

# CHAPTER 6

## Opportunities for System Enhancement and Expansion



Chapter 5 discussed many of the projects that would be needed to bring the MBTA infrastructure into a state of good repair. This chapter presents a wide array of enhancement and expansion projects that have been proposed, considered, or seriously mentioned in the course of the PMT planning process and that could be implemented over the next 25 years to meet the transit mobility needs of the region. The first section presents projects that are not specific to any of the geographic corridors defined for the PMT, but have systemwide impacts. In the following sections, potential investments that primarily affect one corridor are organized and presented by corridor so they can be related to specific mobility challenges.

### **SYSTEMWIDE PROJECTS**

This section discusses the identified mobility challenges that demand systemwide solutions. Some of the problems presented here apply equally across all corridors and are only discussed in this section. However, other systemwide problems are discussed here conceptually, but are also associated with more specific proposals that are discussed in the context of one or more corridors.

### **ENERGY AND TECHNOLOGY**

#### ***ADOPT CLEAN-FUEL AND -VEHICLE TECHNOLOGIES***

The MBTA has made great progress toward improving the emissions profile of its bus fleet through the purchase of compressed-natural-gas and clean-diesel vehicles. The Authority will track new advances in clean fuels and vehicles and will continue to incorporate them into the bus fleet as it turns

over. The MBTA will also acquire the equipment necessary to monitor and maintain the bus fleet to ensure that it functions at peak performance and does not emit more than the allowable amount of air pollutants, including CO<sub>2</sub>.



CNG BUS

In addition, the MBTA envisions future electrification of the commuter rail system. This would benefit the region and the riding public by eliminating locomotive emissions, improving service reliability, and enhancing performance through more rapid acceleration and deceleration. However, full electrification would represent a revolution in the way that the MBTA operates the commuter rail system and would require phased construction and substantial capital investment over a long period of time. Over 500 miles of track would need to be electrified and a new fleet of locomotives purchased. While electrifying the system, the MBTA would have to own and maintain a mixed fleet of locomotives—diesel and electric—and would face significant scheduling and operational challenges, as regular service would need to continue without interruption. The total cost of infrastructure and equipment, coupled with the associated costs of maintenance and operational disruptions, makes electrification a multibillion-dollar project.

The groundwork for electrification was begun when the Providence Line was electrified to accommodate Acela high-speed service to New York and the mid-Atlantic states. As a result, systemwide electrification could begin with the use of electric locomotives for Providence service. Consideration is also being given to the possibility of electrification as a technology option for the proposed South Coast Rail extension.

### **REDUCE ENERGY CONSUMPTION AT AGENCY BUILDINGS**

In April 2007, Governor Deval Patrick issued Executive Order #484 requiring all Commonwealth agencies to meet the following targets:

- Reduce greenhouse gas emissions that result from state government operations by 25% below 2002 levels by SFY 2012, 40% by 2020, and 80% by 2050
- Reduce overall energy consumption at state buildings by 20% below 2004 levels by SFY 2012 and 35% by 2020
- Procure 15% of agency annual electricity consumption from renewable sources by 2012 and 30% by 2020
- Use BioHeat products with a minimum blend of 3% bio-based materials for all heating applications that use #2 fuel, starting with the winter of 2007-2008, and 10% BioHeat blend by 2012
- Meet the Massachusetts LEED Plus green-building standard for all new construction and major renovations
- Reduce potable water use 10% by 2012 and 15% by 2020, compared to 2006

To begin this effort, the MBTA must implement a monitoring system that will allow the Authority to measure energy consumption at individual facilities so that the appropriate strategies can be developed to meet the Governor's targets. Also of importance will be developing an organizational structure that will have the authority to manage and execute agencywide energy and CO<sub>2</sub> reduction programs.

## **IMPLEMENT NEW TECHNOLOGIES AND SUPPORTING POLICIES**

New technologies have allowed the MBTA to automate many systems and to collect data that can be used to improve services. The Authority will continue to implement intelligent transportation systems (ITS) and other technologies that are currently in place and will actively look to improve and enhance them. Technologies that the MBTA may pursue to improve service reliability, customer communication and convenience, and system safety/security include:

- Purchasing and deploying automatic passenger counters systemwide to improve timely collection of passenger load data
- Expanding existing capabilities and investing in new technologies that aid in continuous vehicle location and dispatch to improve on-time performance



**MBTA SUBWAY OPERATIONS CONTROL CENTER**

- Installing and maintaining next-train alert systems at all rapid transit and commuter rail stations and ensuring the functionality of existing equipment
  - Investing in and regularly updating a robust Web and mobile-phone trip-planning system
- with real-time schedule and on-time performance functionality for all modes
  - Providing access to real-time translation services at all MBTA points of contact
  - Installing and maintaining next-bus alert systems at Key Route bus stops that have more than 100 boardings per day
  - Regularly updating and improving automated fare-collection (AFC) capabilities, including expansion to commuter rail and parking facilities
  - Maintaining existing security systems and upgrading/expanding them as technologies and needs change
  - Maintaining redundant and secure computer networks
  - Investing in systems necessary to protect customer security when making online pass purchases
  - Investing in sufficient bus simulation equipment to train new operators and re-train veteran operators on a regular basis
  - Implement positive-train-control systems on the Green Line and all commuter rail lines.

Although the use of technology can greatly enhance system performance, some low-tech solutions and policy initiatives might also prove effective for ensuring continued improvement in meeting customer expectations. Some examples that could be evaluated include:

- Ensuring sufficient staffing for field inspections to assist in service monitoring
- Working with the cities/towns to provide signal priority for surface services (bus and Green Line) and bus queue jumps
- Implementing a proof-of-payment system and opening all doors to allow more rapid boarding (Green Line surface and commuter rail)
- Working with the cities/towns and passengers to consolidate bus stops

- Working with other Regional Transit Agencies (RTAs) in eastern Massachusetts to apply consistent service standards, coordinate schedules, integrate fare media/collection with customer information systems, and install information technology (IT) infrastructure necessary for implementation
- Revising the MBTA's recently defined Key Route service standard to increase the minimum frequency of service during off-peak times and to extend the span of service to begin earlier and end later
- Providing customer amenities systemwide, including bus shelters at all stops, heated waiting areas at stations that are open to the elements, bicycle racks (on all vehicles and at all stations), and functional air conditioning and heating on all vehicles
- Creating customer information centers at all bus transfer points/activity hubs and regularly updating posted schedules for the relevant routes. Making current schedules available for customer pickup on all buses
- Regularly updating neighborhood and bus-connection maps and network diagrams, and replacing the outdated ones at every station entrance/exit
- Installing safety signage systemwide that has been translated into international symbols
- Implementing oral and written translations in accordance with the MBTA's Limited English Proficiency policy, including displaying translated signage in all stations
- Regularly updating posted schedules and making current schedules available for customer pickup at newly created customer information centers in all stations
- Consolidating existing routes in high-frequency service corridors, and provide limited-stop service on the new, consolidated routes

## **AMERICANS WITH DISABILITIES ACT (ADA)–COMPLIANT SYSTEM ACCESSIBILITY**

The MBTA is now implementing accessibility programs throughout the transit system. Some of the more extensive station reconstruction projects are nearing completion, including the Key Station Program. A few are currently in project development, such as Hynes, Auburndale, Science Park, and Wollaston Stations. Completion of the accessibility program within this PMT cycle is a high priority for the MBTA. It is also important to recognize that in almost all instances, the implementation of required accessibility features results in an improved transportation system for all users.

As discussed in Chapter 1, the MBTA entered into an agreement in 2007 with the Boston Center for Independent Living (BCIL) to improve accessibility to all MBTA services for persons with disabilities. A key requirement of the agreement is elimination of separate treatment of persons with disabilities. At a number of stations



**CUSTOMER SERVICE INFORMATION DISPLAY CASE**

- Providing integrated signage at all MBTA transfer points



the MBTA has implemented the use of mini-high platforms or mobile lifts as an interim strategy to provide accessibility while plans for full system accessibility—and elimination of separate treatment—are developed and executed. Table 6-1 shows the status of station accessibility by line.



PASSENGER ENTERING GREEN LINE TRAIN VIA MOBILE LIFT

**TABLE 6-1**  
**Station Accessibility Status by Line**

LINE	ALL STATIONS	NUMBER ACCESSIBLE
Red Line	22	21
Orange Line	19	19
Blue Line	12	8
Green Line subway	13	5
Green Line surface	53	21
Mattapan Line	8	7
Silver Line	3	3
Waterfront subway		
Commuter Rail (all lines)	136	96
<b>Total</b>	<b>266</b>	<b>180</b>

As its first step toward implementing programs to meet ADA requirements, the MBTA designated 84 Key Stations that were considered the highest priority for accessibility improvements. Table 6-2 shows the current accessibility status of those stations by line.

**TABLE 6-2**  
**Key Station Accessibility Status**

LINE	KEY STATIONS	NUMBER ACCESSIBLE
Red Line	12	12
Orange Line	11	11
Blue Line	6	4
Green Line subway	8	4
Green Line surface	19	19
Mattapan Line	2	2
Commuter Rail (all lines)	22	22
<b>Total</b>	<b>80</b>	<b>74</b>

The following table lists the stations that have yet to be made accessible and prioritizes them based on the accessibility evaluation criteria discussed in Chapter 3.

**TABLE 6-3**  
**Station Accessibility Enhancement Priorities**

<b>STATION</b>	<b>MODE</b>	<b>LINE</b>	<b>CORRIDOR</b>	<b>PRIORITY</b>
Babcock Street	Rapid Transit	Green B	West	High
Blandford Street	Rapid Transit	Green B	West	High
Boylston	Rapid Transit	Green	Boston Proper	High
BU West	Rapid Transit	Green B	West	High
Chelsea	Commuter Rail	Newburyport/ Rockport	Northeast	High
Franklin/Dean College	Commuter Rail	Franklin	Southwest	High
Government Center*	Rapid Transit	Blue Line	Boston Proper	High
Government Center*	Rapid Transit	Green	Boston Proper	High
Hynes	Rapid Transit	Green	Boston Proper	High
Newton Highlands	Rapid Transit	Green D	West	High
Packard's Corner	Rapid Transit	Green B	West	High
Pleasant Street	Rapid Transit	Green B	West	High
Science Park*	Rapid Transit	Green	West	High
St. Paul Street	Rapid Transit	Green B	West	High
Symphony*	Rapid Transit	Green E	Boston Proper	High
Wollaston*	Rapid Transit	Red Line	Southeast	High
Allston Street	Rapid Transit	Green B	West	Medium
Auburndale*	Commuter Rail	Framingham/ Worcester	West	Medium
Back of the Hill	Rapid Transit	Green E	West	Medium
Beaconsfield	Rapid Transit	Green D	West	Medium
Belmont	Commuter Rail	Fitchburg	Northwest	Medium
Central Avenue	Rapid Transit	Mattapan	Southeast	Medium
Chestnut Hill	Rapid Transit	Green D	West	Medium
Chestnut Hill Avenue	Rapid Transit	Green B	West	Medium
Chiswick Road	Rapid Transit	Green B	West	Medium
Eliot	Rapid Transit	Green D	West	Medium
Englewood Avenue	Rapid Transit	Green C	West	Medium
Fairbanks	Rapid Transit	Green C	West	Medium
Griggs Street/Long Avenue	Rapid Transit	Green B	West	Medium
Kent Street	Rapid Transit	Green C	West	Medium
Natick	Commuter Rail	Framingham/ Worcester	West	Medium
Newtonville	Commuter Rail	Framingham/ Worcester	West	Medium
Riverway	Rapid Transit	Green E	West	Medium

\*Station accessibility currently in planning or design.

**TABLE 6-3 (cont.)  
Station Accessibility Enhancement Priorities**

<b>STATION</b>	<b>MODE</b>	<b>LINE</b>	<b>CORRIDOR</b>	<b>PRIORITY</b>
Sharon*	Commuter Rail	Providence/ Stoughton	Southwest	Medium
St. Paul Street	Rapid Transit	Green C	West	Medium
Summit Avenue	Rapid Transit	Green C	West	Medium
Sutherland Street	Rapid Transit	Green B	West	Medium
Tappan Street	Rapid Transit	Green C	West	Medium
Wakefield	Commuter Rail	Haverhill	North	Medium
Walpole	Commuter Rail	Franklin	Southwest	Medium
Warren Street	Rapid Transit	Green B	West	Medium
Wellesley Farms	Commuter Rail	Framingham/ Worcester	West	Medium
Wellesley Hills	Commuter Rail	Framingham/ Worcester	West	Medium
Wellesley Square	Commuter Rail	Framingham/ Worcester	West	Medium
West Medford	Commuter Rail	Lowell	North	Medium
West Newton	Commuter Rail	Framingham/ Worcester	West	Medium
Winchester Center	Commuter Rail	Lowell	North	Medium
Windsor Gardens	Commuter Rail	Franklin	Southwest	Medium
Ayer	Commuter Rail	Fitchburg	Northwest	Low
Brandon Hall	Rapid Transit	Green C	West	Low
Butler Street	Rapid Transit	Mattapan	Southeast	Low
Cedar Grove	Rapid Transit	Mattapan	Southeast	Low
Concord	Commuter Rail	Fitchburg	Northwest	Low
Dean Road	Rapid Transit	Green C	West	Low
Endicott	Commuter Rail	Franklin	Southwest	Low
Fenwood Road	Rapid Transit	Green E	West	Low
Greenwood	Commuter Rail	Haverhill	North	Low
Hastings	Commuter Rail	Fitchburg	Northwest	Low
Hawes Street	Rapid Transit	Green C	West	Low
Islington	Commuter Rail	Franklin	Southwest	Low
Kendal Green	Commuter Rail	Fitchburg	Northwest	Low
Lincoln	Commuter Rail	Fitchburg	Northwest	Low
Melrose Cedar Park	Commuter Rail	Haverhill	North	Low
North Wilmington	Commuter Rail	Haverhill	North	Low

\*Station accessibility currently in planning or design.

**TABLE 6-3 (cont.)  
Station Accessibility Enhancement Priorities**

<b>STATION</b>	<b>MODE</b>	<b>LINE</b>	<b>CORRIDOR</b>	<b>PRIORITY</b>
Parker Hill	Rapid Transit	Green E	West	Low
Plimptonville	Commuter Rail	Franklin	Southwest	Low**
Prides Crossing	Commuter Rail	Newburyport/ Rockport	Northeast	Low**
Riverworks	Commuter Rail	Newburyport/ Rockport	Northeast	Low**
Shirley	Commuter Rail	Fitchburg	Northwest	Low
Silver Hill	Commuter Rail	Fitchburg	Northwest	Low
South Acton	Commuter Rail	Fitchburg	Northwest	Low
South Street	Rapid Transit	Green B	West	Low
Valley Road	Rapid Transit	Mattapan	Southeast	
Waban	Rapid Transit	Green D	West	Low
Waverley	Commuter Rail	Fitchburg	Northwest	Low
Wedgemere	Commuter Rail	Lowell	North	Low
Wyoming Hill	Commuter Rail	Haverhill	North	Low

\*\*Station not rated in 2003 PMT due to very low ridership.

## **ACCESS TO MBTA STATIONS**

Although the primary function of the MBTA is moving people via transit, it is clear that the ease with which services can be accessed—on foot, by bicycle, or by car—is critical to meeting customer demand. The MBTA will continue to work with cities and towns to improve pedestrian access to stations and will take steps to upgrade bicycle amenities at stations, such as providing covered and secure bike storage areas. The MBTA will also continue to promote transit-oriented development to make walking and biking to transit more convenient.

In addition, the availability of parking at commuter rail and rapid transit stations is critical in determining whether public transportation is considered a viable mode, particularly in suburban areas, where 80% of riders access stations via car. To make transit attractive for these customers, the MBTA must consider where and to what extent additional station parking facilities are warranted. However, in addition to increasing the supply of parking, the MBTA will also evaluate parking

demand management strategies, such as pricing, to encourage efficient use of resources. The MBTA will also improve the management of its existing parking facilities through implementation of AFC at lots, re-striping to increase capacity, and working with outside parties to encourage carpooling to stations or setting aside parking spaces to support car-sharing programs.

During this PMT cycle, the Commonwealth has committed to building at least 1,000 more MBTA commuter parking spaces by 2011 to accommodate expected growth. Table 6-4 lists MBTA parking lots and prioritizes them using the evaluation criteria discussed in Chapter 3, such as the availability of MBTA-owned land, the potential ease and cost of construction, projected parking demand and utilization, and environmental barriers.

**TABLE 6-4  
Parking Enhancement Priorities**

<b>PARKING LOT</b>	<b>MODE</b>	<b>LINE</b>	<b>CORRIDOR</b>	<b>PRIORITY</b>
Beverly Depot	Commuter Rail	Newburyport/Rockport	Northeast	High
Bridgewater	Commuter Rail	Plymouth/Kingston	Southeast	High
Forge Park	Commuter Rail	Franklin	Southwest	High
Franklin	Commuter Rail	Franklin	Southwest	High
Kingston	Commuter Rail	Plymouth/Kingston	Southeast	High
Natick	Commuter Rail	Framingham/Worcester	West	High
North Quincy	Rapid Transit	Red	Southeast	High
Quincy Adams	Rapid Transit	Red	Southeast	High
Salem	Commuter Rail	Newburyport/Rockport	Northeast	High
South Attleboro	Commuter Rail	Providence/Stoughton	Southwest	High
Whitman	Commuter Rail	Plymouth/Kingston	Southeast	High
Abington	Commuter Rail	Plymouth/Kingston	Southeast	Medium
Attleboro	Commuter Rail	Providence/Stoughton	Southwest	Medium
Devens-Shirley	Commuter Rail	Fitchburg	Northwest	Medium
Hingham	Boat	Boat	Southeast	Medium
Littleton	Commuter Rail	Fitchburg	Northwest	Medium
Mansfield	Commuter Rail	Providence/Stoughton	Southwest	Medium
Milton	Rapid Transit	Mattapan	Southeast	Medium
Norfolk	Commuter Rail	Franklin	Southwest	Medium
Rockport	Commuter Rail	Newburyport/Rockport	Northeast	Medium
South Weymouth	Commuter Rail	Plymouth/Kingston	Southeast	Medium
Walpole	Commuter Rail	Franklin	Southwest	Medium
Alewife	Rapid Transit	Red	Northwest	Low
Anderson RTC	Commuter Rail	Lowell	North	Low
Andover	Commuter Rail	Haverhill	North	Low
Ashland	Commuter Rail	Framingham/Worcester	West	Low
Auburndale	Commuter Rail	Framingham/Worcester	West	Low
Ayer	Commuter Rail	Fitchburg	Northwest	Low
Ballardvale	Commuter Rail	Haverhill	North	Low
Brockton	Commuter Rail	Plymouth/Kingston	Southeast	Low
Campello	Commuter Rail	Plymouth/Kingston	Southeast	Low
Canton Junction	Commuter Rail	Providence/Stoughton	Southwest	Low
Dedham Corporate Center	Commuter Rail	Franklin	Southwest	Low
Forest Hills	Commuter Rail	Needham	Southwest	Low
Framingham	Commuter Rail	Framingham/Worcester	West	Low
Grafton	Commuter Rail	Framingham/Worcester	West	Low
Halifax	Commuter Rail	Plymouth/Kingston	Southeast	Low
Hamilton/Wenham	Commuter Rail	Newburyport/Rockport	Northeast	Low
Hanson	Commuter Rail	Plymouth/Kingston	Southeast	Low
Haverhill	Commuter Rail	Haverhill	North	Low

**TABLE 6-4 (cont.)  
Parking Enhancement Priorities**

<b>PARKING LOT</b>	<b>MODE</b>	<b>LINE</b>	<b>CORRIDOR</b>	<b>PRIORITY</b>
Holbrook/Randolph	Commuter Rail	Plymouth/Kingston	Southeast	Low
Hyde Park	Commuter Rail	Franklin; Providence/ Stoughton	Southwest	Low
Kendal Green	Commuter Rail	Fitchburg	West	Low
Lincoln	Commuter Rail	Fitchburg	Northwest	Low
Lowell	Commuter Rail	Lowell	North	Low
Malden Center	Commuter Rail	Haverhill	North	Low
Malden Center	Rapid Transit	Orange	North	Low
Middleborough/Lakeville	Commuter Rail	Plymouth/Kingston	Southeast	Low
Montello	Commuter Rail	Plymouth/Kingston	Southeast	Low
Needham Heights	Commuter Rail	Needham	West	Low
Needham Junction	Commuter Rail	Needham	West	Low
Newburyport	Commuter Rail	Newburyport/Rockport	Northeast	Low
North Billerica	Commuter Rail	Lowell	North	Low
Norwood Center	Commuter Rail	Franklin	Southwest	Low
Norwood Depot	Commuter Rail	Franklin	Southwest	Low
Readville	Commuter Rail	Fairmount	Southwest	Low
Readville	Commuter Rail	Franklin	Southwest	Low
Route 128	Commuter Rail	Providence/Stoughton	Southwest	Low
Rowley	Commuter Rail	Newburyport/Rockport	Northeast	Low
Sharon	Commuter Rail	Providence/Stoughton	Southwest	Low
South Acton	Commuter Rail	Fitchburg	Northwest	Low
Southborough	Commuter Rail	Framingham/Worcester	West	Low
Stoughton	Commuter Rail	Providence/Stoughton	Southwest	Low
Wellesley Square	Commuter Rail	Framingham/Worcester	West	Low
Wellington	Rapid Transit	Orange	North	Low
West Medford	Commuter Rail	Lowell	North	Low
West Natick	Commuter Rail	Framingham/Worcester	West	Low
Westborough	Commuter Rail	Framingham/Worcester	West	Low
Wilmington	Commuter Rail	Lowell	North	Low
Winchester	Commuter Rail	Lowell	North	Low
Wollaston	Rapid Transit	Red	Southeast	Low
Worcester	Commuter Rail	Framingham/Worcester	West	Low



## BUS RAPID TRANSIT (BRT)

BRT incorporates any number of ITS, infrastructure, and operational strategies that can be implemented to create a rapid-transit-like service using rubber-tired vehicles. These may include a dedicated right-of-way, pre-paid boarding areas, signal timing, stop consolidation, bulb-outs at bus stops, CAD/AVL (computer-assisted dispatch/automatic vehicle locator), PAVMS (public address and variable-message signs), low-floor vehicles, etc. A recent CTPS study of bus Route 39 shows that a combination of signal timing, stop consolidation, and curb extensions can generate a travel time savings between 2.5% and 26.5%.<sup>1</sup>

Another recent CTPS study<sup>2</sup> investigated the future demand for bus service and recommended routes on which more service will be needed. For the most part, these routes include the Key Routes and selected other routes throughout the system. Recommendations are being made in this PMT that BRT elements be implemented on all of the Key Routes. Some of these routes would be enhanced through projects, such as the Urban Ring, while other routes would need to be addressed individually. A careful study of existing conditions, including roadway geometry and traffic congestion, is needed before BRT could be implemented on any of the recommended routes.

The current Key Routes include:

- Route 1: Dudley – Harvard via Mass. Ave.
- Route 15: St. Peter’s Square – Ruggles via Dudley
- Route 22: Ashmont – Ruggles via Grove Hall
- Route 23: Ashmont – Ruggles via Codman Square
- Route 28: Mattapan – Ruggles
- Route 32: Wolcott Square – Forest Hills
- Route 39: Forest Hills – Back Bay

- Route 57: Watertown – Kenmore via Oak Square
- Route 66: Harvard – Dudley via Allston
- Route 71: Watertown Square – Harvard via Mount Auburn St.
- Route 73: Waverley – Harvard via Mount Auburn
- Route 77: Arlington Heights – Harvard via Mass. Ave.
- Route 111: Woodlawn – Haymarket Station
- Routes 116 & 117: Broadway at Park Avenue – Maverick Station (the corridor in which the trunk portions of both routes operate is assigned Key Bus Route status)
- Silver Line Washington Street: Dudley Station – Downtown Crossing via Washington St. and Silver Line Waterfront: South Station – Silver Line Way

Route 31 (Mattapan – Forest Hills) was recommended for inclusion as a Key Route in the 2008 Service Plan. Other routes on which future BRT elements would be beneficial include Route 86 (Sullivan – Reservoir) and Route 89 (Clarendon Hill or Davis – Sullivan). The routes listed above that may be addressed through the Urban Ring project include 15, 116/117, and 86.<sup>3</sup> Route 89 may be addressed through the Green Line extension to Medford. All of these routes are discussed in the context of the corridors in which they are located.

The Key Routes were designated as such because they operate in the most heavily traveled corridors in the transit system and carry approximately 40% of the MBTA bus ridership. In general, the Key Routes serve the densely populated urban core where many residents are minority and/or low-income and depend on MBTA services as their primary means of mobility. Of the

1 Mark S. Abbott and Efi Pagitsas, “MBTA Transit Signal Priority Study: Arborway Corridor,” Central Transportation Planning Staff, December 4, 2008.

2 Jonathan Belcher, “MBTA Bus Deployment Needs Study,” Central Transportation Planning Staff, July 31, 2008.

3 The CT1, CT2, and CT3 bus routes were implemented as precursors to the Urban Ring and have planned BRT elements in the context of that project.

17 Key Routes,<sup>4</sup> 12 are classified as minority and 6 as both minority and low-income for the purposes of Title VI.<sup>5</sup> Routes 86 and 89, which are not Key Routes, are both minority routes as well. Implementing BRT on these routes would help to ensure that the MBTA's core constituents share in the benefits of improved transit services.

## **BUS FLEET EXPANSION**

By 2030, modeling projections suggest that, systemwide, 30 bus routes, including the routes discussed above for possible implementation of BRT elements, would experience passenger crowding levels that would trigger the need for additional service. To increase peak-period capacity and to ensure that vehicle loads do not exceed safe and comfortable levels, at least 50 additional 40-foot buses and 11 additional 40-foot trackless trolleys would be required by 2030 to operate all of these routes. Replacing existing 40-foot buses with 60-foot buses would be another method for increasing capacity to meet user demand and would be assumed on routes that are converted to BRT. Additional vehicles would also be necessary to accommodate possible new circumferential routes, which are discussed later in this chapter.

***The discussion of enhancement and expansion projects for each PMT corridor begins on page 6-14.***

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<sup>4</sup> Routes 116 and 117 are counted as one route, and the two parts of the Silver Line are counted separately.

<sup>5</sup> See Chapter 1 for an explanation of how routes are designated as minority and/or low-income for Title VI.



## CORRIDOR PROJECTS

In this section, project options that are geographically based are discussed in the context of a PMT radial corridor—Northeast, North, Northwest, West, Southwest, or Southeast—or the Central Area/Circumferential Corridor.

For the purposes of the PMT, the Central Area consists of Boston Proper and the surrounding urban areas. Boston Proper is the part of the city that lies northeast of Massachusetts Avenue and is bordered by the Charles River, Boston Harbor, Fort Point Channel, and the Southeast Expressway. Outside of Boston Proper the Central Area is composed of most of Boston's neighborhoods (excluding Hyde Park, Roslindale, West Roxbury, and Mattapan) and nine communities that surround the city: Brookline, Cambridge, Somerville, Medford, Malden, Everett, Chelsea, Revere, and Winthrop. The cities and neighborhoods in the Central Area that encircle Boston Proper form a Circumferential Corridor that cuts across all six radial PMT corridors. Many of the MBTA's bus and rapid transit services operate within the Central Area, and all of the radial rapid transit and commuter rail services converge within Boston Proper.

The Northeast Corridor extends from East Boston and Logan Airport to Cape Ann, the Merrimack River, and the New Hampshire state line at Newburyport and Salisbury. The Newburyport and Rockport commuter rail lines are within this corridor, as well as the Blue Line and a number of MBTA bus routes, which are in the closer-in parts of the corridor.

The North Corridor also extends to New Hampshire. It includes the Boston neighborhood of Charlestown and the municipalities near the Haverhill and Lowell commuter rail lines. Some proposals described here involve extending commuter rail service into New Hampshire. Closer in, the North Corridor is served by the Orange Line, as well as a number of MBTA bus routes.

The Northwest Corridor generally follows the Fitchburg commuter rail line. It includes Cambridge and Somerville at the inner end, and extends to the municipalities of Townsend, Ashby, and Ashburnham, which border on New Hampshire. The Red Line currently serves Cambridge and Somerville, and a number of buses connect with the Green Line terminus in the Lechmere neighborhood of Cambridge.

The West Corridor extends from Boston Proper at Massachusetts Avenue in the Back Bay to Worcester and its surrounding municipalities. All the municipalities on or near the Worcester commuter rail line are included in this corridor. The B, C, and D Branches of the Green Line serve the inner suburbs of Newton and Brookline, and the Brighton neighborhood of Boston.

The Southwest Corridor also starts at Massachusetts Avenue, and includes the Boston neighborhoods of Roxbury, Jamaica Plain, West Roxbury, and Hyde Park. The corridor includes municipalities on or near the Franklin, Providence, and Stoughton commuter rail lines, and extends to the Rhode Island state line. The Boston neighborhoods are served by the Orange Line, as well as by the E Branch of the Green Line.

The Southeast Corridor includes the Boston neighborhoods of Dorchester and Mattapan, and extends to Cape Cod. The municipalities on or near the three branches of the Old Colony commuter rail lines comprise this corridor. The inner areas are served by the Red Line, Mattapan High Speed Line, and a number of MBTA bus routes.



## **CENTRAL AREA**

### **BOSTON PROPER**

The key transit improvement challenges in the Central Area are to better interconnect existing transit services and to expand system capacity. Despite the crossing of the Central Area by the various subway lines, it still requires a “three-seat-ride” entailing two transfers to travel from a non-downtown station on the Red Line to a non-downtown station on the Blue Line. Similarly, two transfers are required for travel between points on the Silver Line Waterfront and the Silver Line Washington Street. Also, at least two transfers are required to travel on the rapid transit system between the North Side and South Side commuter rail systems.

Related to the problem of poor connectivity is the need to expand capacity. Crowding is a problem on subway trains today, especially on the Green Line. Three-car trains and a Park Street cross-over track are possible capacity improvements. Also, stub-end commuter rail terminals seriously restrict the maximum number of train operations, and South Station is steadily approaching the point at which it will not be able to accommodate additional peak-period trains.

### **RED-BLUE CONNECTOR**

This project would extend the Blue Line, providing a connection between Government Center Station in Boston and Charles/MGH Red Line station, allowing a direct transfer between these lines. This would be a 0.4-mile extension (from Bowdoin Station), entirely in a new subway, including the addition of a new level to Charles/MGH Station. Design of the Blue-Red Connector is an Administrative Consent Order (ACO) legal commitment.

### **SILVER LINE PHASE III**

This project would construct a new transitway tunnel from South Station to Charles Street South, with intermediate stops at Boylston and Chinatown Stations. The segment would link Phase I, Silver Line Washington Street, which runs between Dudley Square and Downtown

Crossing, with Phase II, Silver Line Waterfront, which runs between South Station and Logan Airport via the World Trade Center. The Phase III segment would also allow for direct transfers from all segments of the combined Silver Line with the Red, Orange, and Green Lines. Operation would necessitate the purchase of additional dual-mode vehicles. The possibility of providing surface connections in the interim is currently being discussed.

### **ADDITIONAL TRACKS AT SOUTH STATION**

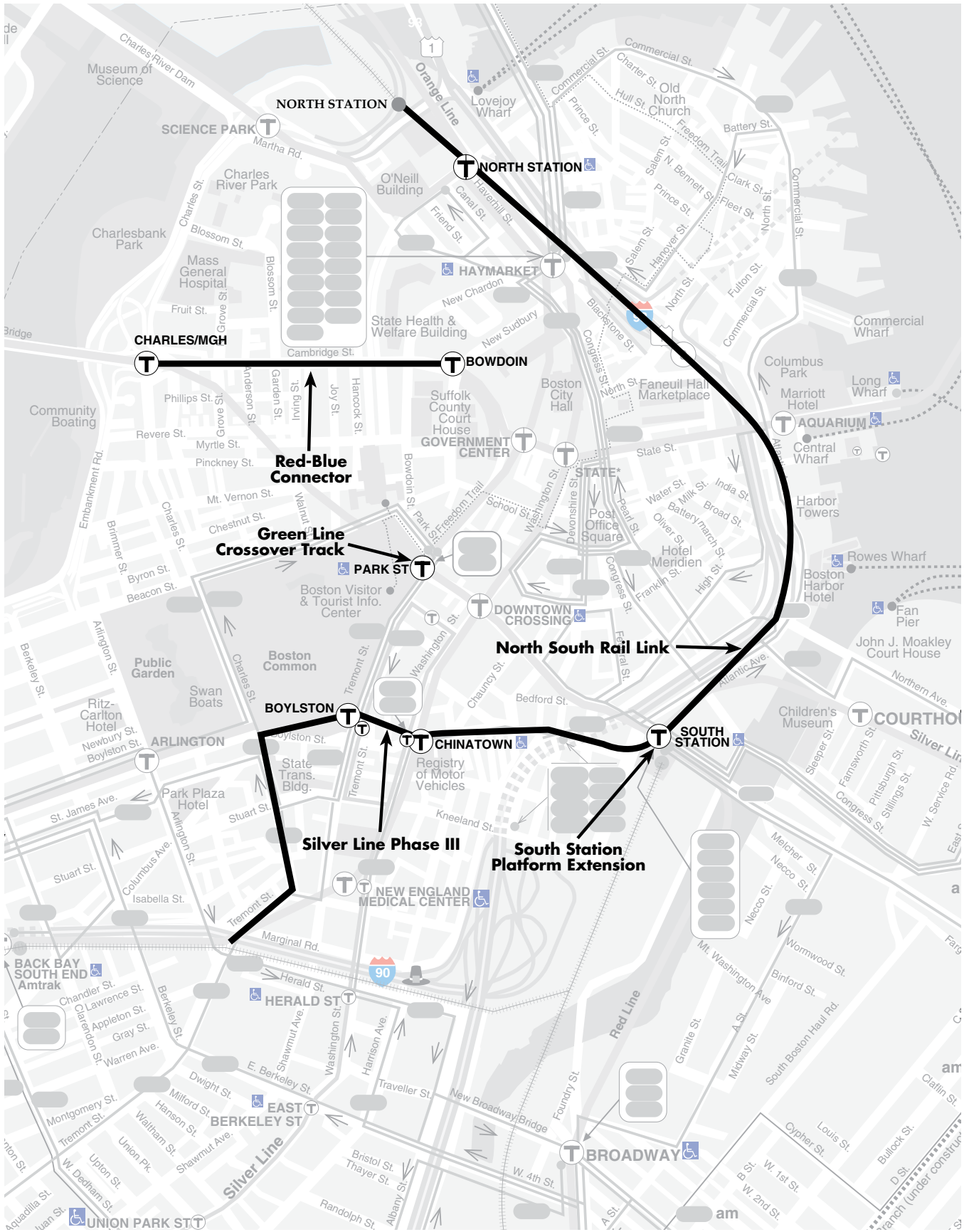
Expansion of the southside commuter rail system has steadily increased demand for peak-period track capacity at South Station. Meeting the need for additional capacity would be a key element of projects such as the expansion of commuter rail service to Fall River and New Bedford. The addition of up to six tracks is being discussed as an integral component of the envisioned redevelopment of the U.S. Postal Service South Station Annex.

### **NORTH-SOUTH RAIL LINK**

This project would provide a connection through downtown Boston between the rail lines that terminate at North Station and those that terminate at South Station, allowing through-routing of trains between North side and South side lines. It would consist of a four-track tunnel over one mile long, with new underground stations in the vicinities of North Station, South Station, and potentially a new central station near the Aquarium rapid transit station. The Rail Link would also eliminate the inherent constraints of stub-end terminal operations.



# MAP 6-2 Central Area Potential Improvements



## **THE CIRCUMFERENTIAL CORRIDOR**

The transit system in metropolitan Boston developed as a radial system, with rapid transit and commuter rail lines converging in the core, and in some cases extending across the core and continuing on. This configuration has worked well for many radial trips, most often work trips. Land use patterns in recent decades, however, have resulted in a number of strong trip-generating areas developing at locations just outside the Central Area, as well as further into the suburbs between the Central Area and Route 128.

Circumferentially oriented transit services would provide quicker and more direct connections for those who both live and work outside of the Central Area. In addition, circumferential services would relieve pressure on the central subway by eliminating the need for a commuter to travel into the inner core in order to travel out to his/her ultimate destination. While travel volumes might not necessarily require or justify rail-based transit service, lower-cost ways of improving circumferential transit do exist, and evaluating these services is clearly a priority of the PMT.

### **URBAN RING**

The Urban Ring is a proposed major new bus rapid transit (BRT) system that would run in a roughly circular corridor through employment centers, residential neighborhoods, and major educational and medical institutions in Boston, Brookline, Cambridge, Chelsea, Everett, Medford, and Somerville. The Urban Ring would provide faster and more direct transit connections between points in the ring and from the MBTA's existing radial rapid transit system to destinations in the ring. The project would also include BRT service enhancements to enable buses to operate more like rapid transit. As a result, the Urban Ring would improve transit access and travel times and capacity while reducing crowding in the central subway system and offering opportunities

for transit-oriented, smart-growth development.

Given the significant capital costs associated with the Urban Ring project and the competition for limited state and federal transportation funds, the Executive Office of Transportation and Public Works is currently exploring options for phased implementation of this project. Under this approach, a segment (or segments) of the recommended alignment could be targeted for full or partial implementation of capital improvements and BRT service identified in the Revised Draft Environmental Impact Report/Draft Environmental Statement.

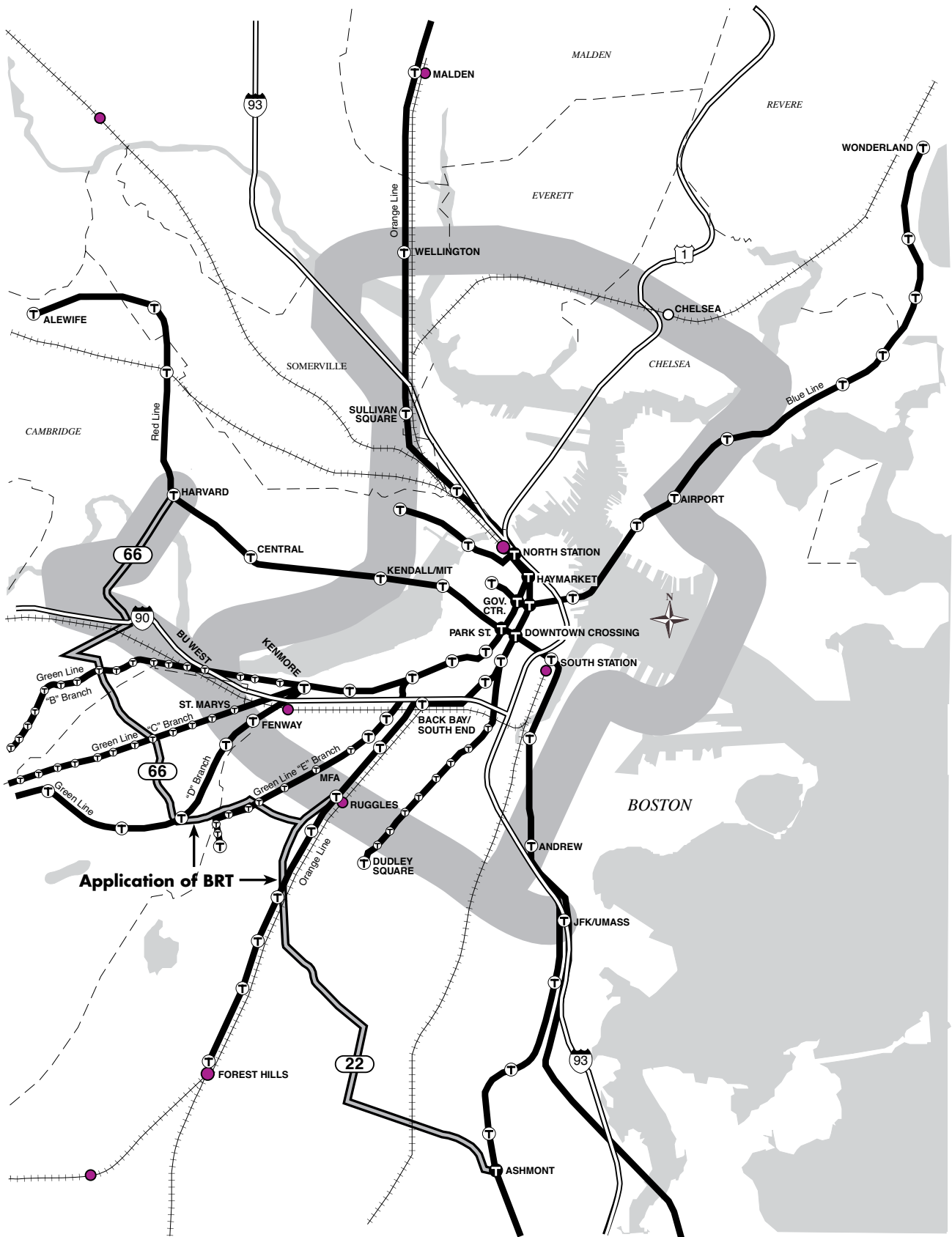
### **BRT ELEMENTS ON BUS ROUTES 22 AND 66**

The PMT envisions that across the MBTA system there are opportunities to enhance key existing bus routes through the application of BRT features and technologies. Just outside the Urban Ring corridor, Routes 22 and 66 are operated along circumferential alignments and experience ridership high enough to perhaps justify some level of investment in BRT-type improvements. Route 22 operates between Ashmont Station on the Red Line and Ruggles Station on the Orange Line. Route 66 operates between Dudley and Harvard Squares, crossing Route 22 at Roxbury Crossing.

### **SUBURBAN CIRCUMFERENTIAL OPTIONS**

Further out from the Urban Ring corridor, but within Route 128, there may exist opportunities to establish additional circumferential routes where potential ridership either exists now or could be expected to develop. Preliminary investigations have identified strong activity centers in adjacent radial corridors and cataloged any currently available transit services that operate circumferentially between these centers. Later analysis will project ridership and identify opportunities for BRT-like improvements.

# MAP 6-3 Circumferential Corridor Potential Improvements



## **NORTHEAST CORRIDOR**

In the Northeast Corridor, the PMT analysis has been focused on the older industrial cities of Lynn, Peabody, Salem, and Beverly. Lynn, Salem, and Beverly have commuter rail service, which was strengthened in the previous decade by the Newburyport extension. There is already substantial MBTA bus service in the inner part of the corridor, and improving the bus network figures prominently in the PMT options. Also of importance are possible improvements to the Blue Line, which anchors the inner Northeast Corridor in East Boston and Revere.

### ***NEWBURYPORT/ROCKPORT CAPACITY IMPROVEMENTS***

Some capacity constraints still exist on the Newburyport/Rockport Line, primarily due to areas of single track. These include 0.8 miles through the Salem Tunnel on the trunk portion of the line, as well as almost 15 miles on the Newburyport Branch between North Beverly and Newburyport, and 4 miles between Control Point Wilson in Gloucester and Rockport Station on the Rockport Branch. Double-tracking these areas would decrease the potential for delays when schedules are tight or when trains are operating off-schedule, and would allow for additional service in the future.

### ***BLUE LINE EXTENSION TO LYNN***

This project would build one new rapid transit station and extend the Blue Line rapid transit line 4.5 miles from Wonderland Station in Revere to Central Square, Lynn. The alignment would either be parallel to the Newburyport/Rockport commuter rail line or would make use of the abandoned narrow-gauge right-of-way through Oak Island Center and Point of Pines Center. The extension would also include a crossing of the Saugus River, which is a navigable waterway. Consequently, a bridge would need to accommodate both large vessels on the river and high-frequency rapid transit service. Additional Blue Line vehicles would need to be purchased to operate the service. It should be noted that this extension of the Blue Line is intended to

complement—not replace—existing commuter rail service to the North Shore.

### ***BRT ELEMENTS ON BUS ROUTE 111***

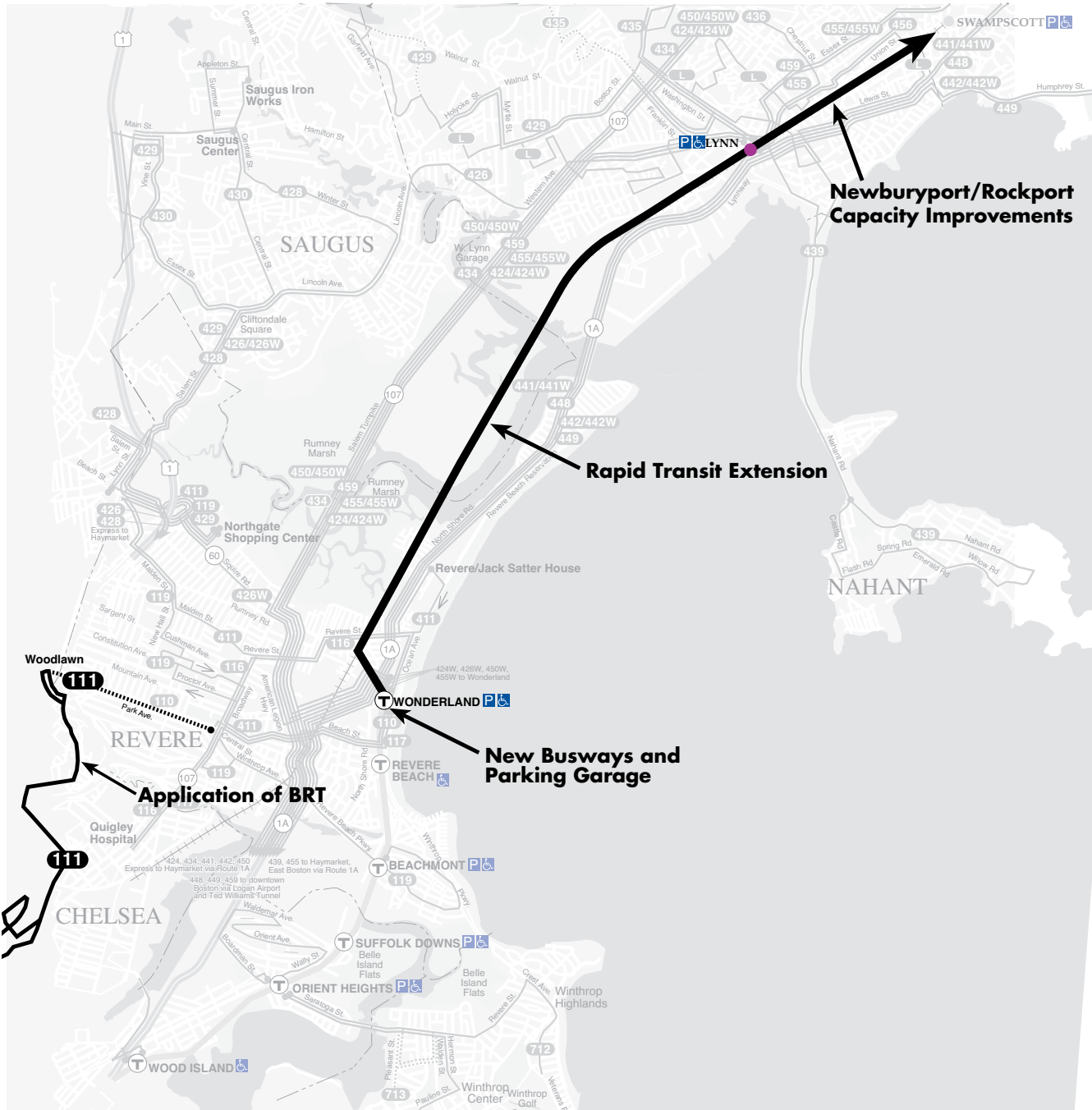
The PMT envisions that across the MBTA system there are opportunities to enhance key existing bus routes through the application of BRT features and technologies. Bus Route 111 is a heavily used route between the Haymarket bus station and Woodlawn Cemetery at the Chelsea-Everett line. The route already benefits from traveling at freeway speeds across the Tobin Bridge. BRT elements in downtown Chelsea would establish this route as a premium radial bus service.

### ***IMPROVED BUS AMENITIES AND SYSTEM IDENTITY IN LYNN, PEABODY, SALEM, AND BEVERLY***

The MBTA bus routes in these inner Northeast Corridor cities are often perceived as primarily Boston-oriented radial services that connect either to Boston directly, or feed the several commuter rail stations in the corridor. With distinct and improved signage, amenities at key bus terminals, and selected route expansions, it is possible that the bus route system in these cities would be perceived as a comprehensive local bus system. Ridership growth would be encouraged, and land use patterns would gradually respond to stronger transit service patterns. Service expansion to West Peabody would be considered as part of such a program.

The bus system in the Northeast Corridor would also be strengthened by the construction of new busways at Wonderland Station. These busways would be positioned on the Route 1A side of the station to allow for much easier access to this important roadway. Station parking would also be consolidated in a multi-level structure adjacent to Route 1A, freeing up valuable parcels on the Revere Beach side of the Blue Line for transit-oriented development.

# MAP 6-4 Northeast Corridor Potential Improvements



## **NORTH CORRIDOR**

### **NORTH CORRIDOR OUTER AREA**

Two of the MBTA commuter rail lines serve the North Corridor, terminating at the historic mill cities of Lowell and Haverhill. Substantial numbers of commuters living in New Hampshire travel to Massachusetts utilizing both these lines. Extensions of these lines into New Hampshire and related improvements are being considered in the PMT.

#### ***LOWELL COMMUTER RAIL LINE EXTENSION***

This project would implement commuter service on an existing rail freight line from the end of the Lowell Line, initially to Nashua, New Hampshire. This would be a 13-mile extension and would include one new station in Massachusetts at North Chelmsford. Extensive upgrading of tracks and signals would be required. Passenger service was last operated on this line in 1981.

This extension would be undertaken in cooperation with the state of New Hampshire, and could, at some point, include service as far as Manchester. A stop at Merrimack, New Hampshire, would be possible, as well as convenient shuttle bus service to the Manchester Airport. The New Hampshire Department of Transportation and the Merrimack Valley Planning Commission have been investigating the possibility of extending transit service from the North Corridor into New Hampshire. Options include the extension of commuter rail to Manchester and “bus on shoulder” treatment on I-93.

#### ***Haverhill Commuter Rail Line Extension and Related Improvements***

This project would implement commuter service on an existing rail line, from the end of the Haverhill Line to Plaistow, New Hampshire. This 5.4-mile service extension would not require track upgrading because the line is currently used by Amtrak’s Boston–Portland Downeaster service. A new station with parking facilities would be built in Plaistow, and one additional train set would be

required to maintain schedules because of the increased running time.

Other improvements of the Haverhill Line are also being considered, some of which could be implemented in conjunction with the Plaistow extension. The train equipment layover facility is currently in Bradford, a Haverhill neighborhood just south of the Merrimack River. A new layover facility north of Haverhill could be built as part of the extension and would offer operational and environmental benefits.

Much of the Haverhill Line is single-track, seriously limiting schedule and operational flexibility; therefore, expanded double-tracking of the Haverhill Line should be considered. The operational flexibility of a double-track line would facilitate both the lengthening of the line to Plaistow and the addition of any new stations. Areas in need of double-tracking include approximately 4 miles between Reading Junction and Melrose, 14 miles between Reading and the Andover Street interlocking in Lawrence, and all of the Wildcat Branch that connects the Lowell and Haverhill Lines. In addition, new stations on the Haverhill Line have been suggested for locations in North Andover, at Lowell Junction in Andover, and in Wilmington.



# MAP 6-5 North Corridor Outer Area Potential Improvements



## **NORTH CORRIDOR INNER AREA**

### ***NEW ORANGE LINE STATION AT ASSEMBLY SQUARE AND RELATED IMPROVEMENTS***

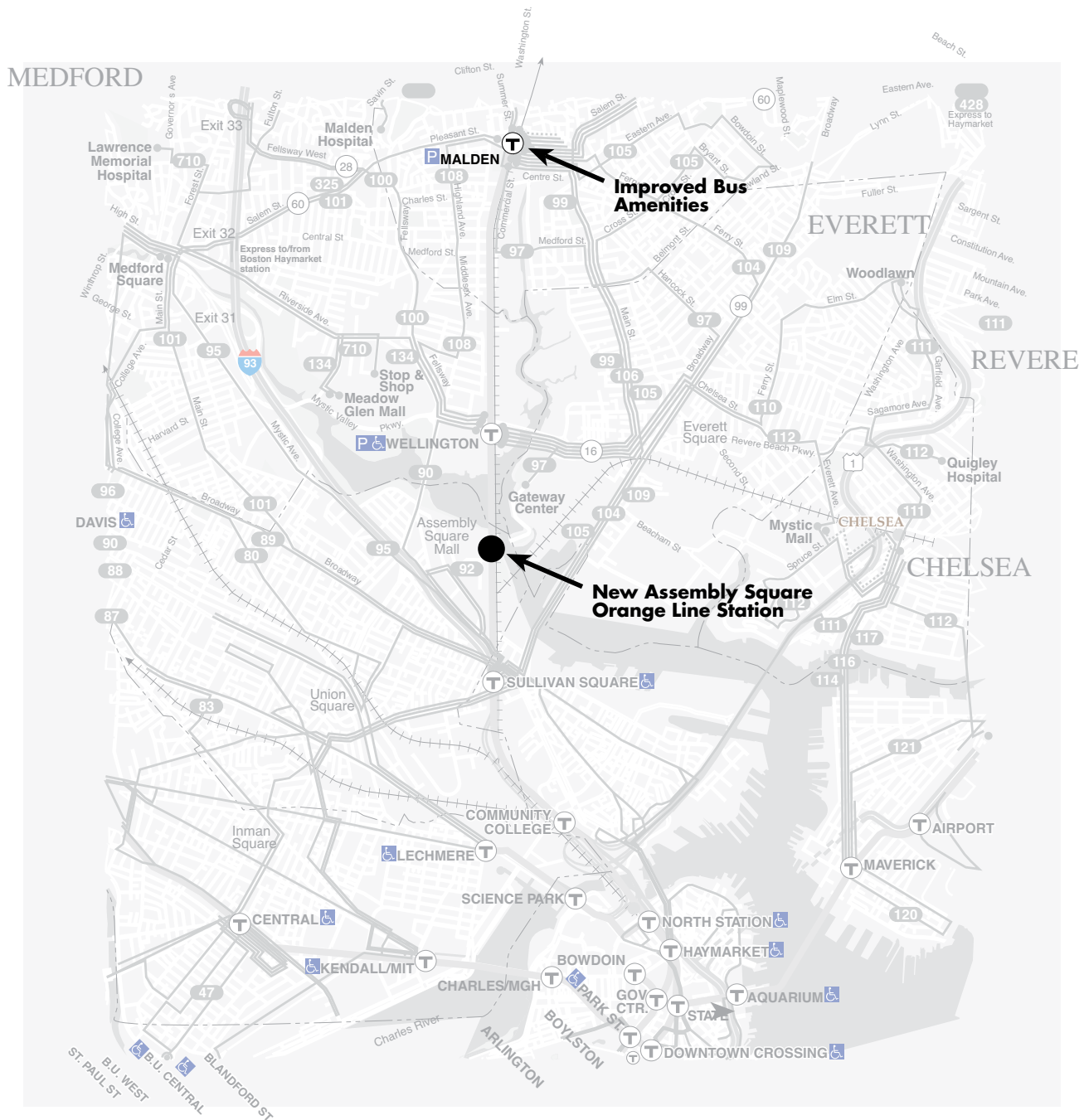
This project would add a station on the existing Orange Line at Assembly Square in Somerville, between Sullivan Square Station in Charlestown and Wellington Station in Medford. Major transit-oriented mixed-use redevelopment is currently underway at Assembly Square, for which the new station is an integral component. No additional route mileage would be added as a result of this improvement.

Recently completed upgrades of the Orange Line signaling system have made it possible to increase rush-hour frequencies. An expanded fleet of Orange Line equipment would be required to realize these service improvements. Increasing the size of the Orange Line fleet will be considered in conjunction with replacing the current equipment, which dates from the early 1980s.

### ***IMPROVED BUS AMENITIES AND SYSTEM IDENTITY FOR BUS ROUTES CENTERED ON MALDEN***

Malden is seen as a logical central point for developing a strong bus service identity. Malden Center enjoys significant density by suburban standards, is served by the Orange Line and commuter rail, and is already the terminus of a number of bus routes. With distinct and improved signage, amenities at key bus terminals, and selected route expansions, it is possible that the Malden-centered bus routes would be perceived as a comprehensive local bus system. One potential bus service expansion that could be considered is building a BRT busway in an abandoned east-west freight rail right-of-way near Malden Center.

# MAP 6-6 North Corridor Inner Area Potential Improvements



## **NORTHWEST CORRIDOR**

### **NORTHWEST CORRIDOR OUTER AREA**

#### ***FITCHBURG COMMUTER RAIL LINE***

##### ***IMPROVEMENTS***

The Fitchburg Line is currently the longest MBTA commuter rail branch, a fact that is reflected in long scheduled running times. There is heavy freight service along parts of the route, and significant portions of the route have only a single track.

Improving Fitchburg Line travel speeds has been identified as a priority, and several proposals are being considered toward this end. An investment in expanded double-tracking at Newton Street in Waltham, and between South Acton and Ayer, would improve Fitchburg Line performance by decreasing the potential for delays when schedules are tight or when trains are operating off-schedule and would increase the capacity of the line. The consolidation of the three Weston stations is under consideration, possibly in conjunction with a new station at Route 128. Also, a major station near Fort Devens with extensive parking might replace one or more nearby stations. Less capital-intensive signaling and operational improvements are also being evaluated.

##### ***POSSIBLE NEW COMMUTER RAIL SERVICES USING THE FITCHBURG LINE***

Upon upgrading the Fitchburg Line, it would be possible to extend commuter service on an existing heavily used rail freight line from Fitchburg to Gardner. A new station with parking facilities would be built in Gardner, and service to Westminister, near the Mount Wachusett recreation area, would also be possible. This would be a 15.6-mile extension, and significant upgrading of tracks and signals would be required to accommodate passenger service, which was last operated to Gardner in 1986.

Another possible new service would be to operate trains from Fitchburg to Boston via Lowell. Trains would use the freight mainline from Fitchburg all the way to Lowell, with possible stops in Westford and Chelmsford, and then continue to Boston along the current Lowell Line.

# MAP 6-7 Northwest Corridor Outer Area Potential Improvements



## **NORTHWEST CORRIDOR INNER AREA**

### ***GREEN LINE EXTENSION TO MEDFORD HILLSIDE AND UNION SQUARE***

This project would extend Green Line service from Lechmere Station to Medford as part of an expanded Lowell commuter rail line right-of-way. Also included in the project is a branch between Lechmere Station and Union Square in Somerville. This Green Line extension would include six new stations, as well as a relocated Lechmere Station. A Green Line extension to Medford Hillside is a legal commitment of the Commonwealth for state compliance with Central Artery/Tunnel mitigation and the federal Clean Air Act.

### ***RED LINE EXTENSION TO ARLINGTON AND LEXINGTON***

An extension of the Red Line beyond Alewife is another potential rapid transit expansion in the Northwest Corridor. This expansion has been the subject of periodic review since it was removed from the Red Line extension project in the 1970s. This would be an 8.3-mile extension from Alewife Station in Cambridge to Route 128 via the former Lexington Branch railroad alignment (now the route of the Minuteman Bikeway). It would include five new stations in Arlington and Lexington, with a major park-and-ride facility at the outer terminal. It is envisioned that this line would be below grade, and the recreational trail would be reconstructed over the tunnel roof.

### ***BRT AND RELATED BUS SYSTEM IMPROVEMENTS***

The PMT envisions that across the MBTA system there are opportunities to improve key existing bus routes through the application of BRT features and technologies. In the Northwest Corridor, bus Routes 1, 71, 73, and 77 are heavily used and are viewed as promising candidates for BRT-type improvements. These routes all begin at Harvard Square and connect it with Dudley, Watertown, and Waverly Squares, as well as Ar-

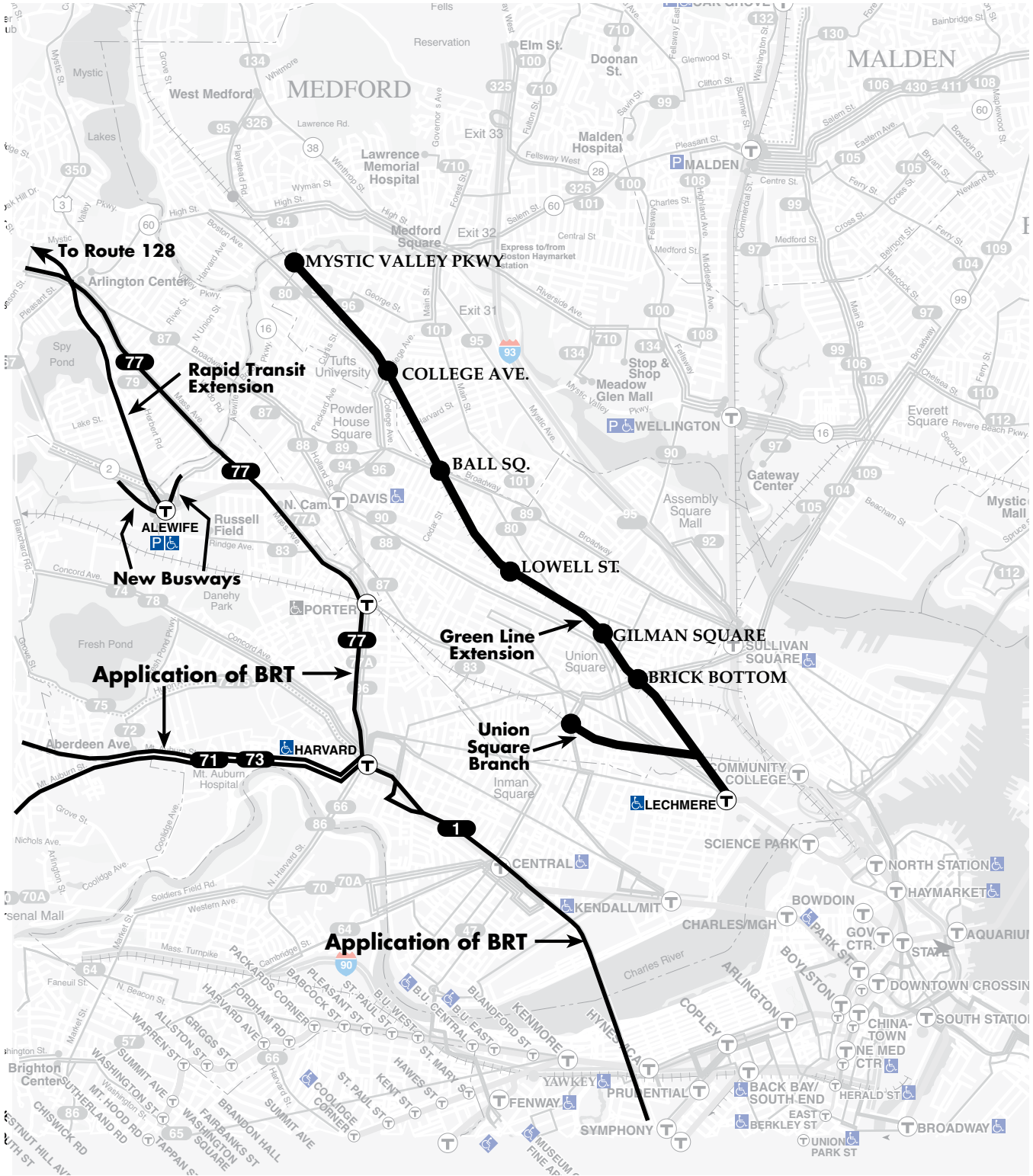
lington Heights near the Lexington town line. BRT improvements could include signal priority for buses, dedicated lanes, and stop consolidation.

Another BRT-type improvement would be constructing exclusive bus lanes to improve access to Alewife Station. Routes 79 from Arlington Heights and 350 from Burlington would use new bus-only lanes along Alewife Brook Parkway from Massachusetts Avenue. Routes 62 from Bedford, 67 from Turkey Hill, 76 from Hanscom Field, and 84 from Arlmont would use new bus-only lanes along Route 2 from Lake Street.

Waltham is seen as a logical central point for developing a strong bus service identity. Downtown Waltham enjoys significant density by suburban standards, and a number of bus routes terminate at the commuter rail station. Waltham has a second, well-used, commuter rail station at Brandeis University. With distinct and improved signage, amenities at key bus terminals, and selected route expansions, it would be possible that the Waltham-centered bus routes would be perceived as a comprehensive local bus system. New demand-responsive or fixed-route services could be developed through partnerships with other service providers, municipalities, or the Boston Region Metropolitan Planning Organization (MPO) to complement existing and potential MBTA services.



# MAP 6-8 Northwest Corridor Inner Area Potential Improvements



## **WEST CORRIDOR**

### ***EXPANDING WORCESTER COMMUTER RAIL LINE SERVICE AND RELATED IMPROVEMENTS***

The highest priority in the West Corridor is to expand service on the Worcester commuter rail line. The right-of-way west of Framingham currently owned by the CSX Corporation, is used intensively for freight service. The Commonwealth and CSX recently reached an agreement in principal for the state to purchase this line, with the intent to ultimately increase the Boston–Worcester round-trips to 20 from today's 12. This service expansion would require investment in tracks, signals, and rolling stock. This commuter rail service expansion would be compatible with the desire by the Commonwealth to also improve and expand freight rail service in Massachusetts.

A number of other improvements have been envisioned for the Worcester Line. The current Yawkey Station would be upgraded in conjunction with major anticipated new development in the Kenmore Square area. With full ADA accessibility to both tracks, and stronger area demand patterns, the number of trains stopping at Yawkey would significantly increase.

Less than two miles west of Yawkey Station is the neighborhood of Allston, bisected by the Turnpike and the CSX freight yard. A possible new station in Allston is currently being studied, as are other services and station options promoted by the City of Boston and Harvard and Boston Universities, the Turnpike Authority, and the CSX Corporation. A number of alternatives are still under consideration.

Increasing capacity west of Framingham would allow consideration of further expansion of commuter rail service in an existing rail right-of-way. One possibility would be an extension of rail service beyond Worcester to Springfield in a corridor that currently carries Amtrak passenger trains. Another possibility would be service between Boston and Worcester via Ayer on the Fitchburg Line. This service would operate in a

right-of-way that currently carries only freight and would require significant upgrading for commuter rail service.

Another enhancement that could be made on the Framingham/Worcester Line would be double-tracking for approximately 3 miles between South Station and Beacon Yard. This would decrease the potential for delays when schedules are tight or when trains are operating off schedule and would increase service capacity.

### ***BRT ELEMENTS ON BUS ROUTE 57 AND OTHER BUS SYSTEM IMPROVEMENTS***

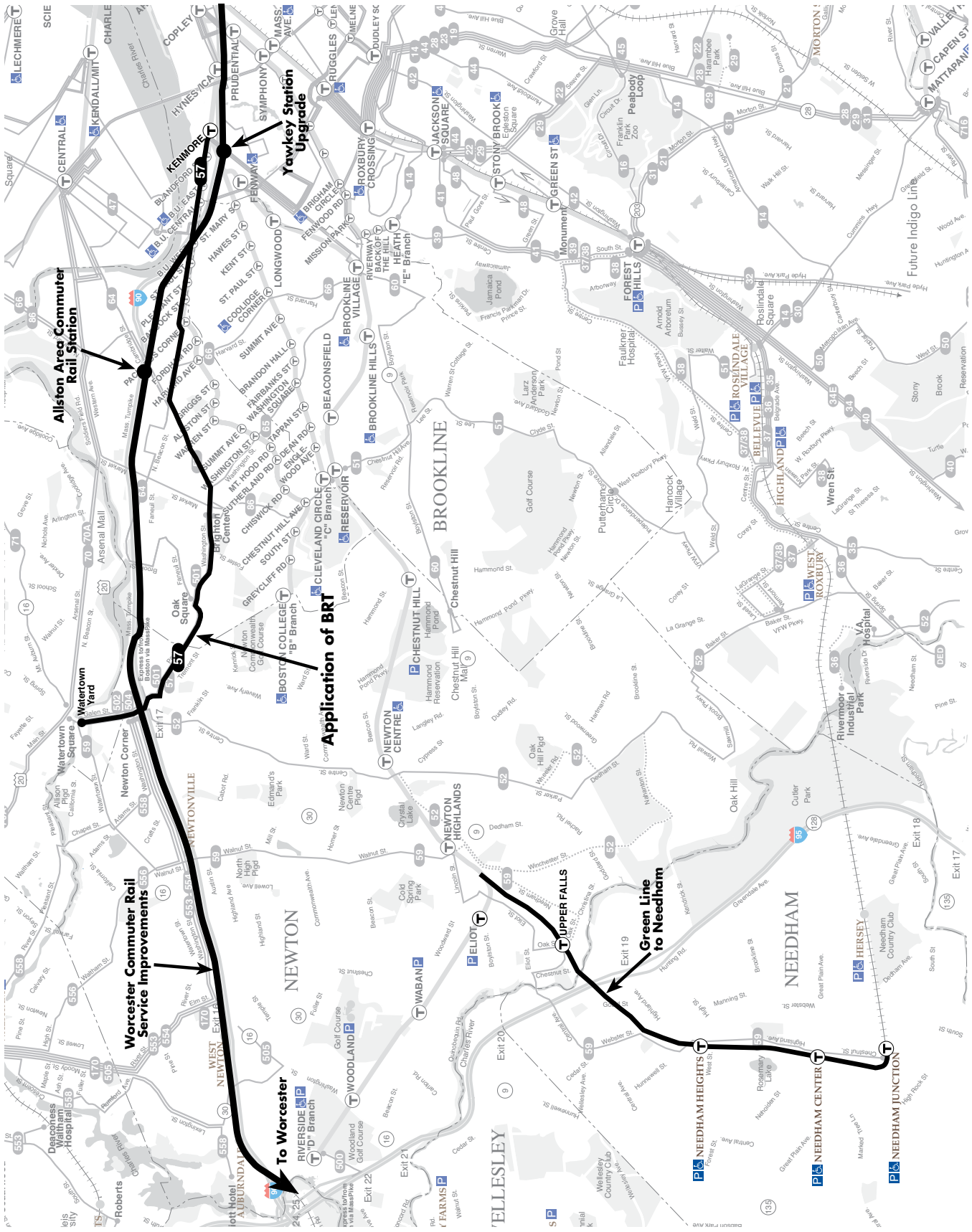
The PMT envisions that across the MBTA system there are opportunities to improve key existing bus routes through the application of BRT features and technologies. Bus Route 57 is a heavily used route between Watertown and Kenmore Squares. Implementing BRT elements could establish this route as a premium radial bus service. In suburban areas, demand-responsive or fixed-route services could be developed through partnerships with other service providers, municipalities, or the Boston Region MPO to complement existing and potential MBTA services.

### ***GREEN LINE IMPROVEMENTS***

The B, C, and D Branches of the Green Line operate in the West Corridor and enjoy very heavy ridership. Expanding the vehicle fleet and introducing three-car trains would reduce crowding and speed boardings on these lines.

An opportunity exists to create a new branch from the Riverside Line to Needham. This new Green Line branch would diverge from the D Branch near Eliot Station and follow the alignment of an unused rail-freight line 3.8 miles to Needham Junction, which would become the last stop of the commuter rail line. There would be a new Green Line stop in Newton, as well as at the current commuter rail stops at Needham Heights and Needham Center, which would become Green Line stops.

# MAP 6-9 West Corridor Potential Improvements



OPPORTUNITIES FOR SYSTEM ENHANCEMENT AND EXPANSION

## **SOUTHWEST CORRIDOR**

### **SOUTHWEST CORRIDOR OUTER AREA**

The Providence commuter rail line is the central feature of the Southwest Corridor. Almost all considered improvements in the outer area, as well as the inner area, utilize directly or relate to the Providence Line in some manner. It has been electrified for use by Amtrak Acela trains, is designed and built for the highest speeds in the MBTA system, and has three tracks in key sections.

#### ***PROVIDENCE COMMUTER RAIL LINE EXTENSION TO T.F. GREEN AIRPORT***

The completion of the Pawtucket layover facility, located in and funded by the state of Rhode Island, has made possible the expanded commuter rail service to Providence. Rhode Island is now in the process of building a new commuter rail station near the T. F. Green Airport. When complete, this will allow trains that now terminate in Providence to serve the airport, and perhaps more distant stations at some point. The T.F. Green stop would serve commuters to Boston and Providence, as well as air travelers.

#### ***COMMUTER RAIL SERVICE TO FALL RIVER AND NEW BEDFORD***

Establishing commuter rail service to Fall River and New Bedford is currently under study by the Executive Office of Transportation and Public Works. Several possible alignments are under consideration. Extension of the Stoughton branch of the Providence Line through Easton, Raynham, and Taunton, and then branching to Fall River and New Bedford, is one possibility. Branching from the Providence Line south of Mansfield and approaching Taunton from the west is another option. Service via the Middleborough Line is also being considered; it is the one alignment that does not utilize the Providence Line.

## ***FRANKLIN COMMUTER RAIL LINE EXTENSION AND RELATED IMPROVEMENTS***

Several expansions and improvements have been proposed for the Franklin commuter rail line. Extending some Franklin Line service along a lightly used freight line is contemplated as a possible way to expand service to Milford and beyond. A station and layover facility in Bellingham could be built as part of this extension.

Currently a branch of the Franklin Line operates from Walpole Station to Foxborough, serving Gillette Stadium on days with home football games. Expansion of weekday service to Foxborough for commuters would be another way of increasing utilization of the Franklin Line.

In order to provide additional capacity on the existing service, it would be beneficial to double-track the Franklin Line near Readville, where the Dorchester Branch converges with the Northeast Corridor (NEC) for a short single-tracked stretch.

#### ***STOUGHTON LINE AND NEEDHAM LINE CAPACITY ENHANCEMENTS***

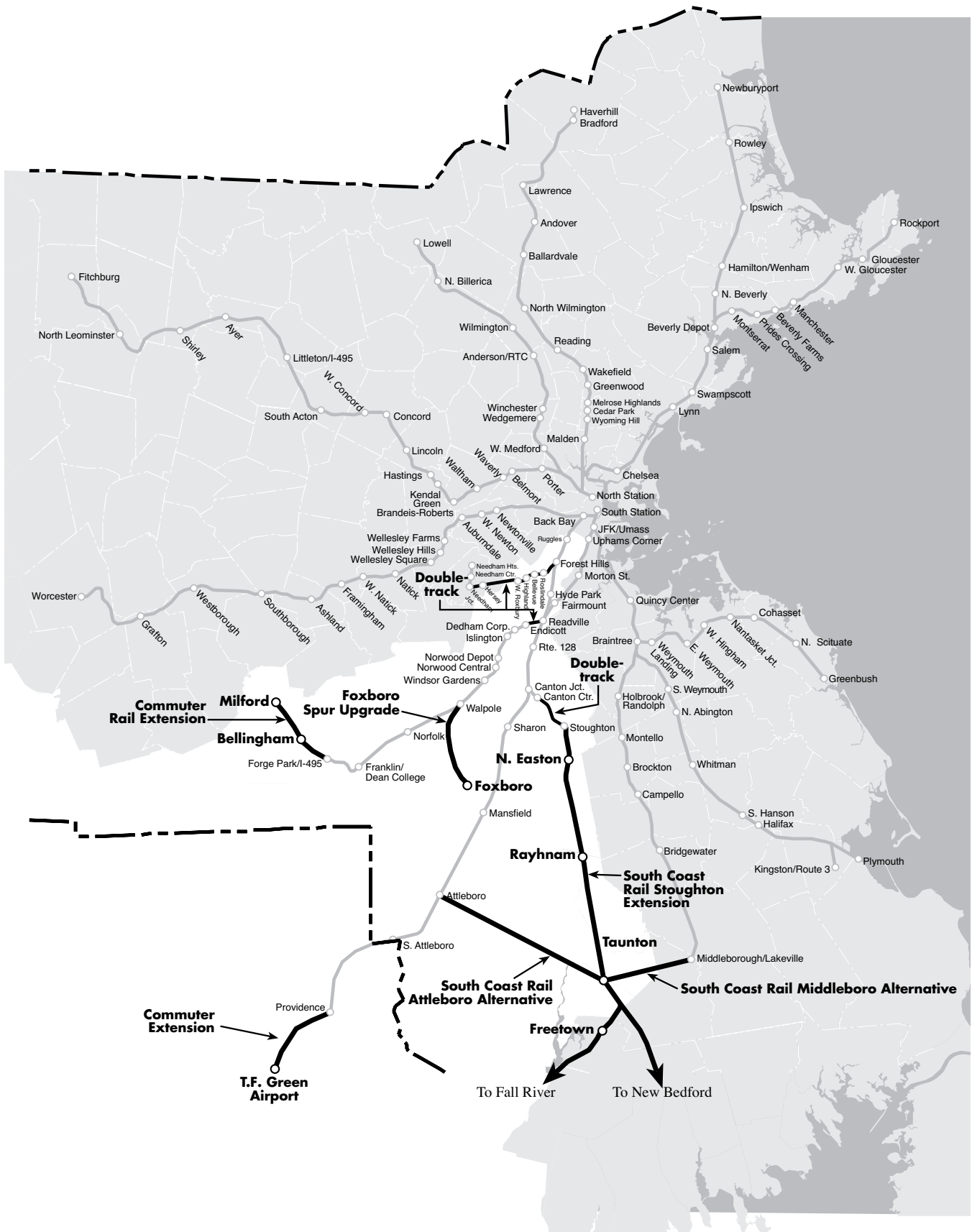
Currently the Stoughton Line and the Needham Line have single-track sections between Canton Center and Stoughton (approximately 4.5 miles) and between the Plains Interlocking and Needham (approximately 8 miles), respectively. Double-tracking these sections would facilitate increased service on these lines.

#### ***BUS SYSTEM IMPROVEMENTS***

The outer portion of the Southwest Corridor has a number of low-density and lightly served areas in which demand-responsive or fixed-route services could be developed through partnerships with other service providers, municipalities, or the Boston Region MPO to complement existing and potential MBTA services.



# MAP 6-10 Southwest Corridor Outer Area Potential Improvements



## **SOUTHWEST CORRIDOR INNER AREA**

### ***FAIRMOUNT COMMUTER RAIL LINE***

#### ***IMPROVEMENTS AND POSSIBLE EXTENSION***

This project would upgrade service on the Fairmount commuter rail line by adding new stations on the existing route and by increasing the frequency of service. Currently four new stations are envisioned in Boston neighborhoods, interspersed with existing stations. Approximate locations under consideration include Blue Hill Avenue near Mattapan Square, Talbot Avenue, Washington Street in Dorchester, and Newmarket Square adjacent to the expanding South Bay shopping center and connecting with the planned Urban Ring.

After upgrading Fairmount service, extension of service from the present terminus in Readville to Route 128 Station in Westwood could be considered. This would entail adding a third track within the right-of-way corridor. Adding this track as part of Fairmount service extension would also add capacity and operational flexibility to the highly utilized Providence Line.

Increasing peak-service frequency or extending service to Route 128 would require additional rolling stock, and introducing advanced diesel-multiple-unit (DMU) equipment would be considered. Another possible improvement advocated by community groups would be adding a fifth new station in the context of more frequent, rapid-transit-type service.

#### ***ORANGE LINE EXTENSION TO ROUTE 128***

This project would extend Orange Line service from Forest Hills Station in Boston to Route 128 via the Providence commuter rail line right-of-way. This would be a 6.4-mile extension, including three stations in Boston neighborhoods, terminating at the existing Route 128 park-and-ride station. This segment of the rail line is already fully grade-separated. Some reconfiguration of the tracks would be needed to allow for two Orange Line tracks in addition to railroad tracks. Commuter and intercity rail passenger service on this line would continue.

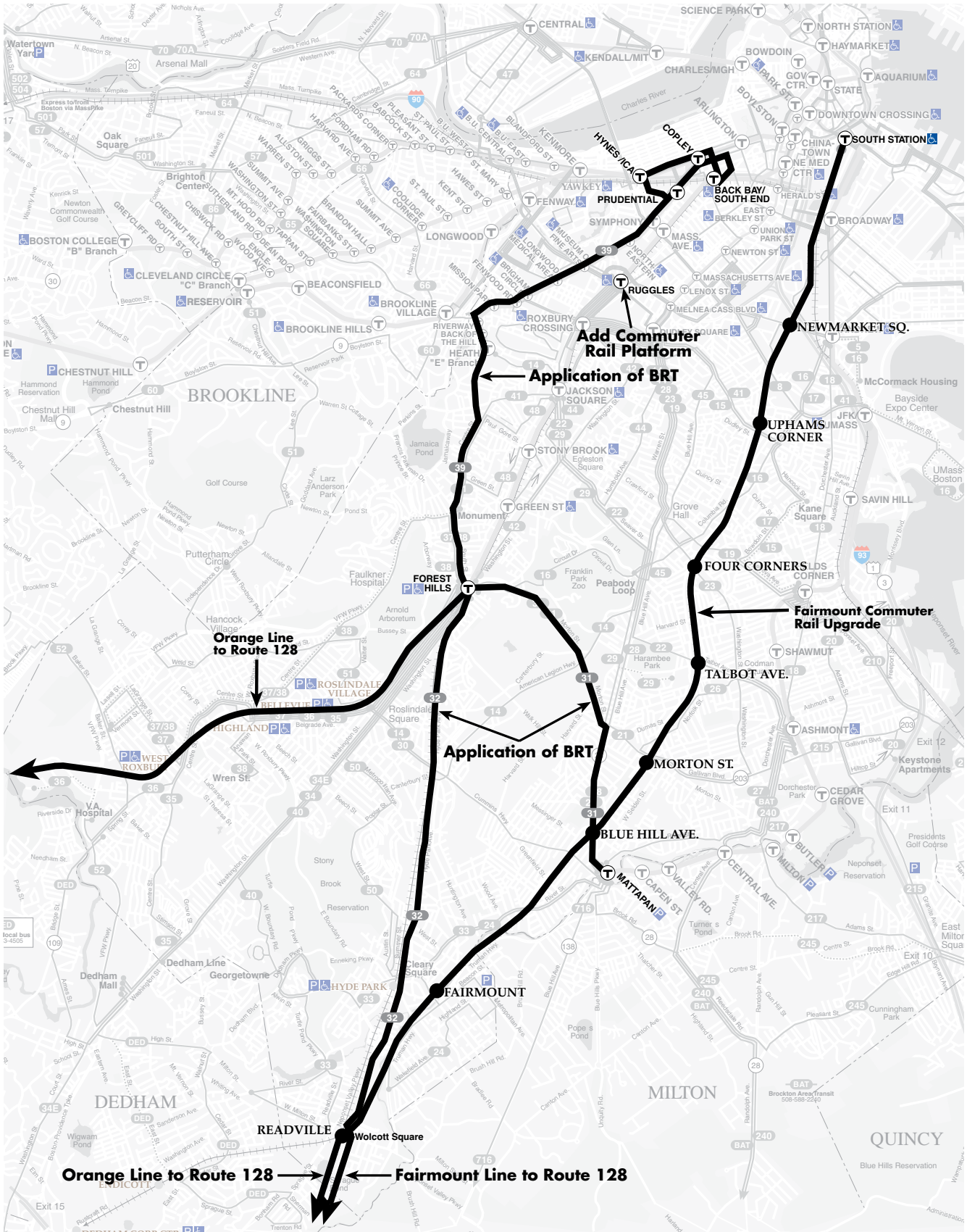
## **SECOND COMMUTER RAIL PLATFORM AT RUGGLES STATION**

This project would construct a second commuter rail platform at Ruggles Station to allow commuter trains to serve passengers using any of the three available commuter rail tracks. Today, only two of the Ruggles Station commuter rail tracks have access to the station platform. The design would require the use of a small part of adjacent property owned by Northeastern University. The recommended design would simplify the MBTA's operations by increasing service flexibility and reliability while also stimulating ridership.

#### ***BRT ELEMENTS ON BUS ROUTES 23, 28, 31, 32, AND 39***

The PMT envisions that across the MBTA system there are opportunities to improve key existing bus routes through the application of BRT features and technologies. Bus Routes 31, 32, and 39 are heavily used routes connecting Forest Hills with Mattapan, Wolcott, and Copley Squares. BRT improvements could include signal priority for buses, dedicated lanes, and stop consolidation. Equipment and services in the Mattapan High Speed Line corridor could also be considered. See the Southeast Corridor Inner Area section for a discussion of Routes 23 and 28.

# MAP 6-11 Southwest Corridor Inner Area Potential Improvements





## **SOUTHEAST CORRIDOR**

### **SOUTHEAST CORRIDOR OUTER AREA**

#### ***MIDDLEBOROUGH COMMUTER RAIL LINE EXTENSION AND IMPROVEMENTS***

The outer area of the Southeast Corridor gained commuter rail service to Middleborough/Lakeville and Plymouth/Kingston in 1997, and to Greenbush in Scituate a decade later. As travel demand in southeastern Massachusetts has gradually increased, extension of the Middleborough Line has been considered. Commuter rail service could be extended along an existing rail freight line from the end of the Middleborough Line to Wareham, an end point relatively convenient to Cape Cod via the Bourne Bridge.

Another possible service enhancement on the Middleborough Line would be adding a new station in West Bridgewater. This station would be near East Bridgewater and would serve both communities.

#### ***OLD COLONY CAPACITY ENHANCEMENTS***

Possible future service expansion on the three Old Colony Lines—Middleborough/Lakeville, Plymouth/Kingston, and Greenbush—is currently constrained by sections of single track that could be double-tracked. These include approximately 12 miles from South Station to Braintree on which all three Old Colony Lines share operations; around 24 miles on the Middleborough/Lakeville Line between Braintree and Lakeville; 22 miles on the Plymouth/Kingston Line between Braintree and Plymouth; and approximately 17.5 miles on the Greenbush Line between Braintree and Greenbush.



## **SOUTHEAST CORRIDOR INNER AREA**

### ***BRT ELEMENTS ON BUS ROUTES 23 AND 28***

The PMT envisions that across the MBTA system there are opportunities to improve key existing bus routes through the application of BRT features and technologies. Bus Routes 23 and 28 are heavily used routes that start at Ruggles Station and travel through Dudley Station to Ashmont and to Mattapan Stations, respectively. Various BRT-related improvements could be made, including signal priority for buses, dedicated lanes, and stop consolidation to better serve the large transit-dependent population in the Southeast Corridor.

### ***SILVER LINE WATERFRONT “T UNDER D”***

This project would grade separate the Silver Line in the South Boston waterfront by extending the existing tunnel from World Trade Center Station under D Street, allowing the buses to avoid the stoplight at the top of the portal. The T under D tunnel would improve on-time performance and reduce travel time for the SL1 and SL2 routes that serve Logan Airport and the Boston Marine Industrial Park, respectively.

# MAP 6-13 Southeast Corridor Inner Area Potential Improvements

