LAND USE AND ECONOMIC DEVELOPMENT

THE BOSTON REGION MPO'S VISION FOR LAND USE AND ECONOMIC DEVELOPMENT

Multimodal transportation will serve business, residential, and mixed-use centers. Transit, bicycle, and pedestrian facilities will be linked in a network to a growing inventory of denser residential developments, employment and commercial centers, and major destinations. Transportation investments will focus on centers of economic activity and areas with adequate water, sewer, and other public infrastructure. Transportation rights-of-way will be used to maximize public benefits.

Transportation planning will be integrated with land-use and economic-development planning to the greatest extent possible in order to achieve increased mobility options, foster sustainable communities and transportation, and expand economic opportunities and prosperity. Transportation improvements will include those necessary to facilitate the movement of freight throughout the region.

To implement this vision, the MPO has developed a set of policy statements to guide its decision-making:

- Link transportation planning with land-use and economic-development plans, particularly in areas identified for development by state, regional, and local planning.

- Make transportation investments where existing or planned development will encourage public transportation use, walking, and bicycling.

- Give priority to projects in areas identified in local and regional plans as being suitable for concentrated development and/or redevelopment, including brownfield redevelopment; support initiatives that increase sustainability.

- Consider both existing development and potential zoning densities in transportation decision-making and give priority to projects that support them.

- Consider the appropriate use and maintenance of transportation rights-of-way to maximize public benefits.

- Put priority on transportation investments related to existing centers of economic activity; or to areas with adequate water and sewer infrastructure; or to municipal centers or areas targeted for economic development.

- Support, through planning and programming, transportation improvements that provide transportation links for economic activities such as freight movement.

In this chapter, the land use and economic development policies, goals, and programs that influence state and regional land use decisions and MPO transportation decisions are discussed. The process for deciding on future land use and development patterns for the region, the methods and assumptions for developing demographic projections, and the MPO's preferred land use scenario, based on recommendations from the MAPC MetroFuture program, are explained. Finally, the use of the regional model and the development of information resulting from the integration of the preferred land use scenario with various possible transportation networks, including the modeling results, are described.

RELATIONSHIP BETWEEN LAND USE, ECONOMIC DEVELOPMENT, AND TRANSPORTATION PLANNING

Transportation, land use, and economic development are inextricably intertwined. Increases in population, employment growth, and expanded land use create additional demand for travel. The spatial location of housing, jobs, and retail facilities determines how well the demand can be met, how costly transportation will be to provide, and whether alternatives to the automobile (walking,
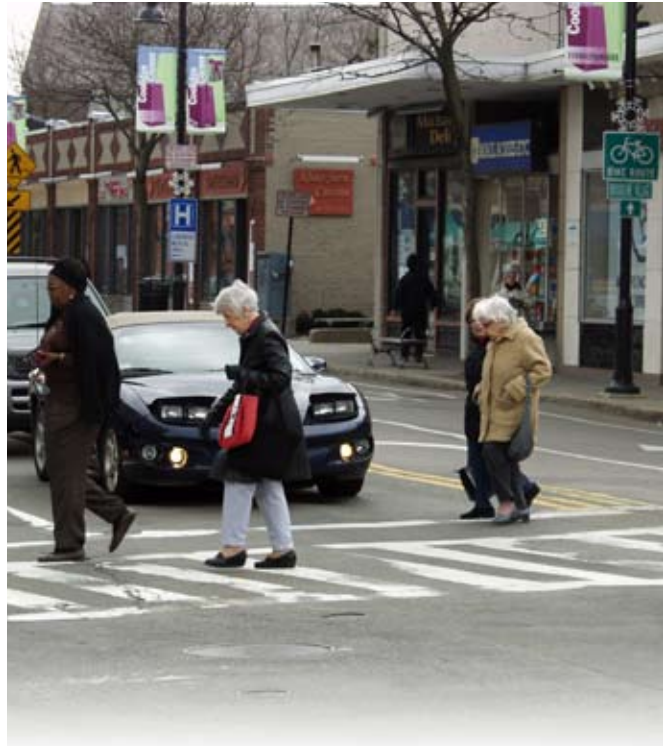
bicycling, and public transit) can succeed. In turn, transportation facilities and services result in impacts (both positive and negative) on the landscape, the environment, and the demand for different land uses. Recent travel demand modeling results for the Boston region suggest that changes in land use that create denser future developments located near existing transportation facilities will have a more positive impact on reducing congestion, increasing mobility, and improving air quality than all the new transportation projects the region can afford to build in the next 23 years.

It is important to coordinate transportation planning decisions and land use planning decisions so they are complementary, not contradictory. This is difficult, since transportation funding decisions are made at the regional and state levels, and land use decisions are primarily made by municipalities. However, extended public discussion on the relationship between land use, transportation, and economic development has clarified their links and has guided state, regional, and much local project-based decision-making in the direction of considering all three elements.

The transportation infrastructure also supports the region's economic activity. This interrelationship is widely recognized. Businesses, industries, and service providers rely on the network to move products and supplies and to provide access for workers and other travelers.

There are measurable economic impacts from congestion—in lost productivity and increased costs of goods and services. Quality of life is affected as, making the region a less desirable a place to live and work, perhaps leading highly skilled workers to leave.

Transportation planning and decisions about federally funded (and some state-funded highway) investments in the transportation infrastructure are managed by state agencies and the 13 MPOs in the Commonwealth. This work is conducted in compliance with federal regulations and guidance (reflecting contemporary best practices) and in consultation with regional organizations, municipalities, and many interested parties. State and MPO decision-makers apply the perspectives and policy positions of the entities they represent in their work, so transpor-

tation planning reflects a broad base of needs and views. The Boston Region MPO embraces the contemporary views regarding the interrelationship of transportation planning with land use and economic development plans. As a regional transportation forum, the MPO considers these plans as it evaluates which proposed projects in the region will best meet the region's transportation needs.

The MPO considers land use and economic development in its project-prioritization and funding processes so that transportation spending will respond both to current conditions and to future needs likely to result from local and regional plans and priorities. The selection process for projects in JOURNEY TO 2030 included consideration of land use and economic development factors. Those factors are also included in the criteria the MPO uses to select projects for funding in its Transportation Improvement Program (TIP). The TIP criteria are posted on the MPO Web site, www.bostonmpo.org.

FEDERAL AND STATE POLICIES AND PROGRAMS

Federal and state policies in place in Massachusetts and being applied in the Boston region are beginning to reframe transportation and land use decisions in a way that produces integrated results: enhanced mobility and transportation options, improved accessibility, and economic benefits.

Federal Policies and Programs

Federal policy and guidance on compliance with federal regulations asks that MPOs consider land use and economic development in decision-making and coordinate cooperatively with state and local agencies responsible for land use management. There should be comparisons of potential regional transportation plans with the economic development and growth patterns planned at the local level. In its long-range planning, when the MPO decides where to invest, that decision should be based partly on existing

and known needs and partly on consideration of state, regional, and local plans for the future.

The Federal Highway Administration (FHWA) supports linking land-use and transportation planning and development and has developed a tool kit for MPOs to use to advance their practices in this area. FHWA also promotes "smart growth" (see following section) policies and programs through information dissemination and through several programs it administers.

The Transportation, Community, and System Preservation Program (TCSP) is a program of discretionary grants for research on ways to integrate these elements into planning and practices in order to improve the transportation system, provide access to jobs and commercial centers, encourage private investments that support efficient transportation, and reduce environmental impacts and the need for high-cost transportation improvements. MAPC used TCSP funding in 2002 for a project in the MetroWest area of MAPC that demonstrated the importance of land use diversity, design, and density in reducing congestion, vehicle-miles traveled, and air pollution.

In addition, the Transportation Enhancement Program (discussed in detail in Chapter 5) is a funding category specified for at least 10 percent of a state's Surface Transportation Program funds. Some projects that support the connection between land use and transportation, such as pedestrian and bicycle facility improvements and context-sensitive design elements, can be funded under this program. An Enhancement Committee staffed by MAPC conducts regional review of enhancement proposals.

Statewide Policies and Programs

Smart Growth

"Smart growth" is a statewide policy that has been particularly influential recently in guiding thinking relative to integrated transportation/land-use decision-making in the Boston Region MPO area. It is a land use development principle that is commonly understood as encouraging compact,

mixed-use development that enhances the built environment of a community and that, among other outcomes, minimizes environmental impacts, supports air quality, and promotes energy efficiency and economic activity. Smart growth takes maximum advantage of existing transportation and community infrastructure such as transit, water, and sewer facilities; it encourages efficiencies in public and private investments by building in accessibility to this infrastructure. It helps focus housing and economic development in areas where these land uses can be supported with minimized negative impact. In addition, consideration of freight distribution needs can reduce impacts on communities and travel distances. Transit, bicycle, and pedestrian modes become more viable.

Transit-oriented development (TOD) is one strategy for achieving smart growth. In this strategy, new and rehabilitated housing, retail outlets, services, recreational facilities, and job centers are sited in areas within walking distance of public transit. In addition, TOD encourages denser, more compact land uses. Mixed-use develop-

ment, bringing housing, jobs, and needed services in closer proximity to each other and to transit, is encouraged. There are many intended benefits, including improving mobility, making possible reduced reliance on the single-occupant motorized vehicle, and reducing congestion; a corollary benefit is potentially helping to reduce air pollutants and energy consumption. In addition, planners cite quality-of-life benefits, sprawl reduction, and the creation of more pleasant community environments as results of TOD.

Many of the MPO's and state's transportation and land use policies have their roots in executive orders and programs implemented in the 1990s and early 2000s in the various regional and state offices and agencies, including the Governor's Office and the Executive Office of Energy and Environmental Affairs (EOEEA). In addition, more than 15 years ago, MAPC developed MetroPlan, a forward-thinking regional plan that drew attention to the importance of smart growth in strategizing for the future of metropolitan Boston.

Early Land Use Policies and Programs

Of the land use policies and programs developed over the past several decades and currently at work in Massachusetts, the early ones include:

- Executive Order 385 of 1996, "Planning for Growth," directed that development and economic activity should not contribute to sprawl. It gave assistance to regional and municipal planners, encouraging development where there was adequate infrastructure and where environmental resources were protected and impacts minimized.

- The EOEEA Community Preservation Initiative of 1999 provided funding for municipalities conducting build-out analyses to demonstrate the impact of developing their remaining undeveloped land.

- Executive Order 418 (2000) provided grants of $30,000 to municipalities to assist in their planning for housing, open space, economic

development, and transportation. More than 220 municipalities produced a Community Development Plan for their community.

- The Community Preservation Act of 2000 allowed the creation of municipal Community Preservation Funds (CPFs) to be used to pay for open space, historic preservation, and affordable housing. The CPFs must be approved by municipal referendum and are funded by surcharges on local property taxes matched by state funds. As of March 2009, 48 of the 101 municipalities in the MPO area had CPFs.

The following subsequent laws, policies, and programs have crystallized land use planning and further supported the integrated consideration of land use, economic development, and transportation planning:

- Chapter 43 of the Acts of 2003 authorized the District Improvement Financing (DIF) Program, which allows municipalities to pay for public works and infrastructure projects using future, incremental tax revenues collected in a predefined district. This investment stimulates private investment, which then results in the predicted additional tax revenue

- Chapter 40R, of 2004, encourages municipalities to set up "smart growth zoning districts" in areas close to transit, in municipal and commercial centers, and where there are under used properties. In these districts, zoning overlays allow developers flexibility if proposals comply with certain smart growth requirements for density and affordable housing. In addition to state incentive payments for 40R development, Chapter 40S provides payments to offset unmet education expenses for new students in developments.

Proposed legislation, the Community Planning Act, formerly known as the Massachusetts Land Use Reform Act, would update the Commonwealth's planning and zoning laws and would encourage municipal updates of local master plans.

Contemporary Land Use Initiatives

The Commonwealth currently provides funding and support for several sustainable-development, housing development, and economic development programs that can connect to transportation planning, including:

- The MBTA and MassHousing offer the Take the T Home Program. This program offers transit-oriented mortgages for regular riders of public transit. The loans are aimed at reducing sprawl and encouraging the use of public transportation by helping people buy homes near transportation hubs.

- The Chapter 40R; Smart Growth Zoning Incentive Program provides incentives for municipalities to adopt zoning bylaws that encourage smart growth, including development near transit services. The associated Chapter 40S: Smart Growth School Cost Reimbursement, provides for reimbursement to cover some public school cost increases (minus related increased revenues) incurred as a result of smart growth development.

- The Commercial Area Transit Node Housing Program is managed by the Department of Housing and Community Development (DHCD) and is designed to produce housing, rental, or ownership in commercial areas that are served by public transit.

- The Transit-Oriented Development Infrastructure and Housing Support Program (TOD Bond Program) promotes TOD by providing funding for pedestrian, bicycle, and parking facilities in mixed-use developments (preferably TOD developments) near a transit station that meet affordability criteria.

- The Affordable Housing Trust Fund, jointly administered by MassHousing and DHCD, provides funding for creating and preserving housing units that serve households with incomes up to 110 percent of the area's median income.

- The Public Works Economic Development (PWED) Program helps municipalities fund transportation infrastructure projects that have economic development impacts.

- The Community Development Action Grant Program (CDAG) funds municipal projects designed to stimulate economic development that will positively affect deteriorating neighborhoods and provide jobs for low- and moderate-income workers. Projects that qualify for this funding can include transportation infrastructure such as roadways, sidewalks, or rail spurs. This program is managed by DHCD.

- DHCD and the MBTA provide technical assistance to municipalities interested in learning more about smart growth, sustainable development, and transit-oriented development and in pursuing these grant and loan opportunities. The MBTA works with municipalities to plan TOD on surplus MBTA land (or air rights) near transit stations.

- The Massachusetts Opportunity Relocation and Expansion (MORE) Jobs Capital Program

provides grant funding for public infrastructure improvements that support business expansion in the commonwealth.

- The Chapter 43D Priority Development Sites program provides communities with a tool for targeted economic growth. It guarantees that local permitting decisions will be made within 180 days of submittal. A property must be zoned for commercial or industrial development and must be approved by the local governing body to be eligible.

- Under the Growth Districts Initiative, the Executive Office of Housing and Economic Development (EOHED) partners with municipalities that have identified areas within their community as being appropriate locations for significant growth. EOHED works with the community and property owners to create highly attractive and competitive districts for growth within the municipalities.

REGIONAL LAND USE AND ECONOMIC DEVELOPMENT PLANNING

Land use decisions and many economic development decisions in Massachusetts are controlled directly by local municipalities through zoning. This planning is guided by a significant body of laws and regulations enacted by the state Legislature and guided by executive orders, policies, and funding programs. However, regional planning agencies, created by an act of the Legislature in 1963, serve as independent public bodies of the Commonwealth within which state and local officials can address issues of regional importance.

The Metropolitan Area Planning Council (MAPC) is the regional planning agency representing 101 cities and towns in the metropolitan Boston area. Its area and boundaries correspond exactly with those of the MPO region. The MAPC region consists of 22 cities and 79 towns and is divided into eight subregions. Council membership consists of community representatives, gubernatorial appoin-

tees, and city and state agencies that collaborate in the development of comprehensive plans and recommendations in areas of population and employment, transportation, economic development, regional growth, and the environment. MAPC is one of 14 voting members of the Boston Region MPO.

The MPO relies on MAPC for developing the region's population and employment projections for use in the travel modeling conducted by the MPO. MAPC also provides a coordination and consultation function with the region's municipalities regarding these projections and the review and evaluation of land use and economic development plans and their relationship to the MPO's planning.

Federal regulations require that the Regional Transportation Plan be consistent with the adopted regional land use plan. In 2008, the Council adopted its regional plan, "MetroFuture: Making a Greater Boston Region." Council members and staff work to advance this plan through technical assistance to cities and towns, data analysis and mapping, research, collective purchasing, public engagement, and advocacy for public policies that advance its mission. In 2008 the MPO adopted population and employment projections that are consistent with MetroFuture.

MAPC MetroFuture Plan for the Boston Region

MetroFuture is a bold and achievable plan to make a Greater Boston Region — to better the lives of the people who live and work in Metropolitan Boston between now and 2030. It was developed with the extensive participation of thousands of "plan builders" – residents, municipal officials, state agencies, businesses, community-based organizations, and institutional partners throughout the region – who shared their visions for the future of the region, evaluated alternative scenarios for our future using data and sophisticated computer models, and had difficult conversations about the region's priorities.

MetroFuture capitalizes on the region's most important assets: its diverse people and landscape, a history of innovation, and a commitment to education and civic engagement. It is a vision of a region where growth is focused in areas where it already exists and linked by an efficient transportation system; our land and natural resources are conserved; we invest in our residents by improving their health and education; opportunities are available to all residents of the region, regardless of race or ethnicity; and expanding prosperity benefits all of us.

Through this process, MAPC has created demographic and economic projections of the region's future; a set of 65 specific goals for the year 2030, as well as objectives and indicators we will use to measure progress toward achieving these goals; 13 implementation strategies containing hundreds of recommendations for actions needed to achieve our goals; and a constituency of "plan builders" poised to make our vision a reality. More information on all of these — which, collectively, make up the "MetroFuture plan" — can be found at www.metrofuture.org.

Goals, objectives and implementation strategies are broadly grouped in 5 categories:

- Sustainable growth patterns;
- Housing choices;
- Community vitality;
- Prosperity;
- Getting around.

Six implementation strategies were adopted for transportation.

1. Integrate land use and transportation planning
2. Prioritize transit and transportation alternatives
3. Establish stable and sufficient financing for all modes
4. Promote an efficient and transparent project delivery system
5. Establish a comprehensive maintenance program for safety and future cost savings
6. Improve the competitiveness of rail freight

Most of these implementation strategies are reflected in this Plan.

Economic Development

The economic vitality of the MPO area is dependent upon a strong transportation infrastructure. From commuting to commerce, the means by which people and goods are moved impact the region's ability to attract new growth, support existing industry, and position itself prominently in the global marketplace. Continued and careful investment in the region's roads, bridges, public transportation system, and rail freight capacity is critical to the long-term success of the MPO area.

Economic Development Centers

A fundamental principle of smart growth is that development should take place in areas where infrastructure capacity already exists, rather than

areas where additional infrastructure or capacity expansion is needed. Infrastructure is defined to include natural, manmade, and human resources. There are many benefits to such a practice:

- State and local government saves money that would otherwise be needed to build schools, lay out roads and track, widen transportation rights-of-way, and/or extend water and sewer service. Freight distribution can be rationalized by providing rail options and regional distribution centers, which may also reduce emissions and congestion.

- Private corporations are less likely to be asked to contribute to such projects, thereby reducing the costs of development.

- Since areas with manmade infrastructure also tend to have larger populations, businesses can be located nearer prospective markets and employees.

- Travel times for customers and workers may be reduced.

- Open space and water resources may be conserved.

- Strategies for creating jobs for currently underemployed and unemployed residents of the region can be enhanced.

- Strategies to attract and retain talented young workers can also be enhanced.

MAPC's MetroFuture plan defines "Community-Oriented Development Areas" that reflect where population centers and infrastructure already exist, and which can guide businesses and municipalities as they seek out places to grow.

Transportation-Related Economic Initiatives

MAPC is designated by the Economic Development Administration (EDA), an agency within the U.S. Department of Commerce, as an Economic Development District pursuant to the Public Works and Economic Development Act of 1965. This designation gives MAPC the authority to propose

job development strategies that involve collaboration among public- and private-sector partners. MAPC periodically develops a Comprehensive Economic Development Strategy (CEDS) for metropolitan Boston that identifies regional trends and conditions and encourages a unified approach to regional economic development goals.

The CEDS includes a listing, called the Priority Projects List, of qualified development projects in metropolitan Boston that seek funding from the EDA's Public Works Grant Program. This program directs funds to economically distressed communities to upgrade their physical infrastructure in order to attract new industry, encourage business expansion, and generate private-sector jobs and investment. Inclusion on the list is an EDA prerequisite for funding consideration.

In order to present the region's most competitive projects to EDA, MAPC's Economic Development Committee recently revisited and

strengthened criteria used to screen projects for placement on the list. The new criteria highlight projects that are ready to go, are supported within the community, and reflect principles of smart growth.

Population and Employment Projections for JOURNEY to 2030

Development of JOURNEY to 2030 (the Plan) involved transportation analysis of three distinct demographic and land use scenarios for the year 2030: one scenario representing continuation of current trends (Current Trends), and two alternative scenarios (Smart Growth Plus and RPA Hybrid). Each scenario comprises a different set of population, household, and employment projections predicated on different assumptions regarding regional growth patterns and policy interventions.

MAPC prepared the Current Trends scenario and the first alternative (Smart Growth Plus) in 2005 and 2006. The MPO used these scenarios to define modeling inputs and to select the preferred land use scenario for the original Plan adopted by the Boston Region MPO in April 2007. MAPC continued to develop alternative scenarios as part of the MetroFuture regional planning project (described later in this chapter) and selected a preferred regional plan (known simply as Metro-Future) in May 2007. MetroFuture was formally adopted by MAPC as the official land use plan in May 2008.
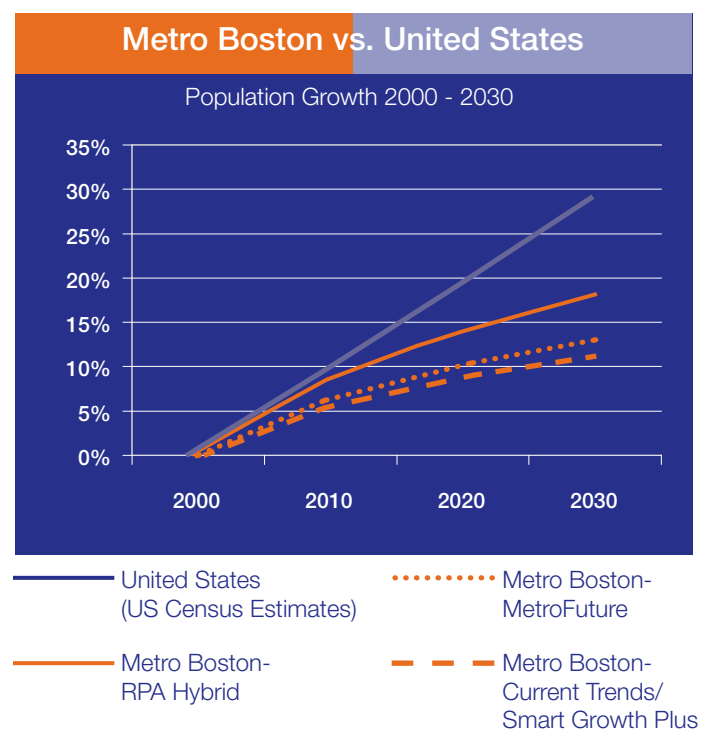
In 2007, MPO staff combined elements of the MetroFuture plan with demographic projections from neighboring regional planning agencies (RPAs) to create an alternative scenario known as the RPA Hybrid. MPO staff conducted transportation modeling for this scenario in early 2008, and the MPO adopted the RPA Hybrid as the preferred land use scenario for the amendment to JOURNEY to 2030 in April 2008 (for more details, see the sections Geography of the Modeled Area and RPA Hybrid Scenario later in this chapter).

Each of the scenarios varies considerably in the amount of population and employment growth forecast for the region (Figure 11-1) and the distribution of that growth. The RPA Hybrid represents the highest rates of population and employment growth among the three scenarios. Compared to Smart Growth Plus (the preferred scenario for the original plan), the RPA Hybrid has higher population growth rates (18 percent versus 11 percent) and higher employment growth rates (18 percent versus 10 percent) That growth is also more dispersed across the modeled region, with a higher share of growth in the other RPAs and in the region's lower density suburban municipalities.

The following sections of this chapter describe the geography of the modeled area, the preparation of the Current Trends and Smart Growth Plus scenarios, transportation outcomes of those scenarios, preparation of the MetroFuture and RPA Hybrid scenarios, and transportation outcomes of the RPA Hybrid scenario.

FIGURE 11-1

Population Growth, 2000-2030
Metro Boston vs. United States

Metro Boston vs. United States

Population Growth 2000 - 2030

Legend:
- United States (US Census Estimates)
- Metro Boston-MetroFuture
- Metro Boston-RPA Hybrid
- Metro Boston-Current Trends/Smart Growth Plus

Geography of the Modeled Area

The Boston MPO region includes 101 cities and towns; the boundaries of the MPO region are coincident with those of MAPC. However, the MPO's regional transportation model covers a larger area in order to more fully account for exogenous impacts on the transportation system within the MPO's boundary. The modeling region includes 164 cities and towns, including 63 municipalities served by other regional planning agencies/MPOs:

- Central Massachusetts Planning Commission – 10 municipalities

- Merrimack Valley Planning Commission – 15 municipalities

- Montachusett Regional Planning Commission – 6 municipalities

- Northern Middlesex Area Council of Governments – 9 municipalities

- Old Colony Planning Council – 13 municipalities

- Southeastern Regional Planning and Economic Development District – 10 municipalities

In this chapter, references to findings for "Metro Boston" or "regionwide" refer to the entire modeled region (164 municipalities). When findings or recommendations refer to just the 101 municipalities, the text uses the terms "MAPC region" or "MPO region."
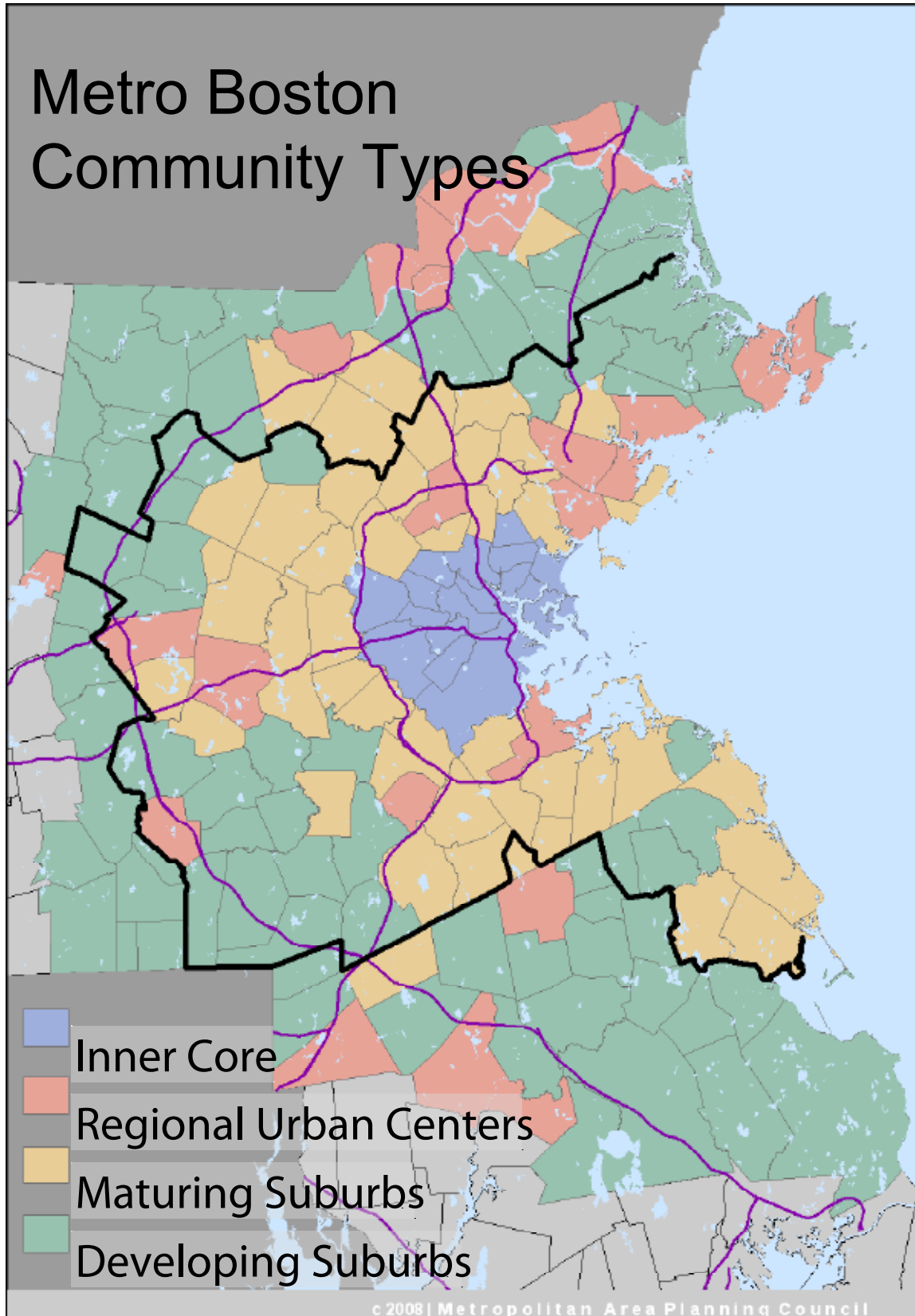
In order to understand how various trends will affect the region's diverse communities over the coming decades, MAPC identified four basic community types. While each city and town is unique, communities within each type share important characteristics. The criteria used to define community types include land use and housing patterns, recent growth trends, and projected development patterns. Figure 11-2 shows the locations of the community types in the region.

- *Inner Core:* These are 16 high-density cities, including Boston, Cambridge, Somerville, Revere, Everett, and Chelsea, as well as more residential "streetcar suburbs." They house 1.3 million residents (31 percent of the region's year 2000 population). The Inner Core is essentially "built out" — it has little vacant developable land. Virtually all recent development has occurred through infill and reuse of previously developed land. Multifamily, rental, and subsidized housing comprise a significant component of the housing stock. Streetcar suburbs are built around village-scale commercial districts.

- *Regional Urban Centers:* This group comprises 21 urban centers outside of the Inner Core, housing 1.0 million residents (24 percent of the region's year 2000 population). These communities are characterized by an urban-scale downtown core, moderately dense residential neighborhoods surrounding this core, and (in some cases) lower-density single-family residential development. Some

FIGURE 11-2

METRO BOSTON COMMUNITY TYPES

Metro Boston
Community Types

Inner Core
Regional Urban Centers
Maturing Suburbs
Developing Suburbs

c 2008 | Metropolitan Area Planning Council

of these communities are built out; others still have vacant developable land around the periphery of the community. Rental and multifamily housing account for a significant component of the housing stock.

- *Maturing Suburbs:* These 50 municipalities are moderate-density residential communities with a dwindling supply of vacant developable land, housing 1.0 million residents (24 percent of the region's year 2000 population). Less than 25 percent of their land area is still developable. Less than 20 percent of their land area is devoted to commercial and industrial uses, although some of these towns comprise significant job centers. More than half of their housing units are owner-occupied single-family homes.

- *Developing Suburbs:* These are 77 less-developed towns with large expanses of vacant developable land. They currently house 900,000 residents (21 percent of the year 2000 population), and most have recently experienced high rates of growth, primarily through large-lot single-family homes. Some towns have a locally significant stock of rental units and units in modestly-sized multifamily structures. Many of these towns have a well-defined, mixed-use town center, but others have town centers with historical and civic significance but no commercial or neighborhood function. The extent of economic development varies, but is generally quite limited.

Current Trends Scenario

In 2005, MAPC developed baseline demographic and economic projections, which form the basis of the Current Trends scenario. MAPC prepared projections for the entire transportation modeling area, which includes the 101 municipalities in the MAPC/MPO region as well as 63 municipalities located in six other RPAs. The process is described briefly below, and complete documentation of the methodology can be found at www.mapc.org/data_gis/data_center/2006_Projections/2006ProjectionMethodologyFinal.doc.

- Regional population growth was based on birth rates, mortality, and migration rates for age-race-sex cohorts, using standard cohort-survival and shift-share methodologies. Net population migration for the region was based on the migration trend in the 1990s and recorded in the 2000 census.

- Regional employment trends were based on national growth projections by 10 industry sectors, and Metro Boston's estimated share of that growth, based on data from the Bureau of Labor Statistics.

- Population and employment growth was allocated to individual municipalities based on each community's share of recent growth.

- Within each municipality, growth was allocated to Transportation Analysis Zones (TAZs) based on recent land use trends, developable land, existing zoning, and municipal-specific redevelopment trends.

- MAPC distributed baseline projections to each municipality and to neighboring RPAs twice in the fall of 2005—first to review the initial population and employment totals, and then to review the TAZ-level allocation. After each round of community comments, MAPC evaluated the new information and adjusted the projections where appropriate.
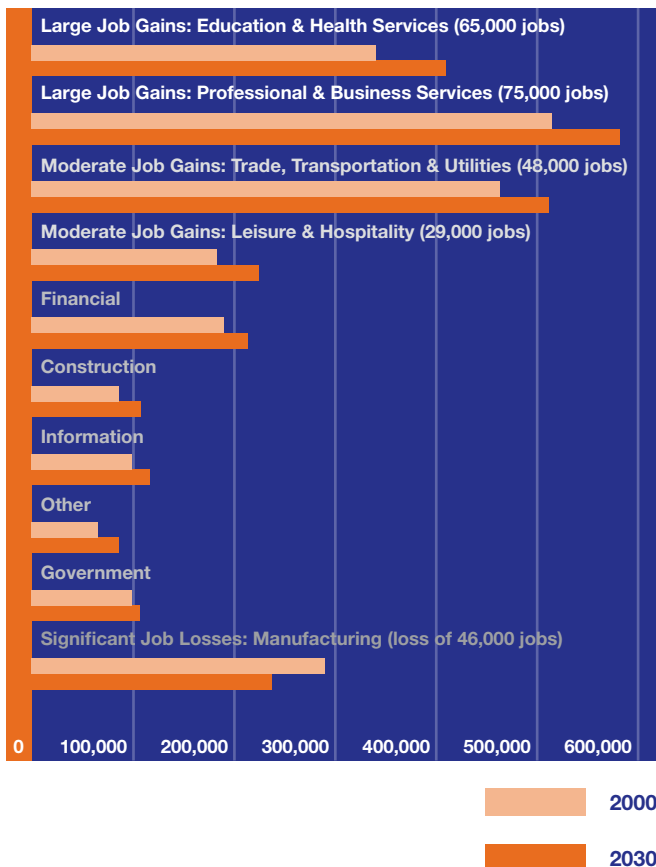
The following paragraphs provide a summary of the key findings of the Current Trends projections.

- *Growth that is slow but steady:* If the Current Trends scenario continues, the region's population may grow by 10.8 percent, adding 466,000 people by 2030. Combined with continued declines in household size, this population growth will create a need for over 300,000 new housing units. Figure 11-1 compares past and projected population growth in the region to national population growth.

- *An aging population and increasing diversity:* Over the coming decades, the over-55 popu-

lation in the region is expected to increase by 75 percent. By 2030, one-third of the population will be over the age of 55, almost one-quarter of the region's residents will be foreign-born, and one-third will be Hispanic, black, Asian, or of another non-white ethnicity. However, if current trends continue, most growth in non-white populations would take place in a dozen urban municipalities, and the ethnic mix of the region's suburbs would change very little.

- *A changing economy and labor shortages:* The region may add 234,000 jobs from 2000 to 2030, an increase of 9.9 percent. This is slower than the expected national employment growth. Figure 11-3 shows the projected gains in employment by sector under the Current Trends scenario. The largest job

FIGURE 11-3

CURRENT TRENDS SCENARIO
EMPLOYMENT BY SECTOR, 2000–2030

Large Job Gains: Education & Health Services (65,000 jobs)

Large Job Gains: Professional & Business Services (75,000 jobs)

Moderate Job Gains: Trade, Transportation & Utilities (48,000 jobs)

Moderate Job Gains: Leisure & Hospitality (29,000 jobs)

Financial

Construction

Information

Other

Government

Significant Job Losses: Manufacturing (loss of 46,000 jobs)

0   100,000   200,000   300,000   400,000   500,000   600,000

2000
2030

gains are expected in professional services, education, and health care; manufacturing employment in the region is expected to decline. If current trends continue, the region will face a major shortage of skilled workers. The region would have a shortage of 158,000 workers with a 2- or 4-year college degree, and of 60,000 workers with a graduate degree. Even if workers commuting into Metro Boston from outside the region could fill the shortage, this in-commuting would put a significant strain on the region's transportation system, especially highways. Municipal-level employment projections indicate that four major job centers, comprising 27 communities, may account for half of the job growth. Meanwhile, 20 communities may experience job losses, as shown in Figure 11-4.

- *Dispersed land use:* If current trends continue, a disproportionate share of population and employment growth would occur in suburban areas, especially in the Developing Suburbs. Their share of new growth would be nearly twice as large as their share of existing residents and jobs. All together, Developing Suburbs would grow at a rate of 19 percent, more than three times as fast as the Inner Core (6 percent), and many Developing Suburbs would grow faster than 30 percent. Rapid growth in outlying suburbs—beyond the reach of regional water and transit systems—will increase pressure on local roads and watersheds. In terms of absolute increase, the largest population increases are expected in urban centers such as Boston, Cambridge, and Lynn, and in a half dozen suburban towns (such as Plymouth and Weymouth) with very large housing developments on the horizon. Figure 11-5 shows the level of 2000–2030 population growth projected for each municipality in the region.

- *Unsustainable use of natural resources:* The emphasis on large, expensive, single-family homes in suburban municipalities will con-

FIGURE 11-4

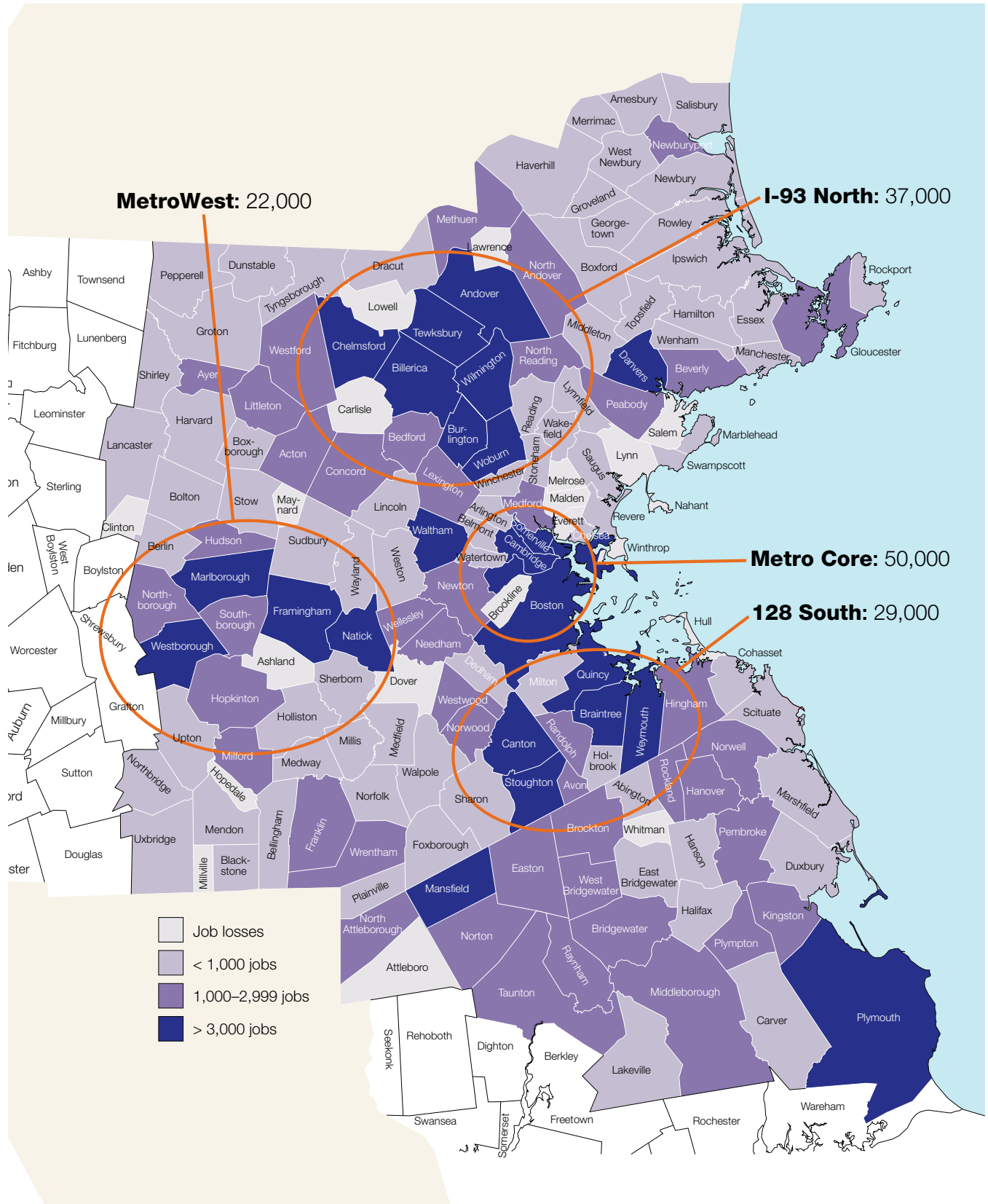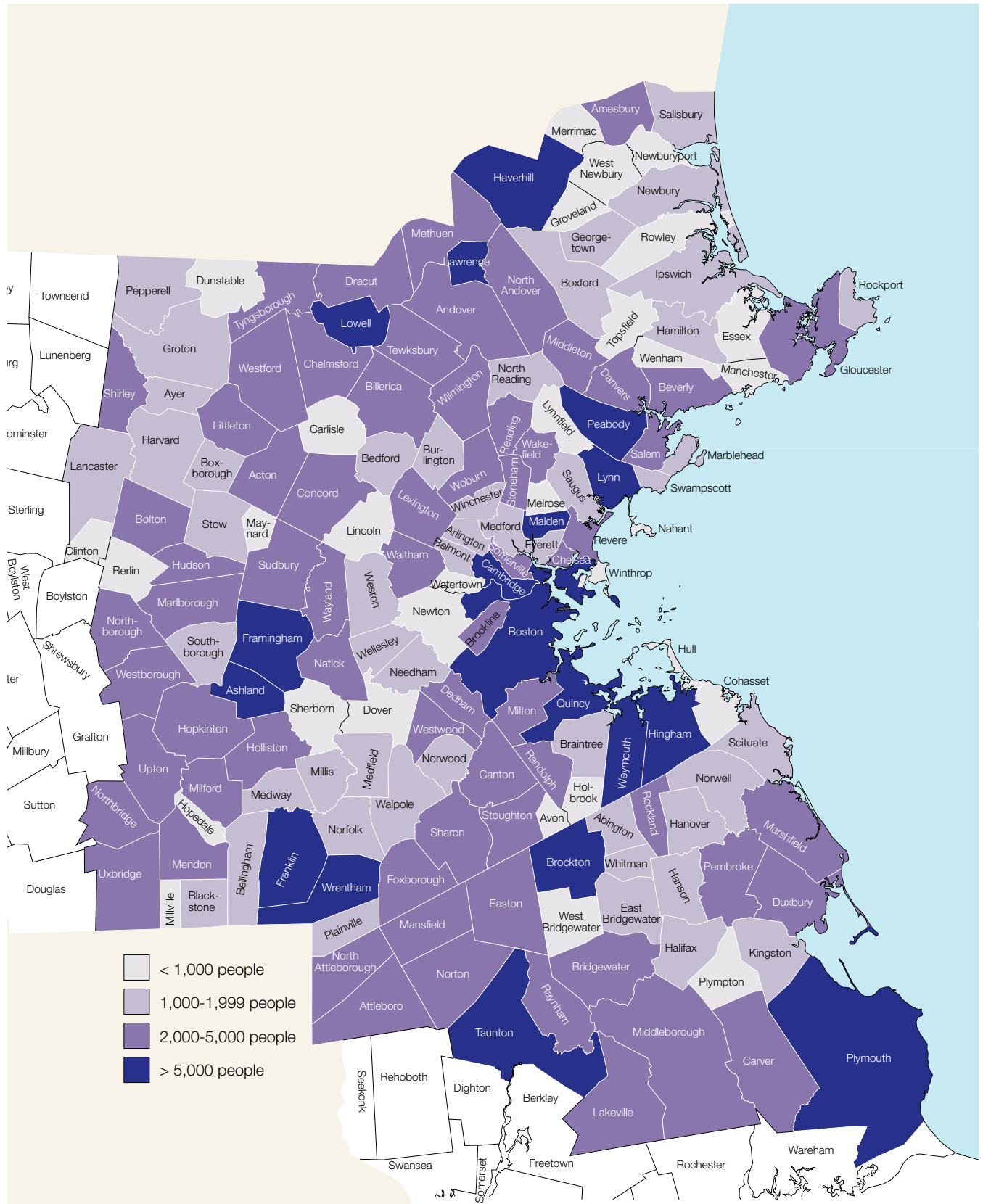### CURRENT TRENDS SCENARIO EMPLOYMENT GAINS, 2000–2030

MetroWest: 22,000

I-93 North: 37,000

Metro Core: 50,000

128 South: 29,000

Job losses

< 1,000 jobs

1,000–2,999 jobs

> 3,000 jobs

FIGURE 11-5

CURRENT TRENDS SCENARIO POPULATION GROWTH, 2000–2030

Legend:

- < 1,000 people
- 1,000-1,999 people
- 2,000-5,000 people
- > 5,000 people

sume more than 120,000 acres of open space, while failing to meet the needs of the region's aging and increasingly diverse population. Based on projected growth patterns and existing water-demand patterns, the total water demand in the region would increase by 11 percent; and 52 cities and towns in Metro Boston would exceed current Water Management Act (WMA) withdrawal limits. Forty of those municipalities would exceed the limits by more than 100,000 gallons per day, and five systems would exceed allowances by more than half a million gallons per day. Those communities that are exceeding their allowances would have a collective deficit of 12 million gallons per day.

Smart Growth Plus Scenario

In the spring of 2006, MAPC began developing alternative scenarios for regional growth as part of the MetroFuture project. MetroFuture is an effort that combines technical planning with civic engagement to create a long-range regional plan for Metro Boston. More information about MetroFuture can be found at www.metrofuture.org.

MAPC staff worked with approximately 20 members of MetroFuture's Inter-Issue Task Force (IITF) to develop the first alternative regional growth scenario, known as Smart Growth Plus. Using the Current Trends scenario as a starting point, Smart Growth Plus assumes different patterns of land use and growth at the local level. The regional population and employment growth rates for the Smart Growth Plus Scenario are only slightly different from those of the Current Trends Scenario, however, the distribution of that growth is different. The Smart Growth Plus Scenario was chosen as the MPO's preferred land use scenario and was used for the original JOURNEY TO 2030 model inputs.

- *Regional growth rates comparable to Current Trends:* Overall population and employment growth rates for Smart Growth Plus are comparable to those for Current Trends. In response to community comments about large

development projects underway that were not reflected in the Current Trends projection, MAPC adjusted the projected employment growth upward by 8,700, and the projected population growth by 1,400, equivalent to less than a 0.5 percent increase over current population and employment figures.

- *Municipal growth focused in Smart Growth locations:* As part of the alternative scenario development, MAPC identified a set of TAZs that, by virtue of location, infrastructure, or existing density, are more suited to development than other TAZs. These TAZs were designated as Community Oriented Development Areas (CODAs). The primary criteria for the designation of CODAs included:

  - Proximity to transit

  - Proximity to existing sewer systems

  - Proximity to town and village centers

FIGURE 11-6

COMMUNITY ORIENTED DEVELOPMENT AREAS, SMART GROWTH PLUS SCENARIO

Community Oriented
Development Areas
(CODAs)

c2006 | Metropolitan Area Planning Council
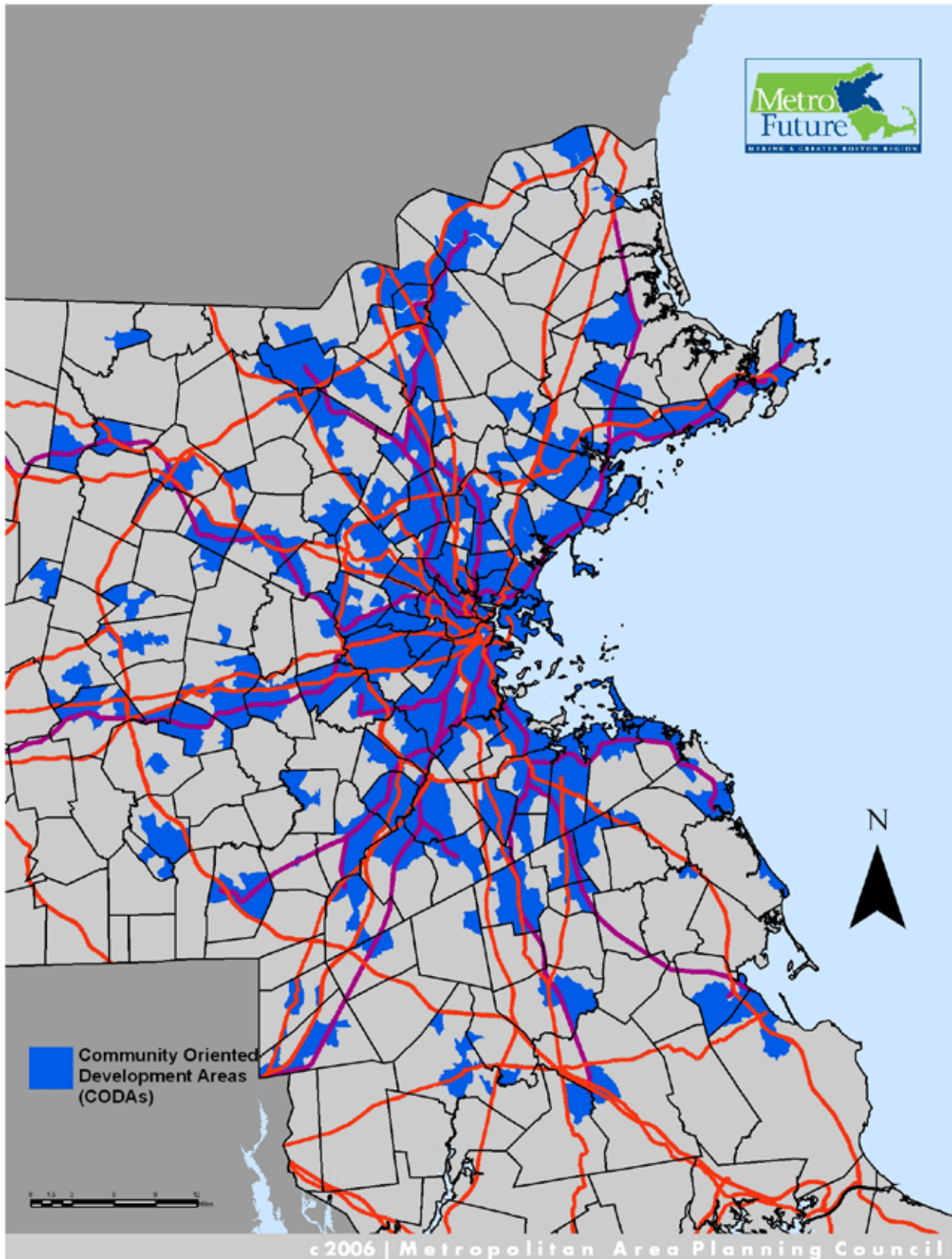
TABLE 11-1

COMPARISON OF TRANSPORTATION ANALYSIS ZONES IN
THE BOSTON REGION MPO'S MODEL AREA

	CODAS	OTHER TAZS
NUMBER	1,918	809
TOTAL ACREAGE	518,000 ACRES	1,324,000 ACRES
AVERAGE SIZE	270 ACRES	1,636 ACRES
YEAR 2000 HOUSEHOLDS	1,175,000	469,000
MEDIAN ZONE DENSITY	2.0 UNITS/ACRE	1.0 UNITS/ACRE

- Underutilized commercial areas

- Areas of higher existing density

MAPC also considered priority growth areas identified in Master Plans, local area plans, and community comments; and did not designate CODAs for residential growth adjacent to major highways due to air quality concerns. Figure 11-6 shows the location of CODAs.

This screening identified over 1,900 TAZs that qualify as CODAs. These TAZs tend to be smaller, have a higher density, and are zoned for a higher density than other TAZs, as shown in Table 11-1. CODAs make up 70 percent of all TAZs in the region, but only 28 percent of the region's land area.

MAPC focused growth into CODAs by assuming higher rates of redevelopment on already-developed land, and by allocating more growth to certain locations based on municipal master plans, community comments, and professional judgment. With the exception of water-related reallocation (described below), municipal totals were the same as under Current Trends, but growth within each municipality was shifted so that more growth would occur in CODAs. The Smart Growth Plus scenario assumes that 67 percent of new housing units and 66 percent of new employment will be in CODAs.

- *Increased water conservation and application of water constraints:* The Smart Growth Plus Scenario assumes implementation of the Massachusetts Water Conservation Standards, with a 15 percent reduction in both per capita and per employee demand, for both existing and new residents and employees. As a result, 34 municipalities that would otherwise have exceeded Water Management Act withdrawal limits would be able to accommodate projected growth within those limits. However, in 18 municipalities, the assumed improvements in water conservation would not be sufficient to accommodate growth within existing WMA limits. In those municipalities, growth was capped so that demand would not exceed the existing WMA limit; remaining growth was reallocated to other municipalities based on (a) adjacency, (b) water availability, and (c) transit access. This reallocation affected the location of 24,000 projected residents and 10,000 projected jobs. As a result, the proportion of the region's population growth and employment growth allocated to Maturing and Developing suburbs declined by 1 to 3 percent, and the proportion allocated to the Inner Core and Regional Urban Centers increased by a comparable amount.

- *Increased land conservation:* The Smart Growth Plus scenario assumes implementa-

tion of the Massachusetts State Land Conservation Plan (SLCP), a statewide vision for land conservation prepared by the Department of Conservation and Recreation (DCR) in consultation with other public agencies and environmental organizations. This plan prioritizes potential conservation land with rankings of 1 to 8 (lowest to highest priority). Smart Growth Plus assumes that land with a SLCP rating of 4 or higher would not be available for development, and that no existing agricultural land would be converted to developed uses. This assumption affects approximately 30 percent of the region's vacant developable land.

- *Improved educational attainment and labor force participation rates:* Smart Growth Plus seeks to address the total labor shortage as well as the structural skills mismatch projected for 2030 under the Current Trends scenario by advancing low-performing cohorts to regional average high school graduation rates, beginning in 2010 with the 15-25 age cohort. Because labor force participation

FIGURE 11-7

REDUCED JOBS/SKILLS MISMATCH

rates generally are greater for people with higher educational attainment, this raises the overall labor force participation for Smart Growth Plus; as a result, 17,000 fewer workers will need to commute into the region each day to meet the labor demand of projected economic growth. These improvements also address the structural jobs/skills mismatch by erasing the surplus of 75,000 workers who lack a high-school degree and, effectively, distributing these workers among higher skill levels, reducing the shortages there and helping the region to be more economically competitive. Figure 11-7 shows the reduced levels of shortages.

Transportation Outcomes of Current Trends and Smart Growth Plus Scenarios

The transportation demand model was used to assist in the MPO's selection of a preferred land use scenario in the original JOURNEY TO 2030 Plan. The regional transportation model is a computer simulation of the transportation system and its use. It is used to estimate daily transit ridership, highway traffic volumes, and levels of emissions, primarily on the basis of projections of study area demographics and planned highway and transit improvements. By varying the demographic projections and alternative transportation network project sets as inputs into the model, the MPO staff forecasts the effects of alternative investment decisions and generates information to help guide the selection of projects for JOURNEY TO 2030.

- The first model run used the Current Trends demographic projections to the year 2030, in combination with the Modified 2004 Regional Transportation Plan (RTP) transportation network. This transportation network included projects in the 2004–2025 Plan and two additional projects: the Green Line Extension to West Medford and Union Square, and 1,000 new park-and-ride spaces in the region (two projects under consideration at that time as substitute projects to the State Implementa-
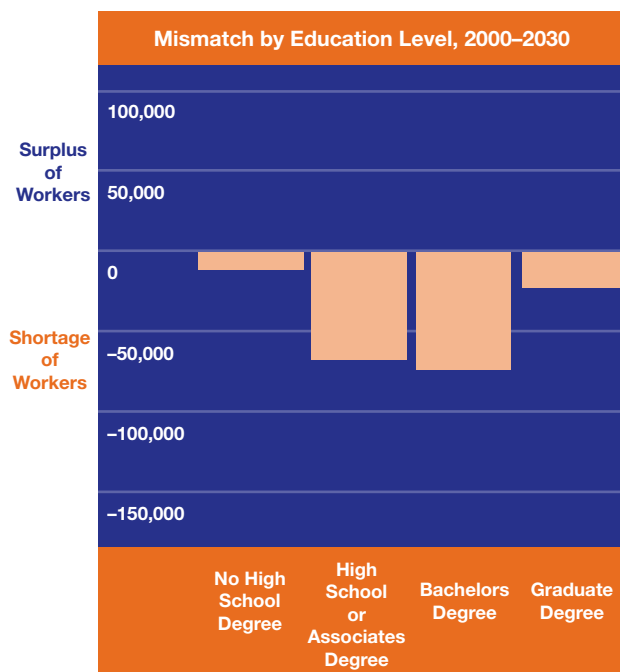
TABLE 11-2

	BASE YEAR 2000	CURRENT TRENDS SCENARIO 2030	SMART GROWTH PLUS SCENARIO 2030	DIFFERENCE BETWEEN SCENARIOS
TOTAL PERSON-TRIPS	14,211,600	15,575,100	15,445,900	129,200
VEHICLE-MILES TRAVELED	106,779,300	123,960,500	122,290,200	1,670,300
AUTO MODE SHARE	77.01%	74.39	73.86%	0.53%
TRANSIT MODE SHARE	6.29%	7.83%	8.14%	-0.31%
NONMOTORIZED-MODE SHARE	16.70%	17.77%	18.00%	-0.23%

tion Plan transit commitments).

- The second model run used the same transportation network, but substituted the Smart Growth Plus land use scenario discussed above.

Table 11-2 summarizes the regional results from the transportation model runs for both scenarios. The concentration of development in CODAs in the Smart Growth Plus Scenario results in higher transit and nonmotorized trip shares and fewer vehicle-miles of travel. The increase in labor-force participation rates by residents in the region reduces the number of out-of-region workers commuting into the region to fill jobs, resulting in 129,200 fewer person-trips daily.

The results of these model runs were compared, and were then discussed with the MPO and made available to members of the public. Based on MAPC's recommendation and the modeling results, the MPO selected Smart Growth Plus as its preferred land use scenario for the original JOURNEY TO 2030. Smart Growth Plus was chosen because it helps to implement the MPO's vision for the region and advance the MPO's transportation policies.

After the MPO adopted Smart Growth Plus as the preferred scenario, MPO staff modeled the 2030 No-Build transportation network. This model run used the preferred land use scenario (Smart Growth Plus) and the existing transporta-tion network, with no expansion or improvements beyond those currently under construction, advertised, or in the federal fiscal year (FFY) 2007 element of the FFYs 2007–2010 Transportation Improvement Program. These results were used as the baseline for comparing the effects of alternative sets of transportation improvements in the build scenario(s).

After this run was completed, employment and population inputs to this model were updated to include recently available information for several areas in the MPO region. The 2030 No-Build network and the 2030 Modified 2004 RTP transportation network were used and the model was re-run. These results were discussed with the MPO and members of the public.

An environmental justice analysis was conducted comparing the No-Build with the 2030 Modified 2004 RTP network results. Comments on this analysis were gathered from representatives of minority and low-income populations and members of the public.

Taking into consideration the model run results, the analyses, and public comments, the MPO's Transportation Planning and Programming Committee identified a second network of projects for 2030 which is the set of expansion and improvement projects recommended in the JOURNEY TO 2030 Plan. These model results are included in Chapter 13.

MetroFuture Scenario

During the development of the original JOURNEY to 2030 Plan, which was adopted in April 2007, MAPC had not yet completed the selection of the preferred land use scenario for the MetroFuture regional planning process. The MetroFuture process evaluated four alternative regional growth scenarios, including Current Trends, Smart Growth Plus, and two additional scenarios. In May 2007, the scenario known as "Winds of Change" was presented at a May 2007 Boston College Citizens Seminar, and was ratified by 94 percent of the participants. This scenario involves significant changes in regional growth patterns compared to Current Trends or Smart Growth Plus. Approximately 53 to 55 percent of growth (housing units and employment) is directed to the Inner Core or Regional Urban Centers (versus 41 to 45 percent under Smart Growth Plus); and only 16 to 18 percent of employment and housing unit growth would occur in the Developing Suburbs (versus 25 to 28 percent under Smart Growth Plus). Growth would also be concentrat-

ed in CODAs and near transit. Approximately 77 to 80 percent of housing unit and employment growth would be in CODAs (versus 66 percent under Smart Growth Plus); and approximately 66 to 70 percent of new housing unit and employment growth would be near transit (versus 56 to 57 percent under Smart Growth Plus). The scenario also includes aggressive goals for water conservation and educational attainment, so that only 5 municipalities would exceed current Water Management Act limits, and there would be 40,000 fewer daily commuters from outside the region needed to satisfy regional labor demand, as compared to Smart Growth Plus.

Following the ratification of the scenario, MAPC distributed TAZ-level forecasts to every municipality in the region and to neighboring RPAs, with a request for comments and information on projects completed since 2000 or currently planned. Over 50 percent of MAPC's member communities responded to the request for comments. Excluding the City of Boston, municipalities reported over 45,000 housing units and over 35,000 new jobs developed since 2000, under construction, or planned. The City of Boston provided data on specific projects, either built or in development, representing 150,000 new jobs and 34,000 new housing units. MAPC incorporated into the MetroFuture Scenario the development already underway, and included planned development selectively, based on its consistency with MetroFuture principles.

Based on the community comments received, MAPC recommended increasing the projected growth for the transportation model area (164 municipalities) by 40,000 households and 52,000 jobs, approximately 2 percent of the existing total for each. This adjustment yielded regional population growth rates of 13 percent (versus 11 percent each for Current Trends and Smart Growth Plus) and employment growth rates of 12 percent (versus 10 percent each for Current Trends and Smart Growth Plus). MAPC determined that such higher growth rates were feasible given a 40 percent decrease in the net

regional outmigration rate for those cohorts with positive outmigration rates during the 1990s (for example, from approximately 2.7 percent to approximately 1.6 percent for adults aged 30 to 55). The Massachusetts Executive Office of Transportation and Public Works (EOT) approved this increase in August 2007. These adjustments were incorporated into the TAZ-level projections, and the final forecasts, known simply as MetroFuture, were delivered to MPO staff in August 2007. MAPC formally adopted MetroFuture as the official regional plan in May 2008, and MAPC is currently undertaking the last phase of MetroFuture, which involves developing strategies to achieve that future, including the implementation of a future Regional Transportation Plan that supports the preferred alternative.

RPA Hybrid Scenario

In late 2007, MPO staff (at the request of EOT) developed a new land use scenario known as the Regional Planning Agency (RPA) Hybrid. This scenario was requested so there would be no conflicts in demographic assumptions among the six MPOs included in the modeled area, per FHWA/FTA regulations. The RPA Hybrid scenario includes the MetroFuture TAZ-level forecasts for the 101 municipalities in the MAPC/Boston MPO region, and projections from neighboring RPAs for the 63 municipalities that are in the modeled area but outside the Boston MPO region. These projections were created by the RPAs using a variety of methodologies and assumptions regarding future growth and the distribution of that growth.

In the RPA Hybrid scenario, municipal-level demographic totals projected by neighboring RPAs are maintained, but MPO staff reallocated the projected data for population, households, and employment. The allocation methodology assumes that the distribution of population and employment in 2030 will be the same as in the MetroFuture scenario, regardless of the amount of growth (for example, if a particular TAZ contains 10 percent of its municipality's population

or employment in the MetroFuture scenario, it would also contain 10 percent of the municipality's population or households in the RPA Hybrid. Since growth rates for most municipalities are relatively modest in the MetroFuture projections, this methodology has the effect of allocating the higher levels of growth projected by other RPAs according to the existing population and employment data; many TAZs that have slow growth under MetroFuture are projected to grow considerably under the RPA Hybrid scenario.

For purposes of trip generation inputs, MPO staff applied the age distribution, educational attainment, and labor force participation rates from the MetroFuture scenario to the total population for each municipality and TAZ, regardless of the level of growth. MPO staff also assumed that the sectoral mix of employment (basic, service, and retail) would be the same for each TAZ in the RPA Hybrid as it is in the MetroFuture scenario, regardless of the level of growth. Municipal population and employment growth rates were not constrained by water availability using existing Water Management Act permit limits. RPA Hybrid projections were not distributed for community comment.

Tables 11-3, 11-4, and 11-5 compare the distribution of population, new housing units, and employment under the Smart Growth Plus, MetroFuture, and RPA Hybrid scenarios. Figures 11-8 and 11-9 show a comparison of population and employment projections for the three scenarios. Overall population, housing unit, and employment growth rates are considerably higher for the RPA Hybrid than for the other alternatives (an 18 percent increase in population and employment versus 11 percent and 10 percent, respectively, for Smart Growth Plus). The distribution of growth is also considerably different, with a larger share of new growth directed to Developing Suburbs and to areas not near existing transit stops, compared to both Smart Growth Plus and MetroFuture.

The RPA Hybrid scenario was adopted by the MPO as the preferred land use plan on April 3, 2008, and is being incorporated into this amendment to

TABLE 11-3

POPULATION INCREASES 2000–2030
SMART GROWTH PLUS, METROFUTURE, AND RPA HYBRID SCENARIOS

COMMUNITY TYPE	YR. 2000 EXIST. POP.	SMART GROWTH PLUS			METROFUTURE			RPA HYBRID		
		PROJ. GROWTH	% INC.	SHARE OF GROWTH	PROJ. GROWTH	% INC.	SHARE OF GROWTH	PROJ. GROWTH	% INC.	SHARE OF GROWTH
INNER CORE	1,349,013	85,251	6%	18%	189,653	14%	35%	189,653	14%	25%
REGIONAL CITIES	1,050,989	110,849	11%	24%	139,156	13%	26%	134,746	13%	18%
MATURING SUBURBS	1,012,034	115,276	11%	25%	128,897	13%	24%	134,222	13%	18%
DEVELOPING SUBURBS	898,061	155,555	17%	33%	87,955	10%	16%	306,678	34%	40%
TOTAL	4,310,097	466,931	11%	100%	545,661	13%	100%	765,300	18%	100%
CODA	2,881,972	315,248	11%	68%	461,164	16%	85%	459,790	16%	60%
NON-CODA	1,428,125	151,683	11%	32%	84,496	6%	15%	305,509	21%	40%
TAZ NEAR TRANSIT	2,671,903	251,525	9%	54%	377,216	14%	69%	375,735	14%	49%
TAZ NOT NEAR TRANSIT	1,638,194	215,406	13%	46%	168,444	10%	31%	389,565	24%	51%

Sources: MAPC, CTPS

TABLE 11-4

HOUSING UNIT INCREASES 2000-2030
SMART GROWTH PLUS, METROFUTURE, AND RPA HYBRID SCENARIOS

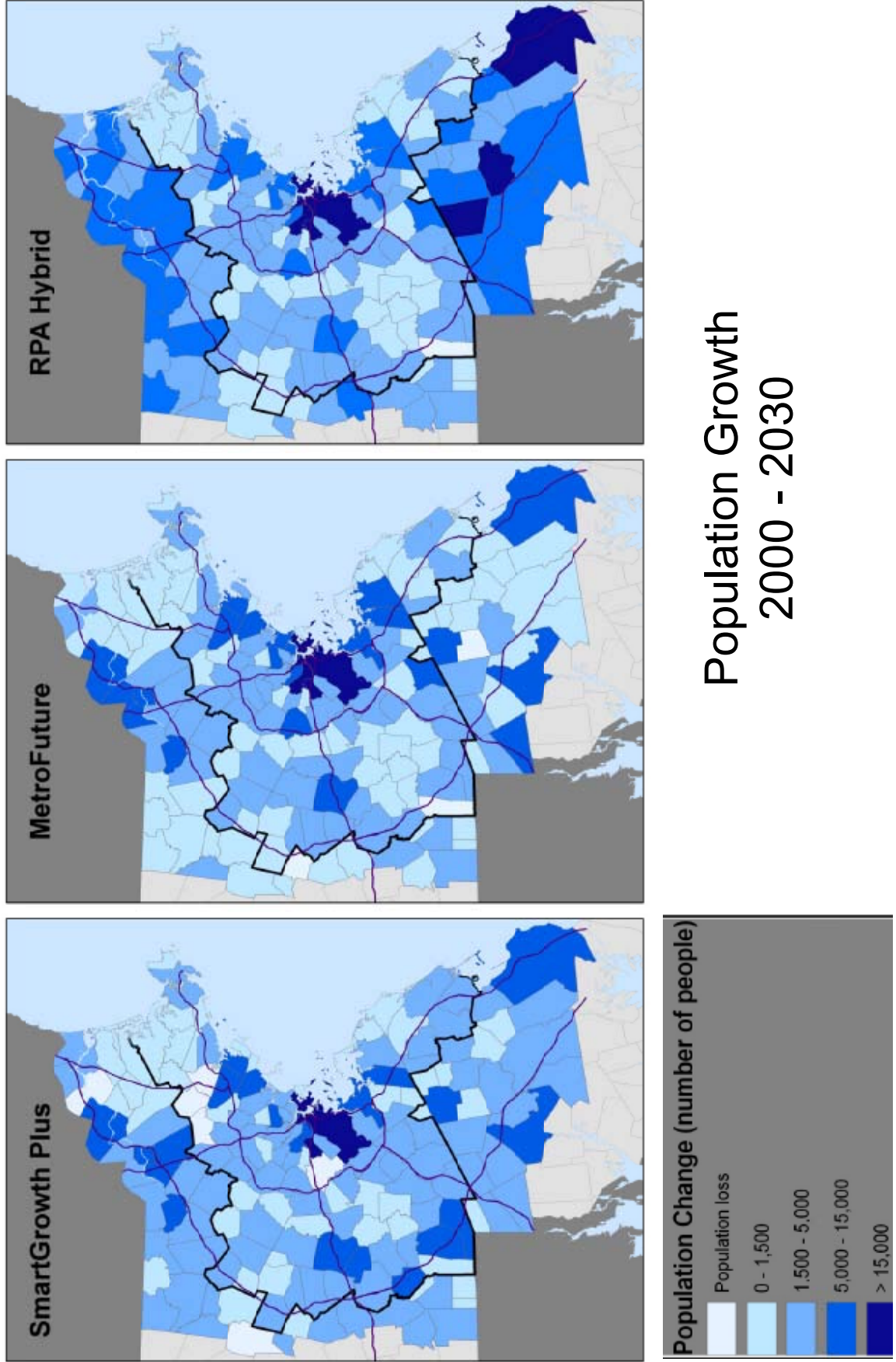| COMMUNITY TYPE	YR. 2000 EXIST. UNITS	SMART GROWTH PLUS			METROFUTURE			RPA HYBRID		
		PROJ. GROWTH	% INC.	SHARE OF GROWTH	PROJ. GROWTH	% INC.	SHARE OF GROWTH	PROJ. GROWTH	% INC.	SHARE OF GROWTH
INNER CORE	547,925	57,833	11%	19%	104,705	19%	30%	104,705	19%	25%
REGIONAL CITIES	407,598	68,266	17%	22%	80,612	20%	23%	77,589	19%	18%
MATURING SUBURBS	372,364	95,867	26%	31%	101,894	27%	29%	100,904	27%	24%
DEVELOPING SUBURBS	315,807	87,063	28%	28%	61,626	20%	18%	142,261	45%	33%
TOTAL	1,643,694	309,029	19%	100%	348,837	21%	100%	425,459	26%	100%
CODA	1,141,906	204,183	18%	66%	269,183	24%	77%	264,879	23%	62%
NON-CODA	502,075	104,559	21%	34%	79,367	16%	23%	160,293	32%	38%
TAZ NEAR TRANSIT	1,053,679	174,130	17%	56%	231,289	22%	66%	229,969	22%	54%
TAZ NOT NEAR TRANSIT	590,302	134,612	23%	44%	117,261	20%	34%	195,203	33%	46%

Sources: MAPC, CTPS

TABLE 11-5

Employment Increases 2000-2030
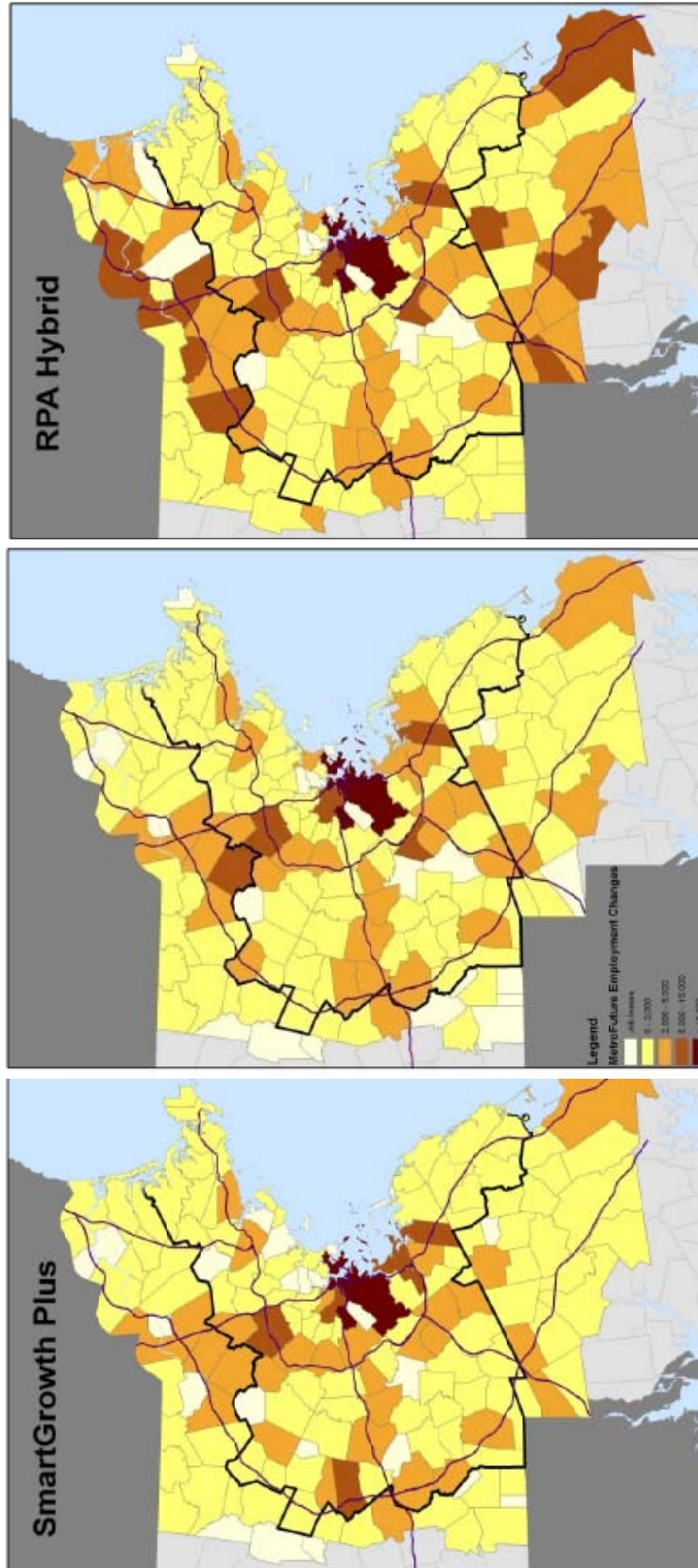### Smart Growth Plus, MetroFuture, and RPA Hybrid Scenarios

COMMUNITY TYPE	YR. 2000 EXIST. EMPLOY.	SMART GROWTH PLUS PROJ. GROWTH	% INC.	SHARE OF GROWTH	METROFUTURE PROJ. GROWTH	% INC.	SHARE OF GROWTH	RPA HYBRID PROJ. GROWTH	% INC.	SHARE OF GROWTH
INNER CORE	934,260	70,104	8%	29%	120,534	13%	41%	120,534	13%	29%
REGIONAL CITIES	494,580	39,782	8%	16%	41,238	8%	14%	102,025	21%	25%
MATURING SUBURBS	548,558	73,223	13%	30%	84,115	15%	29%	81,318	15%	20%
DEVELOPING SUBURBS	374,007	59,449	16%	25%	46,653	12%	16%	112,439	30%	27%
TOTAL	**2,351,405**	**242,558**	**10%**	**100%**	**292,541**	**12%**	**100%**	**416,315**	**18%**	**100%**
CODA	1,702,087	161,129	9%	66%	233,851	14%	80%	299,291	18%	72%
NON-CODA	649,318	81,429	13%	34%	58,691	9%	20%	117,024	18%	28%
TAZ NEAR TRANSIT	1,616,906	139,391	9%	57%	204,921	13%	70%	235,001	15%	56%
TAZ NOT NEAR TRANSIT	734,499	103,167	14%	43%	87,620	12%	30%	181,315	25%	44%

Sources: MAPC, CTPS

FIGURE 11-8

REGIONAL DEMOGRAPHIC SCENARIO COMPARISON – POPULATION GROWTH

Population Growth
2000 - 2030

Population Change (number of people)

Population loss

0 - 1,500

1,500 - 5,000

5,000 - 15,000

> 15,000

FIGURE 11-9

EMPLOYMENT GROWTH – TOTAL NUMBER OF JOBS ADDED

Employment Growth
2000 - 2030

RPA Hybrid

SmartGrowth Plus

Legend
Metro/Future Employment Changes
Job losses
0 - 2,000
2,000 - 5,000
5,000 - 15,000
> 15,000
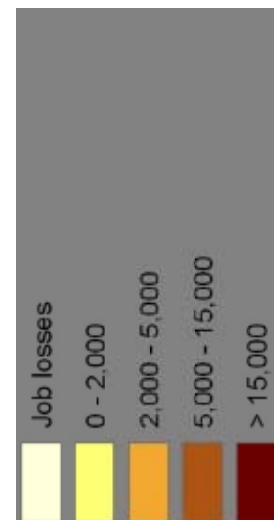
JOURNEY to 2030 through its use in the travel demand model used in the air quality and environmental justice analyses for the Plan Amendment.

The travel demand model results are included in Chapter 13. A new environmental justice analysis and air quality conformity determination were performed with the revised land use projections and revised transportation network. New information on the environmental justice analysis using the revised land use and transportation network is provided in Chapter 14, and the new air quality conformity determination is in Chapter 15.