

# Appendix C Northwest Corridor:

## Mobility Problems and Proposed Solutions



### BACKGROUND

#### EXISTING CONDITIONS

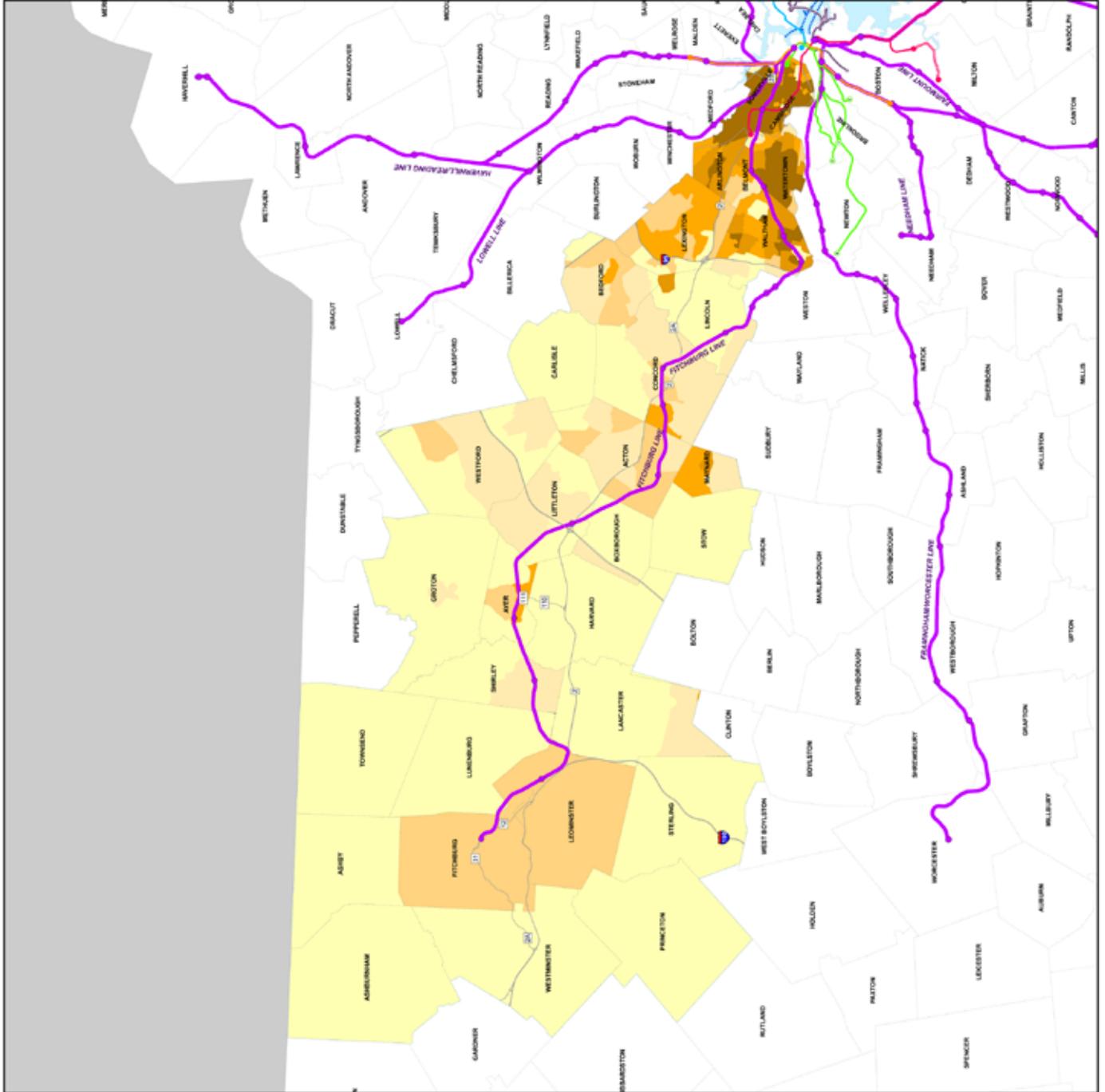
The Northwest Corridor includes 31 municipalities: the cities of Cambridge, Somerville, Watertown, Waltham, Leominster and Fitchburg, as well as 25 towns. The corridor stretches from the transforming industrial districts of NorthPoint in Cambridge and Assembly Square in Somerville to the towns west of Fitchburg, including the Mount Wachusett ski resort in Westminister.

The MBTA provides rapid transit, bus, and commuter rail service in this corridor. The Green Line terminates today at Lechmere Station, adjacent to the rapidly developing NorthPoint, and itself in a fully redeveloped former industrial district. The Red Line serves six stations in Cambridge and Somerville, and terminates at Alewife Station near the Belmont town line and at the eastern end of the limited-access portion of Route 2. Alewife Station, completed in 1985, is a major terminal for bus routes and park-and-ride commuters, as well as serving a gradually transforming former industrial area.

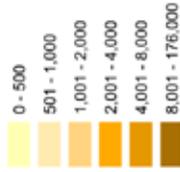
The MBTA operates 6 express and 35 local bus routes. Most of these bus routes are anchored at the Sullivan Square, Lechmere, Central Square, Harvard Square, or Alewife rapid transit stations. The route system fans out from these stations and extends through Cambridge, Somerville, Watertown, Waltham, Belmont, Arlington, and Lexington. Several routes extend into Bedford or Lincoln as well.

The Fitchburg commuter rail line serves 11 municipalities in the Northwest Corridor, as well as stopping in Weston, a municipality in the West Corridor. A connection with the Red Line is provided at Porter Square Station, making this one of the busiest commuter rail stations for trips not anchored at a downtown station. In Fitchburg, a dedicated, privately operated bus from the Mount Wachusett ski

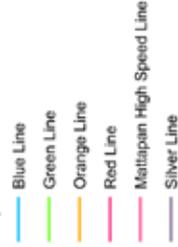
# MAP C-1 Northwest Corridor of the MBTA Service Area Population Density, 2000



U. S. Census 2000  
Population/Square Mile by TAZ



Rapid Transit



Commuter Boat



Commuter Rail

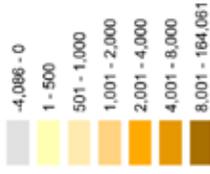


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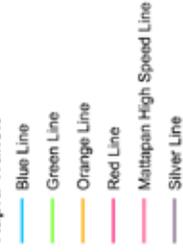
# MAP C-2 Northwest Corridor of the MBTA Service Area

## Projected Change in Population Density from 2000 to 2030

2030 MetroFuture Projection  
Change in Population/Sq. Mi. by TAZ



### Rapid Transit



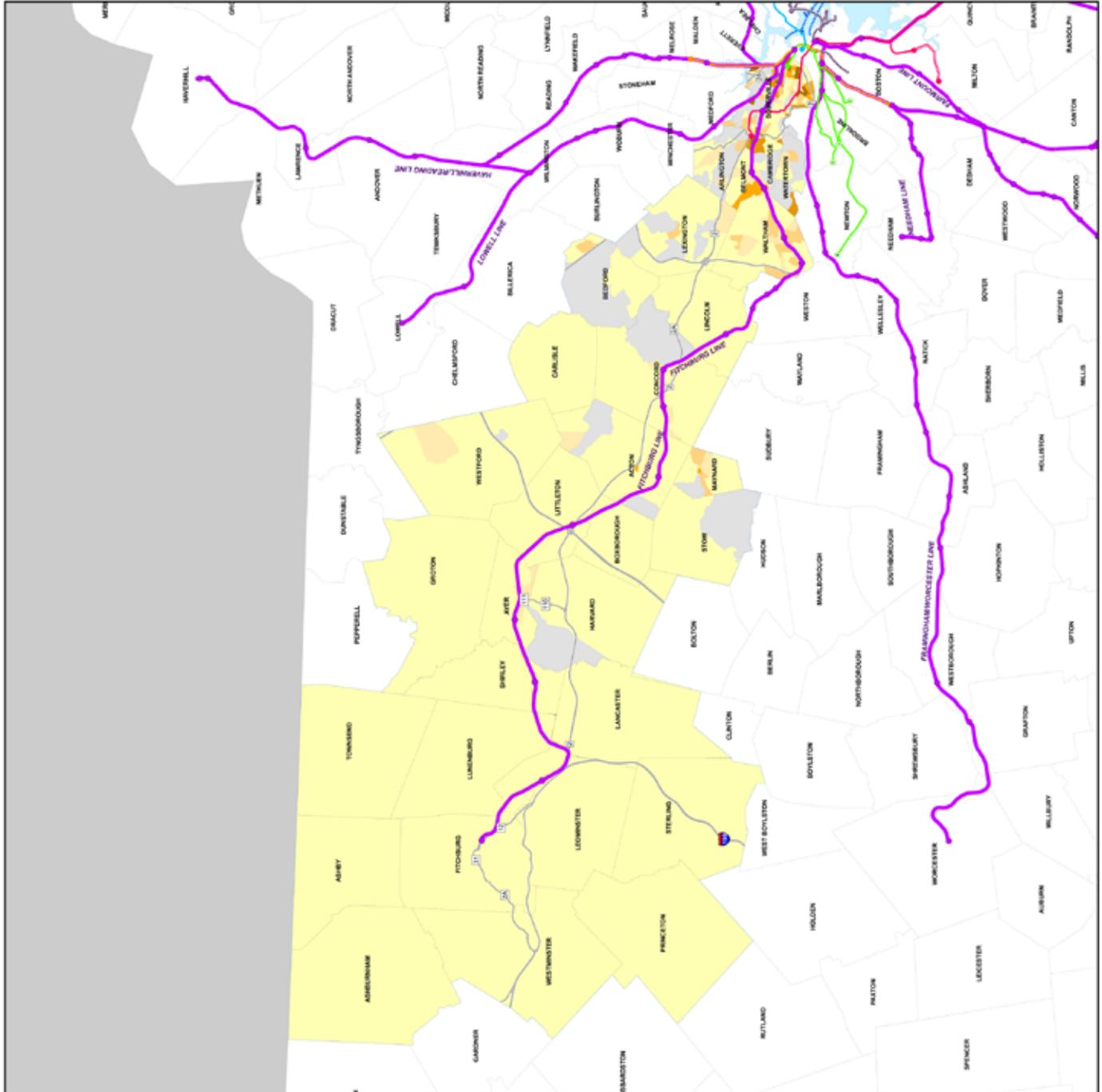
### Commuter Boat



### Commuter Rail



March 2008



resort offers guaranteed connections at Fitchburg to seasonal weekend trains, making the “Ski Train” a recent example of service innovation.

Bus service in the Northwest Corridor is also provided by the Montachusett Regional Transit Authority (MART). MART operates 8 bus routes from the intermodal center at the Fitchburg commuter rail station to points in Fitchburg, Leominster, and Lunenburg, as well as three other routes that are entirely within Leominster. MART also provides one route between Fitchburg and Gardner, two routes entirely in Gardner, and two connecting routes from Gardner to Winchendon and Orange.

## POPULATION

The most densely populated areas in the Northwest Corridor are located primarily inside of Route 128, particularly in the communities of Belmont, Cambridge, Somerville, Watertown, and Waltham. The majority of communities in the remainder of the corridor have low population densities. (See Map C-1.) With the exception of a few scattered areas within the most densely populated communities, population densities will not change much in the majority of corridor communities. (See Map C-2.)

According to the U. S. Census, the corridor's 2000 population was 642,409. In absolute terms, this population is projected to increase by 16% to 748,122 by 2030.<sup>1</sup> More than a third of the corridor's population is located in Cambridge, Somerville, and Waltham with Cambridge being the most populous community. Five communities, Cambridge, Fitchburg, Leominster, Somerville, and Westford, will account for 60% of corridor growth between 2000 and 2030. (See Figure C-1.)

**FIGURE C-1**  
**Northwest Corridor 2000-2030**  
**Population Growth: Top Ten Communities\***  
**in Order of Increase**



\* Does not include Boston

A number of large housing developments are proposed in this corridor. Two that are currently in the permitting process in the corridor are NorthPoint and Assembly Square. NorthPoint is adjacent to the Green and Orange Lines at Lechmere and Community College, respectively, and will have 2,500 residential units in Cambridge, Somerville, and Boston. Assembly Square will have 1,332 units in Somerville.

## EMPLOYMENT

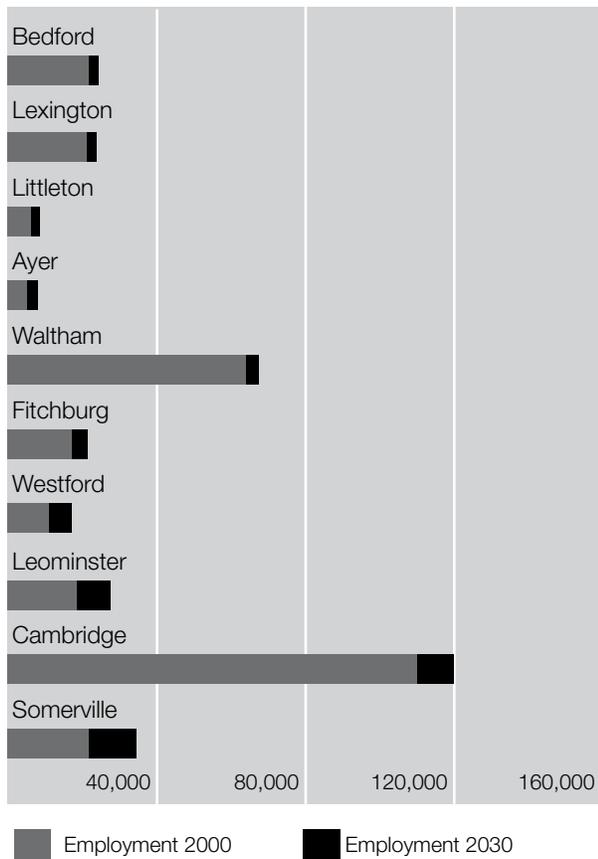
With the exception of Fitchburg, Leominster, and a few other scattered areas, mostly along I-495 and in Bedford, the highest employment densi-

<sup>1</sup> Metropolitan Area Planning Council (MAPC), Central Massachusetts Regional Planning Commission (CMRPC), Montachusett Regional Planning Commission (MRPC), and Northern Middlesex Council of Governments (NMCG) population and employment forecasts.

ties in the Northwest Corridor are located inside Route 128, particularly in Cambridge, Somerville, and Waltham (see Map C-3). Although portions of a few communities are projected to become denser, most communities are not expected to experience major changes in employment density between 2000 and 2030. (See Map C-4.)

Between 2000 and 2030, employment in the corridor is projected to increase by 60% in Somerville, 55% in Westford, 47% in Leominster, and 9% in Cambridge. These four municipalities have the highest projected increase in the numbers of employees by 2030, and together they account for half of the increase projected for the entire corridor. (See Figure C-2.)

**FIGURE C-2**  
**Northwest Corridor 2000-2030**  
**Employment Growth: Top Ten Communities**  
**in Order of Increase**

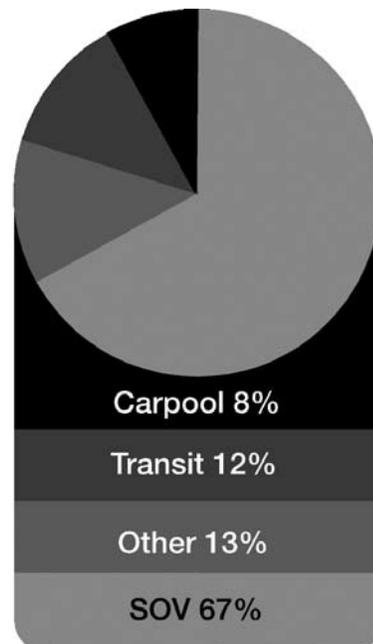


The NorthPoint and Assembly Square developments, in addition to adding substantial housing, will also include major employment components. NorthPoint envisions 2.2 million square feet of office space, while 1.0 million square feet of retail space is planned for Assembly Square.

**JOURNEY TO WORK**

Nationally, work trips account for a small proportion—15%—of all trips.<sup>2</sup> Because most commuting occurs during peak travel times, work-trip volumes determine the capacity needs, as well as the performance, of highway and transit systems. In 2000, 67% of all work trips that originated in the Northwest Corridor were made in single-occupancy vehicles (SOVs), and 9% were made on transit. Without the inclusion of heavily transit-dependent Cambridge and Somerville, the mode split (percentage of travel per mode of travel) would be 78% in single-occupancy vehicles and 6% on transit. (See Figure C-3.)

**FIGURE C-3**  
**2000 Travel Modes to Work by**  
**Northwest Corridor Residents**

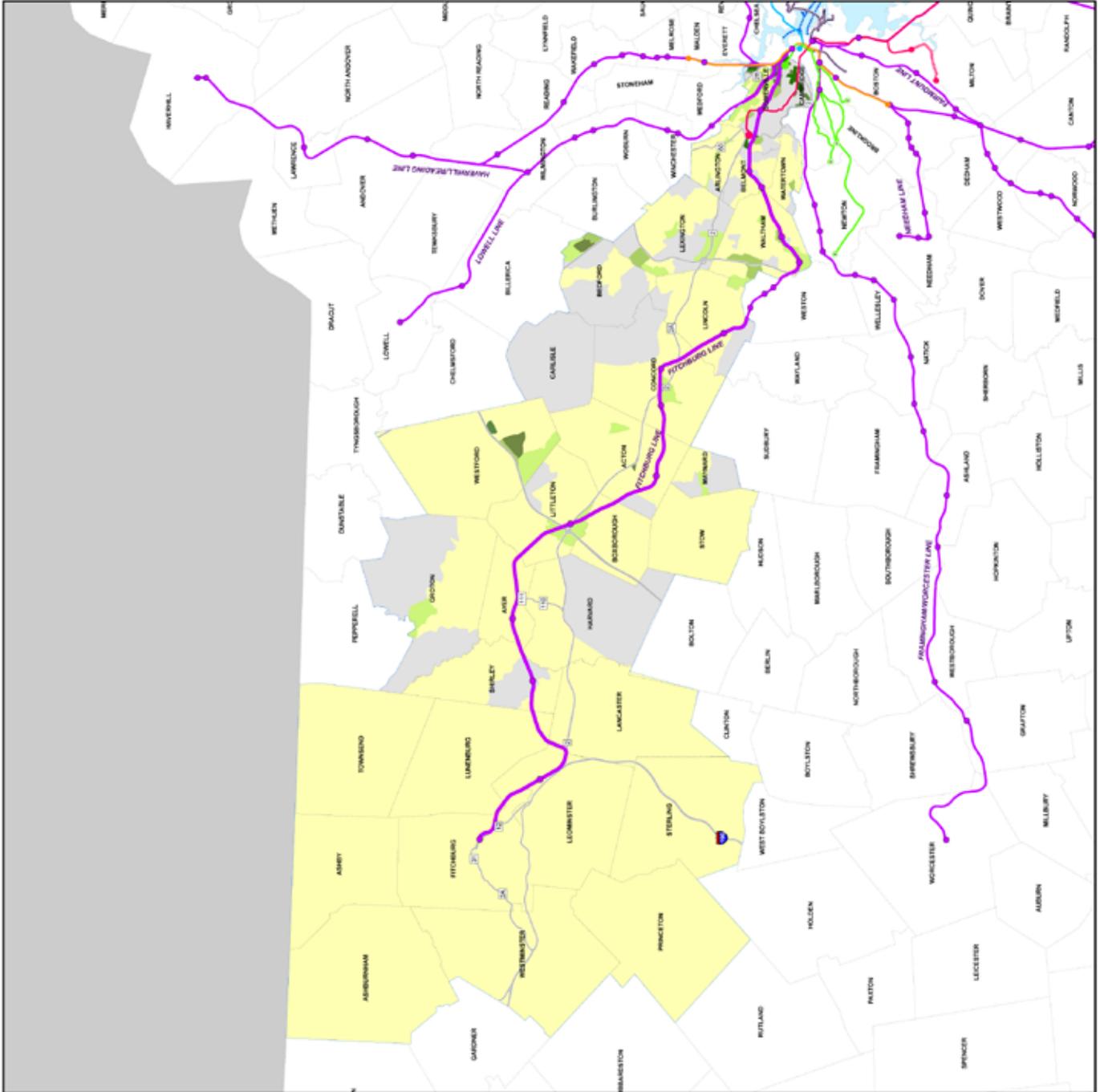


2 Transportation Research Board, *Commuting in America III: The Third National Report on Commuting Patterns and Trends*, NCHRP Report 550, October 2006, p. 3.



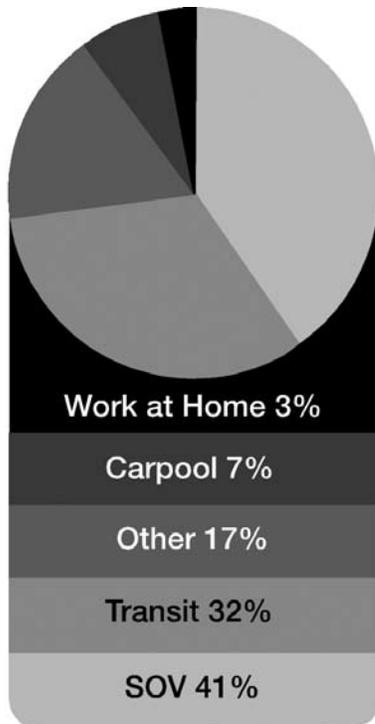
# MAP C-4 Northwest Corridor of the MBTA Service Area

## Projected Change in Employment Density from 2000 to 2030



Most MBTA service is radially oriented towards Boston and Cambridge, which together are the destination for 31% of work trips made by corridor residents. Of work trips from the corridor to Boston and Cambridge, 41% are made in single-occupancy vehicles; 32% are made on transit. (See Figure C-4.)

**FIGURE C-4**  
**2000 Travel Modes to Work by Northwest Corridor Residents to Boston and Cambridge**



### TRAFFIC CONGESTION

Route 2 is the major radial expressway in the corridor. It runs to Boston from points in northwestern Massachusetts. Between the New York state line and Phillipston, Route 2 is mostly a two-lane road with driveway access and surface intersections. When it enters the Northwest Corridor, it is a four lane, limited-access highway through Westminster, Fitchburg, Leominster, Lancaster, Harvard, Littleton, and Acton. Route 2 reaches the first of nine traffic signals just east of Route 111 in Acton.

East of the Concord Rotary, signalization, posted speed limits, and heavy traffic, cause average speeds to be about 30 miles per hour. Between

I-190 in Leominster and Route 128, two-way daily traffic volumes tend to be between 40,000 and 50,000. For most of the distance between Route 128 and Alewife Brook Parkway Route 2 has six or eight lanes. This section of Route 2 serves about 100,000 vehicles per day.

The Fitchburg commuter rail line serves the same corridor. Recent counts show about 3,400 inbound riders a day on this line as they depart Concord Station. This is about 15% of the inbound daily vehicle volume on nearby sections of the Route 2.

### TRAVEL PROJECTIONS

The CTPS Regional Travel Demand Model provides estimates of current travel volumes and projections of future travel volumes for all major modes: auto, transit, and walk/bike.

A useful way of tracking travel growth patterns is to look at the change in travel between pairs of municipalities, and to include trips beginning and ending in the same municipality. By 2030, there are 31 travel pairs in the Northwest Corridor with projected increases of at least 1,000 two-way trips per day. The projected travel-volume increase for these 31 pairs is 167,234 trips per day (approximately 21%).

Of the 31 pairs with projected travel volume increases of over 1,000, 15 are for trips that begin and end entirely within one municipality. The largest projected increases in the Northwest Corridor are trips made entirely within Cambridge (58,013) and entirely within Somerville (21,803). In addition, a fairly large increase is projected for trips between Cambridge and Somerville (5,528), which already show significant intracity trip-making activity (90,088 trips in 2000). (See Figure C-5.) Taken together, trips within and between these two cities account for 52% of the projected trip increases of over 1,000 in this corridor. It should be noted, however, that a large percentage of current trips within each city are made on foot, by bicycle, or via carpool.

For trips other than those between Cambridge and Somerville, the highest projected trip increases are

within Acton (8,249), within Concord (6,383), within Westford (6,350), and within Littleton (5,964). At present, there is no local transit service for the general public within any of these towns.

**FIGURE C-5**  
**Northwest Corridor Trip Increases 2000-2030:**  
**Top Ten in Order of Increase**



The model also predicts 21 increases of over 1,000 daily trips between points in the Northwest Corridor and points in other PMT corridors, including 10 with the North Corridor, 9 with the West Corridor, and 1 each with Boston Proper and the Southwest Corridor. The largest of these increases are for trips between Newton and Waltham (5,375), between Cambridge and Allston (4,527), between Newton and Watertown, (3,561), between Somerville and Charlestown (2,835), between Burlington and Lexington (2,833), between Bedford and Billerica (2,539), and between Lexington and Woburn (2,241). The projected increases for the other 14 pairs are all less than 2,200.

## ENVIRONMENTAL JUSTICE

The federal government defines environmental justice (EJ) as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, education level, or income with respect to the development, implementation, and enforcement of environmental laws. The MBTA monitors EJ through implementation of and reporting for Title VI of the Civil Rights Act of 1964.

The Northwest Corridor encompasses densely populated neighborhoods in Cambridge, Somerville, Arlington, Watertown, Waltham, Belmont, and Fitchburg. Parts of Cambridge, Somerville, Waltham, Leominster, and Fitchburg are classified as minority areas for Title VI, and parts of Cambridge, Shirley, Leominster, and Fitchburg are classified as both minority and low-income. Small pockets of minorities are found in Lincoln, Acton, and Harvard.

Forty-one bus routes run through this corridor; 16 are classified as minority, and two are classified as both minority and low-income.

A portion of the Red Line runs through this corridor. Four of the six Red Line stations in this corridor meet the minority station criterion, and one of these meets both the minority and low-income criterion.

The Fitchburg commuter rail line operates in the Northwest Corridor. Three commuter rail stations in this corridor meet the minority criterion, and one of these meets both the minority and low-income criteria.

## MOBILITY PROBLEMS AND PROPOSED SOLUTIONS

### CAPACITY IMPROVEMENTS ARE NEEDED

Investments Will Be Needed to Ensure that Sufficient Capacity Is Available to Serve Current and Projected Travel Demand.

#### Problem 1:

By 2030, modeling projections suggest that growing demand on 13 bus routes in the Northwest Corridor may cause passenger crowding

levels that would trigger the need for additional service. These include:

- Bus Route 1 Harvard Station – Dudley Station via B.U. Medical Center
- Bus Route 47 Central Square, Cambridge – Broadway Station via B.U. Medical Center
- Bus Route 62 Bedford VA Hospital – Alewife Station via Lexington Center
- Bus Route 66 Harvard – Dudley Station via Harvard Street
- Bus Route 67 Turkey Hill – Alewife Station via Arlington Center
- Bus Route 68 Harvard Square – Kendall Station
- Bus Route 71 Watertown Square – Harvard bus subway via Mt. Auburn Street
- Bus Route 73 Waverly Square – Harvard bus subway via Belmont
- Bus Route 77 Arlington Heights – Bennett Street Alley
- Bus Route 86 Sullivan Station – Cleveland Circle
- Bus Route 87 Arlington Center – Lechmere Station
- Bus Route 89 Clarendon Hill – Sullivan Station
- Bus Route 554 Waverly Square – Federal and Franklin Streets.

Most of these routes operate entirely within the Northwest Corridor; however, some provide circumferential service between one or more corridors. Four of these routes also serve other corridors: bus Route 86 provides service connections between the Northwest and West Corridors; Routes 1, 47, and 66 provide connections between the Northwest, West, and Southwest Corridors; and Route 47 extends into Boston Proper as well.

### ***Proposed Solutions:***

- Purchase sufficient additional vehicles to increase peak-period capacity and to ensure that future vehicle loads do not exceed safe and comfortable levels on all of the above routes. To do so, 20 additional 40-foot buses and 11 additional electric trolley buses would be required. Replacing existing 40-foot buses and electric trolley buses with 60-foot buses and electric trolley buses would be another method for increasing capacity to meet demand.
- On bus Routes 1, 66, 71, 73, 77, 86, and 89 (Davis–Sullivan), implement bus-rapid-transit (BRT) elements, such as signal priority, cue jumps, fare prepayment, a dedicated lane, lengthened stop spacing, and improved bus stop amenities.
- The Urban Ring project would enhance circumferential service.
- Bus garage capacity in the corridor would need to be increased to house an enlarged bus fleet as service is added to meet future demand.

### **Problem 2:**

Outside of the inner core communities of Cambridge and Somerville, Acton, Concord, and Westford show the largest projected growth in intracity travel by 2030. Of the latter three municipalities, Acton and Westford are in the service area of the Lowell Regional Transit Authority.

### ***Proposed Solution:***

Partner with local social service providers, town officials, and the Boston Region MPO to institute new demand-responsive and/or fixed-route service providing connections between densely developed residential areas in Concord and key activity hubs (including employment, commercial, and educational hubs).

### **Problem 3:**

The transit mode share in Waltham is currently lower than would be expected (2.6% of all trips), given the existing level of bus and rail service.

**Proposed Solutions:**

- Increase visibility of bus services through strategies such as improving bus stop amenities and providing real-time customer information.
- Make improvements in signage and services to establish Waltham as the center of a comprehensive local bus service.

**Problem 4:**

Service on the Fitchburg Line currently faces frequent delays, increasing passenger travel times.

**Proposed Solution:**

Expand doubletracking at Newton Street in Waltham and between South Acton and Ayer. Extending the double track west through the station at South Acton would allow trains turning at South Acton to be held clear of passing trains, thus reducing delays. Station changes and signal and operational improvements may also improve operations. Station consolidation at Shirley/Ayer, Silver Hill/Hastings/Kendall Green, and Waverly/Belmont Stations could also help.

**Problem 5:**

Densely developed areas in Somerville currently generate high trip volumes to Cambridge and Boston. In addition, trip volumes between Somerville and Cambridge are projected to increase substantially. Taken together, these expose a gap in rapid transit service in this corridor.

**Proposed Solutions:**

- Extending the Green Line from Lechmere Station, in Cambridge, through Somerville to Medford would provide a transit alternative for some of the intercity travel needs within the Northwest Corridor and between the Northwest Corridor, the North Corridor, and Boston Proper.
- Implement the Urban Ring project.

**Problem 6:**

Traffic congestion around Alewife Station increases the running times and reduces the reliability of bus routes that serve the station.

**Proposed Solution:**

- Build new busways at Alewife Station.
- Extend the Red Line to Arlington via the former Lexington Branch railroad alignment.

**ACCESS TO MBTA SERVICES NEEDS TO BE IMPROVED**

**ADA ACCESSIBILITY**

The MBTA has made strides toward providing ADA accessibility to all of its services. However, the Fitchburg Line still has 11 stations—more than any other commuter rail line in the system—that remain inaccessible: Shirley, Ayer, Littleton/Route 495, South Acton, Concord, Lincoln, Silver Hill, Hastings, Kendal Green, Waverley, and Belmont Stations.

**Proposed Solution:**

Based on the feasibility of construction, the following stations ( Table C-1) are a priority for near-term accessibility improvements.

**TABLE C-1  
Northwest Corridor  
Station Accessibility Priorities**

LINE	STATION	PRIORITY
<b>Fitchburg</b>	Shirley	Low
	Ayer	Low
	Littleton/495	Planned
	South Acton	Low
	Concord	Low
	Lincoln	Low
	Silver Hill	Low (~15 boardings/day)
	Hastings	Low (~30 boardings/day)
	Kendal Green	Low
	Waverley	Low
	Belmont	Medium

**STATION PARKING**

**Problem 1:**

Access to rail transit services, for customers of all abilities, is constrained by the availability of parking for automobiles. An inventory of station park-

ing that was completed during the fall of 2005 and winter of 2006 shows that parking at the following stations (Table C-2) is utilized at 85% of capacity or greater.<sup>3</sup>

**TABLE C-2  
Northwest Corridor  
Station Parking at 85% Usage or Greater**

LINE	STATION
<b>Fitchburg</b>	North Leominster
	Littleton/Route 495
	South Acton
	Lincoln
	Shirley
	Ayer
	West Concord
	Concord
	Hastings
	Kendal Green
Waltham	
<b>Red Line</b>	Alewife
<b>Green Line</b>	Lechmere

**Proposed Solution:**

At stations where the MBTA is the principal provider of parking, the MBTA can address inadequate parking capacity either by increasing the number of spaces or controlling demand through measures like raising the price of parking overall or installing automated parking-fee collection at MBTA lots to allow for congestion pricing and to improve enforcement of parking regulations.

When evaluating expansion of parking, important considerations include the availability of MBTA-owned land, the potential cost of acquiring nearby land, and the potential cost of a multi-level structure. Based on these and other feasibility criteria, the following stations would have the highest potential for expansion of MBTA parking: North Leominster, Littleton/Route 495, South Acton, Lincoln, Shirley, Ayer, and Kendal Green on the Fitchburg Line.

**Problem 2:**

For some customers, access to rail services is constrained by the lack of bicycle parking. A recent study provided a detailed inventory of bicycle amenities, by MBTA station, that included the location, number, and condition of bike racks, bike rack shelters, and signage directing cyclists to them. The study also noted that, at some stations where bike racks were provided, cyclists did not utilize the racks, but parked their bikes elsewhere.<sup>4</sup>

**Proposed Solution:**

The study recommended that the MBTA continue to expand bicycle parking at stations; however, the MBTA does not currently have a standard for determining what the appropriate number of spaces would be for each station. The study therefore also recommended that the MBTA adopt a standard for providing bicycle parking spaces at transit stations.

- In instances where bikes were parked at locations other than at bike racks that were provided, the study made recommendations, based on the type of problem observed, including:
  - The rack was in an inconvenient location (e.g., far from the platform).
  - The rack was not sheltered from the weather.
  - The rack was in a secluded location that was difficult to find or might encourage theft.
  - The rack was damaged or difficult to use.

The following specific improvements (Table C-3) are recommended for stations at which existing bike racks were not used.<sup>5</sup>

**CONNECTIONS WITH OTHER RTAs**

**Problem:**

The Northwest Corridor is served by one Regional Transit Authority (RTA), the Montachusett Regional

3 Fijalkowski, Jared, and Ostertog, Heather, *Inventory of Park-and-Ride Lots at MBTA Facilities*, Central Transportation Planning Staff, February 27, 2007.

4 Fijalkowski, Jared, and Yaitanes, Justin, *2005–2006 Inventory of Bicycle Parking Spaces and Number of Parked Bicycles at MBTA Stations*, Central Transportation Planning Staff, October 2, 2007, Table 6.

5 Ibid.

**TABLE C-3  
Northwest Corridor  
Proposed Bicycle Parking Enhancements**

<b>LINE</b>	<b>STATION</b>	<b>BICYCLE PARKING ENHANCEMENT RECOMMENDATIONS</b>
<b>Red Line</b>	Harvard	Install additional racks; install signs directing bicyclists to racks.
	Davis	Install sheltered racks.
	Kendall/MIT	Install sheltered racks at station entrances.
	Alewife	Provide shelter for existing racks.
	Central	Provide shelter for existing racks.
	Porter	Provide shelter for existing racks.
<b>Green Line</b>	Lechmere	Install sheltered racks at station
<b>Fitchburg</b>	North Leominster	Install racks.
	Kendal Green	Install racks.
	Waltham	Install sheltered racks close to platforms.
	Concord	Provide shelter for existing racks.
	Brandeis/Roberts	Provide shelter for existing racks.
<b>Express Bus</b>	Watertown Yard	Install signs directing bicyclists to racks.

Transit Authority (MART). Seven of MART's bus routes operate from the intermodal center at the Fitchburg commuter rail station to points in Fitchburg, Leominster, and Lunenburg. Three other routes operate only within Leominster. One additional route operates between Fitchburg and Gardner, two routes entirely in Gardner, and two routes from Gardner to Winchendon and Orange.

Although many of the bus routes operate from Fitchburg Station, the schedules are such that it would be difficult for commuters to depend on bus service to connect with commuter rail. Four of the seven routes that serve mostly Fitchburg, Leominster, and Lunenburg currently offer close connections at Fitchburg Station to one Boston-bound train in the AM peak period. However, on six of the seven routes, the last bus of the day leaves Fitchburg Station before the first outbound PM peak-period train from Boston is scheduled to arrive.

Two of the seven MART routes that serve Fitchburg Station also stop at North Leominster Station. They both offer reasonable connections to several inbound AM peak-period trains, but no connections from outbound PM peak-period trains. The three MART routes that run entirely in Leominster do not serve any commuter rail sta-

tion. The route that operates between Gardner and Fitchburg provides minimal connections to commuter rail service.

Although the Northwest Corridor is served by MART, current schedules provide few close connections between MART and MBTA services. In general, RTA bus routes do not function well as commuter rail feeders since they serve different functions and populations. Most RTA routes provide local service on even headways, while commuter rail provides long-distance commuter service and operates on uneven headways due to a number of equipment and operational constraints. In addition, because RTA routes have frequent stops and many do not provide direct service to stations, using them to access stations is much slower than driving.

**Proposed Solution:**

Adjusting the RTA services to coordinate with commuter rail schedules would inconvenience customers making local trips. Changing the commuter rail schedules to coordinate with RTA services would require significant capital and operating costs without significantly improving service for most commuter rail riders. The best solution, therefore, would be to create specific RTA feeder services to commuter rail. It is recom-

mended that as demand for commuter rail feeder service increases, the MBTA work with MART to select one or more stations on the Fitchburg commuter rail line and to determine the number and alignment of routes that would be required to provide adequate feeder services.

### **REVERSE-COMMUTE SERVICE**

#### **Problem:**

There is some potential for reverse-commute service between residential areas of Boston and numerous employment destinations at industrial and office parks along Route 128 in Waltham on the Fitchburg line, which is currently the most frequently used commuter rail line for reverse commuters.<sup>6</sup> To attract sufficient riders to justify such service, bus or van connections from Waltham Station would need to be provided.

#### **Proposed Solutions:**

- The MBTA should work with the Route 128 Business Council TMA to enhance its shuttle service to Waltham Station with additional stops, as needed.
- Expand reverse commute options by adding outbound AM peak-period and inbound PM peak-period commuter rail trains.

### **INFRASTRUCTURE ENHANCEMENTS ARE NEEDED**

#### **Problem:**

In order to continue to maintain and improve service quality as demand grows and as technologies and materials improve, the MBTA will need to continually invest in infrastructure enhancements.

#### **Proposed Solution :**

The following enhancement projects (Table C-4) have been identified as future needs:

**TABLE C-4  
Northwest Corridor  
Proposed Enhancement Projects**

<b>RED LINE</b>	
<b>ASSET CATEGORY</b>	<b>PROJECT DESCRIPTION</b>
Communications	Install single mode fiber optic cable along the Red Line.
<b>FITCHBURG LINE:</b>	
<b>ASSET CATEGORY</b>	<b>PROJECT DESCRIPTION</b>
Power	Install a complete power system and new track layout at the Fitchburg lay-over facility.
Signals	Replace field code units on the Fitchburg Line with units that are compatible with the new Computer Dispatch Center so that Waltham Tower can be eliminated.
Signals	Make major improvements to the signal system on the Fitchburg Line.
Track/right-of-way	Extend the double-tracked portion of the Fitchburg Line west through the station at South Acton to reduce service delays by allowing trains turning at South Acton to be held clear of passing trains (already planned as part of MRTA project).

<sup>6</sup> Humphrey, Thomas J., *MBTA Reverse Commuting Study*, Central Transportation Planning Staff, May 2001, pp. ES-2 and ES-5.

## A STATE OF GOOD REPAIR NEEDS TO BE ACHIEVED

### Problem:

A number of system preservation projects must be addressed in the short- to mid-term to bring the system into a state of good repair and to ensure the safety of passengers and reliability of service.

### Proposed Solutions:

Some of the specific projects needed to bring the system into a state of good repair and maintain it in that condition are included in Table C-5.

**TABLE C-5  
Northwest Corridor  
State-of-Good-Repair Projects**

<b>RED LINE</b>	
<b>ASSET CATEGORY</b>	<b>PROJECT DESCRIPTION</b>
Power	Replace 480 high-voltage AC cables with surface mounted systems at Harvard, Davis, and Alewife Stations on the Red Line.
Power	Replace all 125-volt DC emergency lighting systems at 10 stations on the Red Line.
Revenue vehicles	Replace Red Line cars to allow the retirement of the No. 1 fleet, which was purchased in 1969.
Track/right-of-way	Rebuild sections of the floating slab track on the Red Line between Harvard and Alewife Stations that have been in use since 1984 and are reaching the end of useful life.
Track/right-of-way	Surface and tamp the tracks and thermit weld the rail to improve the quality of service on the Red Line.
Track/right-of-way	Deactivate Red Line switches that do not meet track standards.
<b>FITCHBURG LINE:</b>	
<b>ASSET CATEGORY</b>	<b>PROJECT DESCRIPTION</b>
Bridges	Repair eight bridges on the Fitchburg Line that are currently rated as structurally deficient (one is in need of attention in the short- to mid-term).
Facilities	Demolish and remove building materials in the roundhouse at the Fitchburg layover facility (after abatement of asbestos at the facility).
Track/right-of-way	Replace 18.4 miles of 112-pound type, non-control-cooled rail on the Fitchburg Main Line between Willows and Fitchburg.