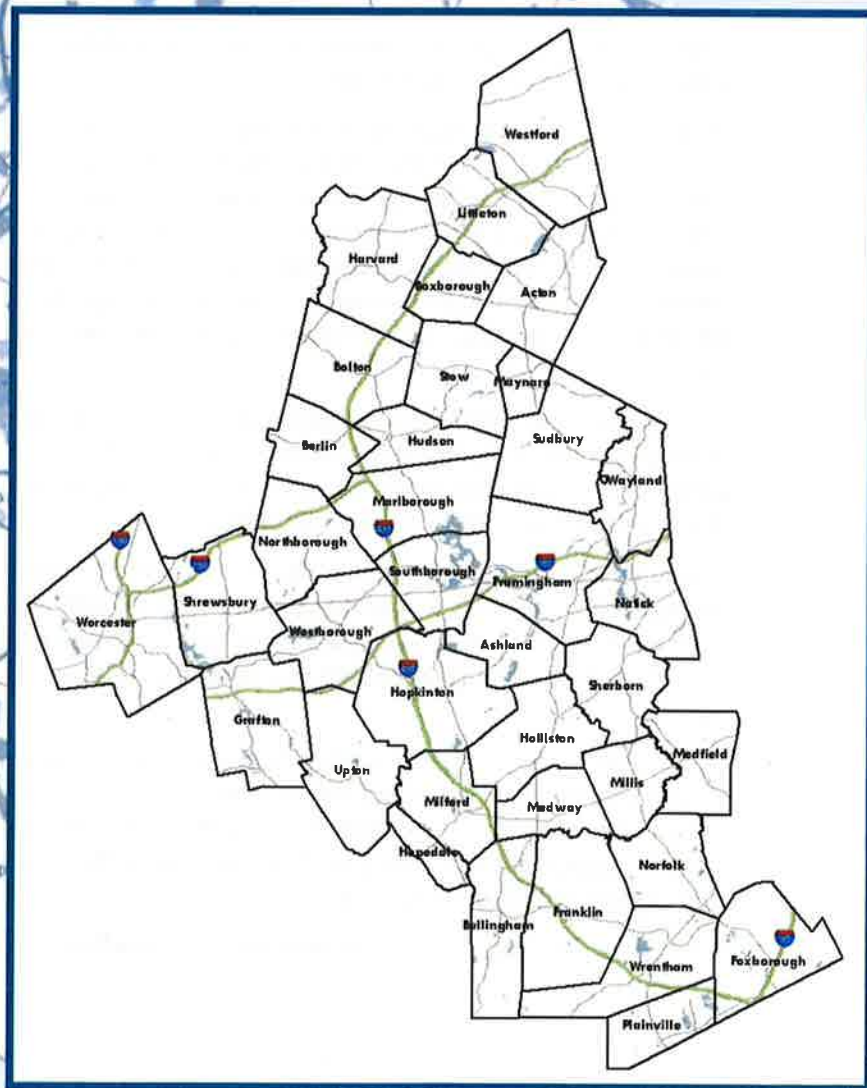


March 2012

495/MetroWest Development Compact Plan



Executive Office
of Housing and
Economic Development



<http://www.495partnership.org/compact>



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Dear 495/MetroWest Region Residents,

I am pleased to announce the 495/MetroWest Development Compact Plan. The 495/MetroWest Region, made up of 37 cities and towns along the I-495 corridor, has seen significant growth over the last 30 years and we can expect the region to continue to serve as an important economic engine for the Commonwealth for the next 30 years.

As a State, we must plan ahead for future growth in order to maximize the benefits of the economic development and growth that the 495/MetroWest region is expected to see in the future and to ensure that such growth is sustainable over the long term. To do this, the State partnered with five regional planning agencies, a regional economic development organization and a not-for-profit environmental organization to undertake a comprehensive regional planning effort. The Plan that follows is the result of that collaboration and hundreds of hours of meetings, discussions and public forums held to gather feedback from local planning boards, boards of selectmen, residents and other stakeholders in the region.

The Compact Planning process reflected in this Plan, at its core, is a locally driven effort which builds upon the priorities identified by the communities in the region. The Plan identifies areas in the region at local, regional and state levels that are considered Priority Development Areas (PDAs) and Priority Preservation Areas (PPAs) in each community.

The priority areas identified in this plan are intended to guide and inform future land use decisions in the region. By providing a regional perspective on the 495/MetroWest Region, the Plan will help local, regional and state partners make decisions and investments that promote new growth which maximizes current resources in the region and to assure that continued growth will be sustainable over the long term.

It will be important in the future that local, regional and state partners continue to work together to implement the plan by adopting prompt and predictable permitting and zoning in the areas identified for growth, to protect areas identified for preservation, to address the infrastructure needs of the region that will support areas of new growth and to market the areas identified for new growth to help support the region's economic prosperity.

I look forward to working with all of you to make this Plan a reality.

Sincerely,

A handwritten signature in dark ink, appearing to read "Gregory Bialecki", written over a light blue circular stamp.

Gregory Bialecki

495/MetroWest Development Compact Plan

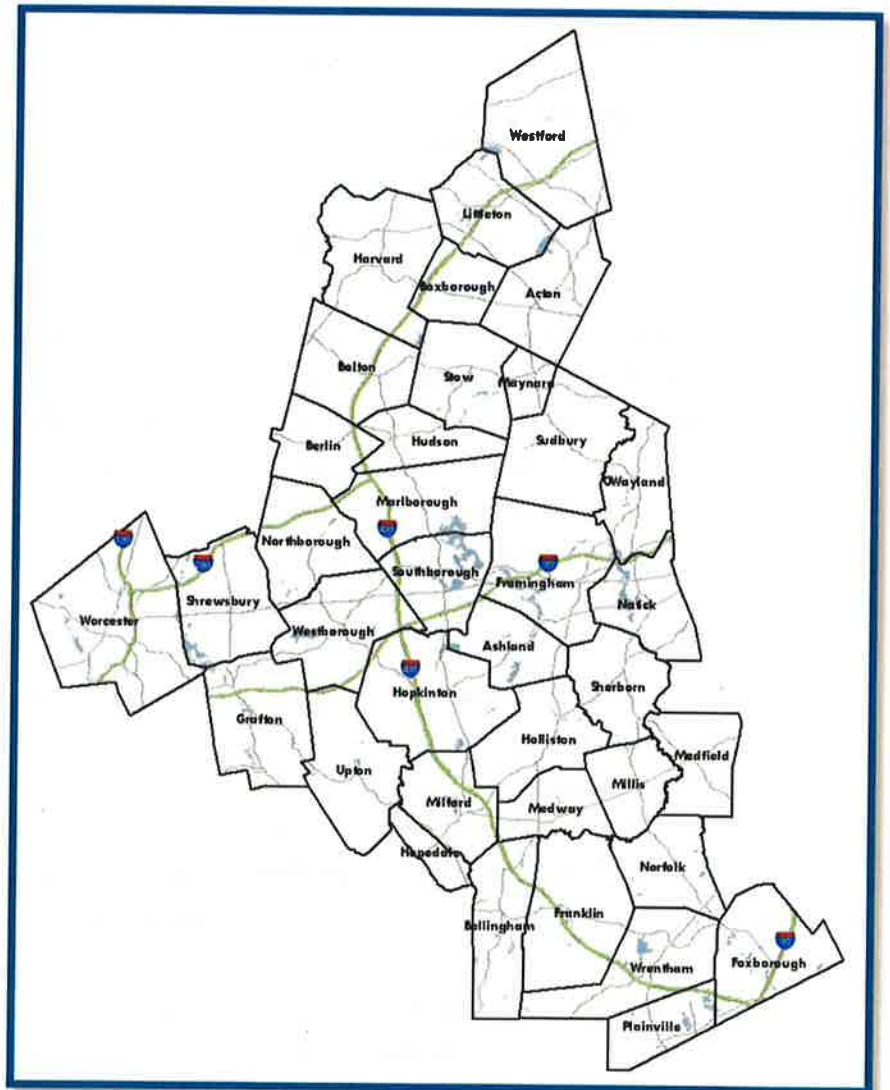


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1. Introduction

We live in regions – areas defined by function. Although we govern through municipal and state jurisdictions, successful planning policy will address the regionalism of real life: where we work, play, live, shop, and socialize. Regional planning works with a fundamental understanding that, in order to meaningfully address local concerns, we must understand and act on them in a regional context. A regional plan, then, addresses issues across boundaries, in an area with shared characteristics and overlapping factors, and is collaborative.

The 495/MetroWest Development Compact is a regional-level planning process that: 1) establishes community-based priorities and strategies along the I-495 corridor; 2) integrates those priorities into regional and state development and preservation strategies; and 3) provides a direction for public investments that conserve the intrinsic qualities of the corridor while capitalizing on its economic strength in the state.

The planning process promoted a dialogue about land use issues that transcend municipal boundaries. Local perspective was the first, key step in identifying areas where growth and development should be emphasized (“locally identified priority development areas”) and areas that should be preserved to protect natural resources and the character of each city and town (“locally identified priority preservation areas”). Meetings and conversations with municipal staff and stakeholders, in addition to large, regional forums, provided the foundation for these locally identified priority areas.

Using these local priorities as a basis, this report describes the methodology and findings of a planning process used to identify Regionally Significant Priority Development Areas, Priority Preservation Areas and Transportation Investments. Consequently, the local and regional priorities were used as a basis for identifying State Development and Preservation Priorities.

The cities and towns included in the 495/MetroWest Development Compact Region (known as “the Compact Region”) are: Acton, Ashland, Berlin, Bellingham, Bolton, Boxborough, Foxborough, Framingham, Franklin, Grafton, Harvard, Holliston, Hopedale, Hopkinton, Hudson, Littleton, Marlborough, Maynard, Medfield, Medway, Milford, Millis, Natick, Norfolk, Northborough, Plainville, Sherborn, Shrewsbury, Southborough, Stow, Sudbury, Upton, Wayland, Westborough, Westford, Worcester, and Wrentham (Figure 1). Although several of these communities are not directly adjacent to I-495, there is strong connection between the population, employment, land development, and travel patterns on I-495 and immediately neighboring municipalities.

The 37 Compact Region municipalities also span five of the 13 Regional Planning Agencies (RPA) in the state: the Central Massachusetts Regional Planning Commission (CMRPC), the Metropolitan Area Planning Council (MAPC), the Montachusett Regional Planning Commission (MRPC), the Northern Middlesex Council of Governments (NMCOG) and the Southeastern Regional Planning and Economic Development District (SRPEDD). RPAs are public organizations that encompass groupings of cities and towns and serve these municipalities by dealing with issues and needs that cross governmental and other boundaries through planning, policymaking and technical assistance.¹

¹ For more information about RPAs: http://www.pvpc.org/resource_center/marpa.shtml

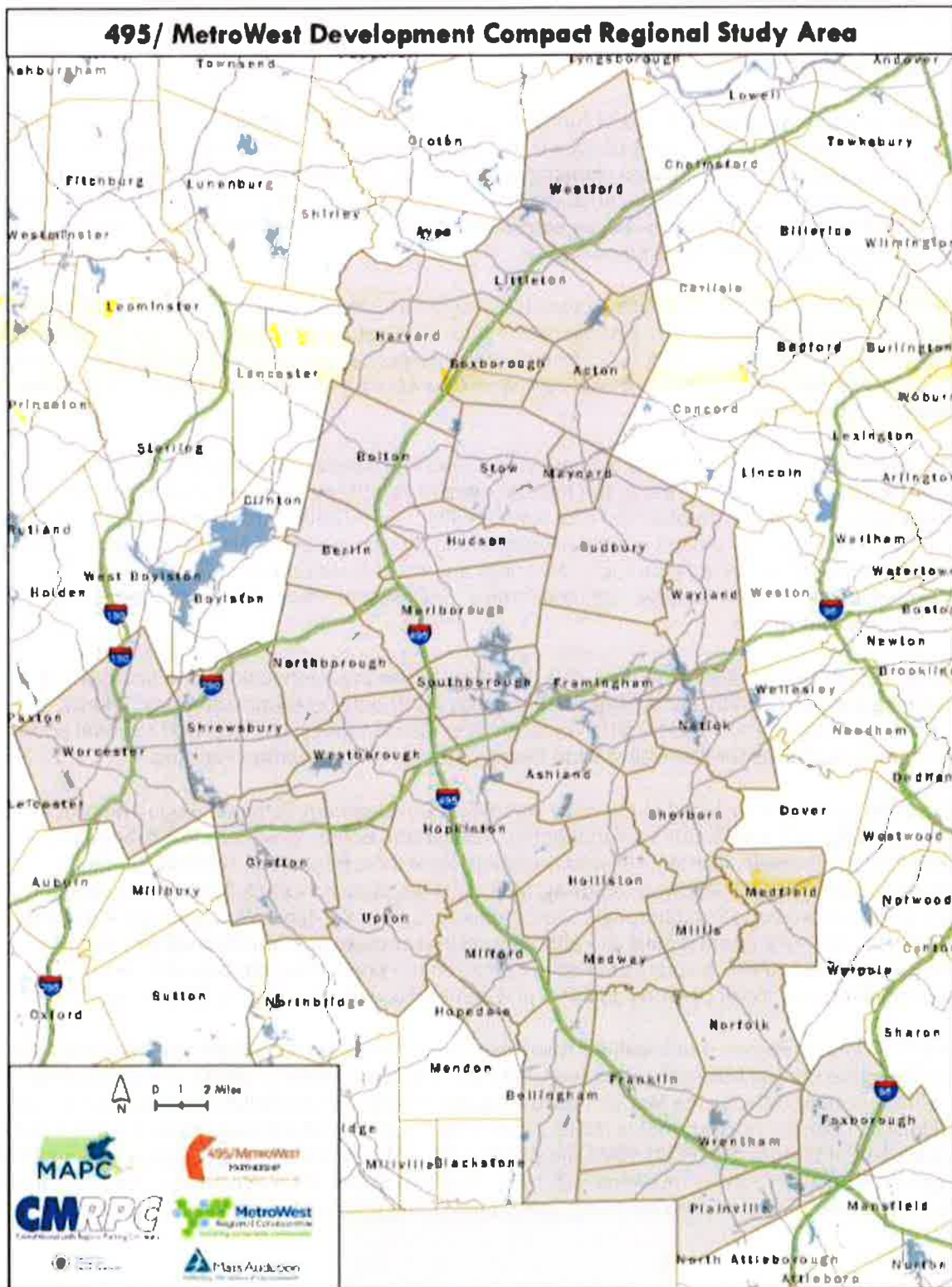


Figure 1. 495/MetroWest Development Compact Communities

2. Background

The 495/MetroWest region of the state has seen tremendous economic development and job creation over the past thirty years. Based on this trend and on available land capacity, there is every indication the region can continue its success in economic development and job creation for the next thirty years. In order to continue that success, however, significant timely steps need to be taken to make economic development more sustainable for the region.

Thus, the Patrick-Murray Administration, through the Executive Office of Housing and Economic Development (EOHED), in coordination with the Executive Office of Energy and Environmental Affairs (EOEEA) and the Massachusetts Department of Transportation (MassDOT), partnered with MAPC, CMRPC, the MetroWest Regional Collaborative, the 495/MetroWest Partnership and Mass Audubon in a development compact planning study for this region². Modeled after the South Coast Rail Corridor Plan³, the 495/MetroWest Development Compact was advanced in collaboration with regional and local participants and included both public and private sectors to form the framework for decision-making in land use regulation and infrastructure investment in the region over the next 20 years.

Developed by the EOHED, the Compact established a set of shared principles for state, regional and local strategies for the growth, development and land preservation efforts in the 37 cities and towns that comprise the 495 Compact Region. The six fundamental principles informing this framework are:

- Continued new growth will likely require major transportation and other infrastructure upgrades, beyond what is needed to keep existing systems in good repair.
- New commercial and residential growth must occur in a manner that is respectful of open space resources, transportation networks, and water resources in the region.
- Land use and transportation decisions must take into account the principles established by the Global Warming Solutions Act, the Clean Energy and Climate Plan, the transportation re-organization statute and GreenDOT Initiative.
- Workforce housing must continue to be produced and preserved within the region at a scale that allows the number of workers living in the region to keep pace with the number of new jobs created in the region.
- Sustainable new growth will involve the creation and maintenance of an effective public transit system that will coordinate with existing transit.
- Coordinated planning and implementation efforts are necessary, particularly where jurisdictions and boundaries intersect.

These principles served as the foundation for the planning and growth strategy, and preservation approach, utilized in this plan. To advance this regional approach, a key aspect of this process was to build consensus with the broadest possible audience that these guiding principles are the appropriate framework for the efforts.

² Organization descriptions for the Interagency Coordination Team are included in **Appendix A**.

³ <http://www.southcoastrail.com/>

3. The 495/MetroWest Development Compact Region

When embarking on a community or regional planning process, we cannot reasonably consider the future or develop the “What IF” scenario until we first articulate “What IS”. That is the role that data collection plays; it describes “What IS”. It tells the story of what the community and region are, and how they have changed over time. This data allows us to establish trends and envision a “what if nothing changes” projection of our future.

Thus, armed with data, we can provide a picture of the reality of the region. Interestingly, this may or may not align with popular opinion. Some of the things the data tells us might be surprising or may not quite fit our expectations or may raise questions. These occurrences are precisely what can guide us in asking questions and will help us to begin to make the necessary changes. This data is analyzed while keeping the VISION, the guiding principles described above, in mind. The data and the trends-extended can help us establish benchmarks for measuring performance and implementation down the road, so that we stay on track to achieving those guiding principles.

The following is the story of the 495 Compact Region⁴.

Community Characteristics

While every municipality is unique, the cities and towns in the Compact Region do share common characteristics. The communities in the Region fall into one of three major community types⁵: Developing Suburbs, Maturing Suburbs, and Regional Urban Centers. These classifications help to inform the analysis of the Region. Please refer to Figure 2 for a map of the community types.

- Twenty-five of the Compact Region’s municipalities are Developing Suburbs. These communities have experienced high rates of growth over the past decade, primarily through large lot single-family homes. They also tend to have large amounts of undeveloped and unprotected land that could be used for development. Some of these suburbs have strong mixed-use town centers, while others have town centers with historical and civic significance but little commercial or neighborhood value. However, overall they have fairly low density development and the extent of economic development varies but is generally quite limited.
- Eight of the municipalities are Maturing Suburbs. One important characteristic of this type of community is that they all have a dwindling supply of vacant land for development, typically less than 25% their land area. On the whole, Maturing Suburbs in this Region are located closer to Boston. The suburban development happened earlier in these communities and they tend to have moderate density for residential development as compared to Developing Suburbs.
- Regional Urban Centers comprise most of the corridor’s most populous communities. These municipalities include major job centers and urban scale downtowns with multi-story mixed-use buildings, and they tend to be home to the many of the region’s low-income minority and foreign-born residents.

⁴ A glossary of planning terms is included in **Appendix B**.

⁵ Community Types were defined for cities and towns in the state through MetroFuture:
<http://metrofuture.org/content/metrofutures-community-types>.

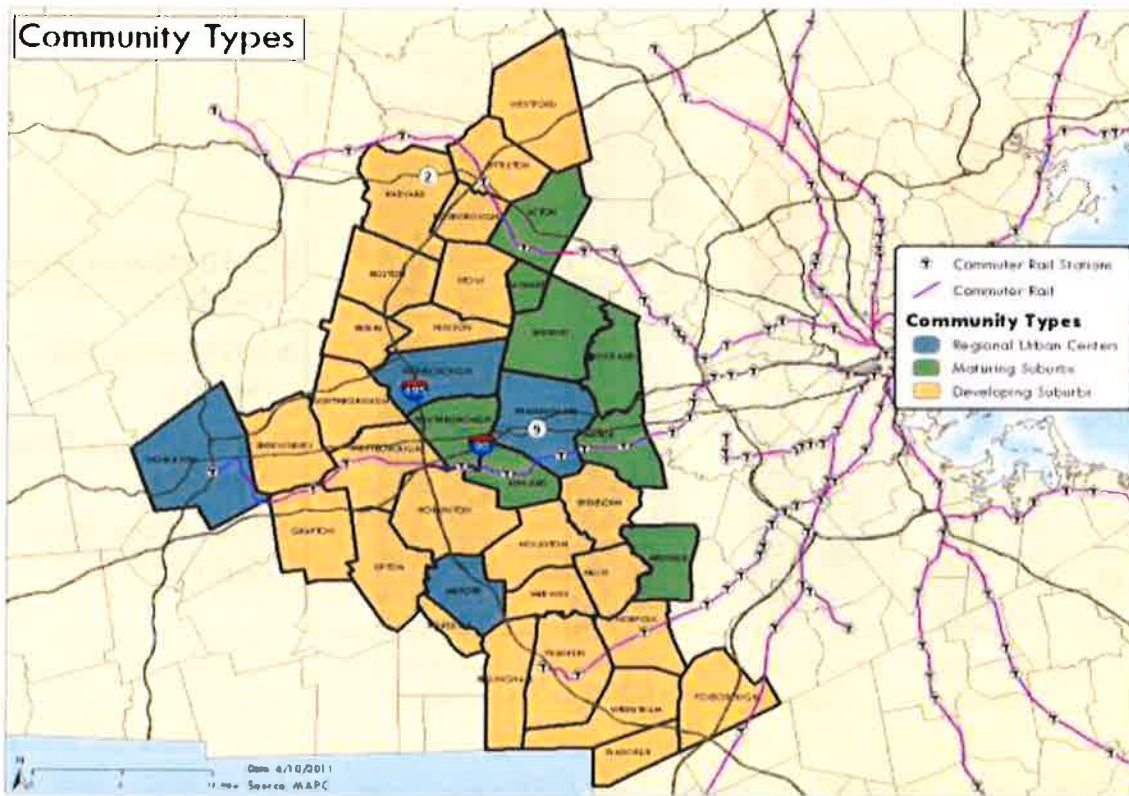


Figure 2. Community Types in the 495 Compact Region

Population Characteristics

As shown in Figure 1, the study area covers 37 cities and towns along I-495 and I-90 (the Massachusetts Turnpike), from Westford in the north to Plainville in the south and Natick in the east to Worcester in the west. In 2010, the 495 Compact Region had a total population of 770,000⁶, which is approximately 12% of the state's population.

Worcester is the largest city in the 495 Compact Region, comprising nearly a quarter of the total population among the 37 municipalities. The other large municipalities are Framingham, Marlborough, and Shrewsbury each of which has a population constituting 5% - 9% of the Compact Region's overall population. Half of the municipalities have fewer than 14,000 residents each, and together comprise about one fifth of the total population of the Compact Region.

The 495 Compact Region grew at a pace of 6% between 2000 and 2010, compared to 3% for the state overall, gaining 40,400 new residents in that time period. The Region has also grown more culturally and ethnically diverse in the past decade, with minority populations increasing by at least 5% in each of the Region's community types (Figure 3). The Latino and Asian populations experienced the largest percentage increases, with the Latino community growing in Regional Urban Centers like Worcester, Framingham and Marlborough, and the Asian community growing in the suburbs Westborough, Shrewsbury and Acton. There is every indication that this growing diversity trend will continue both in the Compact Region and statewide.

⁶The source of data included in the Community Characteristics section is the US Census (e.g., Census 2000, Census 2010, American Community Survey) unless otherwise noted.

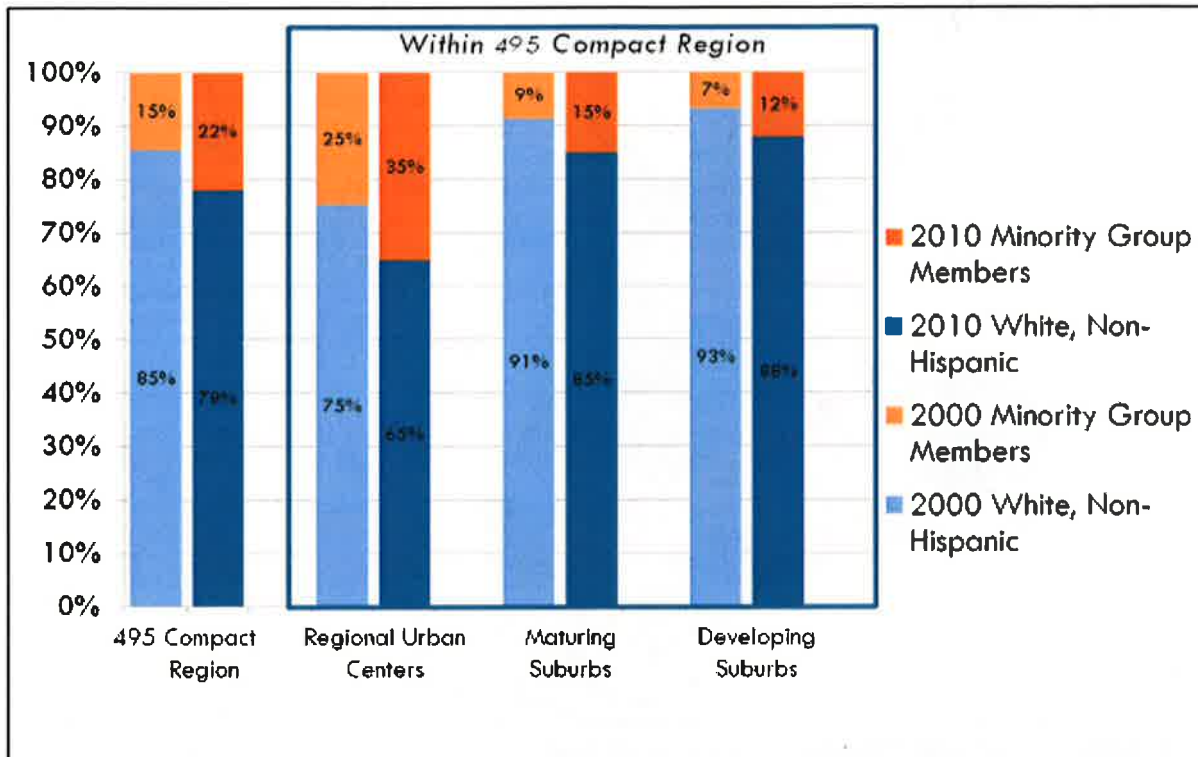


Figure 3. 495 Compact Region Diversity

Understanding the Region's demographic profile is critical to understanding and planning for our future economic profile. Demographic trends drive our labor force. There is a clear trend in declining school-age children in the Region overall (Figure 4). The working age population (defined as ages 18 – 64) grew by 7% over the past decade and, interestingly, this group grew faster in the Regional Urban Centers than it did in the Maturing and Developing suburbs. In contrast, the suburbs experienced increases in their population of people aged 65 and over. On average, the Developing Suburbs increased by 25% and Maturing Suburbs increased by 18%, while this population in the Regional Urban Centers saw a small decline. For example, Berlin and Bolton experienced a more than 70% growth in their 65 and over populations while Worcester experienced a 13% decrease. These changes have significant land use as well as fiscal, environmental and social implications. For example, growing suburban populations typically require expensive new infrastructure while population and job growth in older population centers could take advantage of existing networks like roads, sewers and rail lines.

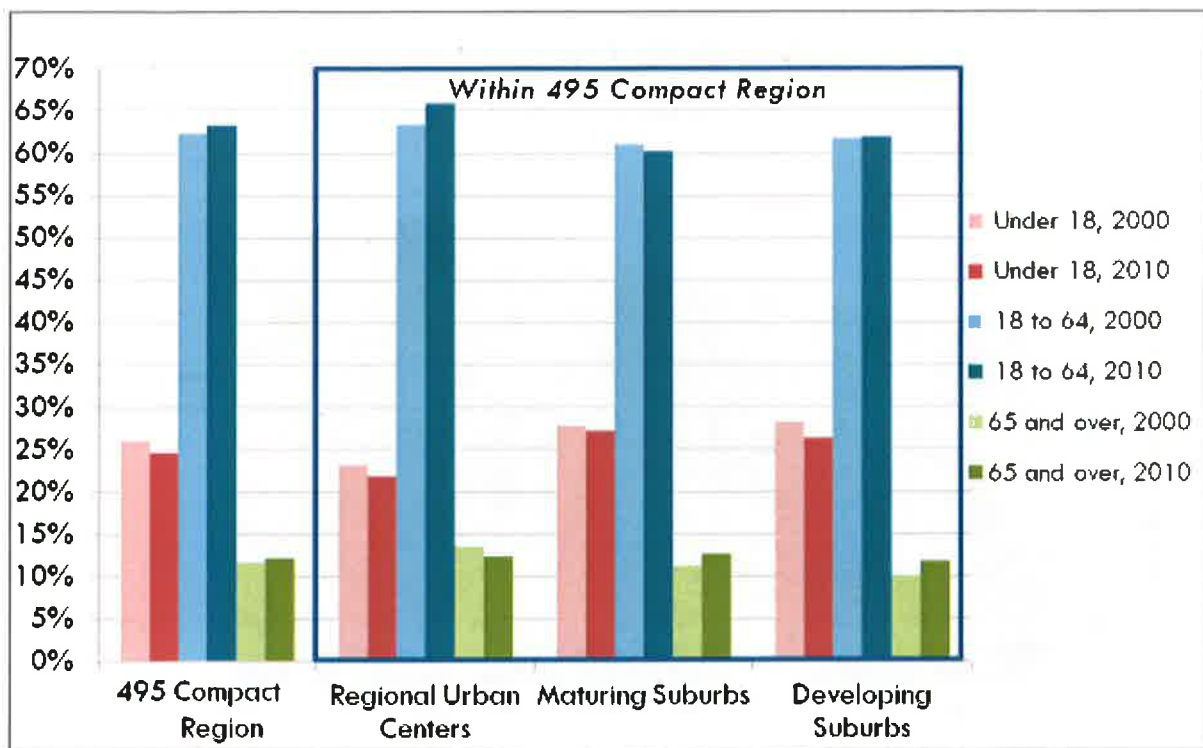


Figure 4. 495 Compact Population Age Cohorts

In absolute numbers the increase in the number of people aged 65 and over was about 10,000 in the Maturing and Developing Suburbs, and the trend is likely to continue. As Baby Boomers move into retirement age and leave the labor force, a shortage of workers may result. The Compact Region's recent population growth and related increase in diversity will be important factors to consider as workers are needed to fill the gaps left in the labor force.

Employment

The Compact Region is an important job center, providing 400,000 jobs, or 11% of the total jobs in the state. Notably, almost a quarter of these jobs are located in the City of Worcester. The Route 9 corridor east of Worcester, including Natick, Framingham, Westborough, Shrewsbury, and Southborough, collectively provides another 52% of the Region's employment.

The Compact Region accounts for approximately 13% of the state's total payroll earnings, totaling more than \$458M per week in the 2010 calendar year⁷. This share has been consistent over the past 10 years, showing stability in the overall employment picture in the Region (Figure 5). Total earnings in the 495 Compact Region increased from over \$355 million per week in 2002 to \$458 million per week in 2010 (+29%). The remainder of the state saw an increase in weekly total payroll earnings at a slightly lower rate (+25%).

⁷ Executive Office of Labor and Workforce Development - Employment and Wage Data, ES-202, 2010.

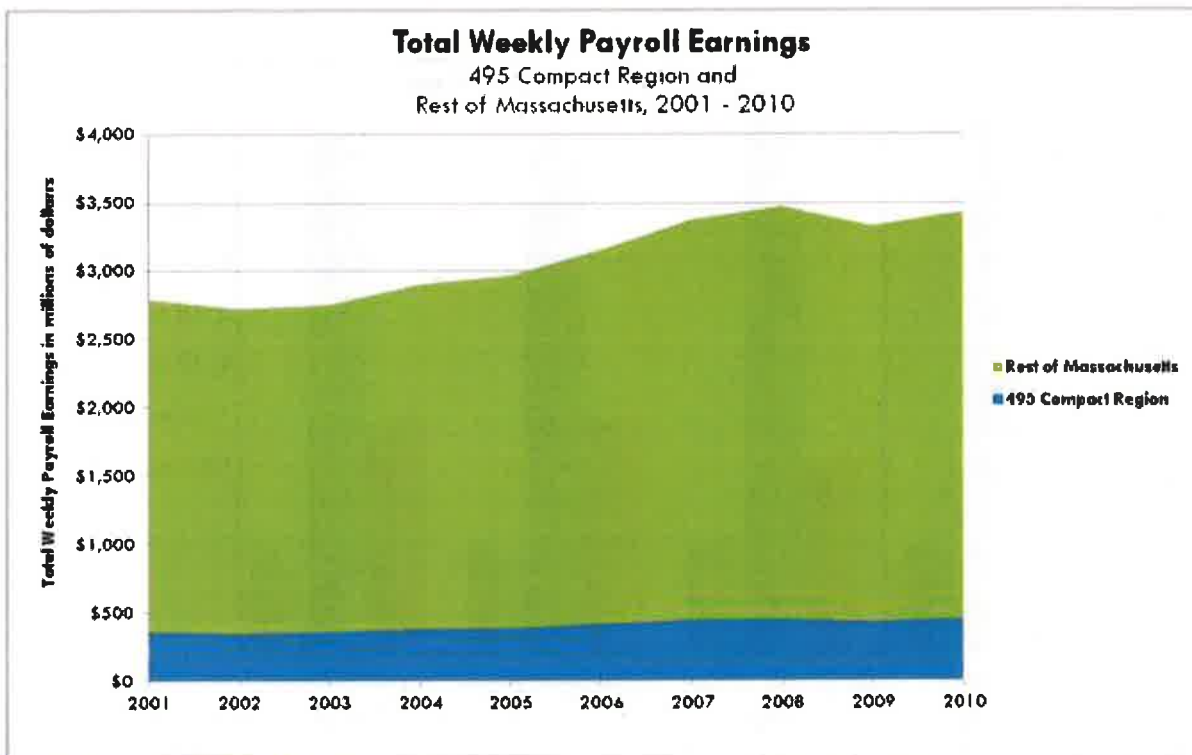


Figure 5. Total Weekly Payroll Earnings

The region has a diverse economy, although employment is dominated by a few specific sectors, including: Education and Health Services; Trade, Transportation and Utilities; and Professional Services. The average annualized wage in the corridor is \$54,766. It is important to note that the two sectors for employment, Education and Health Services, and Trade, Transportation and Utilities, comprise almost 45% of the total jobs, but pay less than the Region's average annual wage. This is a key piece of economic information to consider when looking ahead to the next 20 years. See Figure 6 for more employment and wage characteristics.

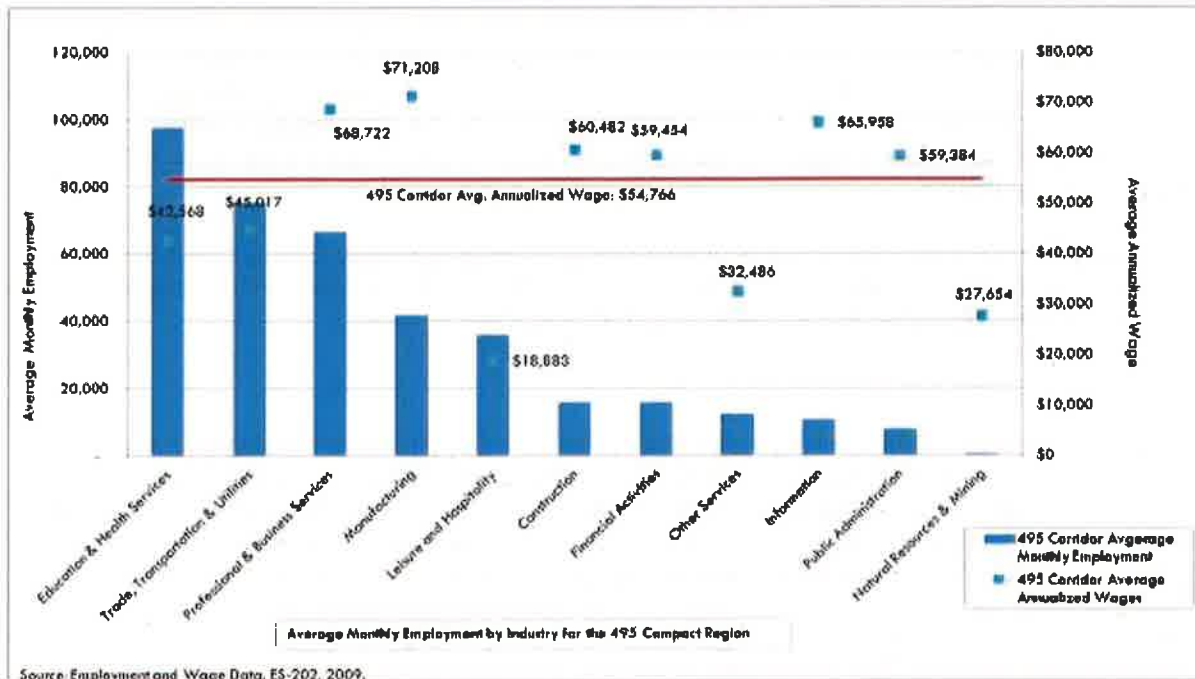


Figure 6. Employment Characteristics

Another key factor in considering the dynamics of the labor market is educational attainment. The residents in the Compact Region are very well educated: 47% have a Bachelor's degree or higher, nearly 10% more than the state overall (Figure 7).

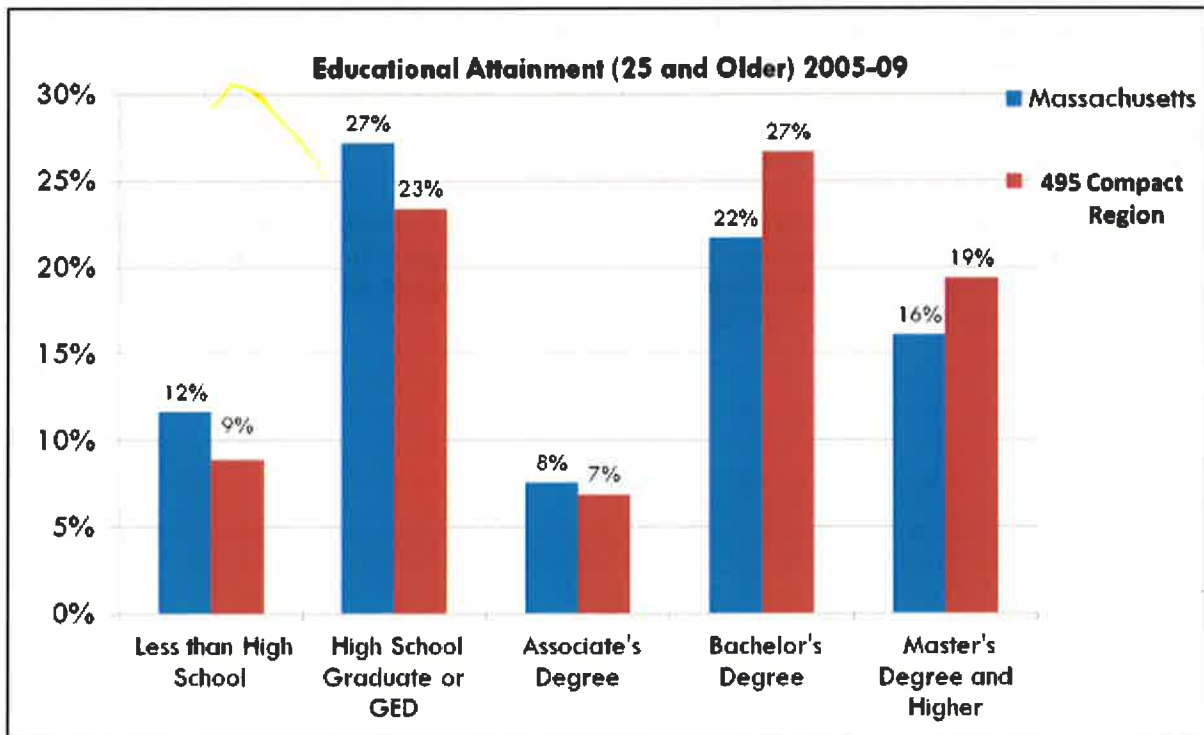


Figure 7. Educational Attainment

The employment data provides a picture of a region that commands a significant share of the state's payroll earnings and overall jobs. It reveals that nearly one-half of the workers in the Region are employed in two sectors, but that those sectors pay less than the Region's annual wage. The top two wage earning sectors are Manufacturing and Professional and Business Services, which pay well over the average annualized wage, but the number of jobs in those sectors is just over 25% of the total jobs in the Region.

The data also shows that the residents of the Compact Region are highly educated and the population is increasingly diverse. Matching the labor force and its skill level with employment in the face of changing demographics will likely be a challenge going forward.

Housing

It is widely recognized that Massachusetts has one of the most expensive housing markets in the nation. This creates a challenge for meeting the housing needs of lower- to middle-income households in the Compact Region and beyond. According to the U.S Department of Housing and Urban Development, a housing cost burden occurs when a household pays greater than 30% of their gross household income on housing costs (mortgage/rent, insurance, taxes, and interest).

Massachusetts aims to meet the needs of households (income-eligible households) whose maximum income does not exceed 80% of the area median income, adjusted for household size, through M.G.L. Chapter 40B and other programs from the Department of Housing and Community Development (DHCD). For example, an income eligible renter household's monthly housing costs (inclusive of utilities) cannot exceed 30% of monthly income for a household earning 80% of area median income, adjusted for household size. In the case of homeownership, an income-eligible household's down payment must be at least 3% of the purchase price, at least half of which must come from the buyer's funds and monthly housing costs (inclusive of principal, interest, property taxes, hazard insurance, private mortgage insurance and condominium or homeowner association fees) cannot exceed 38% of monthly income for a household earning 80% of area median income, adjusted for household size. A cost burden is explained as households paying more than 30% of their gross household income on housing and a severe cost burden is when a household pays more than 50% of their gross household income on housing costs.

In the Compact Region, a total of 37% of households are paying more than 30% of their income towards housing costs; this includes both renters and owners (Figure 8). While the 33% of owner-occupied housing units fall into the category, it is worse for renters of whom nearly 47% have a housing cost burden greater than 30% of their income.

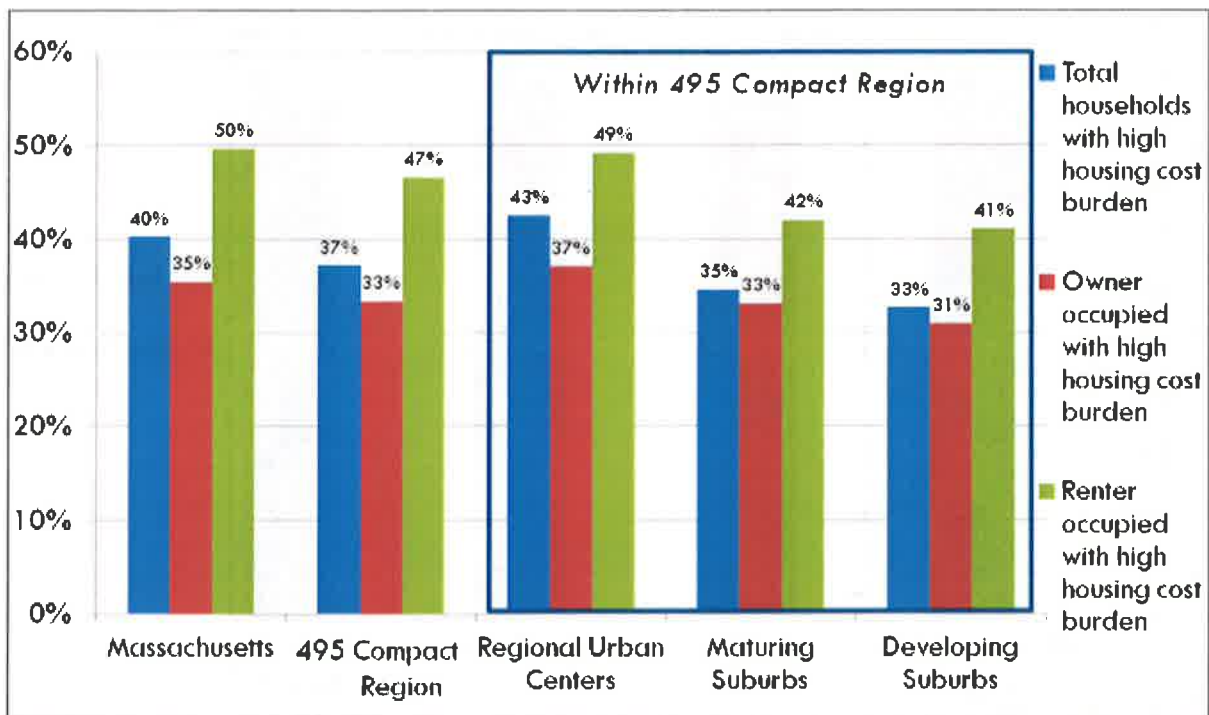


Figure 8. Housing Cost Burden

It is noteworthy that there is very limited housing diversity in the Compact Region (Figure 9). 65% of all housing units are single family homes. In the 33 Developing and Maturing suburb municipalities, this number increases to more than 75%. The Regional Urban Centers provide a much different picture; more than 50% of the housing located there is multi-family. The limited affordable housing choices available in the Compact Region are a critical part of the existing high housing cost burden. In the future, municipalities are encouraged to advance the Compact objectives by addressing the limited diversity in housing stock in the region through smart growth zoning in support of diverse housing types and increased development densities.

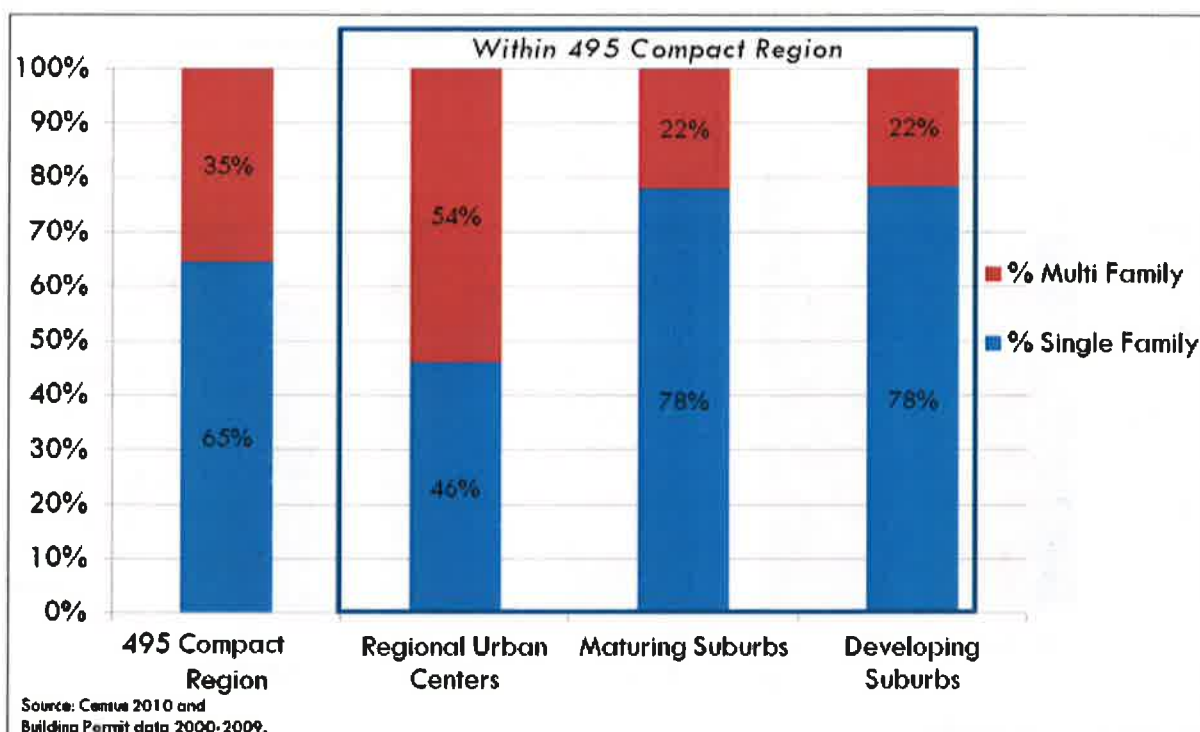


Figure 9. Housing Type

With an increasingly diverse population needing a broader range of housing options in a variety of locations, there is a distinct need to create more housing units throughout the Compact Region that satisfy the required employment, desired housing types and affordability needs. The combination of disproportionately high housing costs and lack of housing choices could potentially deter workers from moving to the corridor and firms from locating here in the future. It is critical to develop alternatives such as multifamily housing in transit accessible locations for a range of household types.

Transportation

A consequence of limited housing choice is that it is more difficult for workers to live close to where they work. This is significant because it means that there is a mismatch between employment and housing; people cannot afford to live in the Region in which they work. On average, residents in the Compact Region commute approximately 15 miles round trip. However, this number increases to over 18 miles for suburban residents and is reduced to 12 miles for residents in the urban centers. More than 58% of Region's residents also work within the Compact Region, nearly one-third of which live in just five municipalities: Framingham, Marlborough, Milford, Shrewsbury, and Worcester. This indicates that the transportation challenges have an emphasis on moving people within the Region, not just moving people in and out of the Region. This understanding helps to focus transportation planning within the Compact Region. It also provides opportunity to reduce vehicle emissions, such as greenhouse gases and particulate matter, by limiting excess travel resulting and increasing transportation choices on key commuter corridors in the Compact Region.

The Region already has some infrastructure to support these intra-Region connections. For example, there are five Regional Transit Authorities (RTAs) in the Region, serving more than 30 municipalities (Figure 10). The RTAs who provide the majority of service in the Region are the Worcester RTA and the MetroWest RTA, both of which provide connections to the MBTA commuter rail. In 2010, the

annual ridership on these two RTA systems alone totaled more than 3.9 million rides, which reflects an increase in ridership over the past several years. Although ridership is strong, there are still gaps in service between the commuter rail stations and the key employment centers. In other words, there are challenges to still addressing the “last mile” problem of transit access.

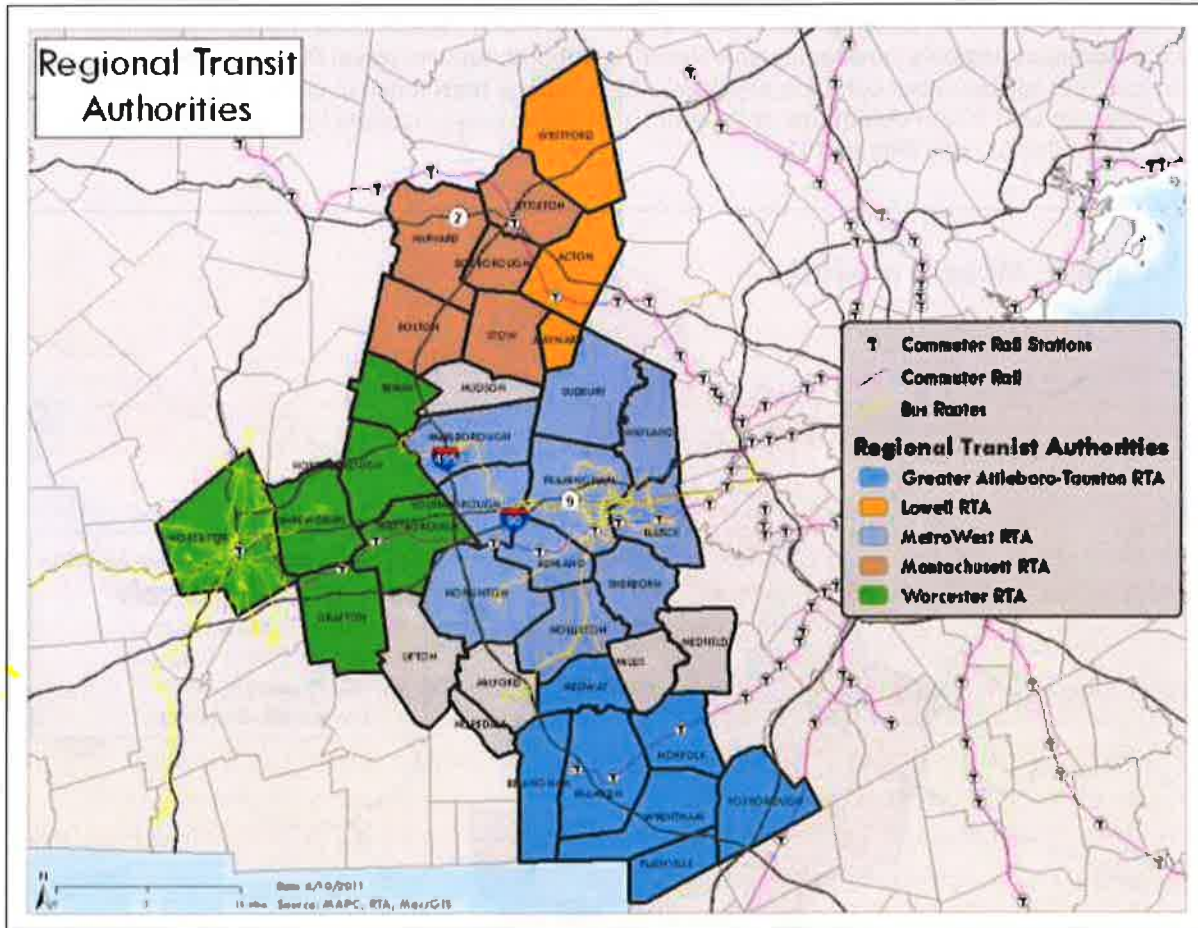


Figure 10. Regional Transit Authorities serving the municipalities in the 495 Compact Region

The commuter rail lines serving the Compact Region are the: Fitchburg Line, Framingham/Worcester Line and Franklin Line. According to the most recent available data⁸, the Framingham/Worcester Line carried the highest number of riders (17,300) while the Franklin Line and the Fitchburg Line carried 13,400 riders and 9,600 riders respectively. Based on the same data, the top 5 commuter rail stations for daily weekday boardings (inbound) in the 495 Compact Region were:

- Framingham (Framingham/Worcester Line) : 1,150
- West Natick (Framingham/Worcester Line): 1,016
- Worcester(Framingham/Worcester Line): 954
- South Action (Fitchburg Line): 856
- Forge Park-495 (Franklin Line): 827

⁸ <http://www.mbta.com/uploadedfiles/documents/Bluebook%202010.pdf>

In terms of trips, the Framingham/Worcester Line makes 41 weekday trips (15 peak/26 off peak), the Fitchburg Line makes 34 weekday trips (12 peak/22 off peak) and the Franklin Line makes 37 weekday trips (13 peak/24 off peak).

Of course, not all trips are commute trips. In fact only roughly one-third of daily vehicle trips are for employment purposes. Based on analysis of Registry of Motor Vehicle Data (RMV), residents in most of the Compact Region's Developing and Maturing Suburbs have to travel farther for shopping, services, school and other common household destinations than those in urban centers. In combination with longer commutes, this means that the average household in the Region is driving over 100 miles per day (Figure 11).

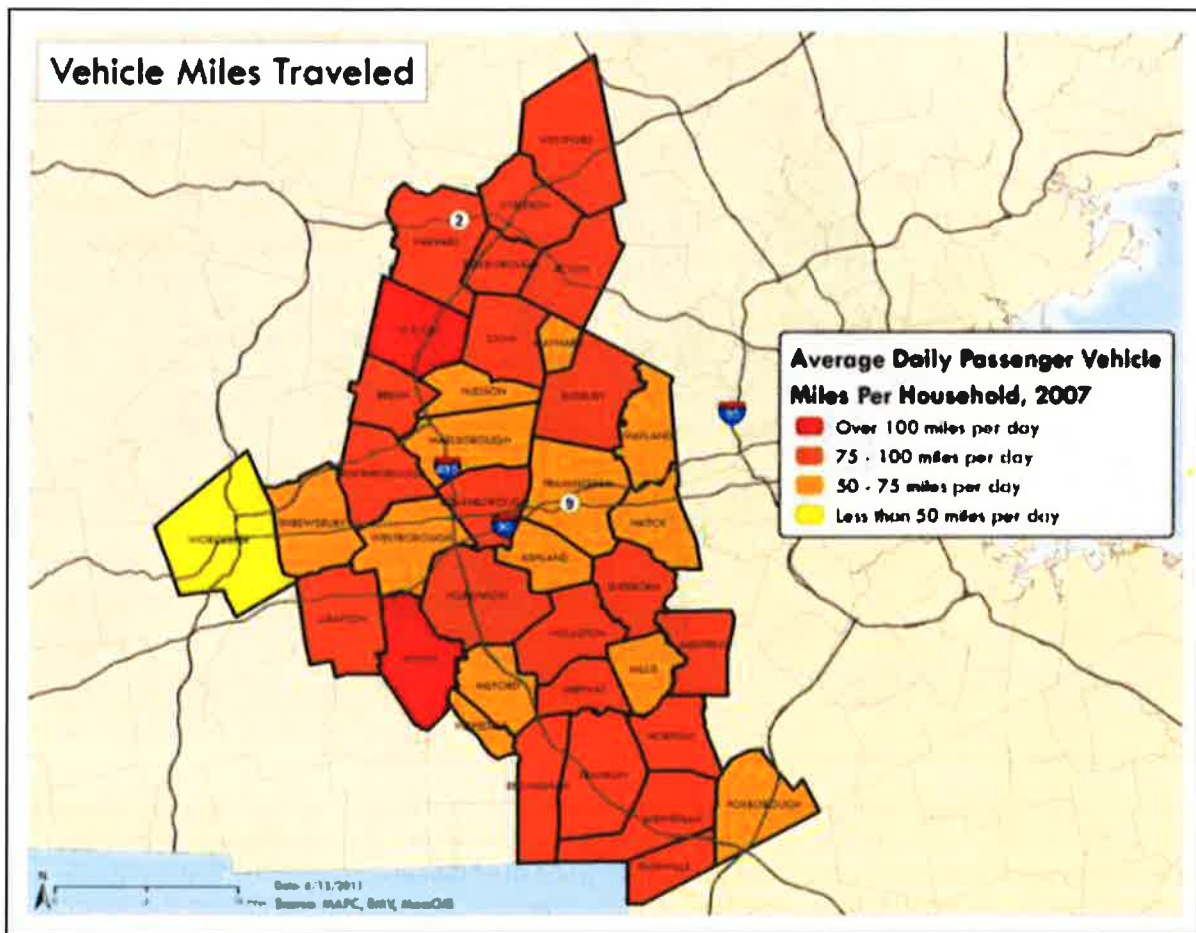


Figure 11. Average VMT Per Household in the 495 Compact Region

In addition, the trips being made are occurring on more congested roadways. The highest levels of congestion are found along the Route 9 and I-90 corridors and along I-495 itself. Figure 12 shows one measure of congestion, as modeled by the Central Transportation Planning Staff (35 municipalities) and CMRPC (Worcester, Shrewsbury, and Grafton only). The units of analysis used in the map are Traffic Analysis Zones (TAZs), which are a unit commonly used in transportation planning models to define where trips begin and end. TAZs include information on population, employment and households, and they vary in size so that they can contain similar amounts of people who are making trips.

The map depicts Vehicles/Capacity (V/C) by TAZ, with higher values/darker colors indicating that there are more vehicle miles travelled relative to roadway capacity, increasing the probability for localized congestion. Also demonstrated is that there are large areas within the region that are relatively uncongested⁹.

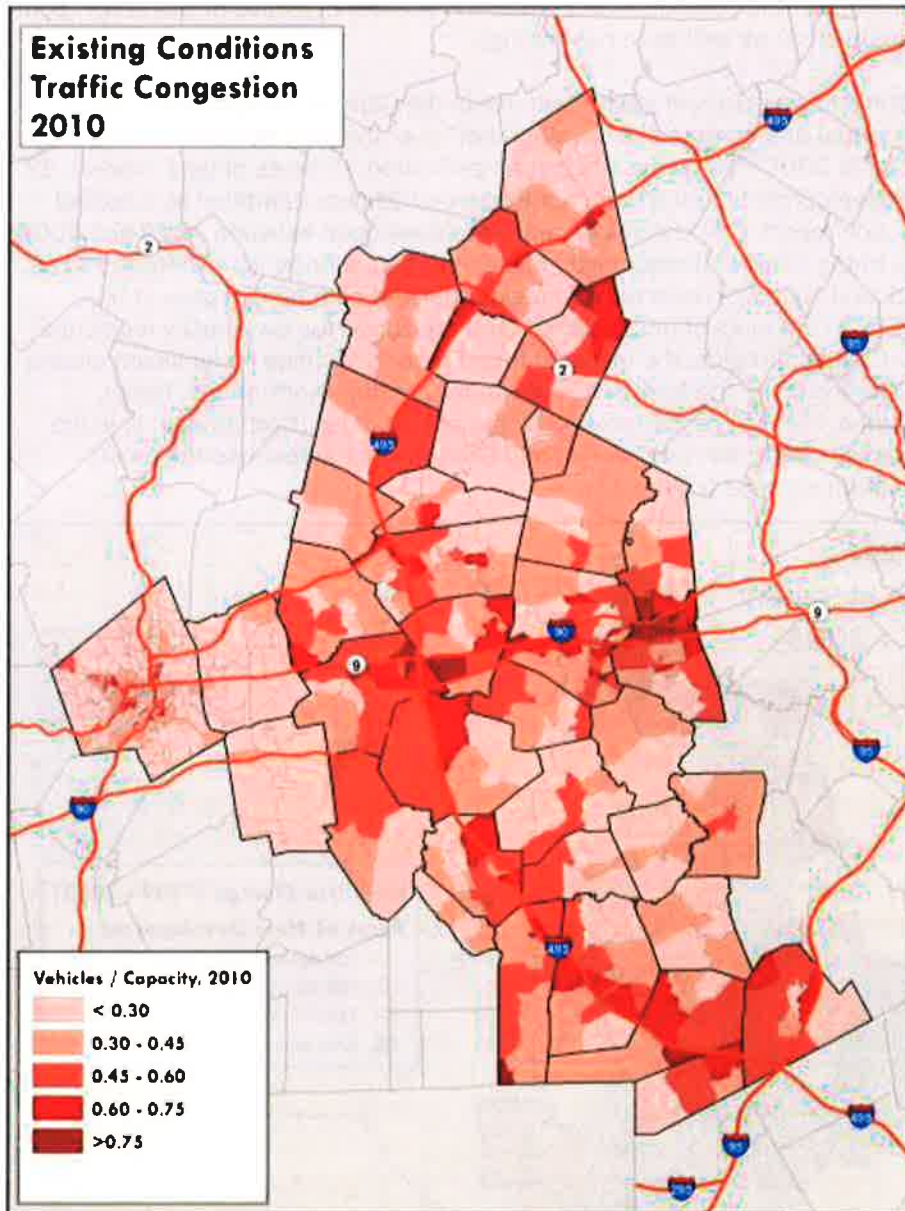


Figure 12. Existing Traffic Congestion in the 495 Compact Region

Together, the longer and more congested trips increase green house gas (GHG) emissions, negatively impact air and water quality, and add to the transportation-related costs of those households. The increased amount of time in their car also means that people are not at home with their families, contributing to the economy, or engaging in other social or healthy activities.

⁹ As a note, the low V/C values in Worcester, Shrewsbury, and Grafton are likely an artifact of different travel demand models used by CTPS and CMRPC, and may not reflect the actual difference in congestion as observed or experienced.

Land Use Change

Changes in land use, such as where new offices are built and where they are abandoned, are an indicator of how the Compact Region has developed and could continue to develop if the status quo is maintained. Re-directing unwanted components of this trend is a key objective of this study, both in the identification of priority areas as well as in our findings.

According to Mass Audubon's *Losing Ground* study, land use in the Commonwealth has been "transformed by new residential and commercial development" over the past 40 years.¹⁰ The study found that between 1999 and 2005 Massachusetts lost an estimated 22 acres of land (approx. 17 football fields) per day to development. In the Compact Region, which was identified as a *sprawl frontier* in that Mass Audubon report, 6,400 acres of land were developed between 1999 and 2005; an area equivalent in size of the Town of Boxborough. Mass Audubon defines "sprawl frontiers" as areas where undeveloped land is being converted into residential and commercial uses at the greatest rates, and where large amounts of undeveloped land are zoned for low-density residential development. In the 495 Compact Region, the Mass Audubon report identified a significant cluster of high-growth municipalities including the towns of Shrewsbury, Grafton, Northbridge, Upton, Hopedale, Hopkinton, Ashland, Medway, and Franklin. All but one of these (Northbridge) is in the Compact Region. The towns of Hopkinton (360 acres) and Grafton (341 acres) had the most development change in that time period (Figure 13).

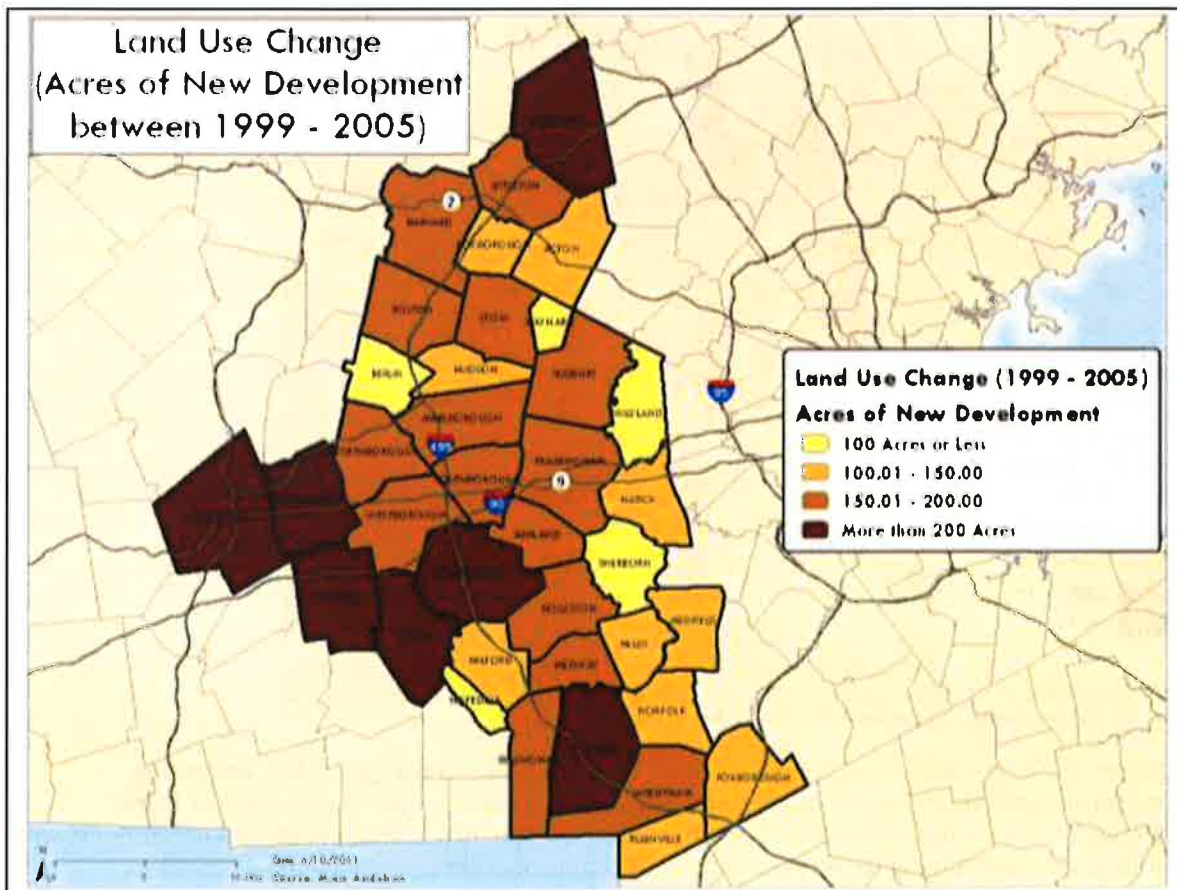


Figure 13. Acres of Vacant Land Converted to Residential, Commercial and Industrial Uses

¹⁰ Mass Audubon, *Losing Ground: Beyond the Footprint*, 2009. www.massaudubon.org/losingground.



Summary of Community Characteristics

This data, collectively, tells a story that helps paint a picture of the Compact Region. Seemingly unrelated data points, when considered in the aggregate, often point to larger themes. For example:

- While the population is highly educated, it is getting older on average and increasingly diverse ethnically and racially. Thus, decisions made in the future ought to consider how to match proposed/anticipated employment with the available and proximate labor force, housing preferences, and modes of travel.
- A large number of jobs are located in the Region, but high housing costs account for more than 30% of workers' income and possibly prevent more workers from living closer to where they work. Decisions made in the future ought to consider how to match housing availability with employment and wage opportunity.
- With more than half of the Region's workers living and finding employment in the Compact Region, there is an opportunity to focus on transportation improvements and alternatives within the corridor to support housing/employment consistency.
- Nearly half of the Compact Region's jobs are in only two industry sectors, both of which pay less than the Region's average annual wage. This suggests the need for a broader jobs base in the future to keep pace with other costs and that help align work force wages with work force housing costs.
- Mass Audubon's *Losing Ground* study shows how vulnerable unpreserved open land is to new development, especially low density residential housing. This housing type consumes inordinate amount of land per unit of housing while there are existing developed areas that are under-capacity or have potential for redevelopment. Meanwhile, residents express a desire for other forms of housing (apartments, townhomes, etc.) that are close to jobs, shopping, and recreational opportunities, and recognize the numerous and far-reaching benefits to permanently preserving open space. Development decisions ought to consider opportunities to match targeted growth with preservation of vulnerable open spaces and habitat.

This data begins to provide an understanding of where the 495 Compact Region has been and where it might continue to go should current trends continue. It highlights strengths and assets that should be carried forward as well the challenges and opportunities that the future may hold. The priorities that are set by decision makers can produce the desired vision. To realize that vision, the process begins with setting priorities at the local level and then progressing to the regional and state levels. This process, which provided the basis for the 495 Compact, is described in Section 5. Methodology.



4. Project Definitions

The basis of the 495/MetroWest Development Compact Plan is the identification and evaluation of priority areas – areas intended for development and areas intended for preservation. These areas are for planning purposes and, although in some cases the areas conform to parcel boundaries, the areas are intended to provide geographic location and context for development and/or preservation even if multiple “parcels” are involved.

In addition to priority areas for preservation and development, the project identifies significant transportation investments that are critical to realizing the principles of the Compact. This material is contained in Section 9. Regionally Significant Transportation Investments.

Other significant infrastructure considerations such as water and wastewater infrastructure investments are discussed as well. Information about non-transportation infrastructure is provided in Section 11. Additional Infrastructure Investment Needs.

Priority Development Areas (PDAs)

Priority development areas (PDAs) are areas within a city or town that have been identified as capable of supporting additional development or as candidates for redevelopment. These areas are generally characterized by good roadway and/or transit access, available infrastructure (primarily water and sewer), and an absence of environmental constraints. In addition, many of these areas have undergone extensive area-wide or neighborhood planning processes and may have detailed recommendations for future actions. Rather than specific projects or sites, PDAs represent general locations where appropriate growth may occur, and where public investments to support that growth will be directed.

PDAs can range in size from a small area to many acres. They may include a mixture of retail, industrial and office uses as well as housing, with a particular emphasis on housing which meets affordability thresholds and/or is accessible by the local workforce. Redevelopment of under-utilized or abandoned properties, as well as adaptive re-use of existing buildings/projects, can also fall under the auspices of a PDA. PDA's might include areas designated under state programs such as Chapter 43D (expedited permitting), Chapter 40R (smart growth zones) or Economic Opportunity Areas.

Priority Preservation Areas (PPAs)

Priority Preservation Areas (PPAs) are areas within a city or town that deserve special protection due to the presence of significant environmental factors and natural features, such as endangered species habitats or areas critical to drinking water supply, scenic vistas, areas important to a cultural landscape, or areas of historical significance. In general, existing parks or new park facilities do not fall within this category. It is important to remember that PPAs are identified on lands not currently permanently protected, such as those that might be currently, but temporarily, protected by Chapter 61, a conservation restriction that has not been approved under an appropriate section of Chapter 184, by virtue of ownership by a land trust, etc.

Like PDAs, the areas identified for priority preservation efforts can vary greatly in size. Areas of Critical Environmental Concern (ACEC), aquifer recharge areas, and designated priority habitats are some of the natural resources that might warrant PPA designation. Similarly, priority preservation areas may be critical to linking open space areas and trails within a community or across municipal boundaries. Also, some PPAs may include some areas of existing development. The inclusion of such

areas does not indicate that the existing land uses will be removed over time, but that preservation of natural and cultural resources in that area is a priority.

In some cases, an area might be identified as a combination of these two concepts, known as Priority Preservation/Development Areas (PPA/PDAs). These are areas that would have components of both development and preservation, or areas that have not been fully planned but are expected to incorporate new development with substantial preservation.

Regionally Significant Transportation Investments (RSTIs)

Regionally Significant Transportation Investments are critical in supporting increased development of identified PDAs while respecting the need to protect PPAs.

Regionally Significant Transportation Investments (RSTIs) are transportation projects that increase efficiency and enhance interconnectivity for facilities which address transportation needs across multiple cities or towns or larger geographic regions. In most cases, these potential projects address major roadways. However, RSTI's also address transit, bicycle, and pedestrian facilities that meet regional travel needs, either individually or collectively. RSTI projects could also include improvements for commercial airports, as well as freight facilities that have significance in the regional economy.

Other significant infrastructure investments

The other significant infrastructure investments considered in this plan include the non-transportation infrastructure investments that will be necessary to serve new growth and redevelopment. These projects might be in a municipality or within a sub-region. In most cases, these potential projects address demand for water, sewer/wastewater, and stormwater (or a combination thereof) service, and may include new infrastructure, facility upgrades, and/or an increase in capacity to existing infrastructure that either individually or collectively serves regional needs.

Along with new investments, improved water and wastewater management are critical to the success of the Compact Region. Sixteen of the 37 municipalities do not have wastewater or sewer systems and this may be a development constraint. Based on an analysis by MAPC and the 495/MetroWest Partnership¹¹, the volume of wastewater treated and discharged by existing municipal wastewater treatment facilities in the Compact Region has been increasing at a rate faster than population and employment growth. Input from the cities and town through this process has indicated that there is tremendous need for infrastructure maintenance, reduction of inflow and infiltration, and improvement in the quality of treatment to protect water resources in addition to desired expansions of the current systems.

Yet solutions will not always be found solely through regional or even community wide infrastructure development or expansion. Decentralized wastewater disposal and other creative approaches will be important to meeting the needs of the Compact region.

Sustainable water management practices adopted at the local level may significantly decrease the anticipated demand for water traditional approaches may require under any growth scenario and the subsequent impact on wastewater systems. These issues face not only this region, but the Commonwealth as a whole.

¹¹ <http://www.495partnership.org/assets/documents/USGS%20Study%202008.pdf>

5. Methodology

The methodology used for the 495/MetroWest Development Compact had several components, including local and regional meetings, identification of priority areas and investments, and a screening process to determine which priorities at the local/municipal level were also significant at the regional and state levels.

This planning process was constructed as an ongoing conversation between local- and regional priorities. The final list of regionally significant PPAs, PDAs and transportation investments contained in this report represents a collective body of knowledge compiled from multiple sources using a diverse array of methods and media.

Public outreach for the project included the creation of a project website. The website during this project was accessible on the 495/MetroWest Partnership's website at: <http://www.495partnership.org/compact>. It served as the repository for all project based information, background materials, a meeting calendar, maps, PowerPoint presentations, contact information, a public comment portal, etc. Additionally, information about public meetings was distributed by the 495/MetroWest Partnership to media outlets serving the 495 Compact Region, as well as to area legislators, chambers of commerce, business groups, Mass Audubon distribution lists and postings at Mass Audubon sanctuaries, and many other lists of various groups working in the Region.

The 7 key steps in the planning process were:

Step One: Conduct Initial Research

The first step in the project process was to do initial research on each city and town in the study area. This included review of existing municipal reports, plans and studies¹², such as:

- Housing Production Plan
- Housing Trust Funds
- Community Preservation Act Funds
- Master Plan or Community Development Plan
- Zoning bylaws; multi-family housing, cluster/OSRD, inclusionary zoning, etc.
- Subsidized Housing Inventory status (MGL 40B)
- Priority Development Sites (MGL 43D)
- Smart Growth District regulations (MGL 40R)
- Status of Open Space and Recreation Plan
- Any other neighborhood studies or reports

These documents were reviewed to determine key goals that the cities and towns had for preservation and development, specific locations where each was desired, and information on major transportation needs and initiatives. These areas were then noted or hand drawn onto draft base maps, so that the project planners had a sense of what the communities were already thinking about in terms of planning for preservation and development. To initiate the local dialogue, project planners then scheduled meetings with the planners and/or other appropriate staff in each municipality.

¹² A list of municipal plans reviewed by RPA staff are included in **Appendix K**.

Step Two: Meet with Municipal Staff and Prepare Draft Maps

The next step in the process was to receive feedback from the local representatives relative to the preliminary list of findings identified through the research phase. At the initial meeting with the community planner or other municipal staff, the project planner explained the background and goals of the project. In some cases, these meetings were held solely with the town planner. In other communities, these meetings included other staff such as the town engineer, town administrator/town manager, fire chief, conservation agent, or other locally-designated representatives and board members. Together, findings from the initial research process were reviewed, and the working map of the priority areas for development and preservation continued to evolve. The municipal staff provided insight on whether the plans were up to date and if they accurately represented the municipality's current attitude towards preservation and development. Corrections and updates were made to the map during meetings and through follow up with municipal staff. The initial list of identified transportation and infrastructure investments was also refined through discussions with planning and other municipal staff.

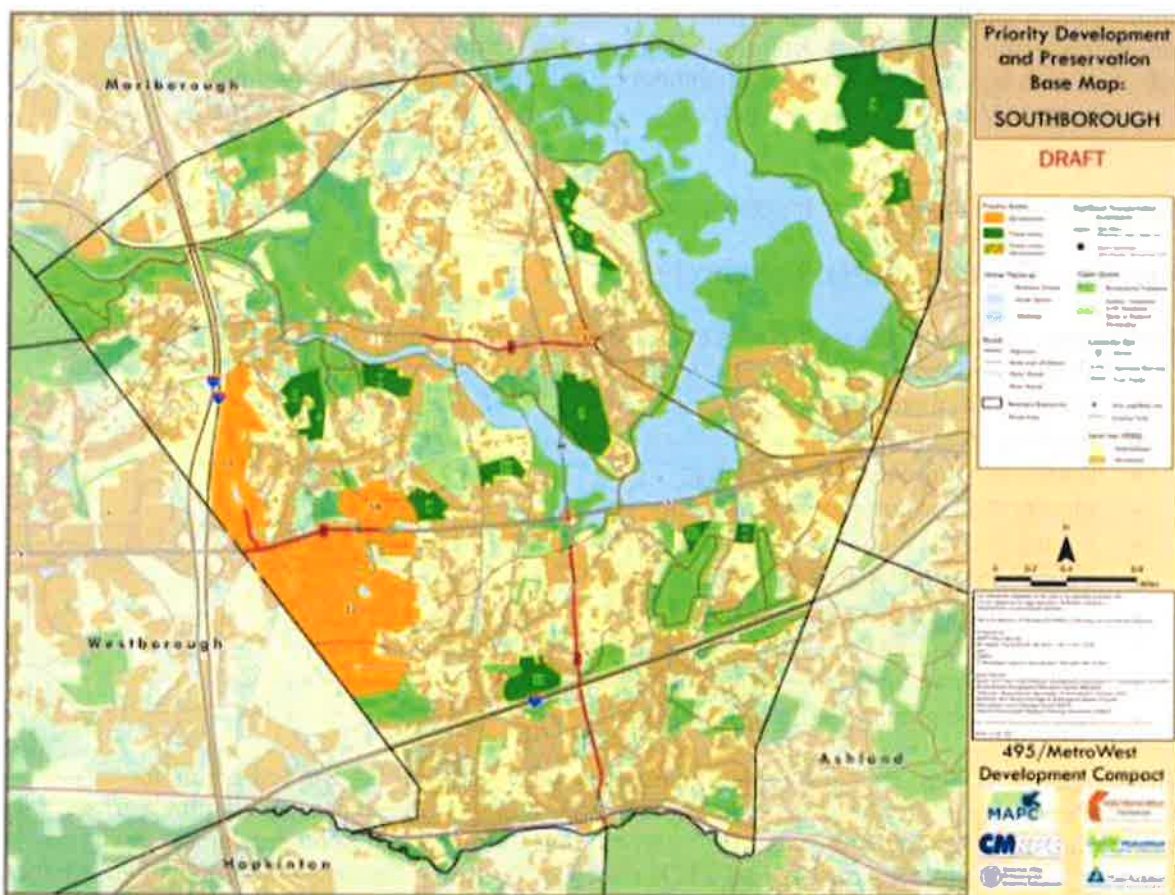


Figure 15. Example of Draft Local PDA, PPA and STI map

Step Three: Local Public Meetings

Following the initial meetings with the municipal staff in each of the 37 cities and towns, public meetings were scheduled. In some cases, the meeting was held for the sole purpose of obtaining input on this project; in other cases it was included as a topic on the agenda at a regularly scheduled

meeting of the City or Town Board (e.g., Planning Board). The decision as to which type of meeting was held was made by the municipality based on their knowledge of their communities and their respective boards.

Each municipality was tasked with publicizing the meeting throughout the community. This included inviting residents and businesses, staff, and members of boards and committees as well as posting a meeting notice. Dates of the meetings are included in **Appendix C**.

At each public meeting the project planner presented the project background and goals of the 495/MetroWest Development Compact planning effort. This was followed by a presentation of the maps and a discussion about development and preservation priorities, as well as infrastructure investments identified by the city or town. It was considered very important to be sure that any gaps in information were identified so that the community's priorities were accurately gathered and mapped. During this meeting, the public was also notified about the upcoming Regional Forums, which would be held in June.

Follow-up to the public meetings varied from community to community. Meeting notes were typed up and shared with the community planners and municipal staff to ensure accuracy, and revisions to the maps were made by the respective RPA.

Step Four: Regional Public Forums

A key step in this regional planning process was to hold Regional Public Forums and solicit input from residents, businesses, municipal staff and officials and other stakeholders in a format that allowed participants to transcend city and town boundaries. In order to maximize participation, two regional forums were held in the region:

- Wednesday, June 15, 2011 – Westborough High School
- Tuesday, June 21, 2011 – Boxborough Holiday Inn

A flyer was created for the June public forums and was sent to community planners, municipal staff and project partners (e.g., Mass Audubon) for their use in publicizing the meeting. Public outreach and information about the forums was also distributed to identified groups (e.g., Chambers of Commerce) and media outlets. Specific outreach through phone calls, emails and site visits was performed to community organizations and centers in the Compact Region, such as churches, health care centers, cultural organizations and transit service providers.

The forum featured an open house to allow attendees to review various maps and meeting materials and ask questions about the project prior to a formal presentation. The maps included the locally identified PDAs, PPAs and RSTIs as well as other geographic information for the entire 495 Compact study area, including: water and environmental resources, land use, environmental justice areas, transportation resources, and BioMap2¹³ data sets.

¹³ BioMap2 is a product of the Massachusetts Natural Heritage and Endangered Species Program (NHESP) and the information is a combination of numerous pieces of geospatial data about the state's species and the ecosystems and landscapes that support them. http://www.mass.gov/dfwele/dfw/nhesp/land_protection/biomap/biomap_home.htm.

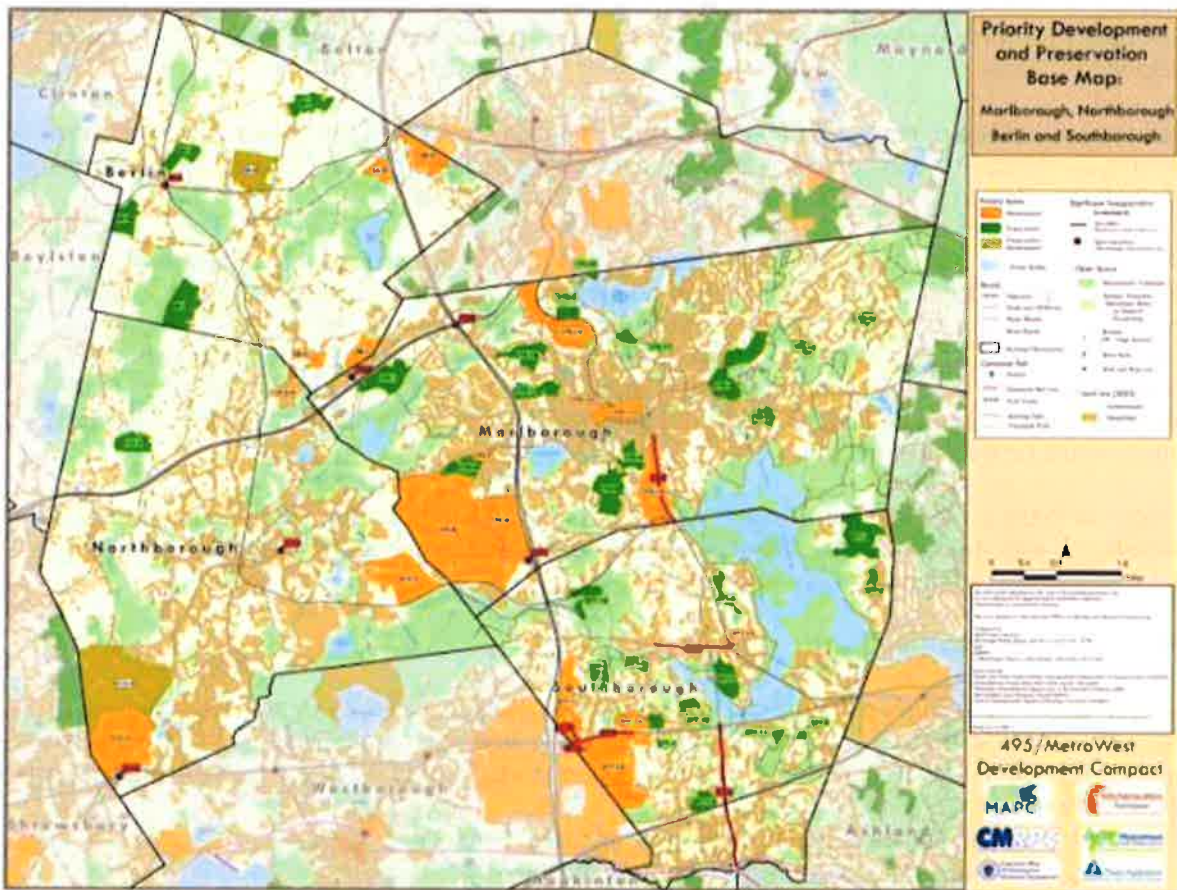


Figure 16. Example of Multi-Municipal Map from the Regional Public Forums

A formal presentation followed the open house and provided attendees with baseline information about the 495 Compact Region such as demographic, commuting and housing trends. This information is described in Section 3 and a copy of the presentation is included in **Appendix D**. The forum also included various key pad questions for the attendees within the body of the presentation. The key pad questions were used to understand how the demographic profile of attendees compared to the demographics of the Compact Region.

Prioritizing PDAs and PPAs on a regional level was an important concept to present and discuss with attendees. Following the presentation of the baseline demographic and economic data, a table exercise was used to introduce the regional concepts for prioritization (e.g., land use, transportation infrastructure, the location of environmental justice populations). These and other concepts were mapped on multi-municipal maps (**Appendix E**). Participants were asked to review the concepts and provide input on how they would direct limited public financial resources to the PDAs and PPAs based on these concepts. The input was captured through comments and other mark-ups on the maps that illustrated the locally-identified priority areas and infrastructure investments for groups of four or five municipalities. Participants were also asked to identify additional concepts that they believed ought to be used in determining regionally-significant priorities.



Forum attendees were also encouraged to submit additional comments either on a comment form available at the forums or through the project web site.

Step Five: PDA and PPA Roundtables

The 495/MetroWest Partnership led the project team in convening meetings of professionals in the preservation and development fields to garner additional input and expertise regarding priorities and the regional screening process. Participants on these roundtables included state officials, local land trust representatives, real estate and development brokers, affordable housing developers, site selectors, and municipal conservation agents, among others. Please refer to **Appendix F** for a complete list of participants and their affiliations.

The PDA roundtable group analyzed the locally identified PDAs from a market feasibility and development potential perspective, while the PPA roundtable group analyzed the locally identified PPAs with an eye to connectivity, habitat and resource value, recreational opportunities, and groundwater protection. This valuable dialogue provided meaningful feedback on many issues. Interestingly, both groups (focused on development and on preservation) provided similar feedback, including the importance of:

- Mixed-use villages and downtowns
- Looking at development and preservation areas together so that they can co-exist and benefit from one another in many cases
- The linkage of housing and employment relative to PDAs
- PPAs being proximate to other open space areas, public transit, and environmental justice communities
- Infill and redevelopment projects
- Water and wastewater infrastructure needs

As with input from the forums, comments and recommendations from the roundtable groups were incorporated into the regional screening process and informed the final list of regionally-significant priority areas.

Step Six: Determining Regional Significance

A regional screening process was performed by MAPC and CMRPC for the locally identified Priority Preservation Areas (PPAs), Priority Development Areas (PDAs) and the combination Priority Preservation/Development Areas (PPA/PDAs) to determine which areas are regionally significant.

In this context, locally-significant priority areas were screened through parallel processes that utilized multiple sources of data and public input. The Regional Screening Criteria were used to guide the assessment of how the various areas align with regional and state priorities for development, preservation and infrastructure investment. A complete listing of the Screening Criteria is contained in **Appendix G**.

Examples of this type of criteria for screening the PDAs are:

- Is the area on or adjacent to already developed areas?
- Is infrastructure (transportation, water, sewer) available to serve the area?
- Does the development area serve multiple communities?
- Is transit currently available?
- Does the development potential include opportunity for workforce housing?

Examples of this type of criteria for screening the PPAs are:

- Is the area in, or does it connect to, a wellhead or water supply protection area?
- Does the area contain prime farmland soils?
- Does the area connect to other permanently protected land?
- Is the area within half-mile of an EOEAA-designated environmental justice (EJ) population?

Section 7 provides more detail about the regional screening process and results.

Step Seven: Regional Public Presentations

Similar to the Regional Public Forums held in June, two Regional Public Presentations (with an “open house” portion) were held in November to summarize the process and present the results of the regional screening process, as well as recommendations and next steps. Again, in order to maximize participation, two presentations were held in the Region:

- Wednesday, November 8, 2011 – Union Station, Worcester
- Wednesday, November 15, 2011 – Framingham Town Hall

In addition to general outreach through email, the web and media outlets, specific outreach was again conducted to community organizations and centers in the Compact Region.

The presentations provided background on the planning process and then reviewed the regional screening process and results, comparison of two growth scenarios and an overview of proposed RSTI categories. The presentation compared potential outcomes from one scenario that used the entire set of locally identified priority areas (Distributed Growth Scenario) and one that used just the regionally significant priority areas (Regional Priorities Growth Scenario) to show the issues and opportunities that could result from different development patterns. Sections 6 and 8 provide a more comprehensive discussion of the two growth scenarios, and Section 9 describes the framework for the transportation investment categories.

Mass Audubon also provided a description of the web-based implementation toolkit under development as part of the study. The toolkit is intended to identify techniques for achieving the objectives of the Compact Plan in both preservation and development areas. Section 13 provides more detailed information on the implementation toolkit.

Finally, the presentation included a panel discussion of the general findings of this planning study and the concept of a plan and vision for the 495 Compact Region. The panel, which was facilitated by the 495/MetroWest Partnership, included:

- Colin Novick, Executive Director of the Greater Worcester Land Trust
- Kurt Gaertner, Executive Office of Energy and Environmental Affairs
- Scott Weiss, The Gutierrez Company
- Robert Nagi, Vanasse Hangen Brustlin
- John Bechard, Vanasse Hangen Brustlin
- Angus Jennings, Director of Land Use Management, Town of Westford

The panelists supported the regional approach to prioritizing areas for development and preservation. Concentrating efforts will prove to be, at least in concept, a more efficient way of focusing investment and energy throughout the region. The opportunities for partnerships were highlighted, both for preservation and development: between the public, private, and non-profit sectors in a variety of combinations. However, it was also noted that a regional effort like this requires both commitment and capacity at the local level in order to be truly effective. This means a commitment from the communities to support the process and the vision through zoning changes, investments, and other actions going forward is critical; it also means that having the necessary staff capacity to shepherd the effort through the local process is essential to success.

Both of the Regional Public Presentations were preceded by an afternoon meeting designed for municipal planners and key staff. This staff level meeting was much more technical in nature and was streamlined in order to give the practitioners an opportunity to hear about and discuss the finer points of the methodology and data in this regional planning process. It provided an excellent opportunity to have a dialogue with the local planners “on the ground” in the Region.



Figure 17. Summary/Timeline of Project Process

This final report is the culmination of the 7-step process.

6. Locally-Identified Priority Areas

A total of nearly 800 priority areas – PDAs and PPAs – were identified by the 37 cities and towns that were part of the 495 Compact (Figure 18). These areas reflected locations identified in municipal planning documents and through input from municipal staff and boards, and were informed by comments provided during the June Forums. Detailed versions of the PDAs and PPAs identified by each municipality can be found in the map series included in **Appendix E**, along with corresponding tables to identify the areas according to names assigned by the municipalities.



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Priority Development Areas

A total of 293 PDAs, including 45 PDA/PPAs, were identified by the cities and towns included in the 495 Compact Region. The locally identified PDAs include many of the region's largest employment centers: Downtown Worcester, Downtown Framingham, the interchanges of Route 9/I-495 and Route 9/I-90 (MassPike), and South Street in Hopkinton. Each of these has more than 5,000 jobs currently. Also included are many development areas with large amounts of vacant undeveloped land; for example, there were 30 distinct PDAs that each contained more than 100 acres of vacant developable land. Additionally, the locally identified PDAs incorporate 10 out of the 11 commuter rail stations in the study area. This illustrates the importance of commuter rail access to the Region.

Collectively, the locally identified PDAs cover approximately 29,800 acres, or 47 square miles. As illustrated in the chart below, vacant developable land accounts for 40% of the development areas, commercial and industrial land comprises 28% and the remainder is residential and undevelopable land (Figure 19). Based on 2011 Infogroup data¹⁴, it is estimated that 140,500 existing jobs are located in these development areas, which is 35% of the current job total in the study area. The average employment density across these areas is 10 employees per acre.

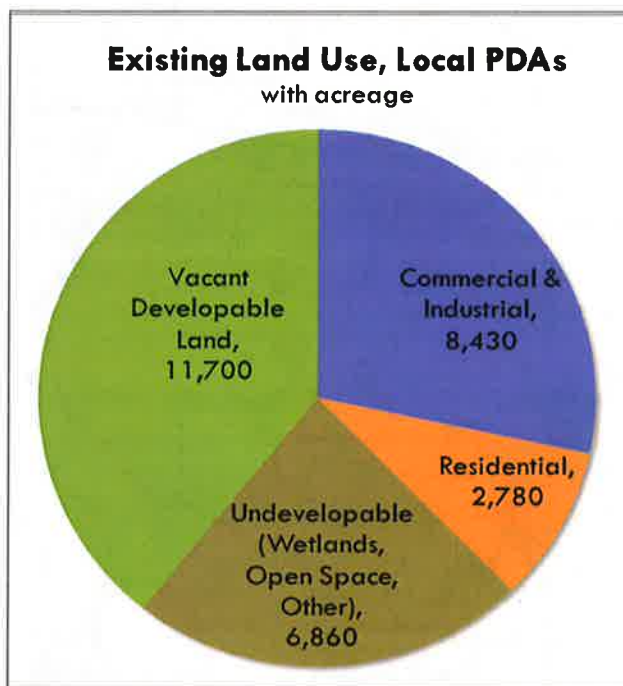


Figure 19. Existing Land Uses in Locally Identified PDAs

Priority Preservation Areas

There were 497 locally identified PPAs across the region and these areas cover 37,200 acres. The preservation areas ranged in size with the largest area including more than 1,300 acres and the smallest less than 1 acre. Overall, the average size of the locally identified PPAs was 75 acres.

¹⁴ Info Group data is based on Infogroup Business Listings for the state of Massachusetts that were jointly purchased by RPAs in 2011. <http://infogroup.com/>.

Included in the preservation areas are:

- 166 contain groundwater recharge areas
- 172 contain Priority Habitat (habitat for state-listed rare species, both plants and animals)
- 4,600 acres of agricultural land use

The rate of preservation supported by state funds in the Compact Region was reviewed and determined to be approximately 300 acres/year (for the most recent 5 years). Based on this current rate of state open space funding and land conservation, it is estimated that it would take more than 100 years to protect all of the locally identified PPAs, and it is apparent that other means of land conservation will need to be used.

Development Characteristics

To understand the buildout potential for the complete set of locally identified PDAs, the potential development capacity was estimated for each PDA. The estimate was based on the land contained inside the development area boundaries and was derived from the existing land use, employment, zoning district designation, environmental constraints (e.g., protected wetlands, etc.) and density assumptions developed by the RPAs. The estimates include new growth on vacant land as well as assumptions about increased density of employment in developed portions of the area. The RPAs also estimated the amount of housing that could be developed on new land and potential increases in existing residential areas.

If all of the locally identified PDAs were built out to their full capacity, it is estimated that they could accommodate 204,000 new jobs. This is a significant number of new jobs and would be a 50% increase over the existing employment in the areas. However, the 495 Compact Region, like much of the nation and the state, has grown slowly in recent years, and a rapid recovery seems unlikely. Even assuming a full recovery by 2020 and modest growth thereafter, MAPC and CMRPC project only 52,000 additional new jobs (Figure 19) in the Region from 2010 – 2035, which is just a quarter of the estimated capacity of the locally identified PDAs (Figure 20).

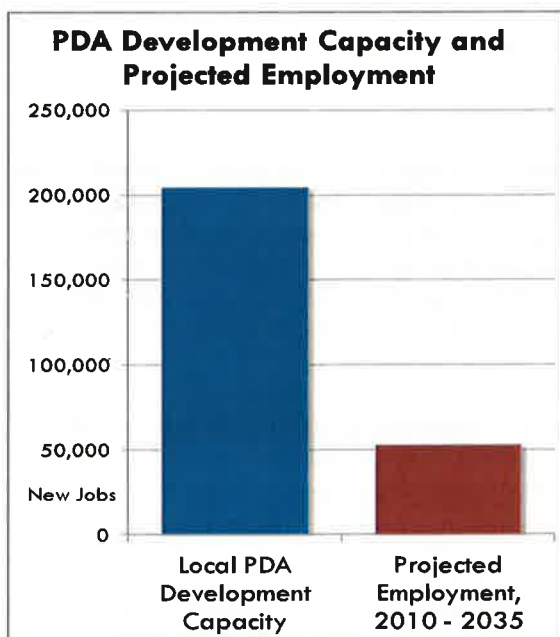


Figure 20. Comparison of Locally Identified PDA Employment Capacity and Projected Job Growth

The build out situation is reversed in regards to housing (Figure 21). Assuming fairly compact growth patterns served by public sewer or a local wastewater treatment facility, the locally identified PDAs have potential for 30,800 new housing units. However, based on RPA projections, the Compact Region is expected to need nearly 60,000 housing units between 2010 and 2035 to accommodate the projected new workers and their families, and to accommodate the changing housing needs and preferences of the Baby Boomer cohort. The heavy emphasis on employment in the local PDAs with little or no emphasis on housing raises a significant concern. It also indicates that continued dialogue is needed among municipalities, RPAs, the state, the development community and community organizations about how to plan for and build workforce housing that keeps pace with the number of new jobs projected in the Compact Region, increases the diversity of the housing stock and connects residents and employees with multiple modes of travel.

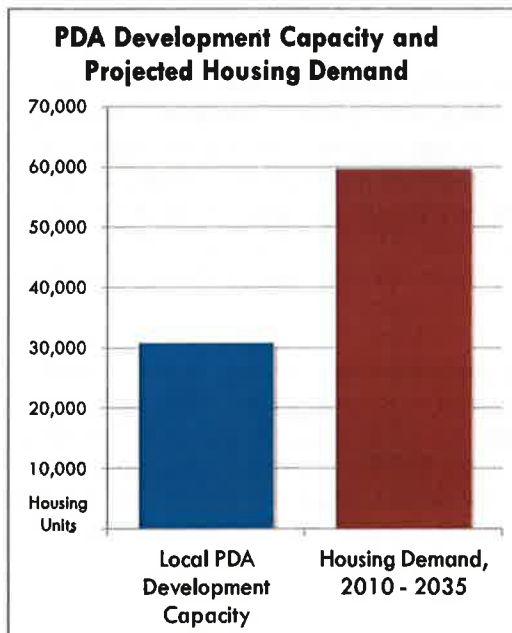


Figure 21. Comparison of Locally Identified PDA Housing Capacity and Projected Housing Demand

Description of Distributed Growth Scenario

In order to understand potential future land use changes in the region and the possible benefits and impacts of targeted growth, MAPC and CMRPC developed two scenarios for the Compact Region. MAPC and CMRPC created population, employment, and land use projections for the scenarios; and CTPS and CMRPC prepared travel demand forecasts based on the projections. Since the total amount of population and employment growth is approximately equal for the two scenarios, the results of this modeling can shed light on the potential benefits and impacts of different approaches to promoting growth and economic development.

The first scenario, called Distributed Growth¹⁵, represents a “business as usual” scenario, in which municipalities are competing to attract economic development, state resources are not focused to specific priority areas, and development decisions are responsive to land cost and local economic development incentives. As a result, most new growth occurs on previously undeveloped sites

¹⁵ The Distributed Growth Scenario is a projection that is based on using all 293 locally identified PDAs; the alternate scenario, referred to as the Regional Priorities Growth Scenario, is based on a subset of PDAs that were identified as regionally significant and is presented in Section 8.

scattered throughout the region. The scenario is based on the 293 locally identified PDAs, and assumes that municipalities and the state advance policies, investments, and incentives to support growth across all of those local priority areas. Furthermore, the scenario assumes that these actions result in 85% of new employment growth in the Compact Region occurring in the local PDAs. Approximately 45,000 new jobs were projected across all 293 PDAs, in proportion to their estimated capacity. Because the combined capacity of all PDAs far exceeds projected employment for the Compact Region, under this scenario each of the locally identified PDAs would realize just 20% of its potential capacity for new employment.

In order to create comprehensive population and employment projections for the Compact Region, MAPC combined the estimated growth for each of the PDAs with three other important data sources: information from the Development Database (an inventory of 1,700 development projects recently completed, in construction, or planned for the region), information about other likely development areas outside of PDAs, and previous RPA projections for the Compact Region municipalities. Figure 22 illustrates the projected job change associated with the Distributed Growth Scenario between 2010 and 2035.

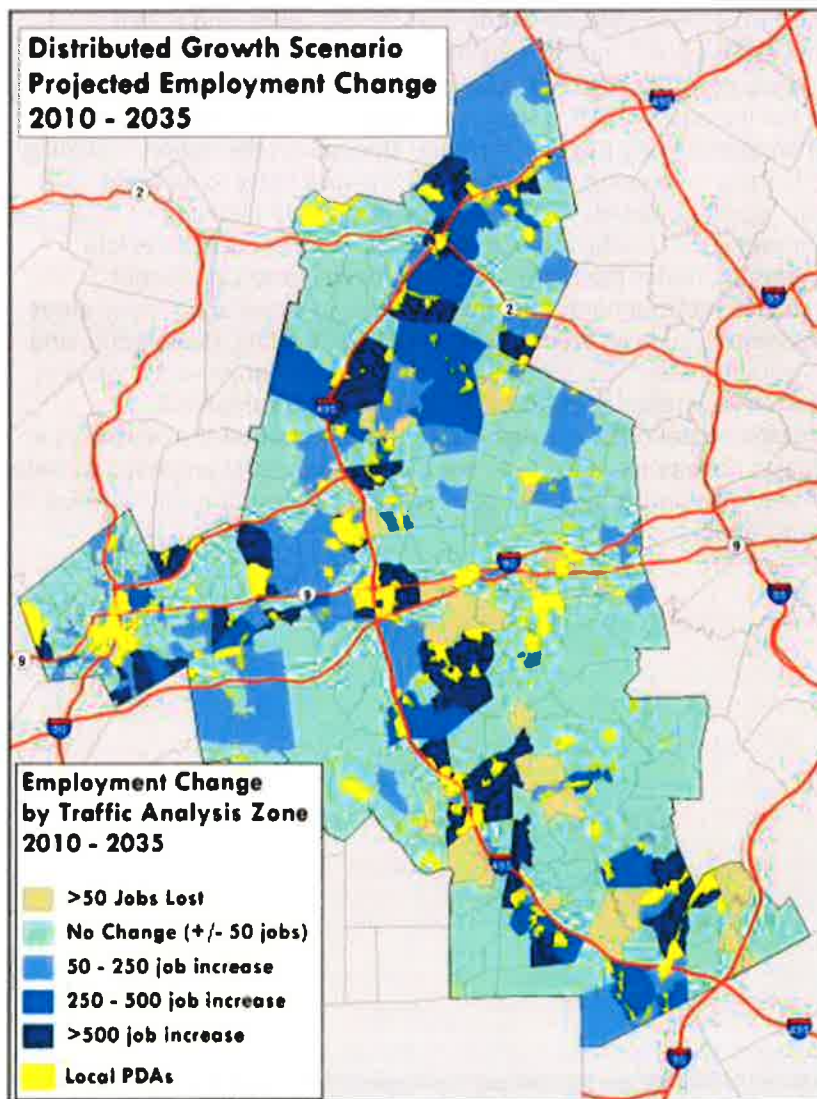


Figure 22. Distributed Growth Scenario - Projected Employment Change, 2010 – 2035

In the Distributed Growth Scenario, 19 cities and towns in the Compact Region would each host more than 1,000 new jobs and 1,900 acres of vacant developable land would be converted into commercial land uses. Other expected impacts from this scenario are:

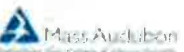
- Only 6,200 jobs created through redevelopment or infill of existing developed areas, which means a majority of jobs would be located outside of existing job centers in the region.
- Nearly 30,000 new jobs (43% of the total) would be located in municipalities with no public sewer system.
- Job losses would occur in some municipalities with Massachusetts Water Resources Authority (MWRA)¹⁶ sewer service.

Average employment density in the locally identified PDAs would increase from 10 employees per acre to 19 employees per acre, although only 36% of the new jobs would be located near existing transit services, such as commuter rail and RTA bus service.

Travel Demand

Travel demand model results indicate that the Distributed Growth Scenario is projected to result in a 16% increase in the total number of trips being made over the next 20 -30 years and a 21% increase in vehicle miles travelled (VMT) - up 4.7 million daily miles to a total of 27.4 million miles per day. Because new housing and job growth is distributed across the Compact Region, so is the additional VMT. Figure 23 shows the increase in VMT by traffic analysis zone (TAZ) for the Compact Region. It shows relatively large increases in VMT (up 30% or more) throughout the region, including many low-density TAZs. As a result of this increasing VMT, congestion is also likely to be more widespread throughout the region. Figure 22 depicts vehicles/capacity (V/C), a measure of congestion that compares auto throughput to roadway capacity (Figure 12 in Section 3 depicts existing V/C). As the figures demonstrate, under the Distributed Growth scenario substantial increases in congestion are likely to occur throughout the Compact Region, including in many areas that are relatively uncongested at present, such as Westford, Acton, Stow, Norfolk, Bellingham, and Grafton. A small number of TAZs—notably those near the Route 9/I-495 interchange—are projected to experience decreases in congestion as a result of roadway improvement assumptions incorporated into the future year traffic model runs. It is also important to note that the increases in congestion are not attributable only to development in PDAs; some development is projected outside of PDAs and the travel demand model also anticipates that per capita trip generation will increase in future years, consistent with recent trends.

¹⁶ The Massachusetts Water Resources Authority (MWRA) is a Massachusetts public authority established by an act of the Legislature in 1984 to provide wholesale water and sewer services to 2.5 million people and more than 5,500 large industrial users in 61 metropolitan Boston communities.



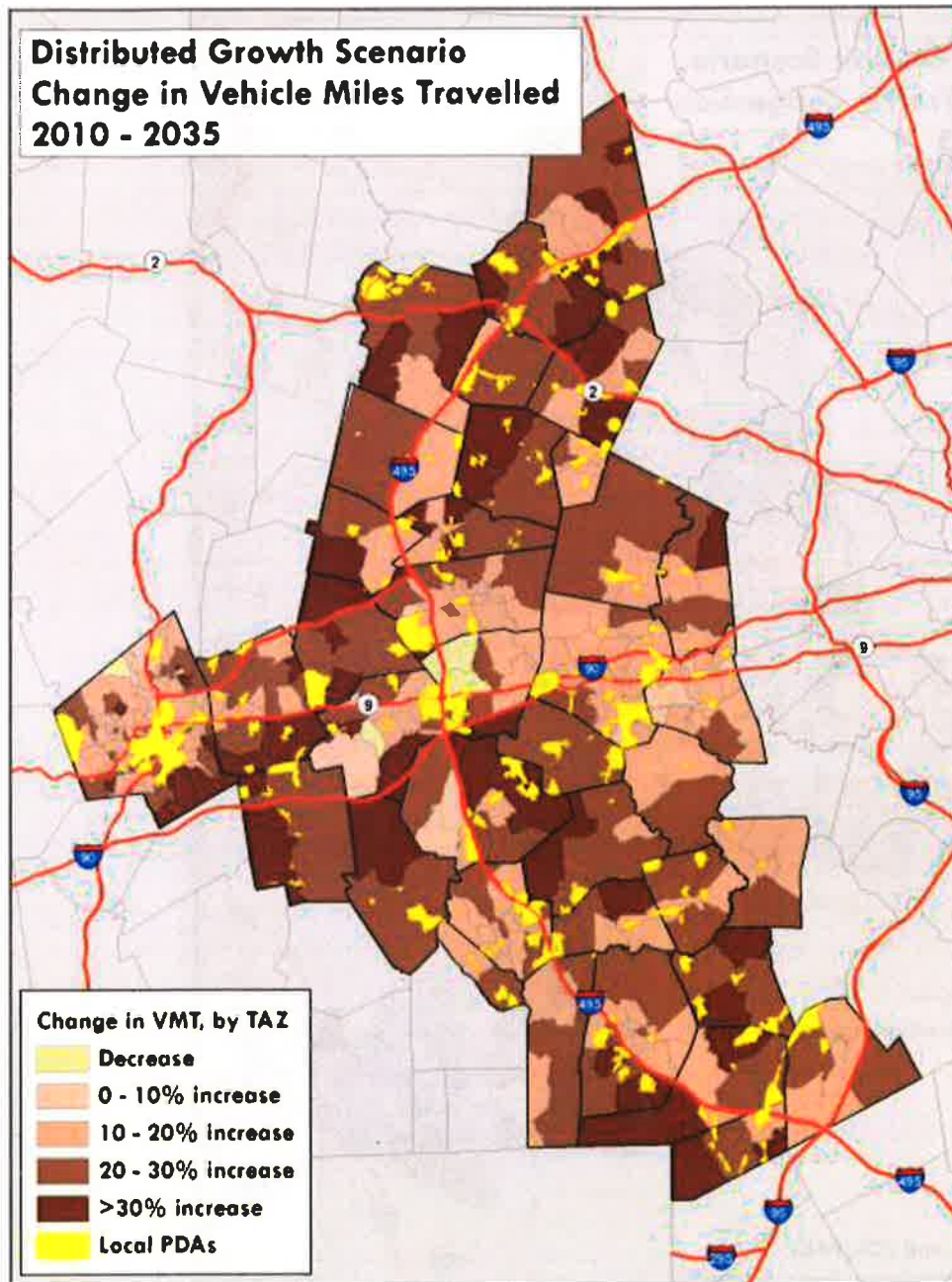


Figure 23. Distributed Growth Scenario – Change in Vehicle Miles Travelled, 2010 – 2035

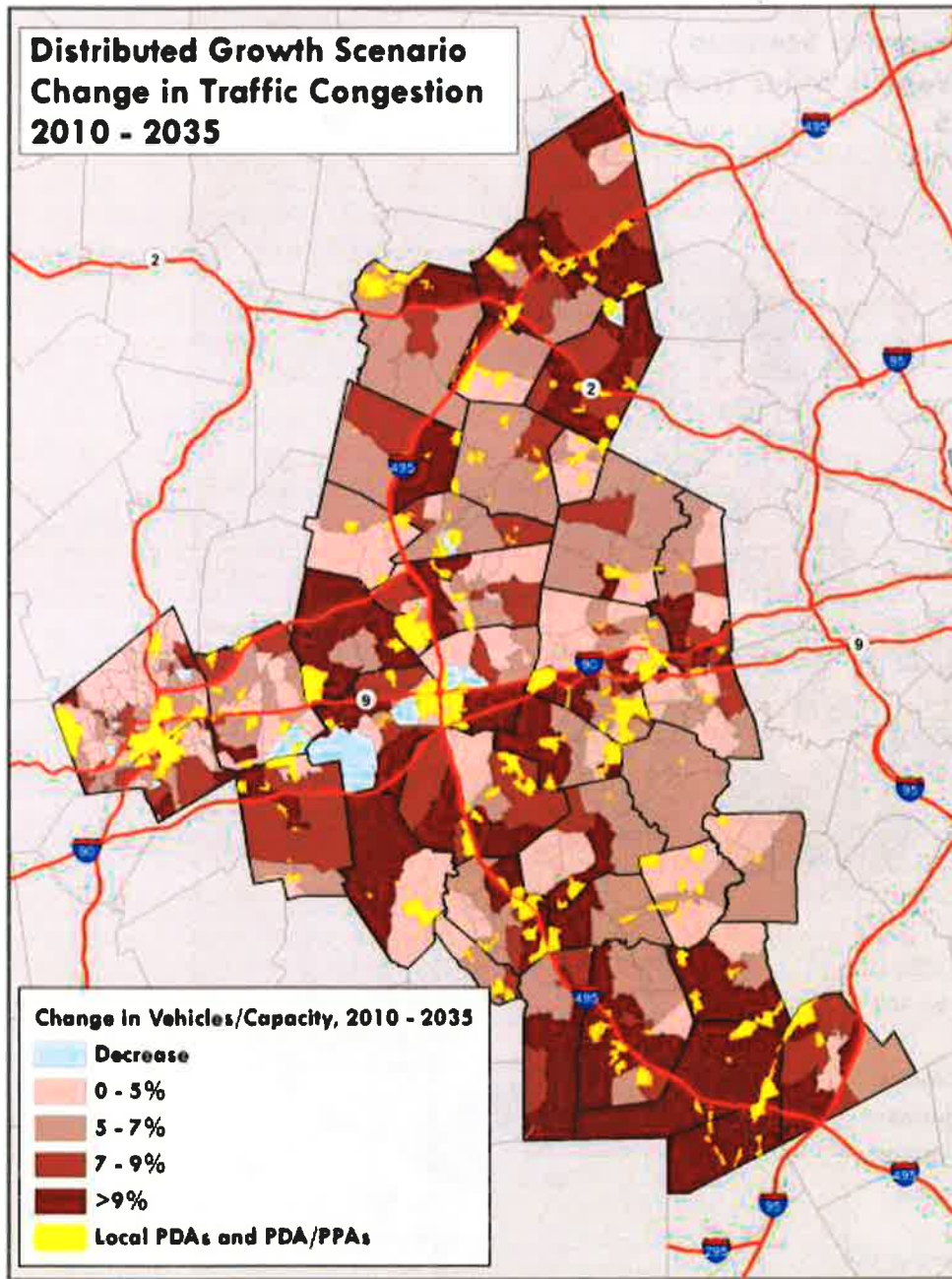


Figure 24. Distributed Growth Scenario – Change in Traffic Congestion, 2010 – 2035

The transit mode share, the percentage of people traveling via public transit, remains steady at 0.58%. When applied to the larger number of trips anticipated in 2035, this share suggests that total number of transit trips may increase about 4,800, to 37,700 (an increase of approximately 15%.) Similarly, the total walk share for the Compact region remains steady at 4.5%, with a 16% increase in total walk trips (on par with the increase in total trips.)¹⁷

¹⁷ The CMRPC transportation model does not project non-auto mode share, so the transit and walk estimates are exclusive of those municipalities outside the CTPS model area: Worcester, Shrewsbury, and Grafton.

Analysis of transportation model results and growth patterns suggest that the Distributed Growth scenario does not represent a sustainable future for the Compact Region. With economic development scattered throughout the region, requests for infrastructure funding will quickly outpace available resources. Less developed areas that are currently uncongested will experience the largest increases in VMT and traffic congestion, resulting in increased demand for roadway improvements and expansion. Dispersed growth far from existing trains, bus routes, and town centers means that the share of trips made by transit, walking, or biking would not increase at all. Most new development would occur in locations not currently served by sewer infrastructure, resulting in demand for system extensions or creation of new wastewater treatment systems. Due to increased demand for roadway expansion and new wastewater infrastructure, less money would be available for maintenance and improvement of infrastructure in existing job centers. Few of the locally identified PDAs would be built to their full capacity as a limited number of projected new jobs would be spread among the nearly 300 development areas. Additionally with the overwhelming focus on commercial and industrial growth identified at the local level, few new housing opportunities would be developed near employment, shops, services, and transportation centers.



7. Regional Screening

With so many competing local priorities, the demand for state assistance will far outstrip available resources, and few areas will be developed to their full capacity, diminishing the return on public investment in infrastructure or tax incentives. Meanwhile, the locally identified PDAs might accommodate only 31,000 housing units, far fewer than are needed to meet the projected demand for 60,000 new units needed in the Compact Region to support a growing workforce.

A regional screening process was performed on the locally identified PDAs and PPAs to determine which areas are regionally significant. The screening by MAPC and CMRPC provided an assessment of how the various local priorities align with regional and state priorities for development, preservation and infrastructure investment. The screening was based on information and data that supported the six fundamental principles that were established for this planning study. Although this screening process was used to highlight specific areas as regionally significant, the local priorities identified for development and preservation are recorded on local maps created through this planning study (**Appendix E**). The RPAs did not alter or modify the local priority areas.

Process

The regional screening process was performed through a series of steps that utilized multiple sources of data and public input. The public input that informed the screening was based on information and comments provided by municipal staff and community meetings, participants at the June Forums in Westborough and Boxborough (including comments submitted following the forums), and the PDA and PPA Roundtables (**Appendix F**).

First Round of Review

The first step in the regional screening involved an analysis of the nearly 800 locally identified priority areas using available Geographic Information System (GIS) data. There were over 40 criteria used which were based on the GIS data. The criteria are listed by category in Figure 25.

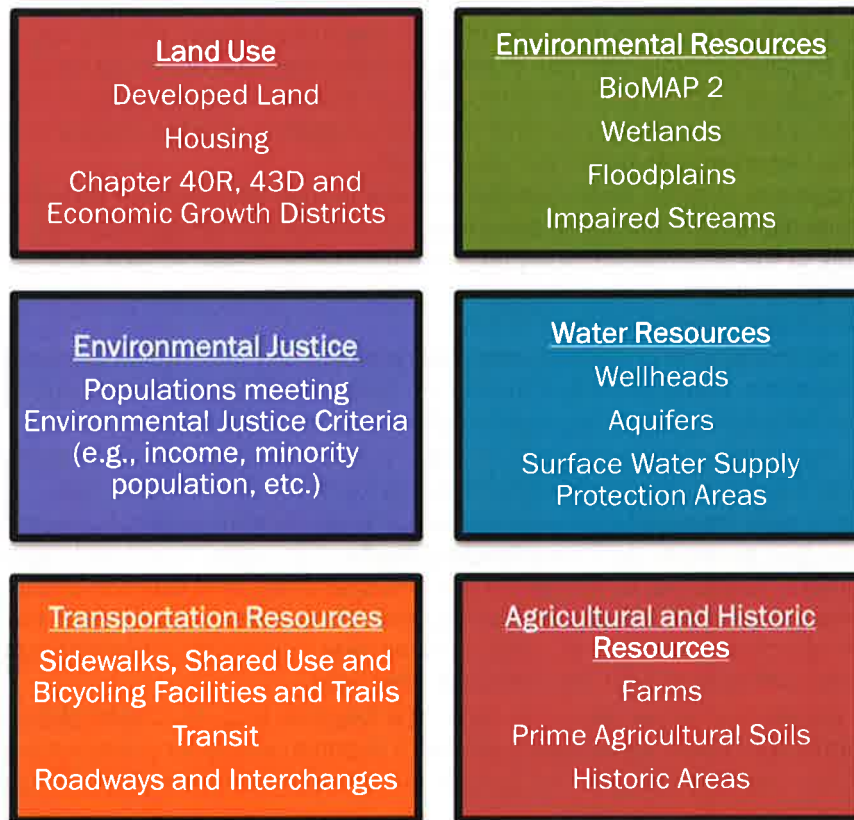


Figure 25. Regional Screening Criteria by category

A detailed listing of these criteria and their sources are included in **Appendix G** for reference.

Each of the locally identified priority areas was evaluated to determine its location relative to the criteria. For example, this evaluation provided information about how a development area was situated relative to interchanges, rail stations, sidewalks, housing, critical environmental areas, and drinking water sources. Similarly, with a preservation area, the evaluation provided data about whether or not area included such features as wetlands, waters of state significance or prime soils for farms. The result was a consistent set of information on which subsequent review and analysis was based.

Second Round of Review

Using the information from the first round, MAPC and CMRPC staff continued to evaluate which locally identified PDAs and PPAs were also regionally significant. These meetings included lead planners on the project from each RPA as well as coordinators for the specific subregions in the MAPC region. This included:

- Minuteman Advisory Group on Interlocal Coordination (MAGIC)
- MetroWest Regional Collaborative (MWRC)
- Southwest Area Planning Committee (SWAP)
- Three Rivers Interlocal Council (TRIC)

A series of guiding themes became evident through the second round of review and these were used to supplement information provided during initial review phases. These themes were:

- Villages and town centers, even if not identified as regional priorities, provide opportunity for housing and employment in areas with existing infrastructure and access to transit. Although possibly not regionally significant separately, villages and town centers collectively represent cultural, historical and economic values of significance and provide the chance to meet shared needs, like affordable housing, in the Region.
- Areas that include or propose housing as an element in their development reflect both a principle in this planning study (i.e., a clear need for workforce housing) and the understanding of the projected demand for housing in the Compact Region. The opportunity for housing was not a sole determinant, but the inclusion of housing was a key consideration in determining regional significance of PDAs.
- RPAs made determinations of regional significance based on the Compact principles, available geographic, quantitative and qualitative data, and goals, objectives and related consideration included in respective regional plans (e.g., MetroFuture).
- Rail (freight, commuter and abandoned corridors) is a key asset as a guide to determining both regionally significant areas and corresponding transportation investments.
- Interchanges are key transportation assets and it is a priority to protect their condition and capacity. Uses that generate significant levels of traffic (e.g., indoor malls and big box/power shopping centers) should not be located at interchanges since they can overwhelm the capacity of the interchange, adversely affect its operations. If development is to occur in the vicinity of an interchange, office and industrial uses near or in vicinity of interchanges should be emphasized, rather than high auto-demand retail uses.
- Collectively, working farms are viewed as forming a Regional Industry Cluster (RIC). Working farms and farms with prime agricultural soils are a regional priority for preservation. PPAs identified as containing farms over two acres in size were carried through as being regionally significant.
- For PPAs, connectivity is essential. The screening looked at how PPAs would form connections between existing protected open spaces, habitats and clusters of identified PPAs, and at how preservation areas could facilitate local and regional trail connections.

In this context, the locally identified priority areas were evaluated and a resulting set of priorities were determined to be regionally significant.

8. Regionally Significant Priority Areas

The regional screening process resulted in the identification of 91 regionally significant priority development areas (PDAs) and 192 regionally significant priority preservation areas (PPAs). Figure 26 provides an overview of the Regionally Significant Priorities Map; a more detailed version of the map with corresponding identification table is provided in **Appendix H**.

Of note on the Regionally Significant Priorities Map are the starred (★) locations. These locations reference the theme about villages and town centers that were not designated individually as regional priorities. The stars note their continued role in collectively accommodating growth, especially housing, and recognize the historical nature of New England villages and town centers.

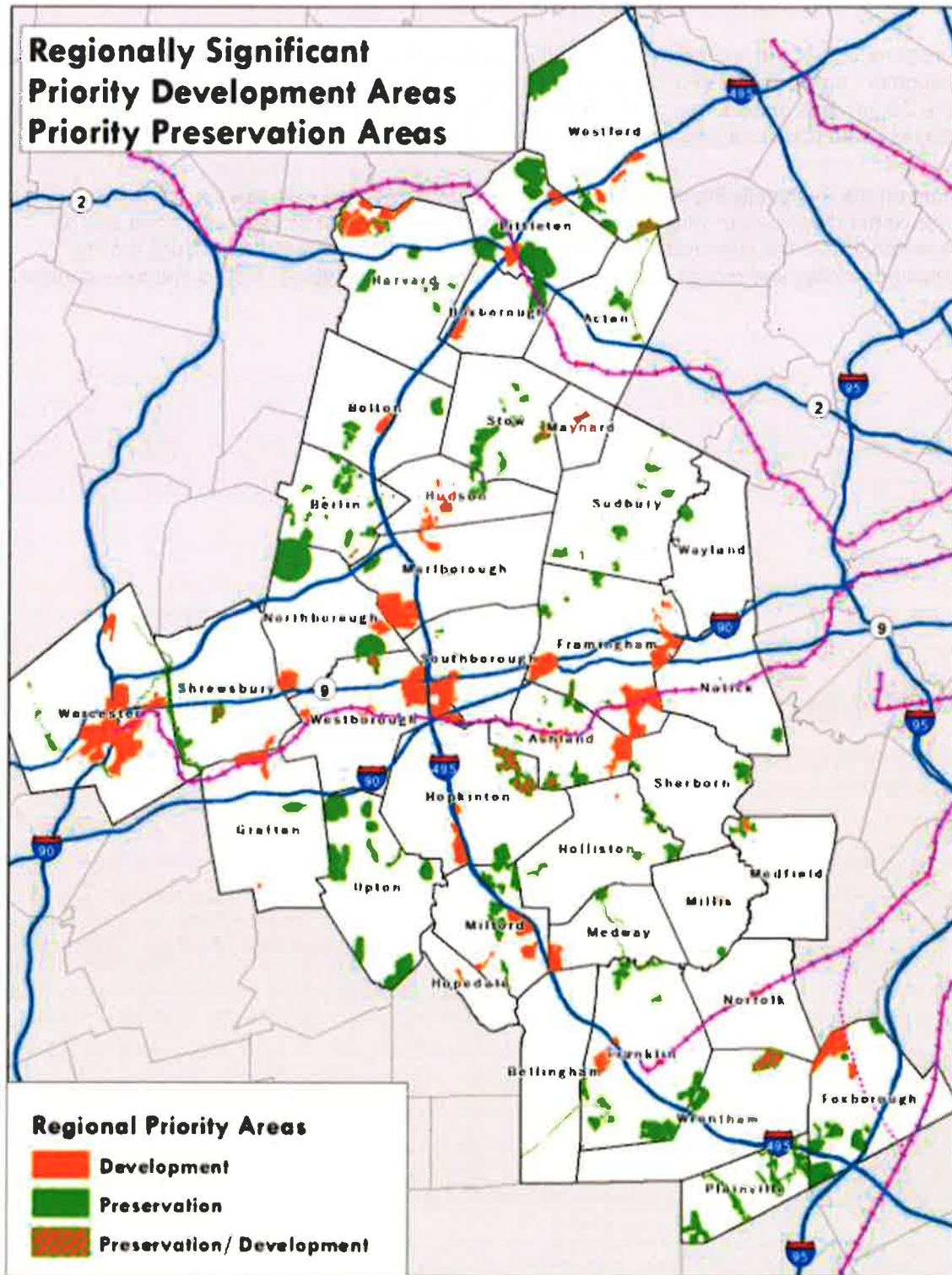


Figure 26. Overview Map of the Regionally Significant Priority Areas

Priority Development Areas

The 91 regionally significant PDAs cover 16,300 acres, which is 13,000 fewer acres than the total acreage of the locally identified development areas. The composition of the land uses in the development areas is presented in Figure 27 and of particular note is the fact that the amount of undevelopable vacant land included has been reduced by over 50%. The average size of the development areas is 170 acres, although they range in size from areas under 10 acres (the Paperboard PDA in Natick) to areas of over 1,000 acres (like Downtown Worcester).

Existing Land Use, Regional PDAs
with acreage

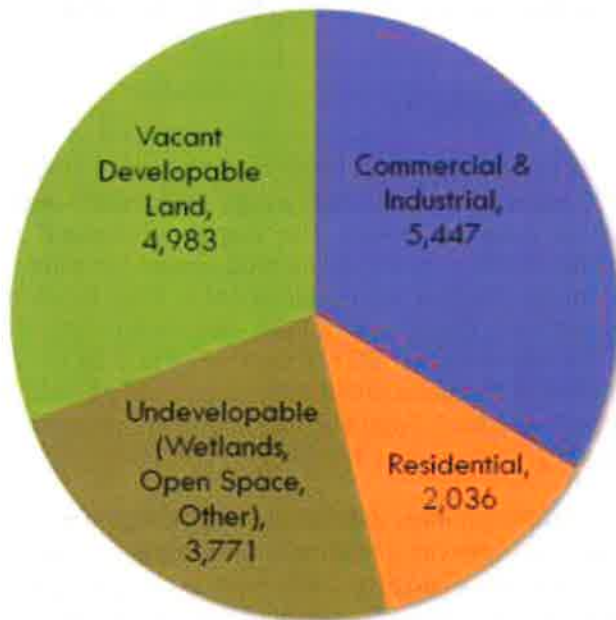


Figure 27. Existing Land Uses in Regionally Significant PDAs

The regionally significant PDAs are estimated to include 110,400 existing jobs, which is 27% of the Region's total existing jobs, and 80% of the jobs initially included in locally identified PDAs. The regional development areas highlight approximately 30% of the local development areas and cover a little more than 50% of the total number of areas identified locally for development. The employment density in the regionally significant PDAs is 14 employees per acre – a greater density than the 10 employees per acre across the locally identified PDAs.

Priority Preservation Areas

The regionally significant PPAs include 192 areas that cover 21,400 acres. As with the PDAs, although the regional preservation areas represent approximately just 40% of the locally identified PPAs, the land area encompassed in these regionally significant areas is more than half of the land initially identified by municipalities (58%). The regionally significant PPAs have an average size of 111 acres, and vary between 1,300 acres and 1.5 acres. Included in the preservation areas are:

- 84 Priority Habitat locations
- 66 groundwater recharge areas
- 2,800 acres of agricultural land uses

Development Characteristics

The potential development capacity was estimated for the regionally significant PDAs in the same manner as was done with the locally identified PDAs. Basing the capacity estimate on similar information (e.g., land use, employment, zoning, etc.), the regional development areas were calculated to have a build out capacity of 109,000 additional jobs. This capacity is still higher than the projected 52,000 additional jobs by 2035, but represents a significant reduction from the capacity of all the local development areas, which was four times the amount projected.

For housing, the regionally significant PDAs were estimated to have a capacity for an additional 10,600 housing units, which still presents a significant gap between estimated housing production and the projected housing demand of 60,000 new housing units in the Compact Region. The issue of housing and its role in supporting future growth is given specific attention in Section 10. Housing Gap.

Description of Regional Priorities Growth Scenario

In order to evaluate the benefits and impacts of focusing state investments and development toward the regionally-significant PDAs, MAPC and CMRPC developed an alternative regional scenario that can be compared to the Distributed Growth scenario described above. The “Regional Priorities” scenario anticipates that investments, policies, and local zoning are all oriented toward focusing growth into the Regional PDAs¹⁸, while also discouraging unplanned development in other locations that is inconsistent with the Commonwealth’s Sustainable Development Principles. As a result, while some job growth will likely occur in other areas, it is assumed that 85% of Compact Region job growth occurs in the regionally significant PDAs. This is the same amount that was distributed to all 293 locally identified PDAs in the Distributed Growth Scenario. Total population and employment growth are essentially equal for the two scenarios¹⁹.

Like the Distributed Growth scenario, MAPC and CMRPC planners estimated the development capacity of each regionally significant PDA and allocated growth accordingly. On average, these areas are anticipated to realize 41% of their development capacity by 2035, versus only 20% under the Distributed Growth scenario. This scenario also incorporated PDA-specific discount factors assigned by the RPAs based on knowledge of current and likely development plans. Comprehensive population, employment, and land use projections for the Compact Region were developed by the RPAs for this scenario, and an allocation algorithm was applied that focused growth in TAZs near existing city and town centers, transit, and wastewater infrastructure. Figure 28 shows projected employment change, by TAZ, for the Regional Priorities scenario between 2010 and 2035.

¹⁸ The Regional Priorities Scenario was developed using 91 regionally significant PDAs; the final set of regionally significant PDAs included 93 areas.

¹⁹ The Regional Priorities Scenario has approximately 1,000 fewer jobs (0.2%) in the Compact Region than in the Distributed Growth Scenario, a modeling artifact resulting from the complexities of overlapping transportation modeling regions.

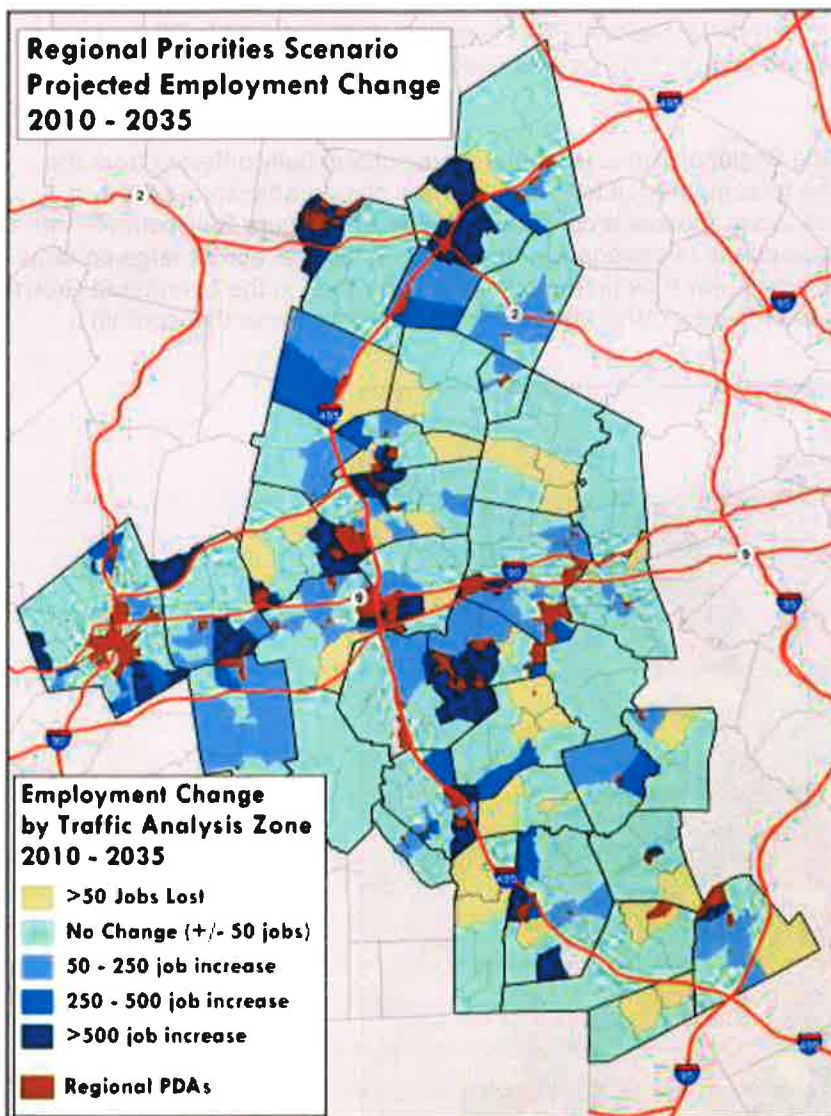


Figure 28. Distributed Growth Scenario - Projected Employment Change, 2010 – 2035

The regional scenario is projected to result in 15 municipalities with more than 1,000 new jobs and more defined nodes of employment growth, rather than having jobs distributed in a thin and widely dispersed manner as projected under the Distributed Growth Scenario. Other key characteristics of the Regional Priorities Growth Scenario are projected to be:

- One-third fewer acres of undeveloped land would be converted to commercial use (1,350 acres, rather than 1,850 acres anticipated in the Distributed Growth model)
- 18,100 jobs would occur through redevelopment or infill in already developed areas (almost three times more than Distributed Growth)
- 7,520 new jobs projected in municipalities with no public sewer system (15,000 less than Distributed Growth)
- 7,000 new jobs in MWRA sewer service area (Job losses in MWRA sewer service areas were projected under Distributed Growth)

Additionally, the employment density in the regional PDAs is projected to increase to 28.6 jobs per acre (average), with 56% of the new jobs in PDAs located near existing transit services.

Travel Demand

The transportation impacts of the Regional Priorities scenario are substantially different from the Distributed Growth scenario. The total number of trips and VMT are comparable across the two scenarios, but the distribution of travel impacts is considerably different. Figure 29 illustrates the difference in trip generation between the two scenarios. It demonstrates that across large portions of the Compact Region, there will be fewer trips produced or attracted than in the Distributed Growth scenario. The TAZs with increased trip generation/attraction are generally those that contain a Regional PDA.

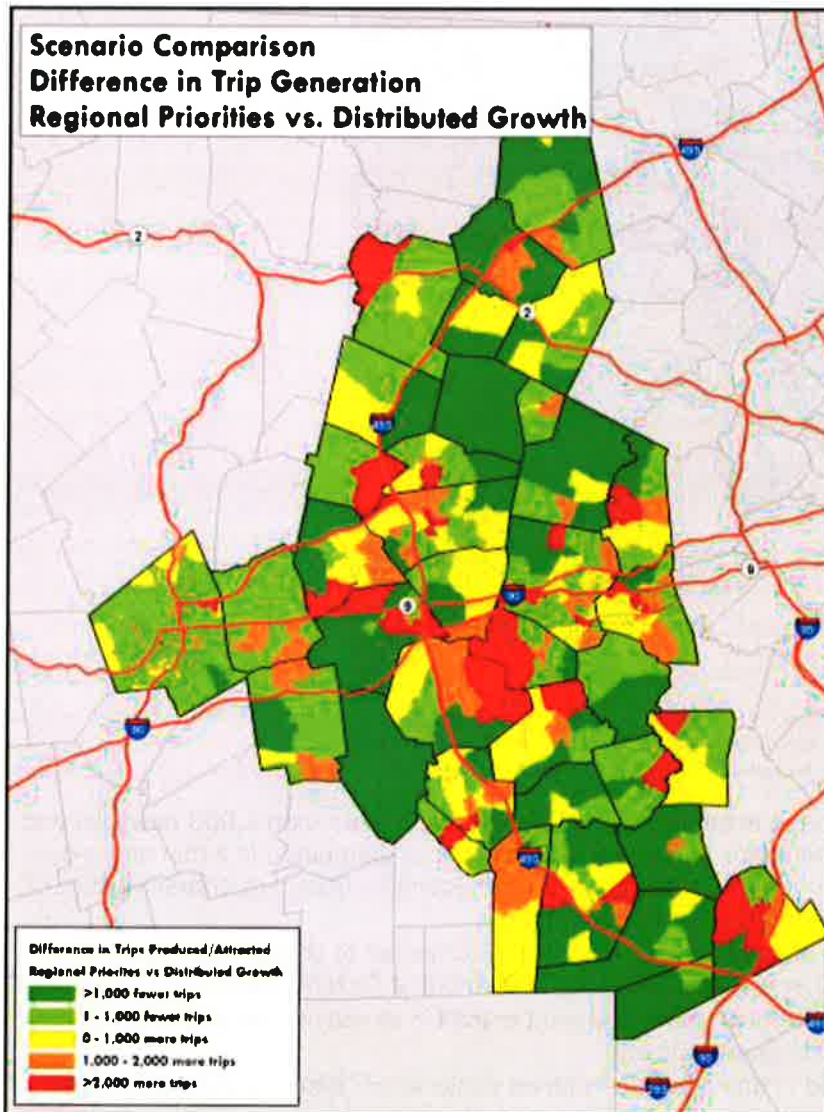


Figure 29. Scenario Comparison for Trip Generation

These patterns of trip generation and attraction result in different patterns of traffic congestion. Figure 30 depicts the difference in modeled traffic congestion in 2035, relative to current conditions. This figure indicates that in the vast majority of the Compact Region (TAZs shaded green), roadways will experience less congestion under the Regional Priorities scenario than they would under

Distributed growth. The TAZs in orange and red are those where traffic congestion is likely to be worse in the Regional Priorities scenario. They also happen to correspond to TAZs where traffic congestion is already above average, and where there is already a need for transportation improvements to reduce congestion, provide travel alternatives, and improve mobility. In the case of the two red shaded areas (Devens and Westborough Commuter Rail Station), the regional priorities scenario focuses development in a greater magnitude for areas that were experiencing little or no growth under the Distributed Growth scenario.

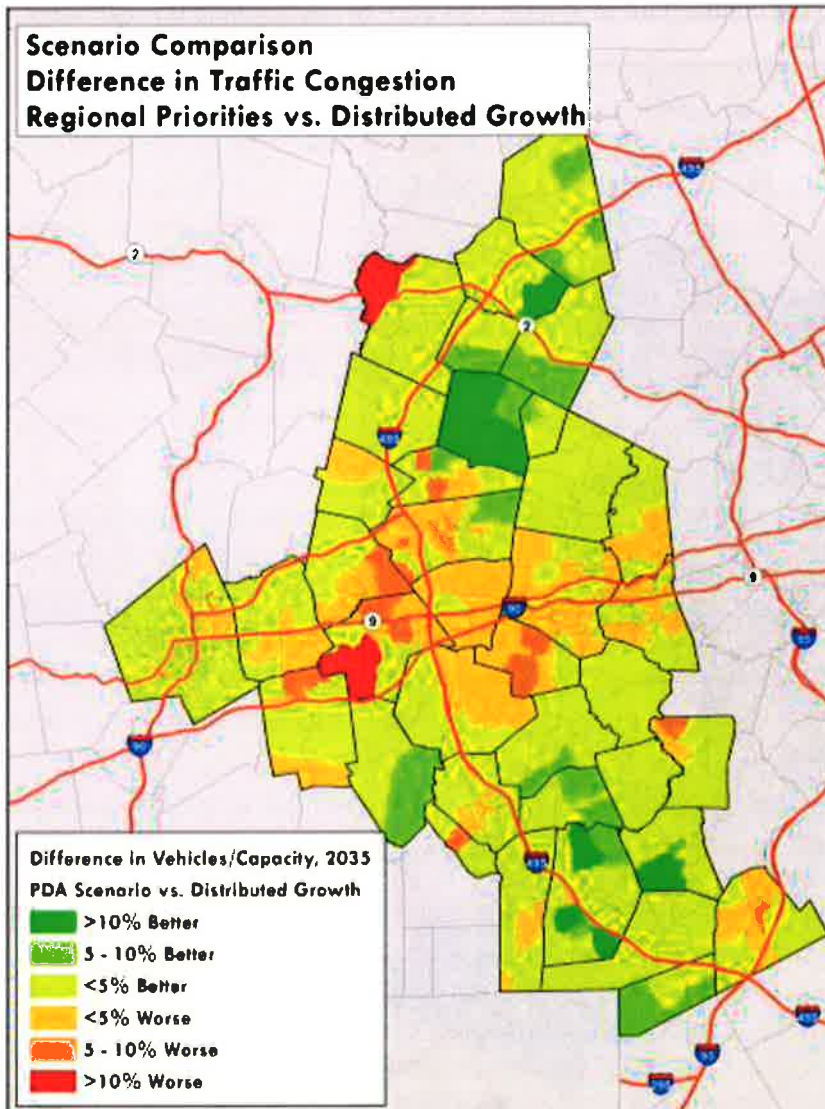


Figure 30. Scenario Comparison for Traffic Congestion

There is a bright side to increasing concentrations of development and increasing congestion: it creates conditions more conducive to transit use and other alternative modes. Model results indicate that transit mode share would increase from 0.58% to 0.62% regionwide, resulting in an additional 2,800 transit trips daily. However, this may be a conservative estimate, because it does not reflect many planned or potential improvements to transit service in the Compact Region. For example the Worcester Regional Transit Hub and improvements to commuter rail in Worcester itself are not reflected in the model results because the CMRPC travel demand model does not include trips made on transit or by walking. The CTPS model does anticipate improvements to the Worcester and

Fitchburg Commuter Rail lines, but does not incorporate any assumed improvements to the MetroWest RTA or other local bus service.

The projected share of walking and biking trips in the region also rises under the Regional Priorities scenario, up from 4.47% to 4.94%, resulting in an additional 69,000 walking trips per day. This increase is partly due to the increased development in areas where average trip lengths are shorter, so that more trips can be made by walking or biking (see Figure 31). It is likely that pedestrian and bike improvements, as well as more compact urban design, can drive those numbers up significantly within and near the regional PDAs.

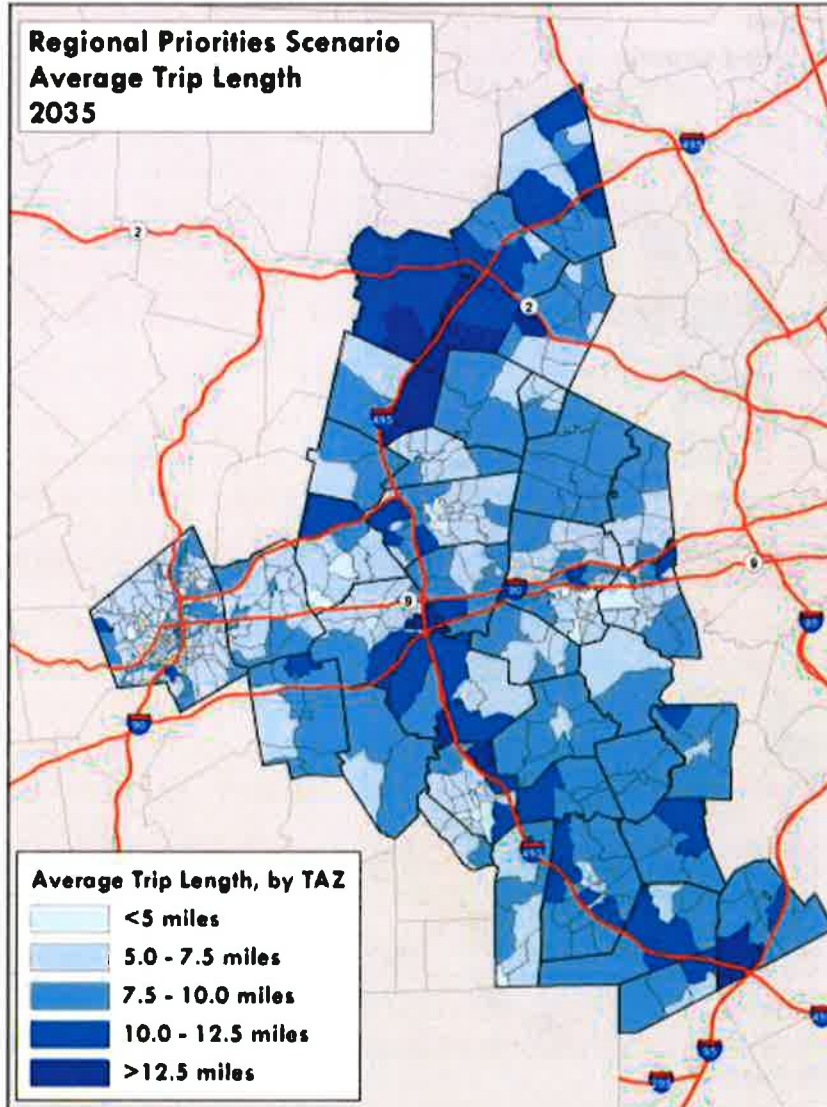


Figure 31. Regional Priorities Growth Scenario – Average Trip Length 2035

The Regional Priorities scenario demonstrates a more sustainable approach to regional development that supports existing employment centers by prioritizing growth where jobs already exist. The focus of the regional scenario on existing job centers would protect previous infrastructure investments. By reducing expansion into undeveloped areas, this scenario would reduce the need for new infrastructure extensions and take advantage of infrastructure that may have existing available

capacity, such as the MWRA system. In addition, as more growth is located in areas served by transit, the Regional Priorities Growth Scenario increases transportation choice for workers and residents.

It should be noted though, as development is supported in fewer locations under this scenario, the development pattern might result in less tax revenue for some cities and towns. At present, this tax revenue is an essential support for municipal services and operations, and despite positive system improvements under the regional scenario (transportation, environmental, air quality, etc.), the reduction or lack of increase in revenue will be a significant concern. However, an opportunity could be presented to explore tax-sharing mechanisms that link successful regional development with multiple municipalities.

Also as noted, there will be more travel demand on what are likely already heavily congested roadways (though this may be offset in part by traffic reductions realized through mixed used and higher density of development). This is a challenge, but it is an opportunity as well, since this development pattern would increase the likelihood of transit and active transportation (bicycle and walking) due to more concentrated nodes of growth.



9. Regionally Significant Transportation Investments

Following the identification of the regionally significant priority areas, the RPA's reviewed potential transportation challenges and opportunities in the Compact Region. This review was used to develop a set of Regionally Significant Transportation Investments (RSTIs) categories that would:

- Support the regionally significant PDAs
- Avoid adverse impacts to regionally significant PPAs
- Increase regional transportation choices and incorporate last-mile concepts into design plans
- Support reductions in greenhouse gas emissions as emphasized by the Global Warming Solutions Act and the GreenDOT initiative

Additionally, the context of existing fiscal limitations related to transportation funding and initiatives was considered in the development of the categories.

The development of the RSTIs was informed by statewide and regional planning documents as well as other transportation investments that were identified during local meetings in the municipalities and by officials and participants at the Regional Public Forums. The locally identified significant transportation investments are illustrated on the maps include in **Appendix G**. The investments are identified as either corridor investments (e.g., Roadways, Trails, Transit, etc.) or spot locations (Interchanges, Intersections, etc.).

The RSTIs are organized into the following seven investment categories along with highlighted projects that have the potential to address transportation needs in the Compact Region:

Category 1: Commuter and Freight Rail

The 495 Compact Region has the benefit of being served by three commuter rail lines: the Fitchburg Line, the Framingham/Worcester Line and the Franklin Line. These assets are critical to success of growth and travel in the Compact Region, both for inbound commutes to Boston and for reverse commutes to the Compact Region. Furthermore, there is opportunity to leverage the freight rail infrastructure to support long and short haul services in support of growth. Elements of this category are:

1. Additional parking (both vehicular and bicycle) should be provided strategically at rail stations to support commuter access and transit-oriented development in PDAs
 - *Provide additional spaces for parking at the Littleton Commuter Rail Station to support enhanced commuter rail service on Fitchburg Line and to support adjacent PDAs.*
2. Activation or increased frequency of service on existing underutilized rail lines that serve multiple PDAs should be explored.
 - *Many PDAs are located along the Worcester Commuter Rail Line and the proposed enhancement to the line with more trips in each direction is a key investment.*
3. Opportunities to enhance freight rail connections should be used to reduce the strain of goods movement on the roadway network and support PDAs with business that utilize rail connections to transport goods.
 - *The Grafton-Upton Railroad is working to upgrade the rail line between Hopedale and Forge Park in Franklin to create additional freight rail connections.*



Category 2: Regional Transit Authorities and Transportation Management Associations

There are five RTAs that operate bus and shuttle services in the region (Figure 6). The strengthening of these services will further enhance transportation alternatives in the Region and access among areas of development. There is also an opportunity to build on or initiate Transportation Management Associations (TMAs) that could capitalize on private and public partnerships to support commuter needs.

This category supports and reinforces the role of the RTAs and TMAs by inclusion of the following elements:



1. The frequency of service on RTA routes between Commuter rail stations and PDAs should be increased during peak travel times.
 - *Enhanced service on the MWRTA route 7 between the Framingham commuter rail station and Simarano Drive should be considered to connect employees to the PDA via transit.*
 - *There is work underway to connect the Westborough Train Station with the business park at I-495/Route 9 via WRTA transit.*
2. Opportunities for interconnections between neighboring RTAs should be supported.
 - *MWRTA and WRTA are working to create connections between their various routes so that travel between the RTA service areas is seamless.*
3. Additional routes that will provide additional transportation choice between PDAs should be considered. Additional and more robust routes have the added benefit of congestion and volume reduction on the Region's connector roads to I-495 (see Category 5).
 - *Additional routes are being considered to connect Northborough, Shrewsbury, and Westborough in the WRTA service area*
4. Support TMAs to increase transportation options in the Compact Region
 - *A new TMA in Littleton, Boxborough and Westford could engage private businesses and the towns, as well as MassRIDES, to implement transportation demand management (TDM) measures and initiate shuttle services to connect employees and residents with existing commuter rail services.*

Category 3: Highway Interchanges

Interchanges are key transportation assets that support existing and future developments; it is a priority to protect their condition and capacity. Improvements to maintain I-495 as a regional travel facility should focus on providing access to jobs and freight movement. This category advocates protecting current highway infrastructure through the following focus areas:

1. No proposed new highway interchanges in the Compact Region are identified in this report.
2. Traffic flow and capacity enhancements should be achieved through safety and geometric



improvements where possible. Any capacity additions should be based on results of detailed studies, including alternatives analyses and application of Intelligent Transportation Systems (ITS) technologies.

- *At the I-290 and I-495 Interchange, safety and geometric improvements have the potential to reduce crashes and better accommodate merging and weaving movements. Paired with limited expansions in existing capacity, these improvements could reduce overall delay and traffic congestion.*
3. Traffic associated with large retail-oriented development can impact interchanges and highway functionality if located immediately adjacent to those interchanges. Therefore development in the vicinity of an interchange should emphasize office and industrial uses rather than other high auto-demand uses such as large-scale retail, for example.
 - *I-495/Route 9 Interchange upgrade study is being funded to support mobility and accessibility improvement for existing job centers in the vicinity of the interchange; no retail is proposed in the area.*
 4. Design highway improvements abutting protected open spaces and PPAs to help enhance and improve natural environmental processes
 - *MassDOT has developed guidance for designing bridges and culverts in order to accommodate, to the extent practicable, fish and other wildlife passage at road and stream crossing ('Design of Bridges and Culverts for Wildlife Passage at Freshwater Streams'). In addition, MassDOT has worked to integrate low impact design (LID) techniques for stormwater management as part of some of its projects. These and other similar approaches should be carried forward in future highway improvements.*

Category 4: Bridges

This plan supports the current state program to address structurally deficient bridges and recognizes that there are number of bridge projects needed in the Compact Region, such as the rehabilitation of the bridge over Lake Quinsigamond between Shrewsbury and Worcester. These bridge projects are focused on maintaining the function of key thoroughfares and accommodating the needs of different travel modes (freight, car, transit, bicycle and pedestrian) to access destinations in the Region. This category supports:



1. Bridge improvements are key along the corridors connecting to PDAs
 - *The bridge at Route 9 and Route 20 in Northborough requires a capacity upgrade to improve traffic movement on and off these two regional connector roads.*
2. Bridge improvements should use a 'Complete Streets' approach to provide access and mobility accommodations for multiple modes of travel.
 - *The Washington Street Bridge project in Hudson proposes to upgrade an existing bridge carrying Route 85 over the Assabet River to current highway standards. The existing 6'+ sidewalk are proposed to be carried forward in project and the opportunity to include 5' wide shoulders or bicycle lanes should be advanced to improve bicycle travel over the bridge and on the Route 85 corridor.*

Category 5: Connector Roadways to I-495

This category includes the east-west roadways, typically state-numbered routes, which are collector roads connecting to I-495. Many municipalities experience significant congestion during peak commuting periods since these roadways were designed to handle volumes much below current levels. Exacerbating this situation is the fact that these routes serve local trips between commercial and residential uses. In many cases, these roadways utilize the full right-of-way, so additional capacity is not feasible. These routes would benefit from the following elements:

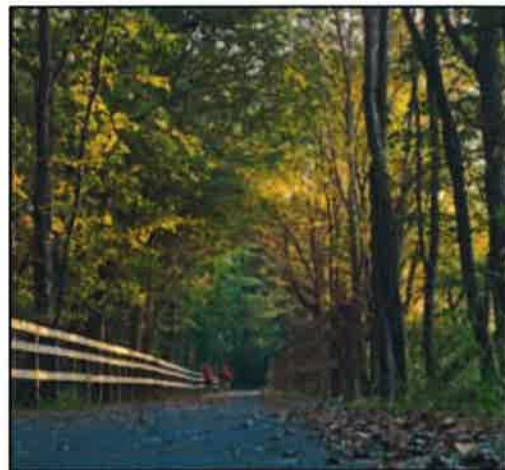


1. Signalization Improvements
 - *Analyzing signal timing along a connector road can help reduce wait times and thus improve travel times along the roadway. This might include synchronizing a targeted number of signalized intersections and increase the “green” time on the dominant travel route to move more vehicles through the intersections.*
2. Access management
 - *Multiple curb cuts on heavily-traveled numbered routes create congestion problems and travel delays. Utilizing access management techniques, bus pull-outs and zoning for mixed uses will allow for the combination of curb cuts and better organize how vehicles, including transit vehicles, enter and exit connector roadways.*
3. ‘Complete Streets’ approach that focuses on moving people, not just vehicles
 - *A complete streets approach includes improvements to entire roadway corridor to best accommodate all modes of travel: vehicular, transit, pedestrian and bicycling. By accommodating all travel modes, people will have transportation choices beyond the single-occupant vehicle and encourage active transportation.*

Category 6: Regional Bicycle and Pedestrian Connections

In the Compact Region, there exists numerous opportunities to develop the component parts of a regional bicycle and pedestrian network. These pieces would come from existing off-road paths and abandoned rail rights-of-way and connect with on-road bicycle facilities and sidewalks. The creation of these network connections would include:

1. Off-road shared use connections to rail stations, bus stations or PDAs should be completed to provide increased non-motorized transportation options.
 - *The Assabet River Rail Trail (ARRT) would provide a shared use path connection between multiple PDAs, including the Tower Street Mill in the Downtown Hudson, Downtown Maynard and South Acton Village.*



2. On-road bicycle facility and sidewalks enhancements that connect to rail stations, bus stations or PDAs should be advanced to address 'last mile' connections.
 - *Creating a better bicycle and pedestrian access between the UMass Memorial Hospital campus and Union Station/Downtown Worcester from Route 9 to Shrewsbury Street will encourage people to use an alternate mode of travel between these two nodes.*

Category 7: Rail and Roadway Interactions

The 495 Compact Region has a few locations where regionally significant PDAs are impacted by the intersection of the roadway network and rail lines. This challenge has the potential to grow as commuter rail frequency increases along 2 of the 3 lines operating in the region and as development pressure mounts. Effective management of the roadway and rail interactions could be supported by:

1. Projects should be advanced that explore grade separation and/or roadway network improvements to reduce delay caused by commuter rail and/or freight operations.
 - *The Framingham Downtown PDA and the Ashland PDAs can accommodate additional growth around the nearby commuter rail stations, however a key transportation issue faces both of these areas: rail crossings. Improvements to the intersections where the rail crossings are located and to the surrounding roadway network have the potential to enhance access to and travel through these PDAs.*



These categories provide guidance for programmed and proposed projects while offering a framework for how to structure new projects that have yet to be identified. The categories also present an opportunity to identify a similar set of transportation investments across multiple municipalities that provide efficiencies and cost-savings in implementation. For example, if multiple commuter rail stations require key sections of sidewalk to provide pedestrian access, there could be the possibility of bundling this work into a single project that involves a bulk request for design and construction.

In addition, the categories set a framework for projects that can be funded at various scales from the municipal to the state and federal levels. For example, Chapter 90 funds could be used to support maintenance and 'Complete Streets' enhancements along a corridor, while state and federal funds could be applied to signalization improvements on the same corridor to enhance vehicle traffic operations. Additionally, private investment from development projects can also be used to fund these improvements, creating viable opportunities for public-private partnerships to enhance mobility both to the site and within the Compact Region. Since transportation improvements are often costly, it will be essential to incorporate funding from a variety of sources.

10. Housing Gap

A gap of 30,000 or more housing units (as illustrated in Figure 21) is projected under both the Distributed Growth Scenario and the Regional Priorities Growth Scenario. This gap is the result of numerous areas being identified for commercial and industrial uses and fewer areas identified to include residential uses. The reduced number of areas identified with residential uses is understandable given the existing property tax structure and the perceived property tax implications. However, there are significant consequences related to transportation and economic competitiveness that will arise if housing unit growth fails to keep pace with job growth.

If housing choice in the Compact Region remains limited due to low or no housing growth, it will create a system where an increased number of workers will need to find transportation into the Compact Region for jobs and other needs. This will be especially true under a scenario that would distribute jobs in a disparate manner across the region. It would reinforce the need for an automobile to commute which would likely contribute to increased traffic congestion, reduced potential for alternate modes of travel and reduce the opportunity for moderate- and low-income people to connect to employment. A side effect of this would be increased air emissions and associated air quality, climate and stormwater impacts.

With this housing gap, there is reduced ability to meet both affordable and workforce housing needs in the Region. Currently, only three municipalities have a Subsidized Housing Inventory (SHI), as defined by MGL C. 40B, of 10% or more (Worcester, Northborough and Framingham) and with the new data from the 2010 Census, four municipalities had their inventory drop below their previous level of 10% (Franklin, Hudson, Marlborough and Natick)²⁰. Although some like Sudbury and Stow are making progress on Housing Production Plans, most municipalities in the Region are not on pace to achieve MGL 40B housing production goals. These goals are critical to providing affordable housing choices but if they are developed in a manner outside of municipal planning processes, there is missed opportunity to focus growth near transit, on infrastructure, and away from natural resources.

An element of the housing gap is limited housing diversity. As shown in the Community Characteristics portion of Section 3, the majority of housing in the corridor is single family homes, and there are considerably fewer opportunities for those seeking other housing types. It is predicted that these other housing types – duplexes, multi-family units, and condominiums – will be necessary to meet changing demands of recent generations and newly expected housing preferences of baby boomers. By broadening the housing types available, there is the potential to address changing needs as well as to offer more rental housing opportunities, especially for those facing the possibility of a high housing cost burden.

Four actions are recommended to reduce the projected housing gap. An initial step would be to review the regionally significant priority development areas identified for only commercial and industrial uses and explore their potential for housing. Inclusion of housing in these locations would require balancing how commercial and residential uses are distributed and would be a major step towards accommodating housing in focused locations. Increasing the number of mixed use development areas to include both residential and commercial or industrial uses would also provide a broader base of customers to support retail businesses, restaurants and other local services.

A second step is to focus on the provision of residential land uses in village and town centers, where there is the potential to accommodate a greater number of units and housing types. These locations

²⁰ Based on data from Massachusetts Department of Housing and Community Development and MAPC Analysis

concentrate development and often include commercial uses. This action does not imply that each village and town center must equally take on the same levels of growth. It does however propose that different types of housing growth are appropriate relative to the size of the center and that a municipality has a responsibility to make substantive progress toward expanding its affordable housing inventory.

A third step is to diversify housing opportunities to create more residential options, reduce development pressure on Priority Preservation Areas and facilitate land conservation. Low-density single-family residential developments that consume 1-2 acres or more of land per unit of housing are expensive both economically and environmentally, and they will likely not result in the number of units to help meet the housing needs of the region. Alternative zoning options, such as Open Space Residential Design (OSRD) and Accessory Dwelling Units (ADU), can be applied to residential zones in suburban and rural areas to expand local housing choices and create more opportunities for workers in the Compact Region. For example, OSRD provides for housing to be built in a more compact fashion on the least sensitive portions in a development area, while natural assets such as stream corridors, fields, and woodlands are protected and amenities and recreational opportunities are provided. OSRD developments can also include a variety of housing types such as duplexes, condominiums, and multifamily housing.

The fourth recommended step is to focus housing in development areas with transit access or the potential to support transit service. Supporting housing creation in these areas increases the number of locations that have a “critical mass” of people sufficient to increase transportation choices through the support of transit service. Furthermore, housing near transit service, especially near commuter rail stations, can reduce the housing-transportation cost burden for workers and provide more opportunity for seniors to stay engaged with their communities.

Although discussed separately, these actions overlap in how they relate to the priority development areas and equitable access to these opportunities for current and future residents of the 495 Compact Region. For example, only a few of the Regionally Significant PDAs by commuter rail stations include a housing component. These locations hold great possibilities for accommodating housing that offers transportation choices, diversifying a municipality's housing stock and reducing the development pressure on vacant developable land. As these actions are advanced either individually or in combination, they will go a long way in meeting the principles that have guided the planning process.

11. Additional Infrastructure Investment Needs

Although inventorying and identifying potential transportation infrastructure investments were specific tasks of the study, non-transportation infrastructure needs were cited by many cities and towns as being just as critical to successful future housing and commercial development in the Compact Region. In most cases, the limitations of drinking water and sanitary sewer systems were identified as significant impediments to achieving the full potential of identified PDAs. For example, of the 37 municipalities in the region, 16 do not have wastewater systems and six are served solely by private wells. Similarly, region-wide the volume of wastewater managed by existing municipal wastewater treatment facilities has been increasing faster than population and employment growth.

While growth is expected to bring an increase in demand for water and wastewater disposal, comprehensive management solutions can reduce or limit the amount of infrastructure enhancements and/or expansion that would be expected. It is also critical to note the impact that water and wastewater infrastructure can have on the surrounding natural systems, particularly rivers and streams, since both pollutant discharges and withdrawals have been shown to affect ecosystems²¹. Sustainable water practices will increasingly depend on conservation and innovation throughout the corridor to ensure protection of both economic and environmental health.

The issue of water infrastructure in Massachusetts is of such importance that in 2010 the Legislature created the Water Infrastructure Finance Commission (WIFC). The Commission is charged with developing a comprehensive, long-range water infrastructure finance plan for the Commonwealth and its municipalities. Specifically, the Commission was charged to: “examine the technical and financial feasibility of sustaining, integrating and expanding public water systems, conservation and efficiency programs, wastewater systems and storm water systems of municipalities and the Commonwealth, including regional or district systems.”

According to the draft WIFC report²²:

“As we build on our many accomplishments, the Commonwealth has an opportunity to continue to bring the most modern, science-based understanding of water resources to our future decisions and investments. We have the chance to address some of the adverse impacts of older, centralized systems, including high-energy demand to move water to centralized facilities, ground water drawdown, low in-stream flow, and drought risk. This theme was set by the Commonwealth’s Executive Office of Environmental Affairs’ 2004 Water Policy, which stated, Existing infrastructure often transports precipitation away from where it lands instead of letting it infiltrate. Transporting dirty water far from its source made sense historically, but today, with significant improvements in wastewater treatment techniques and standards, treatment levels often make the water available for reuse or recharge, thereby replenishing natural stream flows and aquifers in the basin or sub-basin.

Municipalities are faced not only with finding the financial resources to keep existing systems running, but also with decisions and imperatives about what kind of new investments they will make. As a Commonwealth, our future water resource protection investments will likely include a mix of natural and flexible decentralized approaches, integrated with infrastructure our municipalities already have in a way that optimizes water resource availability.

²¹ Armstrong, D.S., Richards, T.A., and Levin, S.B., 2011, Factors influencing riverine fish assemblages in Massachusetts: U.S. Geological Survey Scientific-Investigations Report 2011-5193, 58p. (Also available at <http://pubs.usgs.gov/sir/2011/5193>).

²² <http://www.senatoreldridge.com/legislation/wifc/about-the-wifc>

Fully integrating more modern systems that are open to our evolving comprehension of the aquatic environment into our current infrastructure is a process that will take decades and require the ability to test new solutions for their efficacy and economics. It will require permitting and project review that is able to partner with local communities to realistically integrate new solutions into or away from existing assets in a way that makes sense, is financially viable, and is low-risk for communities that must meet state and federal standards.”

Water Supply

Drinking water in the Compact Region is provided and distributed through multiple sources, including large regional authorities, municipal water districts and private wells. Five municipalities receive various levels of water services from the Massachusetts Water Resources Authority (MWRA), (Framingham and Southborough receive full water service, Marlborough and Northborough partial water service, and Worcester utilizes the MWRA for emergencies only), 29 communities are served by public water supplies, and six communities rely on private wells.

Water withdrawals are regulated by the Massachusetts Department of Environmental Protection (DEP) under the authority of the Water Management Act. Thus, new or increased municipal water supplies require permits and the reporting of water use data to DEP. Overall, growth projections are for population expansion of approximately one percent per year, with an accompanying growth in employment population of one-half of one percent. This growth will put increasing pressure on local water systems. While water is a relatively abundant resource in Massachusetts, it is a limited natural resource nonetheless and an asset of the water supply system that is as important as pipes and pumps. Of the communities in the Compact Region, all but two are projected to increase their water use. In some cases, demand is projected to double.

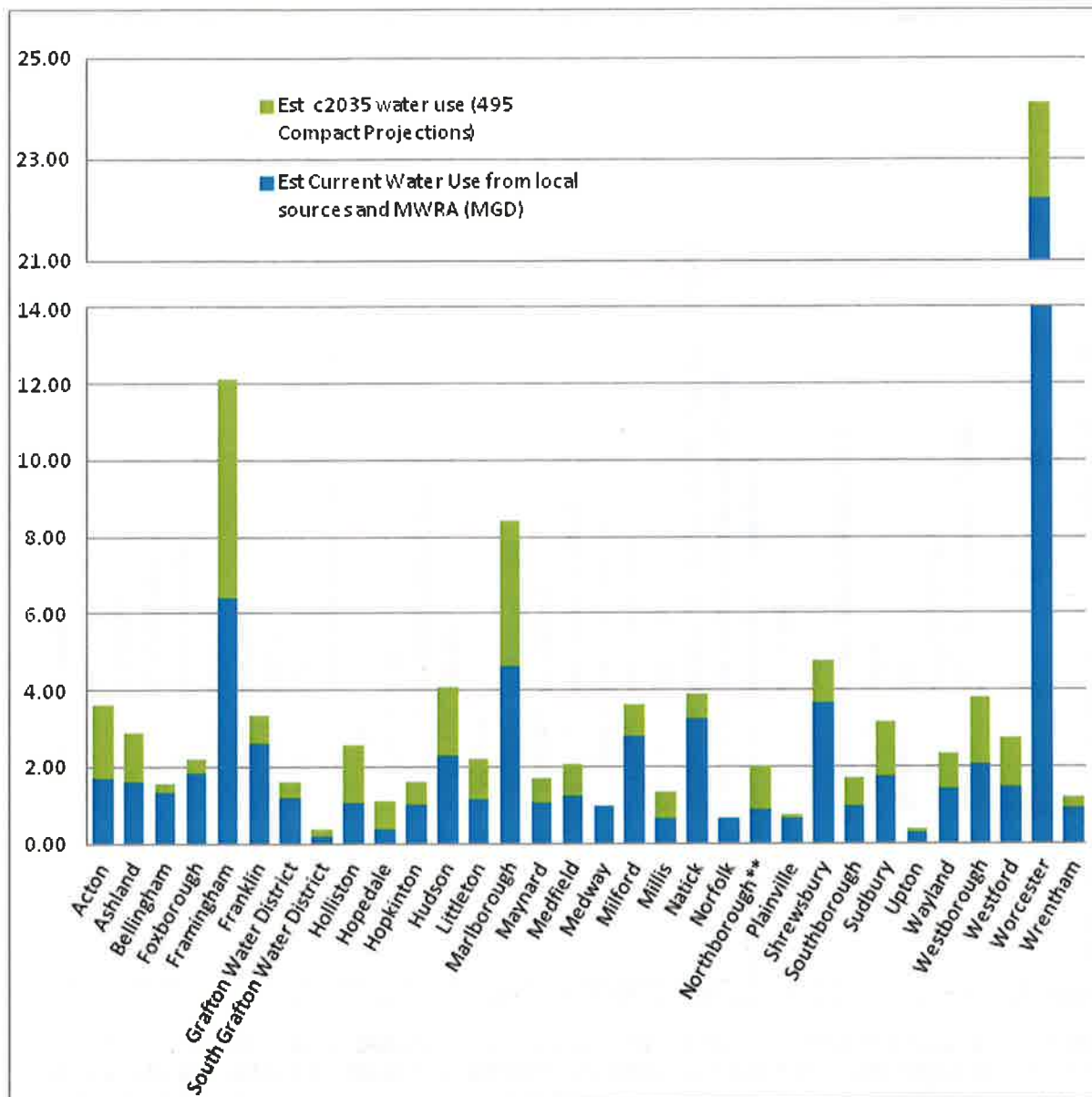


Figure 32. Comparison of Current Water Use to Future Projected Water Use
(495 Compact Region Communities Regulated by Water Management Act Permits)

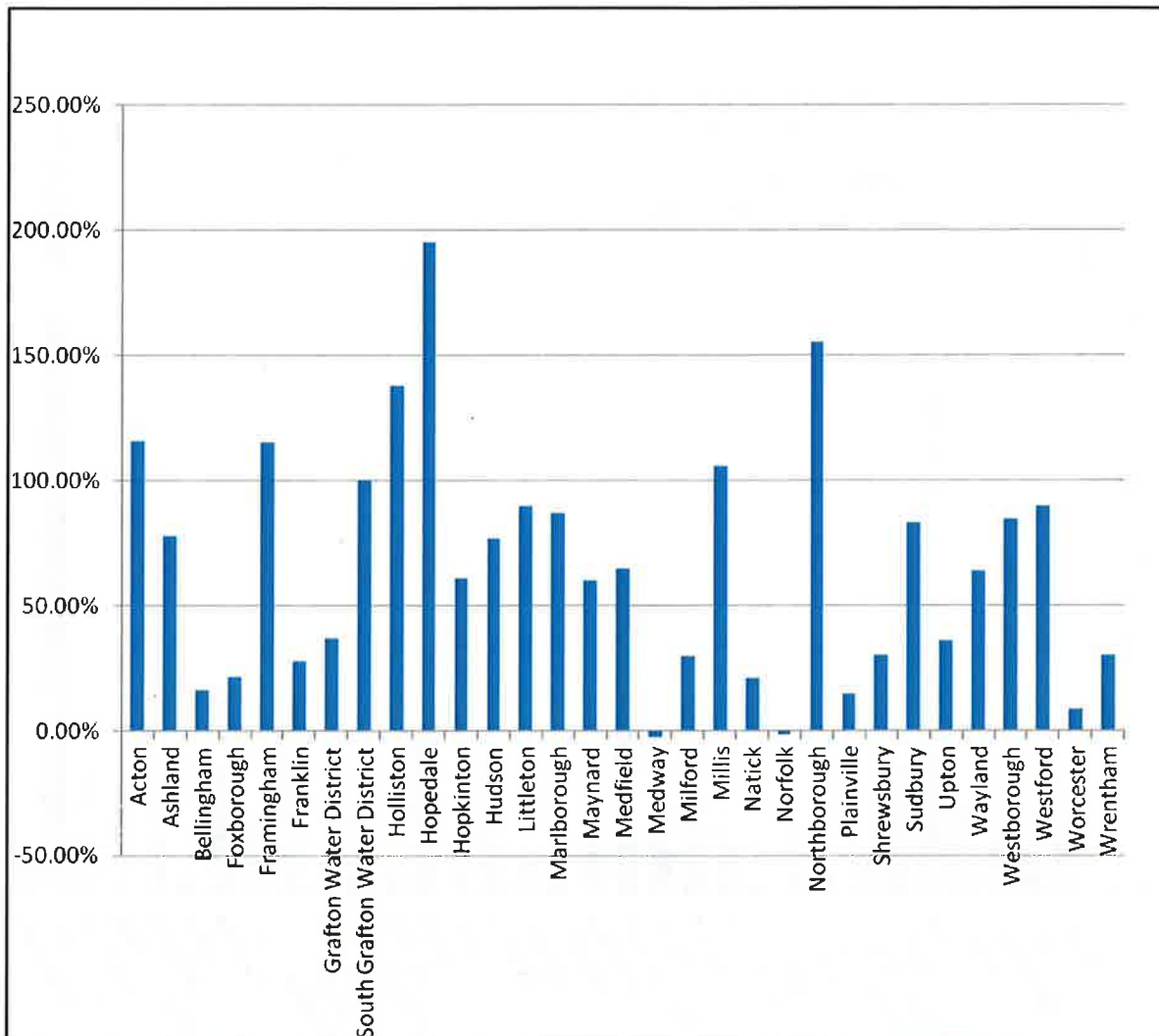


Figure 33. Change in Water Use - A Comparison of 2035 Compact Projections versus Current Use

Under the Regional Priorities Scenario, growth in seven communities is expected to result in significantly higher water demand than under the “Distributed Growth” scenario. The communities shown below will have an added water supply challenge due to the concentration of growth in these areas.

Table 1. Water Demand Projections - Municipalities Projected to have Significantly More Demand under the Regional Priorities Scenario vs. the Distributed Growth Scenario

Municipality	Increase in Demand Projection (%)
Holliston	8%
Hopedale	13%
Hopkinton	8%
Hudson	8%
Littleton	23%
Marlborough	7%
Southborough	8%

Of the 29 communities with Water Management Act Permits, 22 are projected to have higher demands than current authorizations allow. They are:

Table 2. Municipalities Where Water Demand under the Regional Priorities Scenario is Projected to Significantly Exceed Current Authorizations

Municipalities			
Acton	Hopedale	Medfield	Sudbury
Ashland	Hopkinton	Milford	Wayland
Bellingham	Hudson	Millis	Westborough
Grafton: Grafton Water District	Littleton	Norfolk	Westford
Grafton: So Grafton Water District	Marlborough	Northborough	
Holliston	Maynard	Shrewsbury	

As communities seek expanded authorization through permits for additional water supplies they will also need to continue to ensure a stable and sustainable water supply for future generations as well as for long-term ecologic health. Particular attention will be paid to requests in subwatersheds already experiencing a 35% or more reduction in streamflows (See Figure 34). Equipped with their future demand forecast communities are now in a position to develop a strategy and take steps to meet the water supply challenges of projected growth.

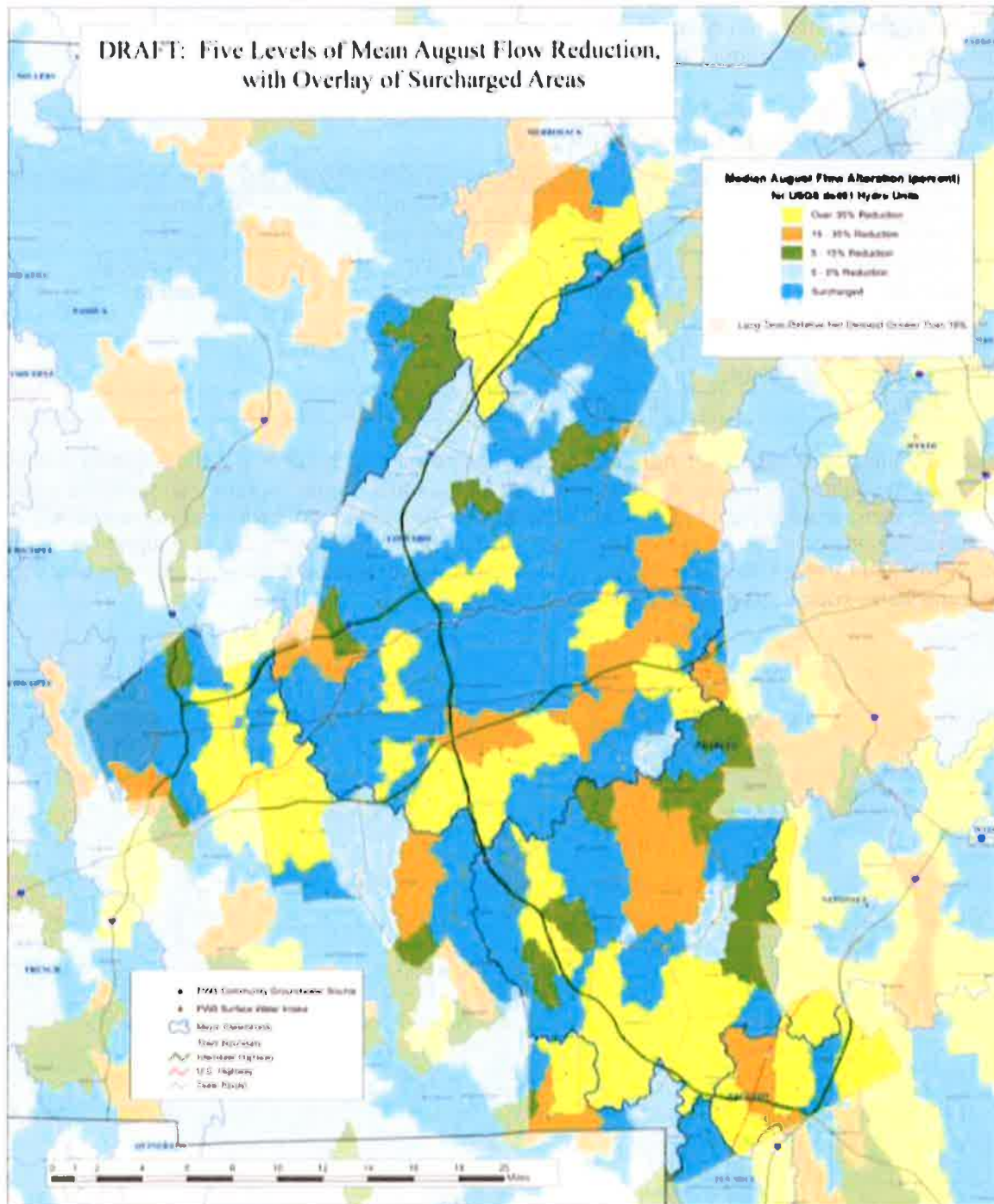


Figure 34. Five Levels of Mean August Flow Reduction, with Overlay of Surcharged Areas

Sufficient supply may not always be available to meet demand unless strategies are adopted to ensure sustainable water management. Improved conservation efforts and innovative technologies can significantly reduce future projected water demand. Across Massachusetts, the demand for water in the summer is about 28% higher than the average use the rest of the year. Much of this increased use is attributable to non-essential activities such as lawn watering, where use of potable water is unnecessary. Curtailing non-essential use, and requiring innovative solutions such as treatment on-site and recycling of water for non-potable uses, could significantly reduce future demand increases as well as treatment and distribution costs to public water suppliers. Through the reuse of wastewater flows to wastewater treatment facilities could also be reduced (see below).

Wastewater

An equally important issue in the Region is wastewater treatment and sewer infrastructure. Providing adequate wastewater treatment for large-scale economic development while protecting the environment is a challenge whether one is pursuing decentralized treatment or addressing ongoing maintenance, reduction of inflow and infiltration, or expansion of sewer infrastructure to service anticipated growth.

Three communities receive sewer services from the MWRA: Framingham, Ashland, and Natick. Thus, as with water supply, the majority of the municipalities in the Compact Region have either municipal district or regional sewer infrastructure, which may cover only a portion of one or multiple towns (such as with the Devens Regional Wastewater Treatment Facility), or have no public sewer system at all.

Thirteen of the communities in the Compact Region have no public sewer infrastructure available. This lack of public sanitary sewer may constrain development since the cost of designing, constructing and maintaining an on-site facility for a large-scale development significantly impacts a development pro-forma, and may make site development cost-prohibitive. However, large scale regional systems are not always the best or most cost-effective solutions. Decentralized treatment facilities may offer unique solutions to growing within designated PDAs.

The forecasted increases in water demand discussed above are likely to result in corresponding increases in wastewater demand should current wastewater management practices continue. As of 2011, nineteen communities in the region had wastewater treatment facilities and all were at or near their current discharge permit limits.²³

Table 3. Municipalities At or Near Their Current Discharge Permit Limits

Municipalities			
<i>Acton</i>	<i>Hopedale</i>	<i>Medway</i>	<i>Shrewsbury</i>
<i>Bellingham</i>	<i>Hudson</i>	<i>Milford</i>	<i>Upton</i>
<i>Foxborough</i>	<i>Marlborough</i>	<i>Millis</i>	<i>Wayland</i>
<i>Franklin</i>	<i>Maynard</i>	<i>Northborough</i>	<i>Westborough</i>
<i>Harvard</i>	<i>Medfield</i>	<i>Plainville</i>	

Source: MassDEP

In the case of those communities highlighted in italics, water use is expected to increase by more than 50%. If this translates into a direct impact on wastewater flow demand (volume of water treated), the need for expansion would present a serious challenge. In addition to potential flow demand, publicly owned treatment works seeking federal National Pollutant Discharge Elimination

²³ Defined as at or near MassDEP groundwater discharge limits or U.S.EPA NPDES permit constraints.

System (NPDES) permits²⁴ would have to meet Clean Water Act anti-degradation provisions prior to receiving a permit for any increase in discharge flow to water bodies. Generally, this means that the pollutant loads currently generated cannot be increased and any additional discharges would need to fall within these current pollutant loads. This can be an expensive treatment process.

However, groundwater discharge is a viable alternative. GIS analysis shown in Figure 35 indicates areas where groundwater discharges may be suitable and communities should consider protecting these lands for potential use in the future. Financial assistance is available from the EOEPA Division of Conservation Services to help communities purchase land for this purpose. Localized on-site treatment and water re-use are two additional alternatives that could significantly decrease the need for wastewater disposal capacity while providing a supply of water for non-potable uses.

²⁴ See http://cfpub.epa.gov/npdes/home.cfm?program_id=45



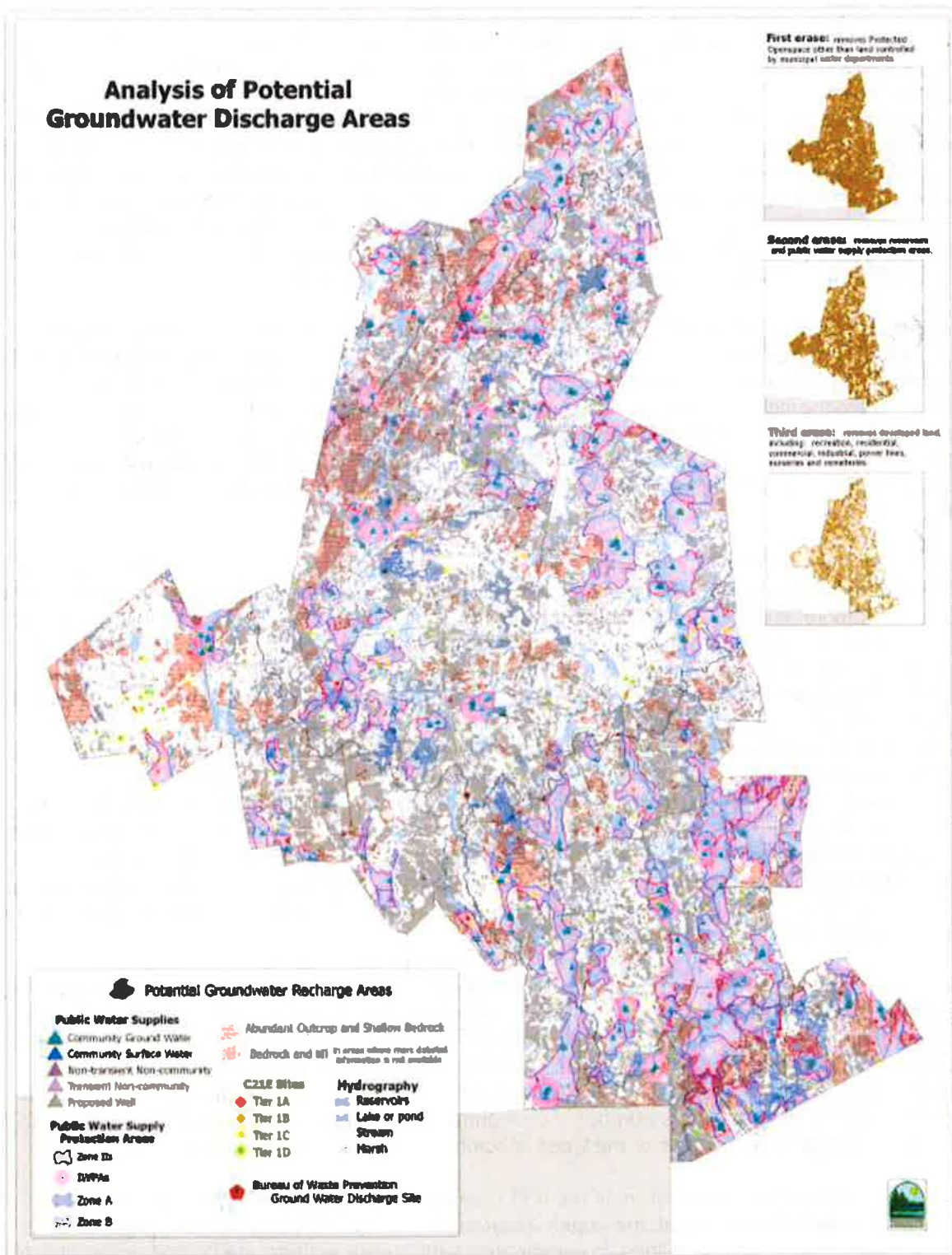


Figure 35. Map of Potential Groundwater Discharge Areas

Existing facilities are constrained from expanding capacity or allowing additional connections by various limitations. An example of these system constraints is the infrastructure in the Town of Westborough's wastewater treatment facility, which has a current permit limit of 7.68 million gallons per day (MGD). This flow allocation is shared between Westborough (2.89 MGD), Shrewsbury (4.39 MGD), and Hopkinton (0.40 MGD). Westborough has allocated its total flow allowance amongst various land uses and/or areas to plan for future build-out, but in order to reach the full potential of its identified priority areas, additional capacity is necessary, and the Town has identified regulatory hurdles to increasing the treatment plant's capacity. The plant is currently undergoing significant renovations, totaling nearly \$53 million, which were mandated by the U.S. Environmental Protection Agency to meet federal regulations to limit the amount of phosphorus in the effluent discharged to the Assabet River. Increasing the plant's capacity is not part of this project.

Similarly, the Town of Shrewsbury has already identified necessary infrastructure improvements required for development of their priority development areas. Some of these improvements include: extending sewer service, upgrades to existing pump stations, and construction of a new pump station. Recognizing that the Town relies upon the Town of Westborough for wastewater treatment, and that Westborough has limited capacity, Shrewsbury has instituted a moratorium on sewer connections for certain new residential development (i.e., development that fronts on a roadway that does not contain sewer mains). This action was taken in order to reserve the remaining sewer capacity for new or expanded commercial and industrial uses.

Another example of shared wastewater treatment in the Compact Region is in Northborough, where approximately 25% of the town's area has sewer service, via a connection to the Westerly Treatment Plant in Marlborough. This sewer area includes the built-out area around I-290, as well as the 300 acres of land owned by the Gutierrez Company on Bartlett Street, a regionally-significant PDA. Of note is that there is no sewer service on Route 9, a highly developed office, commercial and retail corridor which relies upon individual septic systems. Northborough is not unique in having a partial system in the community. It is, however, quite common for proposed development projects to augment or expand the existing system as part of the development permitting process. Recently, a private developer funded the installation of two miles of sewer lines in developed areas of Northborough. This sewer extension is outside the existing area of town served by municipal sewer and the developer owns it for two years during which time he controls who may or may not connect to it. Once he turns the infrastructure over to the town, anyone can connect in the usual way by seeking permission from the Water and Sewer Commission, paying betterment and hook-up fees, etc. This is a project that benefitted both the project and the town, allowing for more development in line with the town's vision of economic development.

The Town of Littleton is considering a plan to promote growth within a PDA by building a groundwater discharge treatment facility. The costs to build and operate this facility could be partially offset by incorporating technologies designed to generate energy from waste by products of the wastewater treatment as well as septic pumpout solids. Research indicates the project can be developed for less cost than either a traditional large regional facility or on-site treatment provided by individual property owners. It also offers a number of environmental benefits²⁵. This innovative approach to a growing challenge is an example of the types of solutions that are on the horizon.

Water and wastewater infrastructure in the 495 Compact Region, key elements in promoting strategic economic development, are largely localized as opposed to being part of a regional or metropolitan system. Municipalities, in combination with private entities, are largely responsible for the construction of this infrastructure. Given the amount of development that has occurred in the Region over the past twenty years, this is a significant fact. Municipalities, the region and the state

²⁵ CRWA report at <http://crwa.org/projects/littleton/FinalReport.pdf>

should continue to think about how wastewater infrastructure should be planned for, financed, and pursued over the next 20 years. However, these challenges also present opportunities for new approaches and technologies through which Massachusetts can again provide leadership for others to emulate.

Infrastructure Mapping

The reality of localized infrastructure consequently translates into localized infrastructure mapping. Absent a centralized or regional system for water and/or sewer, each community handles this infrastructure on their own. This means that, while system maps are usually available from communities, it is not always the case. Their availability depends upon the technology in the town, the staff capacity to create and maintain the information, and whether or not they have mapping in a format that is useful to others or are willing to share it. Typically, information is received and assembled during a specific project, such as an open space and recreation plan or master plan or development review. Because this kind of analysis is on a case-by-case basis, there is not a central repository or reconciliation of this information, making it extremely difficult to assemble a regional system map. As regional strategic planning continues, creating and maintaining a region-wide infrastructure mapping element ought to be a priority.

MassGIS, the centralized GIS data repository for the state has the following infrastructure layers, illustrating the limited amount of collected existing information:

- **Public Water Supplies:** The Public Water Supply (PWS) data layer contains the locations of public community surface and groundwater supply sources and public non-community supply sources
- **MWRA Water/Sewer Service Areas - October 2005:** This polygon data layer shows the areas across the commonwealth with water and sewer service as provided by the MWRA, but shows only which communities have service, not the actual infrastructure lines. The layer is maintained with updates when provided by the MWRA.

Available infrastructure is critical to planning for development and preservation priorities. Incomplete information or information that is only available from individual communities is a constraint upon the regional planning process, creating a piecemeal approach, particularly with data that has such critical implications to the development process. Water and sewer infrastructure ought to be available much as local and regional roadway information has been documented.

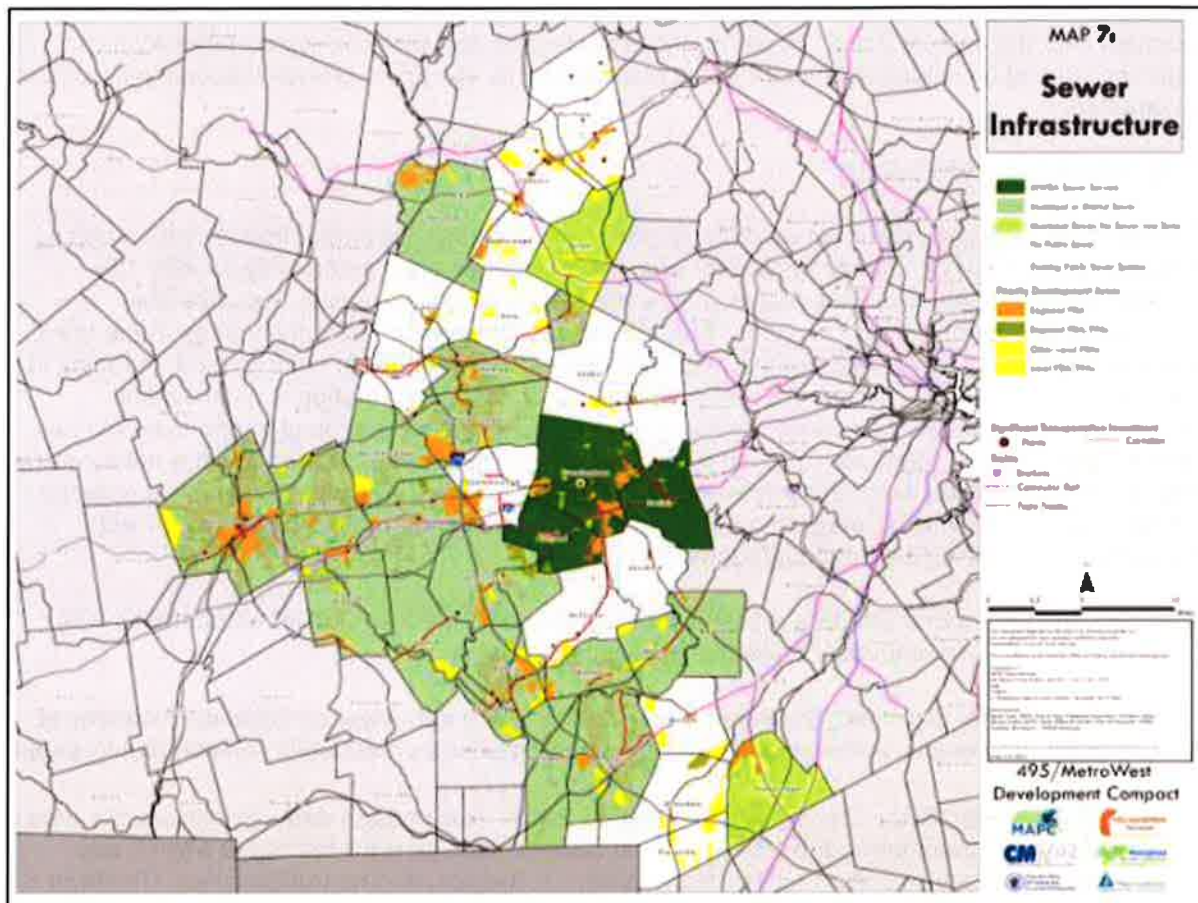


Figure 36. Sewer Infrastructure

12. State Priority Areas

Building on the process to identify local and regional priorities, a review was initiated at the state level to identify state PDAs and PPAs. The resulting map of State Priority Development and Priority Preservation Areas is intended to serve as a roadmap for state agencies to use when evaluating investment decisions in the region. Though state resources for infrastructure investments are constrained, the identification of areas that are most appropriate for new housing, economic development, land preservation and the infrastructure needed to support those goals, allows state agencies to evaluate opportunities and target their resources accordingly.

Figure 37 provides an overview of the State Priorities Map; a more detailed version of the map with corresponding identification table is provided in **Appendix J**.



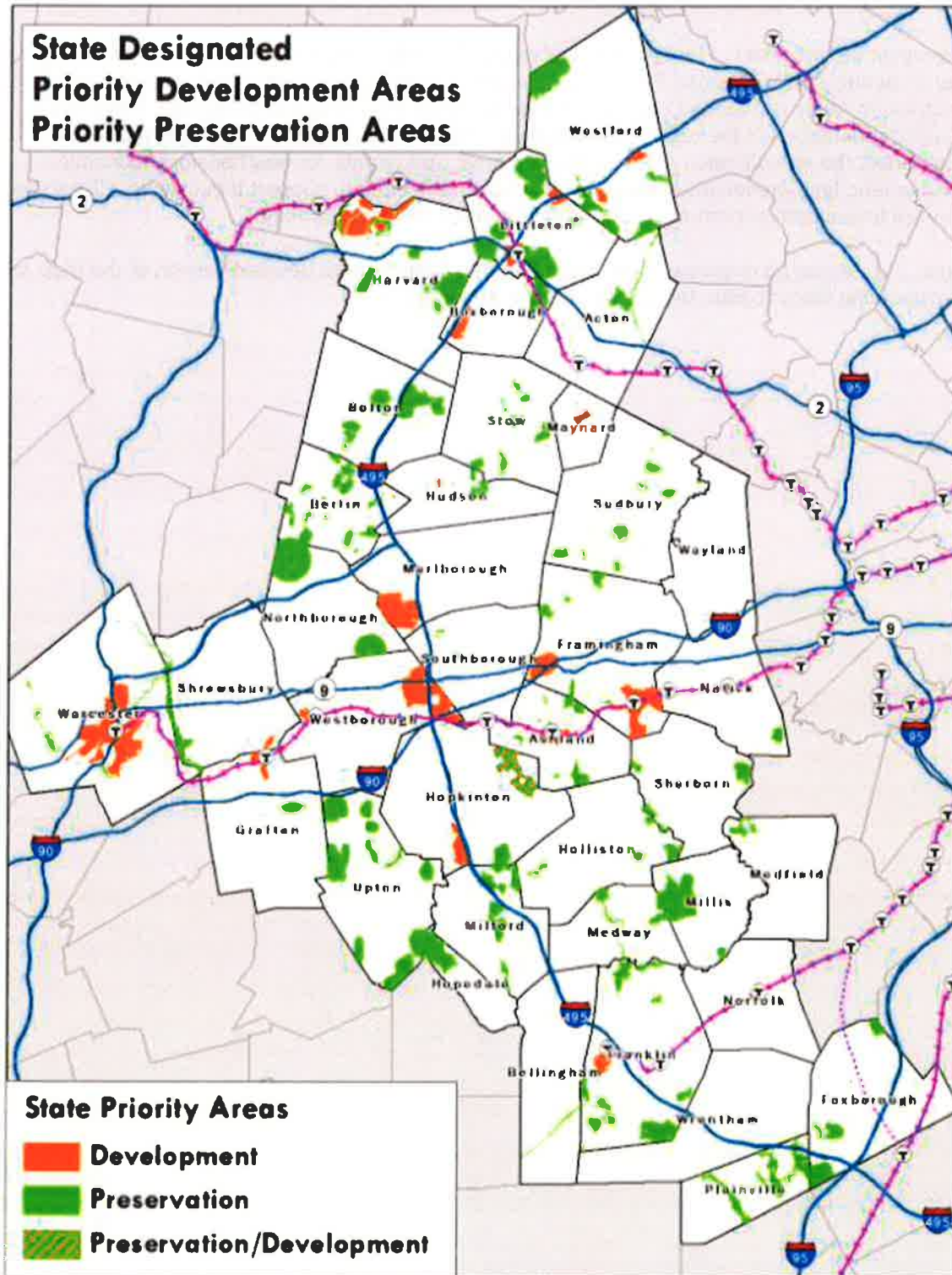


Figure 37. Overview Map of the State Priority Areas

State Priority Development Areas

Led by EOHED, the state review resulted in the identification of 21 State PDAs in the 495 Compact Region. The areas identified are estimated to be able to accommodate approximately 25,000 new jobs, representing approximately 45 percent of the total job growth projected for the region through 2035, and 3,700 new housing units.

These areas have been identified from the larger list of Regional Priority Development Areas and represent significant economic development opportunities in three overarching categories:

- Existing City and Town Centers;
- Transit-Oriented Development Opportunities; and
- Exceptional Opportunities for Job Creation and/or Workforce Housing

The State PDAs represent opportunities to promote growth in the 495/MetroWest Region, while also upholding the state's commitment to the Sustainable Development Principles. In addition, EOHED has prioritized the following development goals: encouraging the reuse of previously developed sites, promoting housing at a density of 4 units to the acre or greater, and supporting mixed use development, Gateway Cities, and transit oriented development. The State PDAs identified in the 495/MetroWest Region meet these criteria and/or represent an exceptional opportunity to support future job growth and/or workforce housing in the region making them suitable State Priority Development Areas.

The State Priority Development Areas are not intended to represent all areas that meet the criteria listed above, but instead were chosen for their strategic significance in advancing these goals by virtue of being able to accommodate significant growth at scale. The state is committed to working with all communities in the region to help support economic development and preservation in areas that are appropriate and will support the future prosperity of the region.

State Priority Preservation Areas

EOEEA led the state review of preservation priorities which resulted in the identification of 192 State PPAs. In order to determine the State PPA list, EOEEA updated the GIS analysis first developed by the Commonwealth, land trusts and other conservation organizations for the South Coast Rail Corridor Plan. The GIS analysis combined mapping of a variety of natural resources to produce a single weighted combination of factors that represents the areas of highest conservation priority (Figure 38). A list of GIS data layers used and their relative weighting is included as **Appendix J**.

Updates to the methodology were made by members of the Interagency Lands Committee, a group of staff responsible for the land conservation efforts of the Executive Office of Energy and Environmental Affairs and the Departments of Agriculture, Conservation and Recreation, Environmental Protection, and Fish and Game, and EEA water policy staff. Changes to the list of layers and their weighting were necessary to address differences in the natural resources and development patterns of the two regions and to include new GIS data, most notably BioMap2. The scores for land in the 37 communities ranged from 0 to 505 (of a possible 670), representing a cumulative score for environmental resources present. The following map shows in purple and pink cross-hatching lands with the highest 10% and 20% of scores respectively.

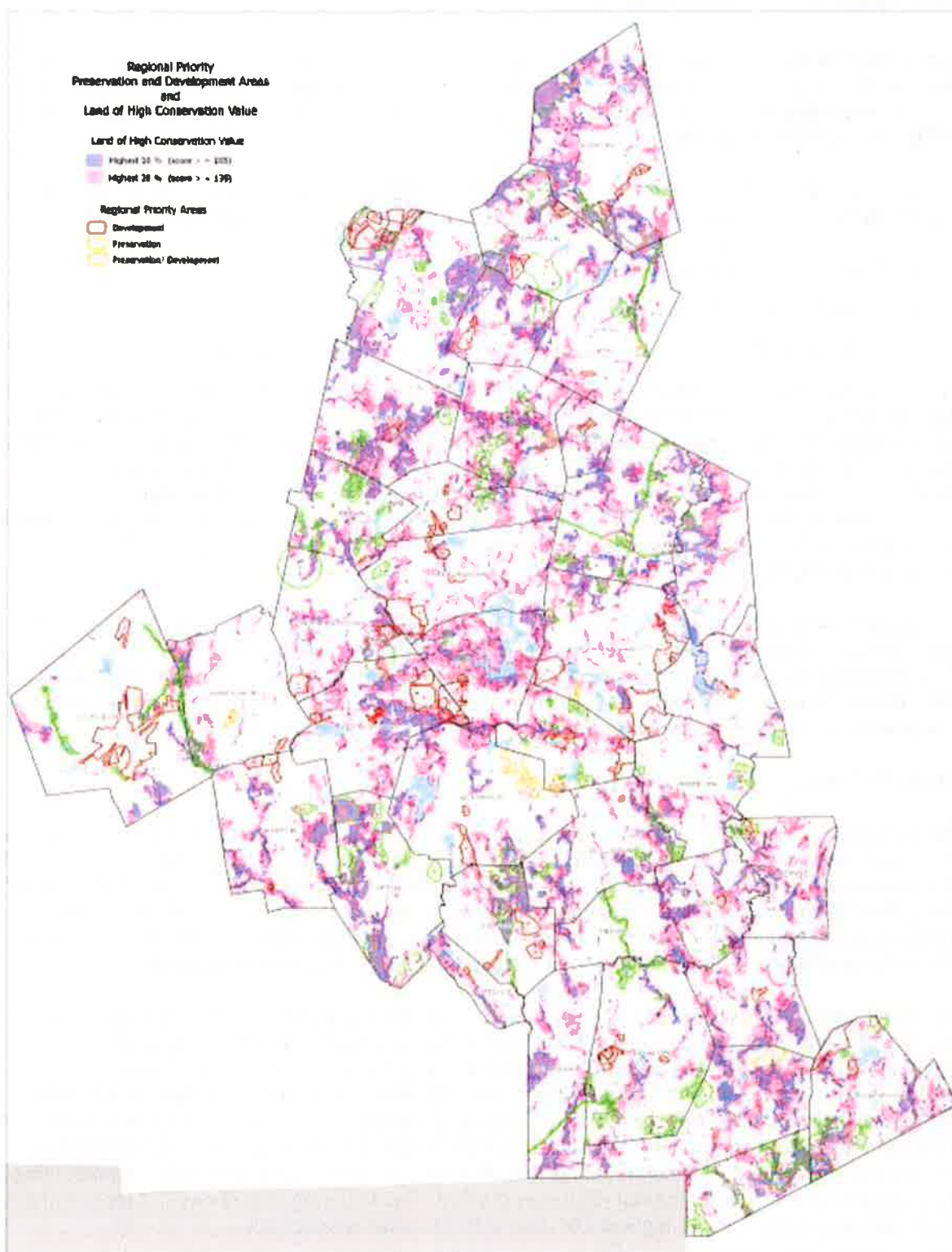


Figure 38. Map of EOEEA GIS Analysis

Each Regional Priority Development Area was examined for areas of overlap with lands shown to have high natural resource value. Similarly, areas of high natural resource value were reviewed to determine if they were already protected or shown as a Regional Priority Preservation Area. The work done by the regional planning agencies was found to be of high quality. Few of the 93 Regionally Significant PDAs were deemed problematic (none are State PDAs) and less than 20 revisions (listed in **Appendix I**) were made to the regional priority areas with the balance becoming State PPAs.

The 11 areas that were shown as Regional PPAs but not deemed to be of state significance, and the area in Littleton that was reduced in size, contain gravel pits, golf courses, were otherwise partially developed, or lacked sufficient natural resource value to be targeted for the expenditure of state resources. Alternatively, four areas were added that were not shown as regional priorities. These areas are characterized by high natural resource value or active agricultural use. Finally, two Regional PPAs were expanded to encompass additional adjacent land of high natural resource value. None of the added land area is shown as a development priority at either the local or regional level.



13. 495 Compact Toolkit

Mass Audubon has assembled a toolkit to assist in the implementation of the 495/MetroWest Development Compact. The toolkit provides access to sources of funding and technical assistance, model zoning bylaws and other land use techniques, informative studies and data sources. The toolkit content is organized by:

- Priority Development Areas (PDAs): Techniques and resources for achieving appropriate uses and site design in the PDAs
- Priority Preservation Areas: Tools for the protection of land, water, and other natural resources, with a focus on fiscally efficient methods to achieve preservation goals
- Regionally Significant Transportation Improvements: Strategies for the development of an enhanced, upgraded, and more sustainable transportation system for the 495 Compact Region.
- Water Resource Protection and Infrastructure: Resources and information for protecting water quality and meeting water needs of residents, industry and natural systems.
- Clean Energy and Climate Change: Information on coordinating land use and transportation consistent with the principles of limiting and reducing greenhouse gas emissions established by the Global Warming Solutions Act and the transportation reorganization statute.

The toolkit is designed to support the work that is necessary to address the findings of this Compact Plan, and to assist communities, citizens, businesses, nonprofits and others in undertaking effective implementation actions. The 495 Compact Toolkit is an online resource that can be updated as new practices and techniques become available. The toolkit is available online through Mass Audubon (www.massaudubon.org/shapingthefuture), as well as on the EOHED website (www.mass.gov/mpro) and the 495/MetroWest Development Compact project website (<http://www.495partnership.org/compact>).



14. Conclusion

The 495/MetroWest Development Compact Plan engaged multiple levels of government, residents and the private sector in setting priorities for the future of the region; specifically, for future development and preservation areas, and investments of limited public resources. Local perspectives were the first step in this regional planning process that looked beyond municipal and RPA boundaries and focused on the larger region and common goals. The result is a set of priorities that hold the potential for providing a greater return on future public investments, reducing the need to build on undeveloped land, and protecting natural resources on which residents, businesses, and wildlife depend.

Supporting priorities that promise the best return on investment will require that the State thoughtfully align its investments. The State has indicated that it will do so, and a record of this can be found in the public investments being used to support the South Coast Rail initiative. By supporting identified priorities through state programs, such as the MassWorks Infrastructure Program, the Community Innovation Challenge grant, the Landscape Partnership Program grant, and technical assistance, the state is demonstrating its commitment to a regional planning process rooted at the local level.

The RPAs will also continue to advance the Compact principles and assist in implementation related to the priority areas. The RPAs can provide local technical assistance to augment local planning capacity and move development and preservation initiatives closer to implementation through broad regional programs and initiatives. This assistance involves helping cities and towns move forward with zoning changes that set the foundation for future investments and assisting with economic development activities that streamline permitting while creating more opportunities for residents and business throughout the 495 Compact Region. Local knowledge is necessary for successful collaborations, and guidance from municipal staff and local officials informed by community feedback is essential.

Additional Considerations

Given its larger perspective, both geographically and programmatically, the State should look for opportunities to bundle similar investments that may apply in a variety of priority locations. Large investment projects may be readily apparent; however, multiple locations may share a particular investment need, such as the need for certain roadway signalization improvements, consolidation of small rail corridor segments, replacement of sewer pipes or other similar projects. Rather than pursuing these investments individually, there may be economies of scale and other more efficient practices that could consolidate intended outcomes into one request that offers a greater return on investment – a regional approach. The RPAs, as well as the 495/MetroWest Partnership, MetroWest Regional Collaborative and Mass Audubon, are willing partners in applying this perspective and finding these opportunities.

In a similar manner, the State should look to regional frameworks that advance multi-municipal cooperation and collective projects that support identified regionally-significant and state-wide priorities, such as has been emphasized in the MassWorks Program. For example, as this type of planning and investment priority setting continues, there will likely be the need and the opportunity to demonstrate how investment in one municipality brings benefit to a broader group of municipalities and the systems on which they rely, ranging from transportation to water quality. Likewise, guidance and encouragement will be necessary for implementing agreements that distribute tax revenue, like the tax-sharing districts used at Fort Devens and South Weymouth Naval Air Station, when multiple municipalities plan for a large development that crosses boundaries or is

intended to serve many cities and towns. This is not always straightforward; however, by strengthening incentives that foster inter-municipal collaborations and sharing costs and benefits from major developments across municipalities, State, regional, and local priorities will move together toward a common regional goal.

As highlighted in this report, housing production is not projected to keep track with the anticipated housing demand. The State and RPAs will need to continue to play a role in assisting and providing incentive for municipalities to develop housing production plans and capitalize on opportunities to add housing to areas proposed for non-residential development. This assistance should also include encouraging the integration of a variety of housing types into residential developments. As shown in the Community Context section, the region is experiencing dramatic demographic economic changes. The housing market stands to benefit if it adapts to reflect the needs and shifting preferences of current and future residents.

Infrastructure investments should be made strategically and should be conditioned on local regulatory decisions that support identified priorities and compact development patterns. For example, roadway improvements can support planned growth but can also encourage new developments that increase single occupant vehicle (SOV) trips that absorb the additional roadway capacity. As the plan is implemented, continued attention should be paid to proposed developments in priority areas, including the planned mixture of land uses, so that public investments are paired with capacity-conserving, multi-modal approaches to future development.

Moving Forward

It is important to note that the planning study required close cooperation between three state agencies, five RPAs, a public-private collaboration, and a non-profit advocacy organization. This in turn reflects a great amount of investment, perspectives, intended outcomes, and organizational agendas coming together all in one place. However, with an emphasis on intended outcomes and clear communication, the organizational stakeholders worked together quite well.

The most significant intended outcome was that priorities for development and for preservation directly reflect local perspective and become foundational to the prioritization that would later occur at the regional and state level. The integrity of this process was agreed on early and respected throughout by the partner organizations. This means that priorities identified by the Commonwealth came from the grassroots, having been institutionalized in municipal master plans, Open Space and Recreation Plans, zoning ordinance, and etc. In that same way, priorities identified by the Commonwealth reflect long-term regional planning efforts such as Community Development and Planning, Regional Services, and Transportation planning at CMRPC, and MetroFuture at MAPC.

Commonly held knowledge is a powerful community organizing tool. As work progressed, it was clear that residents of any individual city or town were very interested, in fact extremely interested, in the development and preservation priorities of neighboring towns. The individual character and independent nature of New Englanders, and of New England cities and towns, is a known quantity world-wide. Many times it is said that municipalities in Massachusetts just cannot get along together. This was decidedly not true of the citizens, elected and appointed municipal boards, and municipal staff who participated in all aspects of the planning process. There is much evidence that this stream of open sharing of information between and among neighboring communities will continue. Indeed, it must if regional prosperity is to continue in the 495 Compact Region.

There are visible benefits of thinking regionally. There is cost-effectiveness in regional delivery of public services, predictability in a shared regional vision for growth and development, and