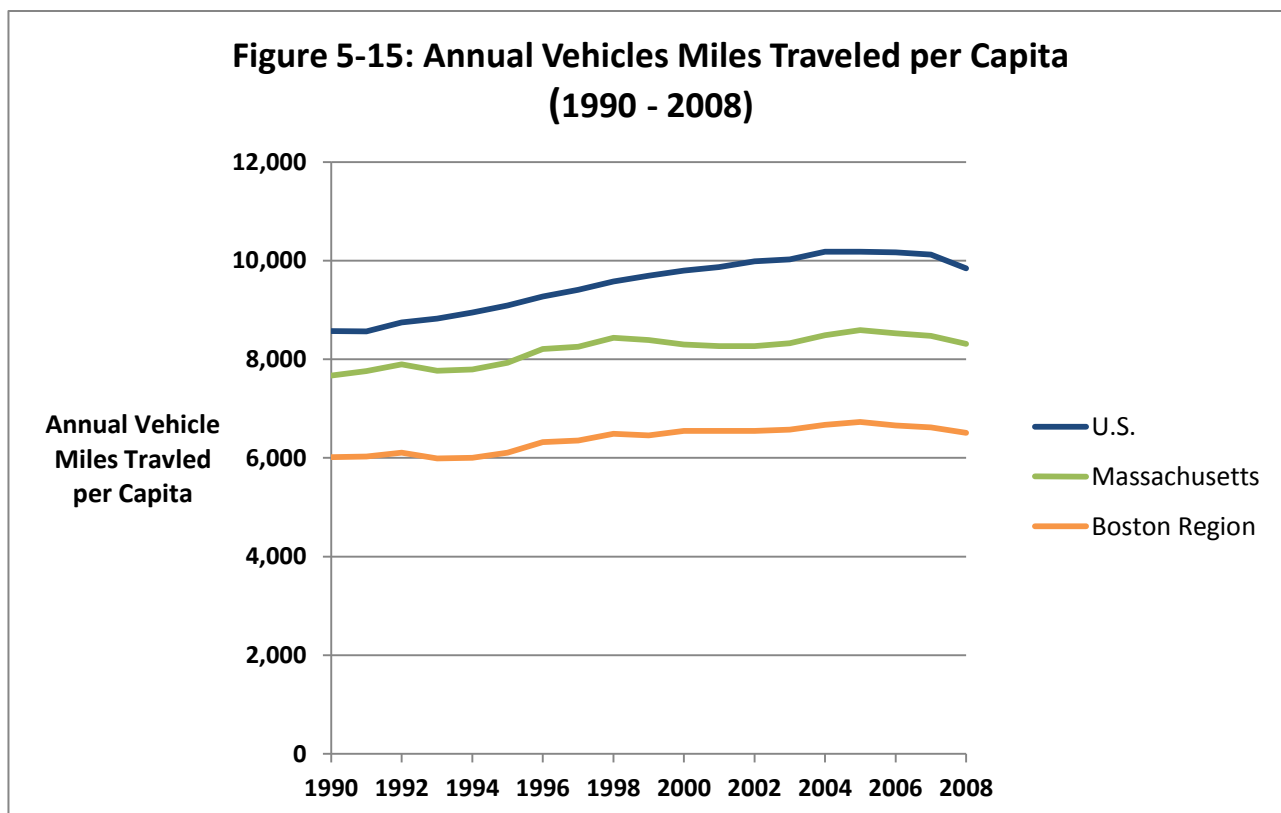
Extensive highway transportation investments have enabled most individuals with an automobile to maintain access to a variety of opportunities, including housing, schools, jobs, medical facilities, and shopping centers. Advancements in automobiles coupled with substantial investments in highway transportation 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.²¹ 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.

²¹ 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.



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 50 percent higher fuel expenses for the typical Massachusetts household.²² 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.

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

²² 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.

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.²³

AAA Average Costs Per Mile

miles per year	10,000	15,000	20,000
small sedan	58.6 cents	45.1 cents	38.1 cents
medium sedan	73.9 cents	57.3 cents	48.6 cents
large sedan	96.4 cents	73.2 cents	61.2 cents
composite average *	76.3 cents	58.5 cents	49.3 cents

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 2000.²⁴ Yet, the preference for the automobile has compromised other travel options and diminished opportunities to engage in physical activity.

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



²³ American Automobile Association, “Your Driving Costs,” 2011 Edition.

²⁴ U.S. Census Bureau, Journey-to-Work data, 1980–2000.

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 2003.²⁵

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 (O₃) 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.²⁶

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 associated with motor vehicle crashes in Massachusetts were estimated at over \$6.4 billion in 2005.²⁷

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.²⁸ Automobile speed has a significant impact on crash severity for

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

²⁶ 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.

²⁷ Massachusetts Executive Office of Health and Human Services (EOHHS) website, http://www.mass.gov/?pageID=eohhs2terminal&L=5&L0=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.

²⁸ Massachusetts Executive Office of Public Safety and Security (EOPSS) website, <http://www.mass.gov/?pageID=eopsterminal&L=3&L0=Home&L1=Crime+Prevention+%26+Personal+Safety&L2=T>

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.²⁹

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.³⁰ 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, to affordable housing.

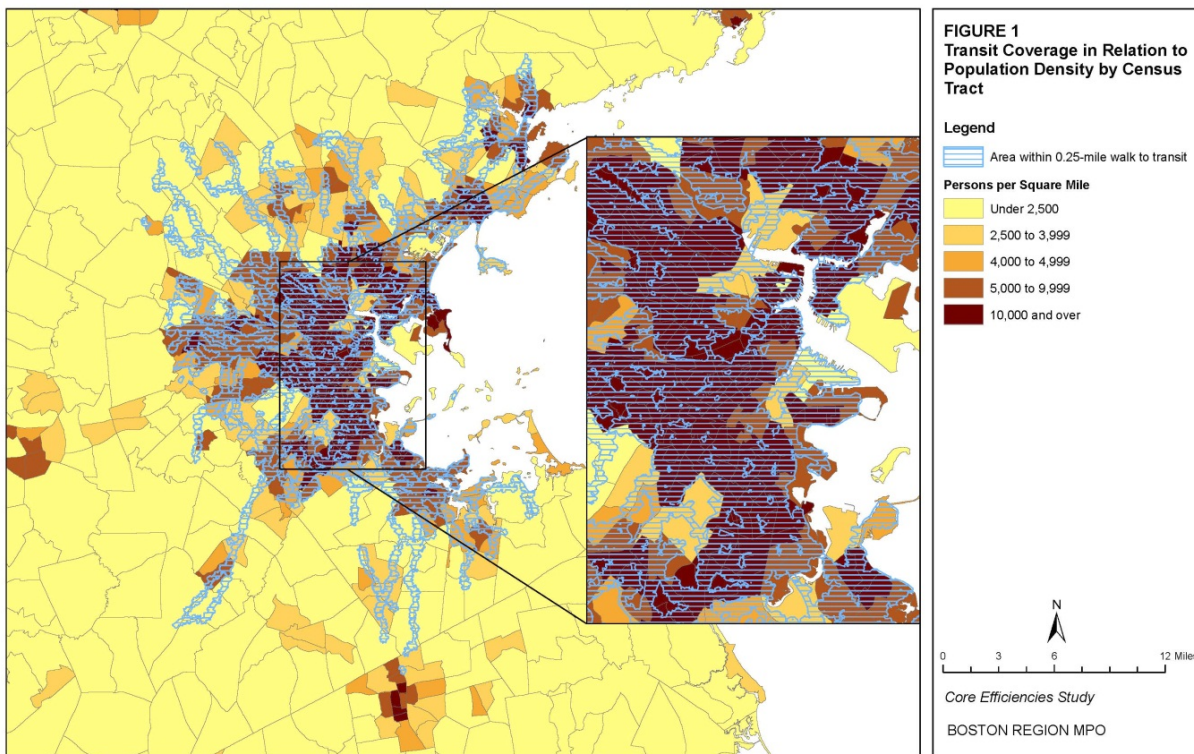
Figure 5-16 shows the transit coverage (rapid transit and bus) in relation to population density. Figure 5-16 demonstrates that some of the conditions associated with livable places (identified above) are higher population density and good transit access.

[raffic+Safety&sid=Eeops&b=terminalcontent&f=programs_ghsb_2006_2008_crash_statistics&csid=Eeops](#), “2006-2008 Massachusetts Crash Statistics,” accessed on 5/20/11.

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

³⁰ *Ibid.*

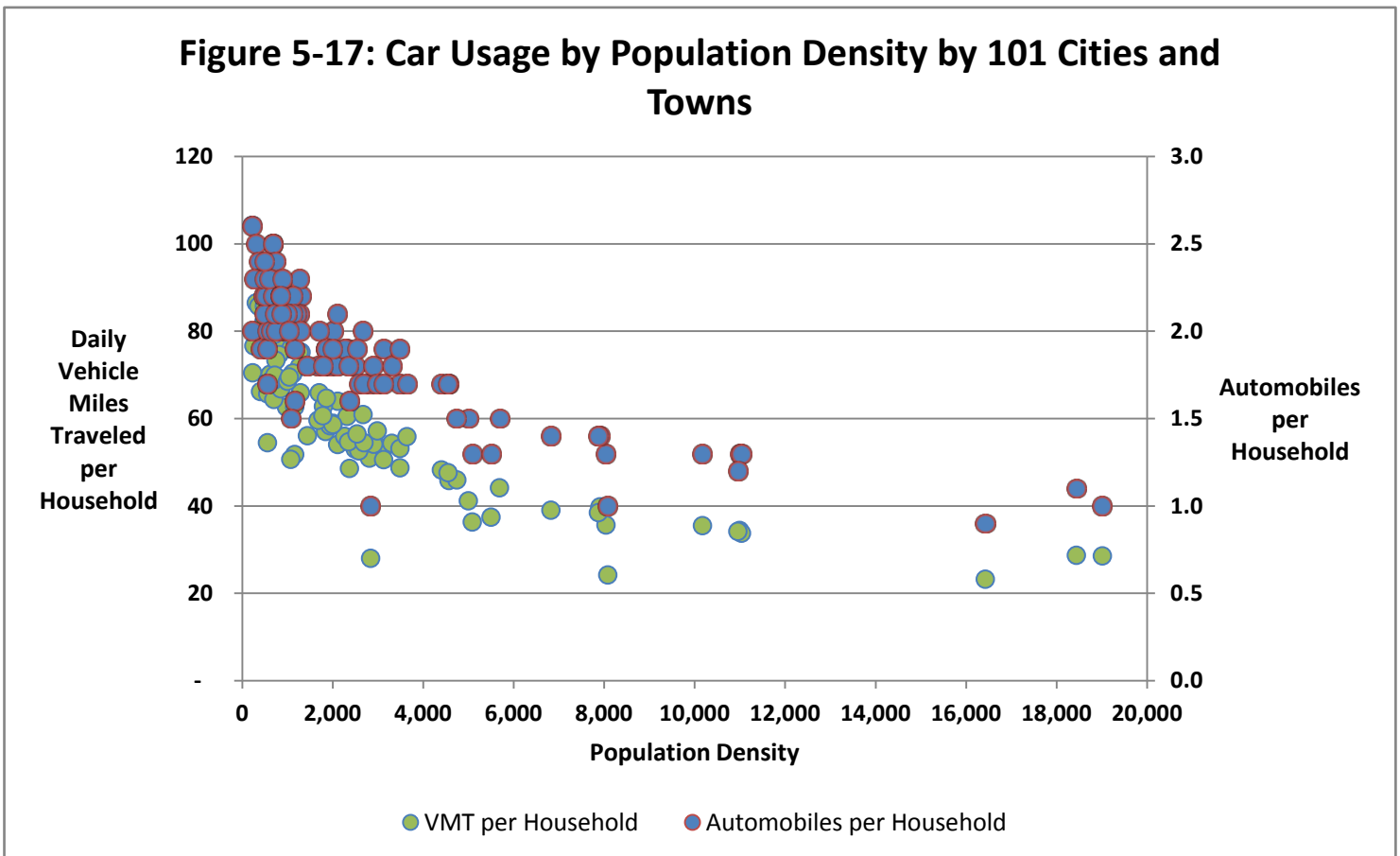
Figure 5-16: Transit Coverage in Relation to Population Density by Census Tract



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 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.

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.



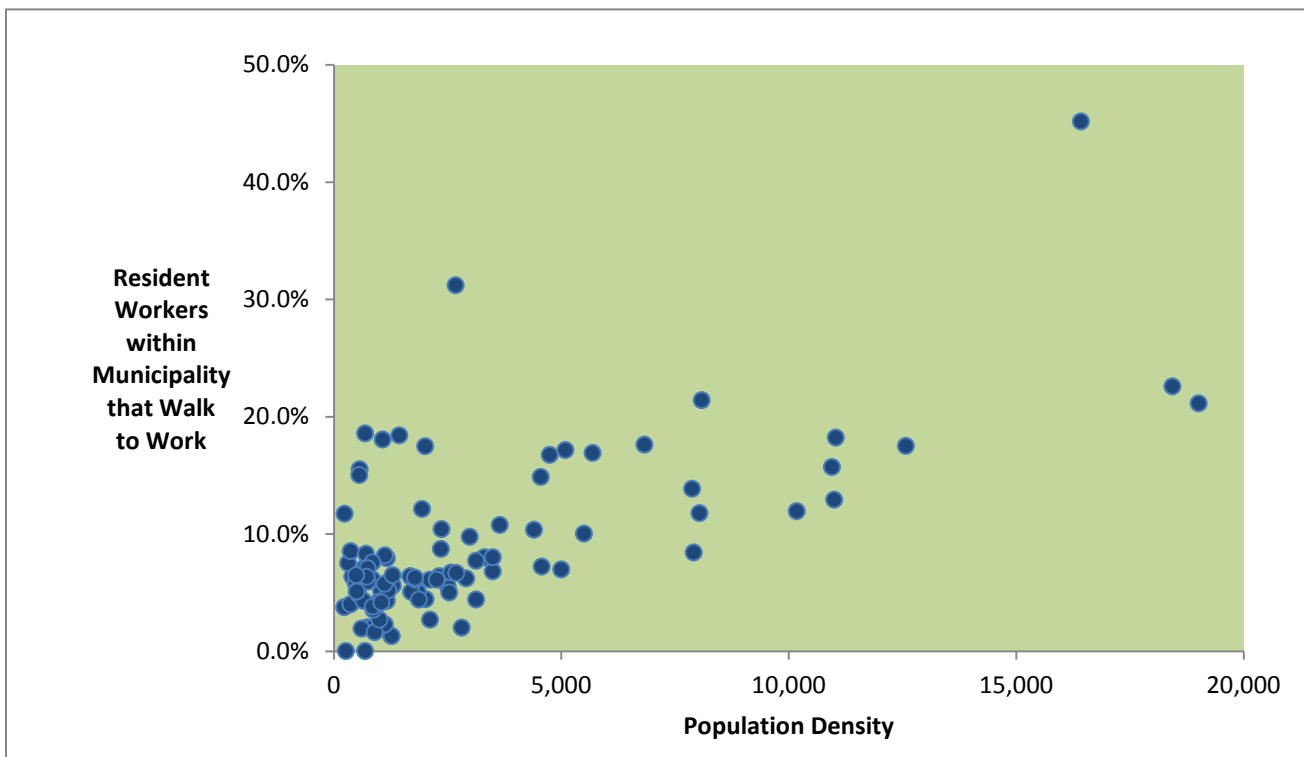
These trends are supported by the Center for Neighborhood Technology’s Housing and Transportation Affordability Index, a tool that provides a more accurate cost of housing based on its location.³¹ According to the Center for Neighborhood Technology, places that cluster schools, parks, shopping, and transit 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

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

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



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 in 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, 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, and MBTA Bikes on Buses, which strengthens transit connections for bicyclists. 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, improvements to North Green in Ipswich, and Broadway Streetscape Improvements in Somerville.
 - 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.
 - 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.
 - **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 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 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.

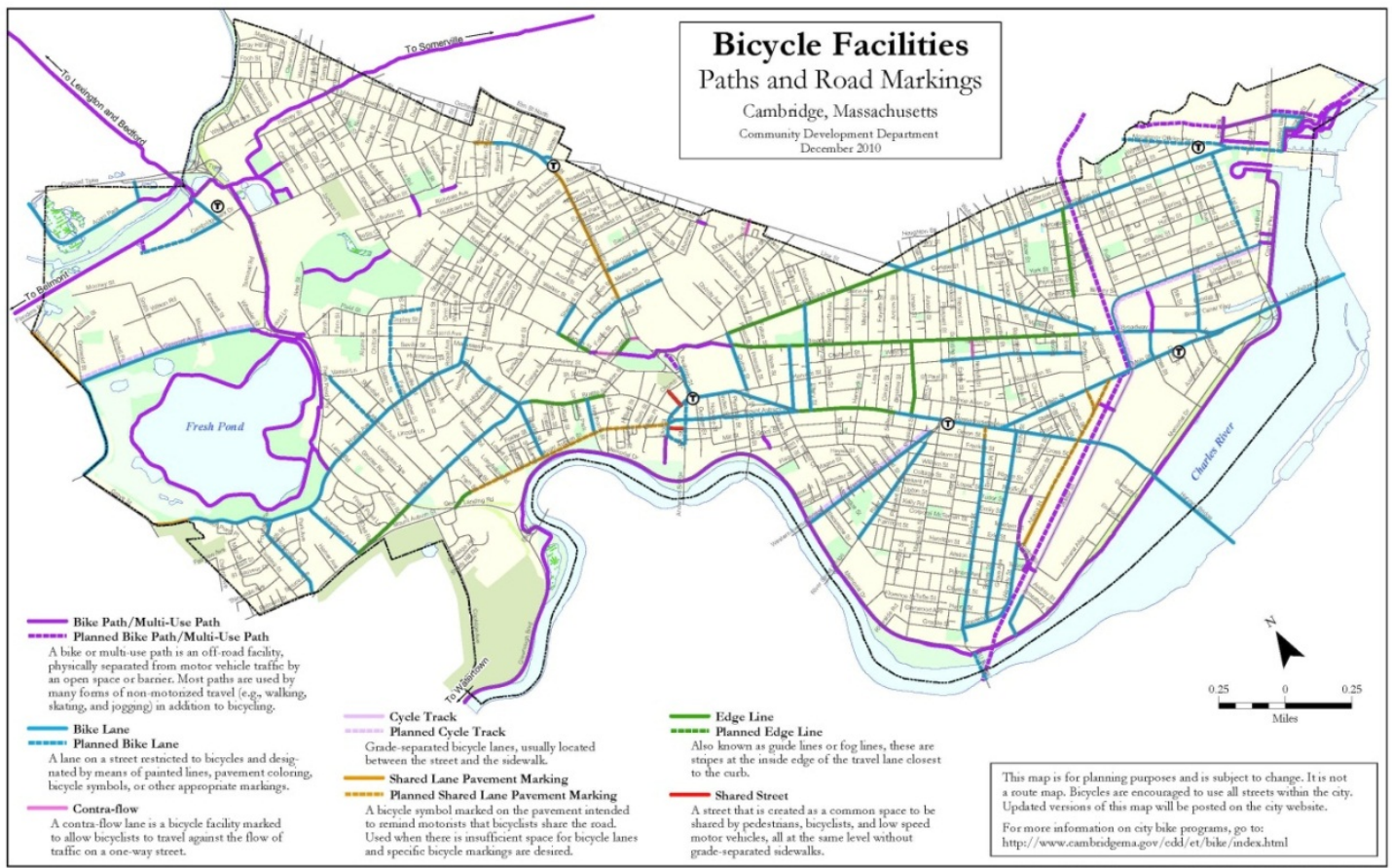
- **Healthy Transportation Compact** – Coordination of the Secretaries of Transportation, Health and Human Services, and Energy and Environmental Affairs, and the MassDOT Highway Administrator, MassDOT Rail & Transit Administrator, and Commissioner of Public Health, to facilitate transportation decisions 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 10–25 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 2008.³²

Figure 5-19: City of Cambridge Bicycle Network



- 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.

³² Cambridge Community Development Department, “Bicycle Trends in Cambridge,” April 2010.

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 investments** for limited funding.
- **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.³³ 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

³³ Inexperienced cyclists such as beginner adults and young children require separated facilities, such as cycle tracks and shared-use paths, which reduce opportunities for conflict between bicyclists, pedestrians, and motorists, and allow users to operate at comfortable speeds.

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	Critical infrastructure within useful lifespan (facility type)

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	CO2 (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 30 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