4 SOCIOECONOMIC TRENDS

Demographic information is the foundation of transportation planning efforts. Understanding demographic changes and trends help decision-makers identify future needs and set priorities. This chapter outlines the past and future trends in population, household, and employment data the three most important factors that influence trip generation. Analysis is provided on a regional level and is concentrated on the Boston urban core and the southeastern Massachusetts communities because they generate most of the commuter traffic through the Braintree split during the peak travel periods.

4.1 POPULATION

In this section, population forecasts and historical trends are discussed. Population data and forecasts by MAPC and the Southeastern Regional Planning and Economic Development District (SRPEDD) are presented in Figures B-1 and B-2 in Appendix B. The population forecasts take into consideration future natural population increases and future migration.

Overall, between 1990 and 2000, the southeastern Massachusetts communities grew faster in population than communities in the Boston urban core. In most of the southeastern communities outside the urban core, population growth ranged from 11 to 20 percent. However, during the same period, the growth in population for communities in the Boston urban core was 3 percent.

Population forecasts depict similar trends. As Figure B-2 shows, over the 2000–2025 period, the populations in southeastern Massachusetts communities are expected to grow faster than communities in the Boston urban core. However, the rate of growth is expected to be moderate compared to that of the 1990s. To allow for easy comparison of the past and the future, the scale for the future demographic forecasts is adjusted by a factor of 2.5 to reflect the 25-year span (2000–2025) versus the 10-year span (1990–2000) historical trends. All of the communities south of Stoughton, Holbrook, Hingham, and Scituate are expected to grow, thereby increasing travel demands in the region.

4.2 HOUSEHOLD

Another statistic related to population that affects travel demand is household. As with population, the number and size of households are important trip generation determinants, even more than population itself. As the number of households increases and household size decreases, trips that could have been shared by two or more people are often made separately. In this section households are discussed in terms of number and size. Household data from MAPC and SRPEDD are presented in Figures B-3 and B-4 in Appendix B. Data used for the household forecasts includes data from the 1990 and 2000 U.S. census. This data includes the total number households, the number of residents in group quarters, the total population, and forecasts of the total population.

Between 1990 and 2000, the number of households grew faster in southeastern Massachusetts communities than in the Boston urban core. In addition, the growth in the number households was faster than the growth in population. Many communities that lost population (Figures B-1 and B-2) registered growth in the number of households; this resulted from a general decrease in the average household size. The increasing number of smaller households has an impact on trip generation as well.

Household forecasts, shown in Figure B-4, depict similar trends—the number of households will continue to grow faster than the population through 2025 as lifestyle changes toward a smaller average household size persist. Over this 25-year period, the number of households in southeastern Massachusetts communities is expected to grow faster than in communities in the Boston urban core. Unlike population, the rate of growth of the number of households is not expected to be moderate compared to that of the 1990s, but according to the forecasts, it is expected to remain at the current rate of growth.

4.3 EMPLOYMENT

While population and households are trip generators, it is employment (number of jobs) that determines the work-related trips. A component of work-related trips is commuter trips that involve travel to work. Commuter trips usually occur during peak travel periods and are the source of traffic congestion on many highways that lead to downtowns and major employment centers. In this section, employment is discussed in terms of number of jobs, historical trends, and future projections. The employment data used in this analysis was obtained from MAPC and SRPEDD.

Between 1990 and 2000, communities in the Boston urban core experienced a growth in jobs, with the heaviest concentrations of new business establishments in Boston (46,291), Cambridge (12,347), Somerville (3,084), and Chelsea (3,454). At the same time, the number of jobs in the southeastern Massachusetts communities increased as well. The majority of the new jobs were service-sector jobs that include professional services, business, repair, entertainment, recreation, health, and education.

Future changes in employment from 2000 to 2025 reflect trends similar to the 1990s—that employment is expected to grow in both the Boston urban core and in southeastern Massachusetts communities. However, future growth is expected to be moderate when compared to that of the 1990s. All of the communities in the Boston urban core (Boston, Cambridge, Somerville, Chelsea, and Everett) are expected to gain jobs over the 25-year period. All of the southeastern Massachusetts communities south of Stoughton, Holbrook, Hingham, and Scituate are also expected to gain jobs, but not as many as those in the Boston urban core.

Figure B-5 and B-6 in Appendix B show the locations and distribution of jobs in the Boston urban core and in southeastern Massachusetts communities. As the figures show, the Boston urban core has the largest number and concentration of jobs, which far exceed the job figures for southeastern Massachusetts communities. This trend persists into the future.

The net effect is that even though there is expected to be job growth in the southeastern Massachusetts communities, the region will remain essentially residential, relying on the Boston urban core for much of its employment. Thus the southeastern Massachusetts region will export more workers to the Boston urban core than it imports. This geographical distribution of jobs and residences creates the need for long commutes, hence the high peak-period travel demand on the highways to and from downtown Boston via the Braintree split, and also the high peak-period load on commuter rails service in these areas.

4.4 GROWTH IMPACTS

The growth trends (jobs, population, and household) in southeastern Massachusetts that are fueled by the high quality of life that its communities offer and the concentration of jobs in the Boston urban core have contributed to an increase in commuter trips between the two areas. They have also resulted in imbalances in the transportation systems, causing, for example, traffic congestion on Route 3 South, the Southeast Expressway, and the stretch of I-93 from its intersection with Route 24 to the Braintree split. Many of the southeastern Massachusetts communities do not have convenient access to transit services; hence many of their residents drive alone to work. These trends have also resulted in high peak loads on MBTA commuter rail and rapid transit serving this area that exceed MBTA standards. The next chapter discusses the travel patterns of the work trips of persons employed in the Boston urban core who reside in southeastern Massachusetts communities.

5 TRAVEL PATTERNS

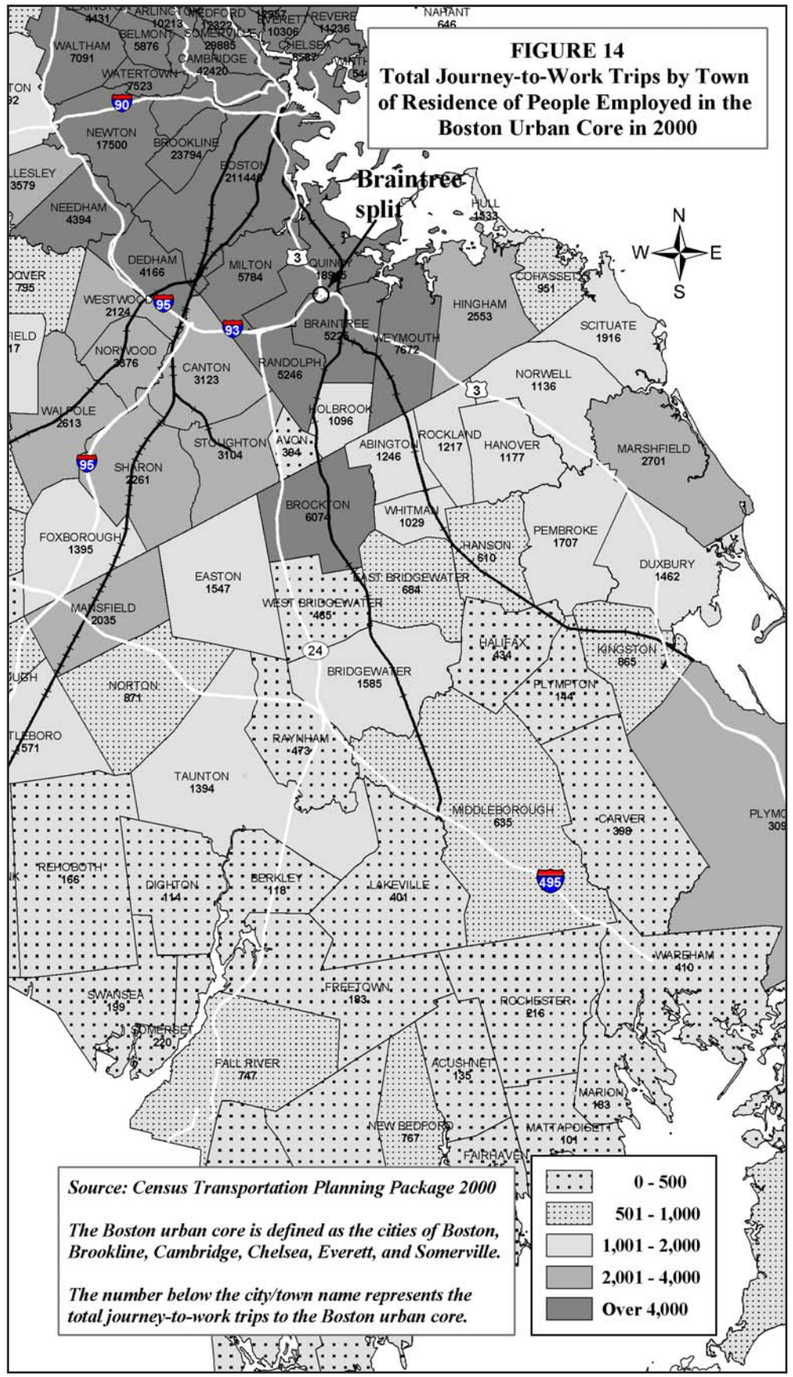
As described in the previous chapter, geographical distribution of jobs and residences influences commuter trips. The following section describes the travel patterns of persons employed in the Boston urban core (Boston, Brookline, Cambridge, Chelsea, Everett, and Somerville) who reside in southeastern Massachusetts. The source of the data for this analysis is the Census Transportation Planning Package 2000 (CTPP 2000). The CTPP 2000 provides accurate and comprehensive data needed to make informed decisions. It provides statistics of households, people, and workers and summarizes this information by place of residence, by place of work, and for worker-flows between home and work.

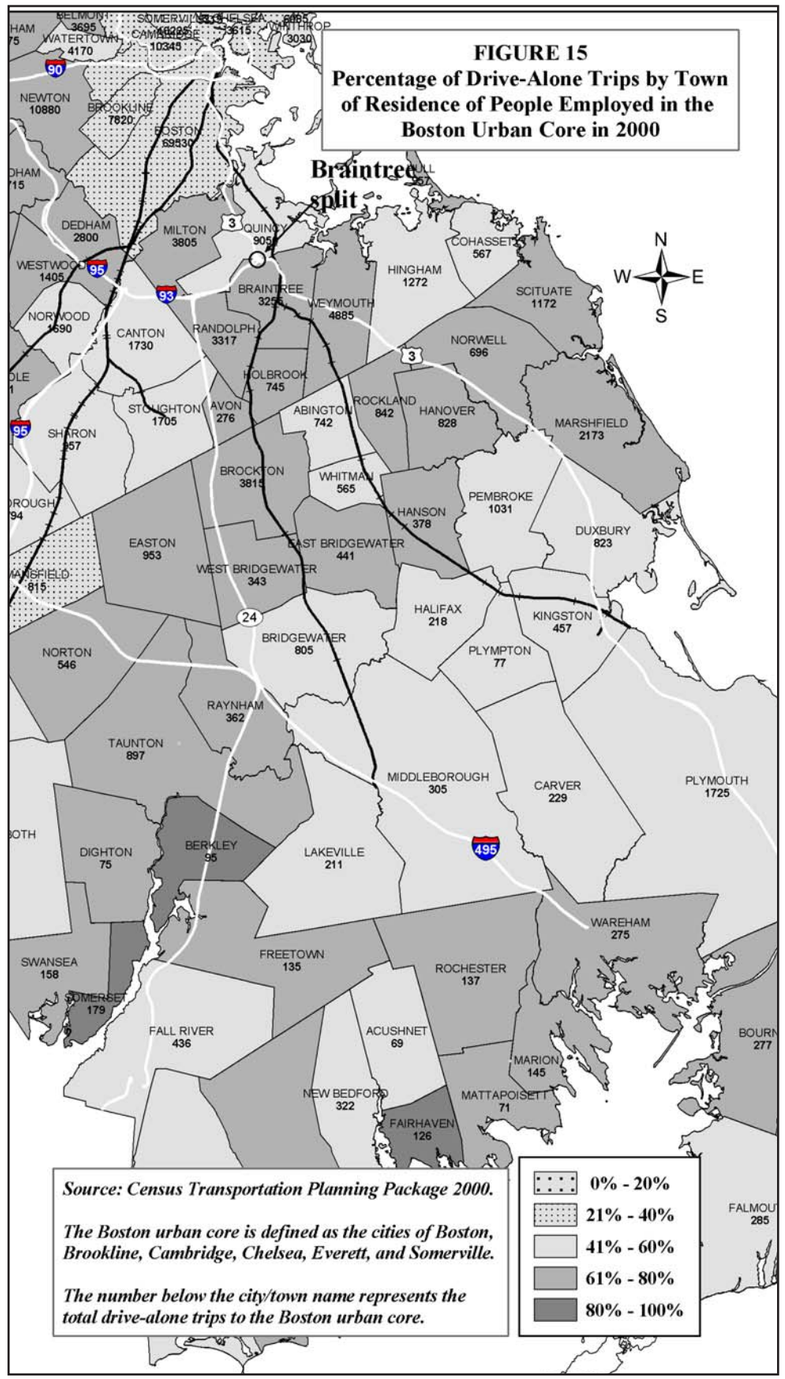
CTPP 2000 is a set of special tabulations, designed for transportation planners from answers to the long-form questionnaire of the 2000 census, which is mailed to one in six U.S. households. Because of the large sample size, the data is reliable and accurate. CTPP 2000 provides comprehensive and cost-effective data, in a standard format, for the entire United States. Transportation planners use CTPP 2000 data to evaluate existing conditions, develop or update travel demand models, and analyze demographic and travel trends.

The journey-to-work trip pattern is presented in Figure 14. In subsequent figures, trips have been separated into categories: drive-alone, transit, and carpool and vanpool. Transit trips consist of four modes: commuter rail, rapid transit, bus, and ferry boat. Walk, bicycle, taxi, and motorcycle modes were not analyzed, as they are rarely used for commuting from southeastern Massachusetts to the Boston urban core. The analysis of total trips in the Massachusetts counties of Barnstable, Bristol, and Plymouth, and from the state of Rhode Island are summarized in Table 3.

TABLE 3
Mode Share of Trips of People Employed in the Boston Urban Core Who Reside in Southeastern Massachusetts or Rhode Island

County/ State	Persons Employed	Drive Alone	Transit	Carpool/ Vanpool
Barnstable	3,114	57%	29%	12%
Bristol	12,576	56%	32%	10%
Plymouth	33,972	61%	30%	9%
Rhode Island	5,516	47%	37%	13%





5.1 DRIVE-ALONE TRIPS

Drive-alone trips are shown in Figure 15 (page 23). As the figure shows, less than 40 percent of the people who reside and work in the Boston urban core drive alone to work—an indication of high transit use in the urban core. Figure 15 also shows a high percentage of drive-alone work trips to the Boston urban core from southeastern Massachusetts communities. Three principal areas identified as having high drive-alone shares are described below.

Route 24 Corridor Residents of these communities, which are sandwiched between the Attleboro/Providence and Middleborough/ Lakeville commuter rail lines, often do not have convenient access to either of the lines. Hence, the majority of the people residing in this area who are employed in the Boston urban core prefer to drive alone to work. The result of this choice is the high volume of commuter traffic along Route 24 through the Braintree split to the Boston urban core.

Fall River–New Bedford–Cape Cod Area The communities in this area also generate a significant number of drive-alone work trips to the Boston urban core. Although the Middleborough and Kingston/ Plymouth stations are options, these communities are generally underserved by commuter rail. P&B bus line is the major transit service in the area. Route 3 South and Route 24, both of which are congested during peak travel periods and also feed vehicles through the Braintree split, are the major highways used by these commuters.

South Shore Area This area consists of the communities along Route 3A and Route 3 South between Plymouth and Braintree. It has a substantial number drive-alone work trips to the Boston urban core. The area is not yet served by commuter rail; however, the Greenbush commuter rail is expected to begin service in 2006. Presently, the only transit service is bus service provided by the P&B bus line for these communities. The majority of these drive-alone work trips end up on Route 3 South and Route 3A, contributing to peak-period travel congestion. Because Route 3 South serves many communities and includes traffic from the Cape and the Islands, drive-alone work trips significantly impact its congestion.

5.2 TRANSIT TRIPS

Figure 16 shows the transit work trips to the Boston urban core from the southeastern Massachusetts communities. This figure shows

FIGURE 16
Percentage of Transit Trips by Town of Residence of People Employed in the Boston Urban Core in 2000

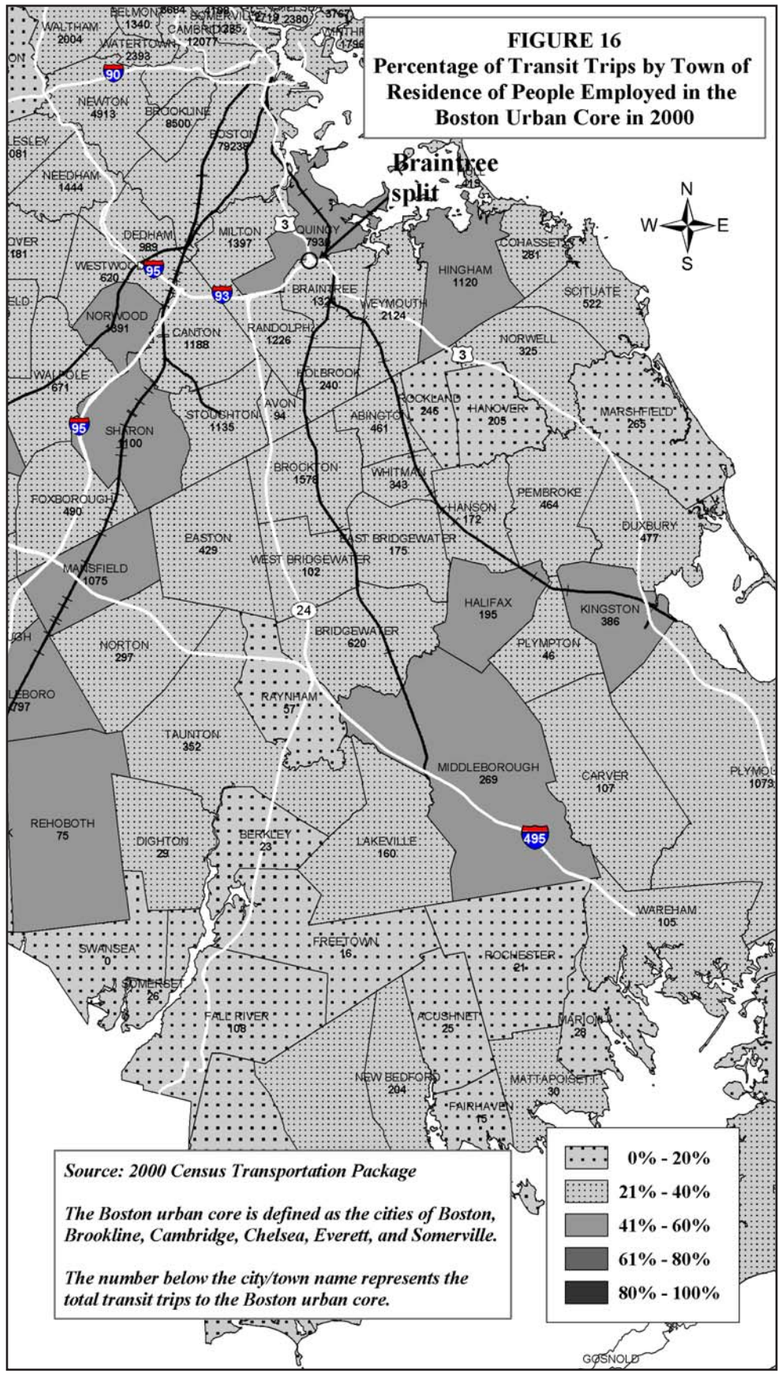
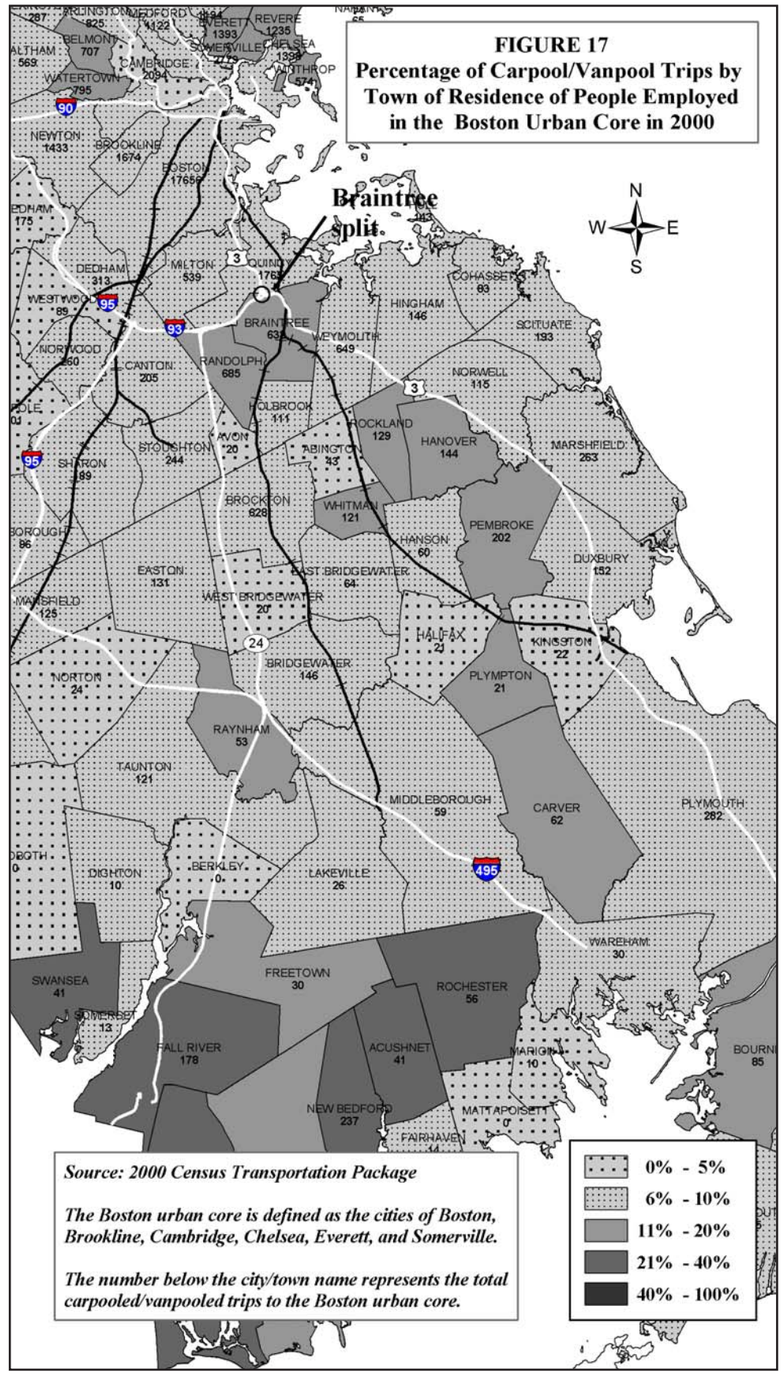


FIGURE 17
Percentage of Carpool/Vanpool Trips by Town of Residence of People Employed in the Boston Urban Core in 2000



almost the opposite distributions of those in Figure 15. Nearly 40 percent of the work trips in the Boston urban core are by transit. In southeastern Massachusetts, the communities that are served by commuter rail also have high percentages of work trips to the Boston urban core that use transit, while those without convenient access to commuter rail and/or park-and-ride lots, particularly those along Route 3 South, Route 3A, and Route 24, have lower percentages of transit use.

Another important observation is the low percentage of transit share of the work trips to the Boston urban core from the Fall River–New Bedford–Cape Cod area. Implementation of the proposed extension of the Stoughton commuter rail line to Fall River/New Bedford is expected to change this pattern to a degree, as it would create new transit riders diverted from nontransit modes, such as drive-alone and carpool and vanpool work trips to the Boston urban core. Thus implementation of this project has congestion reduction benefits for the Braintree split.

5.3 CARPOOL AND VANPOOL TRIPS

Carpooling and vanpooling are congestion reduction strategies and are the only way to commute to the Boston urban core if one wishes to take advantage of the HOV lane on the Southeast Expressway without using bus transit. The percentage and number of carpoolers and vanpoolers in the southeastern Massachusetts communities are shown in Figure 17 (page 24). The figure shows relatively high numbers of carpoolers and vanpoolers from the South Shore and communities along Route 3 South.

In the Fall River–New Bedford area, carpooling and vanpooling seem to be the preferred alternatives. Between 20 and 40 percent of people employed in the Boston urban core who reside in that area carpool or vanpool to work. By observation, areas with a high percentage of people carpooling and vanpooling are those that are not served by commuter rail, and where the only available service is bus transit. There are several factors contributing to this high percentage, including the convenience and flexibility offered by ridesharing, and the levels of service of other transit modes, such as bus. These reasons were not investigated through a survey, as they were beyond the scope of this study.

5.4 FUTURE TRAFFIC VOLUMES

The forecast horizon year for this study is 2025. The 2025 regional model includes all the transit and highway projects in the MPO region expected to have been completed by that year. It also accounts for the effects of plans for land development and growth in employment, number and size of households, and population. For this study, data on these factors for 2025, developed by MAPC, was already available from the regional planning model set. It was used to create 2025 regional trip tables that consist of zone-to-zone trips.

Between 1992 and 2003, average weekday traffic on I-93 (between Routes 24 and the Braintree split) increased by 14 percent; on Route 3 South by 15 percent; and on the Southeast Expressway, by 18 percent. These increases represent a rate of about 1.2 to 1.3 percent per year. The morning and afternoon peak-period traffic volumes presented in Figures 4 and 5 (pages 11–12) indicate that between 6:00 and 9:00 AM and 3:00 and 6:00 PM the volumes in the peak direction of travel remain constant or decrease slightly due to traffic congestion.

The forecasted traffic volumes for 2025 indicate slower growth, partly due to congestion and partly due to an increased transit share of the total trips. The MBTA commuter rail ridership is predicted to increase by about 45 percent between now and 2025.[5] Its proposed Greenbush and Fall River/New Bedford lines are expected to divert single-occupant-vehicle work trips to the Boston urban core to transit trips.

Peak-period traffic demand on I-93 (between Route 24 and the Braintree split) and on Route 3 South is expected to increase by 15 to 20 percent between 2003 and 2025 and by 10 to 15 percent on the Southeast Expressway in the same time period. These increases represent an average growth rate of about 0.5 to 0.8 percent per year. Initially, the current growth rate may continue, but it is expected to taper off in later years. Given current peak-period traffic congestion, additional traffic demand will most likely be experienced as an expansion of the duration of the peak periods rather than as a significant increase in peak-hour volumes.

5.5 SUMMARY

Both socioeconomic trends and travel patterns indicate future growth in population, number of households, and jobs in both the Boston urban core and in southeastern Massachusetts. While future growth in population and households is more pronounced in southeastern Massachusetts communities because of the affordable high quality of life that its communities offer, future growth and concentration of jobs will be more pronounced in the Boston urban core.

As described earlier, this geographical distribution of jobs and residences has resulted in peak-period traffic congestion on the highways that connect the Boston urban core to southeastern Massachusetts through the Braintree split. It has also resulted in the high peak load on the commuter rail lines serving this area. It is expected that this spatial imbalance will continue to overload the transportation systems (highway and transit) serving these areas, if improvements are not made.

The next two chapters describe the planned and proposed highway and transit projects that might impact traffic flow through the Braintree split. They include projects that are already under construction, already in the Transportation Improvement Plan, or in planning stages.

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5 Produced by the Central Transportation Planning Staff for the Massachusetts Bay Transportation Authority, *Program for Mass Transportation*, May 2003, Revised January 2004, p. ES-2.

6 PLANNED AND PROPOSED IMPROVEMENTS

6.1 TRANSIT

The transit projects that are described in this chapter are service enhancement and system expansion projects that are in the MBTA's *Program for Mass Transportation (PMT)* and 2004 Service Plan.[6] The PMT is a central element of capital planning at the MBTA and is the foundation for transit infrastructure planning and programming in Eastern Massachusetts. The PMT defines a vision for regional mass transportation and sets priorities for infrastructure investments in the areas of system preservation, service enhancement, and system expansion without financial constraints.

System preservation projects are projects aimed at keeping the MBTA's system in a state of optimal repair. Service enhancements projects are projects that would improve the service already in operation. System expansion projects are projects that would extend a transit line to an area that is not currently served, implement a service on an existing line that is not currently provided, or change the mode of transportation operating on an existing line. The system expansion projects described below are shown in Figure 18.

Because the PMT contains many projects, only those projects that are rated high or medium priority, are located in southeastern Massachusetts, and might have an impact on traffic flow through the Braintree split are discussed in this chapter. In addition, because the 2004 Service Plan contains service changes for all bus routes, only the proposed changes that affect the buses that serve the Braintree split area were considered.

6.1.1 Proposed Bus Service Changes

The MBTA reviews the level of usage of bus services every two years and reallocates services based on consumer demand. In addition, new bus routes and route restructuring are considered to provide better service for the riding public. The 2004 Service Plan is complete, and the MBTA Board of Directors approved it in September 2004. Service changes were to be implemented in the spring and winter of 2005, and the new Service Delivery Policy will be used in the development of the 2006 Service Plan. The recommended changes that affect services in the study area are listed in Table 4.

[6] Produced by the Central Transportation Planning Staff for the Massachusetts Bay Transportation Authority's *Program for Mass Transportation*, May 2003, revised January 2004, p. ES-1.

6.1.2 Service Enhancement Projects

The following are the MBTA service enhancement projects that are rated high or medium priority. They are summarized in Table 5, which gives the status of each project and funding.

Signal and Train Control Improvements on the Red Line

This high-priority proposal calls for increasing peak capacity on the Red Line by installing new-generation signal systems that will allow for closer spacing between trains than the present system allows in the shared segment of the two branches of the Red Line between Alewife and Andrew stations. Applying the new technology could allow train frequencies of every 2 minutes, instead of the current 3.5 minutes. Expanding the capacity of the Red Line through signal improvements and expansion of the fleet is expected to add 9,700 new riders to the mode, of whom 3,400 would be new transit riders who would be attracted from nontransit modes such drive-alone, carpool and vanpool, and bicycle and motorcycle. Because of the high number of new transit riders attracted, this improvement would have a high impact on air quality. In addition, this project is expected to reduce crowding, improve system reliability, and allow more frequent service. This project is not programmed in the 2006–2010 Transportation Improvement Program (TIP).

Operate Eight-Car Trains (Red Line)

This medium-priority proposal calls for expanding capacity on the Red Line by operating trains with a maximum train length of eight cars during peak periods instead of the present maximum train length of six cars. This proposal involves extending station platforms, excavating at underground stations, expanding storage yards, expanding power systems, modifying signal blocks, and purchasing additional rolling stock. This project is expected to add 3,800 new riders to the mode, of whom 1,000 would be new transit riders diverted from nontransit modes. Because of the limited number of new transit riders attracted, this project would have only a moderate impact on air quality. This project is not programmed in the 2006–2010 TIP.

Access to Service (Parking and Pedestrian Access)

Automobile parking is a critical access mode for commuter rail, which is the major transit system serving most of southeastern Massachusetts communities. This project includes expanding parking, installing bicycle racks, and improving pedestrian approaches to MBTA parking lots. The current plans of the MBTA envision adding over 9,500 parking spaces at various commuter rail and transit stations throughout the region. The MBTA planned parking program includes new parking spaces for the following rail lines in southeastern Massachusetts:

Attleboro/Providence Commuter Rail:	930 spaces
Franklin Commuter Rail:	500 spaces
Middleborough/Lakeville Commuter Rail:	500 spaces
Plymouth/Kingston Commuter Rail:	550 spaces
Red Line:	1,928 spaces

Additional parking facilities will be constructed over the life of this plan based on prioritization in the PMT. Table 6 shows the ratings of parking enhancement projects in the PMT for commuter rail and Red Line stations located in southeastern Massachusetts. In developing the ratings, stations that lack the necessary elements for project development, including availability of property for expansion and community support, were given low-priority ratings. In addition, stations where expansion was completed in the last 10 years or is currently underway were also assigned a low-priority rating.

The MBTA anticipates using several funding sources for these projects, including federal funds allocated to the MBTA; federal funds allocated to other regional transit authorities for use on the commuter rail system; and federally earmarked MBTA, local, private, and state bond funds. The MPO estimates that 5 percent of the transit funding for maintenance and improvement of the regional system will be allocated to parking expansion and maintenance.

6.1.3 System Expansion Projects

Commuter Rail Branch from Old Colony Lines to Greenbush

This high-priority project, currently under construction, will restore commuter rail service on a third branch of the Old Colony lines in Braintree and would follow a combination of active and inactive freight rail routes to the Greenbush section of Scituate. There will be seven new stations, in Weymouth, Hingham, Cohasset, and Scituate. The Greenbush Line is expected to add 11,400 riders to the mode, of whom 4,600 would be new transit riders diverted from nontransit modes. Because of the high number of new riders attracted, it would have a high impact on travel time savings and moderate air quality benefits. The funding sources for this project are MBTA Bond Proceeds and PAYGO (Pay-As-You-Go financing).

Commuter Rail to New Bedford and Fall River

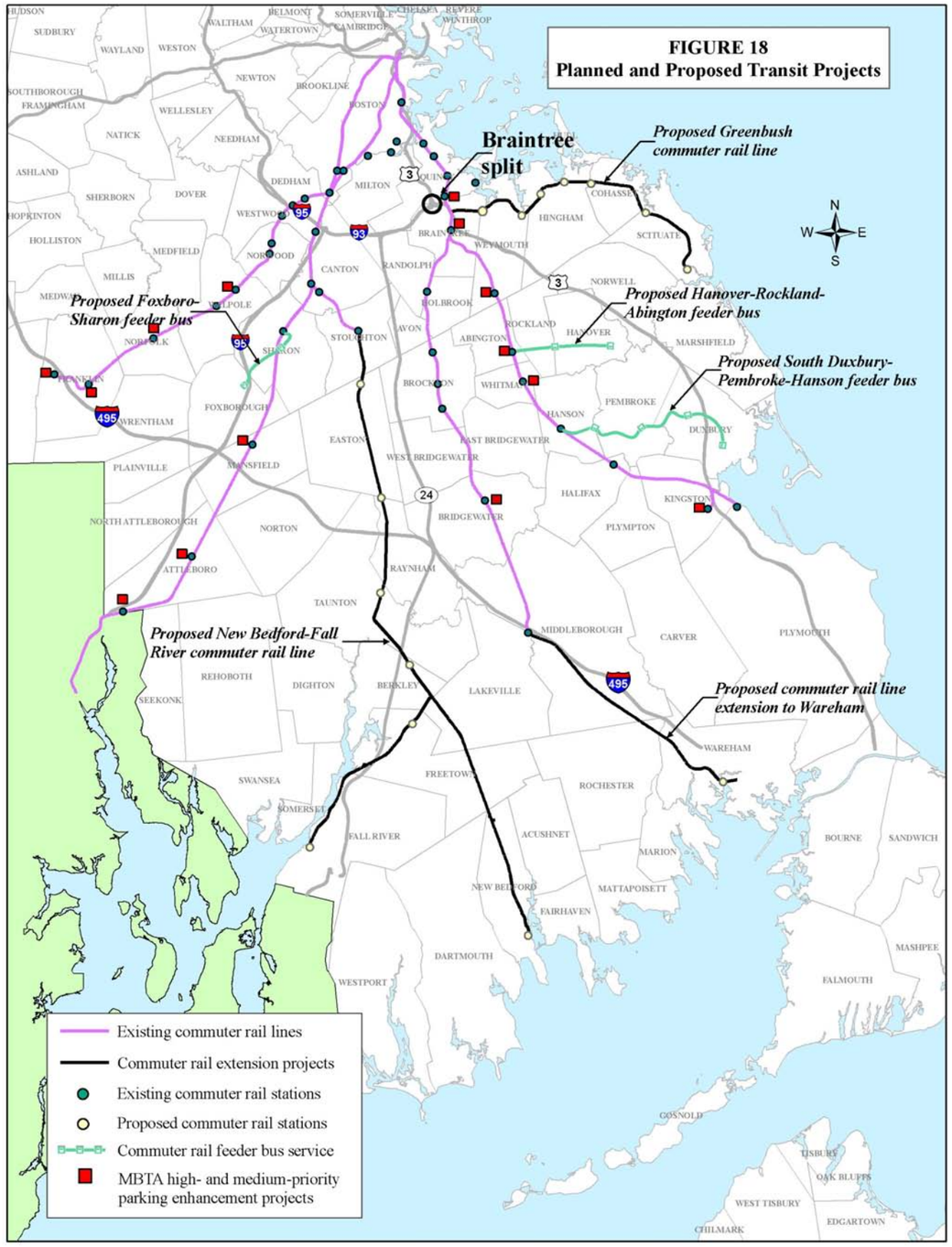
This high-priority project would extend commuter rail service from the end of the Stoughton Line to New Bedford and Fall River via a combination of inactive and active rail freight lines. There would be seven new stations, in Easton, Raynham, Taunton, Freetown, Fall River, and New Bedford. This project would attract the second largest number of commuter rail riders and new transit users of all commuter rail projects examined for the PMT. The New Bedford/Fall River Line is expected to add 8,700 riders to the mode, of whom 7,100 would be new transit riders diverted from nontransit modes. Because of the high number of new riders attracted, it would have a high impact on mobility and travel time savings. It is rated medium in cost-effectiveness, air quality benefits, economic and land use impacts, and environmental equity. Currently, this project is in planning stages and has not been programmed in the 2006–2010 TIP. Funding sources for this projects are yet to be determined.

Suburban Commuter Rail Feeder Bus Service

This high-priority project would implement new feeder bus services to several suburban commuter rail stations that currently have no transit service connections. An average of two vehicles would be needed to operate peak-period service on each feeder route. Preliminary analysis indicates that the promising new routes in southeastern Massachusetts are:

- From Foxboro to Sharon Station on the Attleboro Line.
- From Hanover via Rockland to Abington Station on the Kingston/Plymouth Line.
- From South Duxbury via Pembroke to Hanson Station on the Kingston/Plymouth Line.

Currently, this project is only a proposal and it has not been programmed in the 2006–2010 TIP. Funding sources for this project are yet to be determined.



Extend Commuter Rail from Middleboro to Wareham

This medium-priority project would extend commuter rail along an existing rail freight line from the end of the Middleborough/Lakeville Line to Wareham. The extension to Wareham is expected to add 1,300 riders to the mode, of whom 420 would be new transit riders diverted from nontransit modes. Wareham itself has very limited express bus service to Boston, but communities south of the Cape Cod Canal, from which the extension would draw riders, have frequent bus service provided by the P&B bus line.

The project is rated high in mobility and medium in utilization, air quality benefits, and economic and lands use impacts. It has a low rating in cost-effectiveness, as its capital and operating costs per new transit rider would be relatively high. Currently, this project is only a proposal and has not been programmed in the 2006–2010 TIP. Funding sources for this project are yet to be determined.

Improved Ferry Service from the South Shore to Boston

This medium-priority project includes several elements that could be implemented individually or together. The project would increase service frequency on the existing Hingham and Quincy/Hull commuter boat routes and would establish new routes to Boston from Cohasset and Scituate. It would add new transit options for travel to Boston, but would have to compete with other transit alternatives, including commuter rail and combinations of bus and rapid transit. The project is expected to add 800 new riders to the mode, of whom 270 would be new public transportation riders diverted from nontransit modes. It is rated medium in mobility and cost-effectiveness, and low economic and land use impacts and air quality benefits. Currently, this project is only a proposal and has not been programmed in the 2006–2010 TIP. Funding sources for this project are yet to be determined.

South Weymouth Naval Air Station Transit Access Improvements

The primary benefit of this project is the facilitation of a significant economic development opportunity related to reuse of the Naval Air Station. The nearby communities are working with the MBTA to explore several concepts for transit amenities. These include additional parking at the South Weymouth commuter rail station and development of a multimodal transit center linking rail and public and private bus services in the region. Currently, this project is only a proposal and has not been programmed in the 2006–2010 TIP. Funding sources for this project are yet to be determined.

TABLE 4
2004 Service Plan
Summary of Proposed Changes for Bus Routes Serving the Braintree Split Area

Bus Route		Day	Description of Change
230	Montello Station–Quincy Center	Weekday	Eliminate 5:30 AM trip.
230	Montello Station–Quincy Center	Sunday	Add a 7:00 AM and an 11:00 PM trip.
236	South Shore Plaza–Quincy Center	Weekday	Eliminate 3:20 PM southbound and 4:00 PM northbound trips; extend span to 8:20 PM.
236	South Shore Plaza–Quincy Center	Saturday	Change the frequency of service from a bus every 60 minutes to a bus every 70 minutes to increase reliability, and add trips at 7:00, 8:00, and 9:00 AM and at 10:00 PM.
238	Randolph–Quincy Center	Saturday	Eliminate Quincy Center–South Shore Plaza short trips. In addition, add one early morning trip.
238	Randolph–Quincy Center	Sunday	Eliminate last trip; create earlier first trip.
238	Randolph–Quincy Center	Saturday/ Sunday	Create earlier first trip.
240	Randolph–Ashmont Station	Weekday/ Saturday	Allow customers to ride trips returning to garage from North Randolph to Quincy Center Station.
240	Randolph–Ashmont Station	Sunday	Create earlier first trip.
245	Mattapan–Quincy Center	Weekday	Cancel late morning round trip. Add 7:00 PM trip.
246	Quincy Center–Quincy Medical Center	Sunday	Add new route serving Quincy Medical Center on Sundays to compensate for change to Sunday routing on bus route #215

TABLE 5
Current Status of Proposed Transit Projects

Project Name	Project Status	2005–2009 TIP Status	Funding Sources
Signal and Train Control Improvements On The Red Line	Proposal	Not programmed	To be determined
Operate Eight-Car Trains (Red Line)	Proposal	Not programmed	To be determined
Access to Service (Parking and Pedestrian Access)	MBTA Planned Parking Program		Several funding sources for maintenance and improvement
Commuter Rail Branch from Old Colony Lines to Greenbush	Under construction	Not applicable	MBTA Bond Process and PAYGO
Commuter Rail to New Bedford and Fall River	In planning	Not programmed	To be determined
Suburban Commuter Rail Feeder Bus Service	Proposal	Not programmed	To be determined
Extend Commuter Rail from Middleboro to Wareham	Proposal	Not programmed	To be determined
Improved Ferry Service from South Shore to Boston	Proposal	Not programmed	To be determined
South Weymouth Naval Air Station Transit Access Improvements	Proposal	Not programmed	To be determined

TABLE 6
MBTA Parking Enhancement Project Ratings in Southeastern Massachusetts

Key
● = High rating; ◗ = Medium rating; ❍= Low rating

Station	Line	Project Criteria									
		Customer Access	Land and Air Rights	Project Demand	Potential Utilization	Cost/Parking Space	Environmental Status	Ease of Construction	Community Support	Funding Availability	Overall
Quincy Adams	Red Line/Commuter rail	◗	●	●	❍	●	●	◗	●	◗	●
Braintree	Red Line/Commuter rail	❍	●	●	●	●	●	◗	◗	◗	●
Bridgewater	Commuter rail	◗	●	●	●	●	●	◗	●	◗	●
Forge Park	Commuter rail	◗	●	●	●	◗	●	◗	◗	◗	●
Franklin	Commuter rail	❍	●	◗	●	●	●	◗	●	◗	●
Kingston	Commuter rail	◗	●	●	●	●	●	◗	◗	◗	●
South Attleboro	Commuter rail	●	●	●	●	◗	●	◗	●	●	●
Whitman	Commuter rail	●	●	◗	●	●	◗	●	●	◗	●
Abington	Commuter rail	◗	❍	●	●	❍	●	●	◗	◗	◗
Attleboro	Commuter rail	◗	●	●	●	❍	❍	❍	●	●	◗
Hingham	Commuter rail	◗	◗	●	●	●	◗	◗	◗	◗	◗
Mansfield	Commuter rail	◗	●	●	❍	❍	◗	◗	●	●	◗
Norfolk	Commuter rail	❍	❍	●	●	●	●	◗	❍	◗	◗
South Weymouth	Commuter rail	◗	❍	●	●	◗	◗	●	◗	◗	◗
Walpole	Commuter rail	◗	◗	●	●	❍	❍	◗	●	◗	◗
Brockton	Commuter rail										❍ *
Campello	Commuter rail										❍ *
Canton Junction	Commuter rail										❍ *
Dedham Center	Commuter rail										❍ *
Holbrook	Commuter rail										❍ *
Middleboro	Commuter rail										❍ *
Montello	Commuter rail										❍ *
Norwood Center	Commuter rail										❍ *
Norwood Depot	Commuter rail										❍ *
Sharon	Commuter rail										❍ *
Stoughton	Commuter rail										❍ *

Note
* Individual-criterion ratings were not applied to stations where parking facilities are currently being expanded or are planned for expansion, or where substantial community opposition exists to potential expansion projects.

The MBTA already has in place a process to analyze the large number of parking projects under consideration. This process was used by the PMT in prioritizing new parking needs. The evaluation criteria include:

- Customer Access—Quality of automobile access to station parking lot from major arterial roadways.
- Land/Air Rights—MBTA ownership of (access to) land/air rights for expansion of the parking facility.
- Projected Demand—Magnitude of expected future demand for parking at the station.
- Potential Utilization—Ability of potential parking expansion to meet the needs of projected demand.
- Cost per Parking Space—Expected cost per parking space, either in surface lot or garage.
- Environmental Status—Barriers to parking expansion resulting from existing environmental issues.
- Ease of Construction—Barriers to parking expansion resulting from space constraints, land acquisition issues, challenging terrain, etc.
- Community Support—Level of Support demonstrated by local and/or regional officials and community groups for expansion of the parking facility.
- Funding Availability—Availability of non-MBTA funding sources for expansion of the parking facility.

6.2 HIGHWAYS

The 2006–2010 TIP was reviewed to identify planned and approved highway projects that might affect traffic operations at the Braintree split. In consultation with MassHighway, major highway projects in the study area that are in the planning stages and might have not been on the TIP were also identified. These projects, shown in Figure 19, are described below. They are also summarized in Table 7, which gives the status of each project and funding.

6.2.1 Burgin Parkway Viaduct in Quincy

This project will create new ramps at the Route 3/Burgin Parkway interchange. An overpass will be constructed for the Burgin Parkway southbound traffic (heading toward Route 3) over Centre Street. Beginning on Burgin Parkway just south of Penn Street, the outbound roadway will split. Southbound traffic staying left will continue to the existing at-grade intersection at Centre Street. Traffic bearing right and continuing south along Burgin Parkway will pass over Centre Street en route to the Route 3/Route 128/1-93 ramp system. The overpass will provide two travel lanes; it will then merge with the existing viaduct that carries traffic soutbound from the Quincy Adams MBTA station.

A new ramp will carry traffic away from Centre Street to 1-93 northbound and southbound from Crown Colony Drive, where it intersects with Congress Street. The ramp will join the southbound flow from Burgin Parkway downstream of the MBTA ramp and the Burgin Parkway merge location. Traffic using the ramp from Congress Street will not be required to weave with other traffic using Burgin Parkway, thus minimizing traffic weaving on the Route 128/I-93 ramps. A channelized ramp will be contructed to allow northbound Crown Colony Drive traffic to bypass the Crown Colony Drive/Centre Street and Burgin Parkway/Centre Street intersections and to connect Crown Colony Drive with southbound Burgin Parkway ramps.

This project will improve access to the Crown Colony development area by providing a new overpass, described above, that minimizes conflicts for the highest-volume traffic movements through the Burgin Parkway/Centre Street intersection: the northbound left-turn movement from the Route 3 ramps onto Centre Street and the southbound movement from Burgin Parkway to Routes 3 and 128 and 1-93. It will also improve the level of service for the weave mentioned above during both peak periods. This project will be constructed with Congestion Mitigation and Air Quality Improvements fund and is programmed in the 2006–2010 TIP.

6.2.2 Improvements near the I-93 and Route 37 Interchange in Braintree

This project will create an extension of the existing I-93 northbound off-ramp to Route 37 (Granite Street) by constructing a new distributor road paralleling I-93 and connecting the off-ramp to Granite Street. The distributor road will begin as an off-ramp on I-93 northbound midway between Routes 28 and 37. A new ramp will connect the distributor road to Forbes Road. The improvements will also include a connection from Brooks Drive to Forbes Road in order to facilitate circulation and access to businesses and residences in the area.

This project will improve access to the Route 37 development area. The northbound on-ramp services 1,200 vehicles per hour during the AM and PM peak periods, with traffic queues sometimes extending onto the freeway. The distributor roadway will create more storage room for the exiting traffic destined to Route 37 and minimize traffic queues that interrupt flow on the freeway, thus improving safety. The project will reduce the off-ramp traffic volumes at Route 37, as traffic destined to developments on Forbes Road from I-93 would now arrive there directly from the proposed collector/distributor road. This project is not programmed in the 2006–2010 TIP.

6.2.3 South Weymouth Naval Air Station Access Improvements

The primary benefit of this project is the facilitation of significant economic development related to the reuse of the Naval Air Station. To support this reuse, an ongoing Environmental Impact Review (EIR) will include alternatives, such as new roadway connections between the air station, Route 18, and Route 3; the construction of a regional intermodal facility; and improved bicycle and pedestrian connections. A connector road will provide a link to Route 18 and to an alternative access route to the redevelopment site and the South Weymouth commuter rail station on the Plymouth Line, which is located on Route 18. The projects identified in the final EIR will be considered for funding as part of the Regional Transportation Plan. Some of the planned access improvement projects have been programmed in the 2006–2010 TIP, as shown in Table 7.

6.2.4 Route 3 South Transportation Improvement Project

The project will widen Route 3 South from two lanes in each direction to three lanes in each direction from Weymouth (interchange 16 at Route 18) to Duxbury (interchange 11 at Route 14). Congestion has increased to the point that the State Police, MassHighway, and the Federal Highway Administration agreed to allow the use of the breakdown lane as a travel lane during peak periods. The project will restore the shoulder breakdown lanes, provide safety recovery zones, and will upgrade interchange acceleration and deceleration lanes. The project also involves design configuration improvements at the interchange ramps at interchange 12 (Route 139 in Pembroke); related intersection improvements at highway ramps at interchanges 11, 12, 13, and 15; and upgrades and expansions of the park-and-ride lots at interchanges 12 and 14. This project is not programmed in the 2006–2010 TIP.

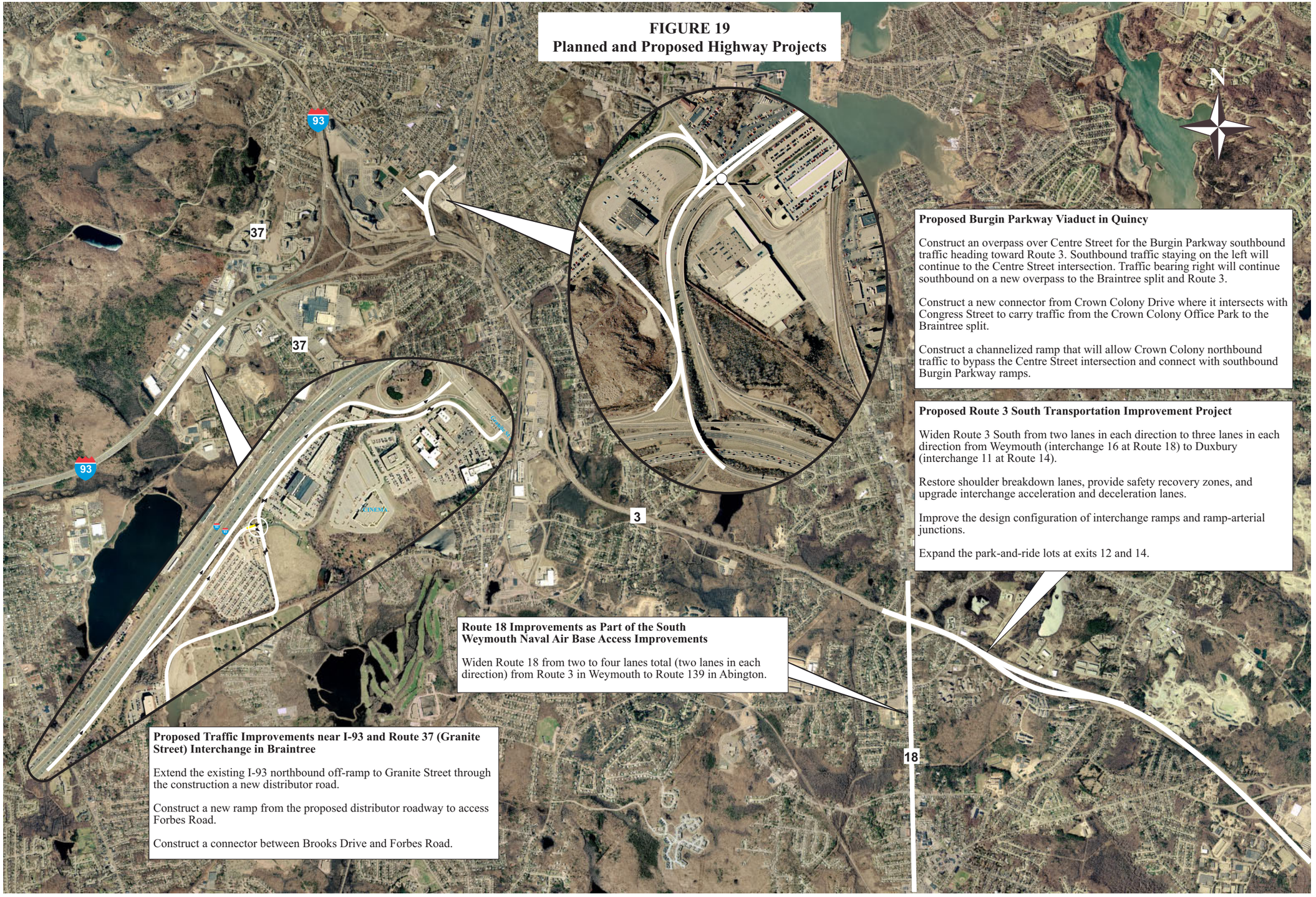
The next chapter discusses additional improvements considered to be necessary at the Braintree split, haven taken into consideration the planned and proposed highway and transit projects in the area that may impact traffic flow through the split. The additional improvements are operational improvements that will improve safety and traffic flow through the split and will remove the bottlenecks around the split that restrict traffic flow to and from it.

TABLE 7
Current Status of Proposed Highway Projects

Project Name	Project ID	Design Status	2006–2010 TIP Status	Cost	Funding Sources
Burgin Parkway Viaduct in Quincy	603391	75%	Programmed, 2006	$18.0 million	Congestion Mitigation and Air Quality Improvement Program
Improvements Near the I-93 and Route 37 Interchange in Braintree	603134	25%	Not programmed	NA	To be determined
Route 3 South Transportation Improvement Project	NA	NA	Not programmed	NA	To be determined
South Weymouth Naval Air Station Access Improvements					
Route 18 Right-of-Way	601630	Pre 25%	Programmed, 2007	$1.0 million	High-Priority Project
Route 18 Intersections	603161	75%	Programmed, 2005; to be advertised in September 2005	$3.4 million	State Transportation Program
Route 18	601630	Pre 25%	Programmed, 2008	$14.0 million	State Transportation Program
East-West Parkway, Design	NA	Pre 25%	Programmed, 2006	$2.0 million	High-Priority Project
East-West Parkway, Permitting	NA	NA	Programmed, 2008	$3.0 million	High-Priority Project

NA = Not available

FIGURE 19
Planned and Proposed Highway Projects



Proposed Burgin Parkway Viaduct in Quincy

Construct an overpass over Centre Street for the Burgin Parkway southbound traffic heading toward Route 3. Southbound traffic staying on the left will continue to the Centre Street intersection. Traffic bearing right will continue southbound on a new overpass to the Braintree split and Route 3.

Construct a new connector from Crown Colony Drive where it intersects with Congress Street to carry traffic from the Crown Colony Office Park to the Braintree split.

Construct a channelized ramp that will allow Crown Colony northbound traffic to bypass the Centre Street intersection and connect with southbound Burgin Parkway ramps.

Proposed Route 3 South Transportation Improvement Project

Widen Route 3 South from two lanes in each direction to three lanes in each direction from Weymouth (interchange 16 at Route 18) to Duxbury (interchange 11 at Route 14).

Restore shoulder breakdown lanes, provide safety recovery zones, and upgrade interchange acceleration and deceleration lanes.

Improve the design configuration of interchange ramps and ramp-arterial junctions.

Expand the park-and-ride lots at exits 12 and 14.

Route 18 Improvements as Part of the South Weymouth Naval Air Base Access Improvements

Widen Route 18 from two to four lanes total (two lanes in each direction) from Route 3 in Weymouth to Route 139 in Abington.

Proposed Traffic Improvements near I-93 and Route 37 (Granite Street) Interchange in Braintree

Extend the existing I-93 northbound off-ramp to Granite Street through the construction a new distributor road.

Construct a new ramp from the proposed distributor roadway to access Forbes Road.

Construct a connector between Brooks Drive and Forbes Road.