Regionwide Suburban Transit Opportunities Study

Phase II

A report produced by the Central Transportation Planning Staff for the Boston Region Metropolitan Planning Organization

Regionwide Suburban Transit Opportunities Study
Phase II

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TABLE OF CONTENTS

LIST OF FIGURES

1. SUMMARY OF FINDINGS

Overview

The objective of this second phase of the Regionwide Suburban Transit Opportunities Study was to identify neighborhoods in the study area that currently have either no direct mass transportation service or very limited service, and that appear to have the best potential for supporting new service. This work was performed in close cooperation with the Suburban Mobility/Transportation Demand Management Subcommittee of the Boston Region Metropolitan Planning Organization. Step 1, as described in Chapter 2, was to apply various screening criteria to all census tracts within the study area, regardless of whether or not they currently have mass transportation service. The products of this step were several lists of census tracts that were to be subjected to further analysis in Step 2.

In Step 2, the census tracts on the lists generated in Step 1 were compared with maps and schedules of existing MBTA, regional transit authority, and private-carrier mass transit routes. In conformance with the eligibility requirements set forth for funding under the Suburban Mobility Funding Program, tracts with no mass transit service other than commuter rail or rapid transit stations were selected for further analysis in Step 3. Some tracts with existing bus service were also forwarded to Step 3 if that service was very infrequent or beyond convenient access distance from many of the trip generators.

In Step 3, the census tracts selected in the Step 2 screening process were examined at a finer level of detail. This included identification of concentrations of residences or employment locations that had resulted in their inclusion on the Step 1 lists, and review of the existing road systems and proximity to commuter rail or rapid transit stations. Some tracts that had appeared to have good potential to support transit service based on their overall characteristics were found to have population and employment too dispersed to allow for efficient fixed-route, scheduled transit operation. After the Step 3 analysis, only seven locations remained for further consideration.

In Step 4, suggestions were developed for specific mass transit routes to serve the seven locations identified in Step 3. As discussed further below, these locations are in Wellesley, Winchester, Westwood, Canton, Salem, Waltham, and Peabody. Although these were the highest-ranked locations in the analysis, none appeared to have unmet demand for public transportation that would support routes capable of meeting MBTA Service Delivery Policy standards. Indeed, many of them have had previous mass transit service that was discontinued because of low ridership. Consequently, services using smaller vehicles and able to target niche markets may be more desirable.

Although some limited potential was found for new fixed-route, scheduled transit services under the criteria set forth for this study, it is suggested that the focus of future suburban mobility funding efforts reemphasize the eligibility of two other types of service improvement strategies. One such strategy is to institute improvements to existing suburban mass transit routes, such as increased frequency, longer operating spans, new weekend service, or revision of alignments to serve new demand generators

or eliminate unproductive segments. Another strategy is to implement more demand-responsive services, with smaller vehicles operating when and where they are called for. A current example of such a service is The Local Connection (TLC), implemented in 2005 under the Suburban Mobility Funding Program. This service operates in designated areas of Marlborough, Southborough, and Westborough. Performance data for this service will be useful in planning other comparable systems.

Suggested Routes

Wellesley

The greatest potential for new transit service in this town would be for a feeder route from tract 404301 (in the northwest corner of the town) to the Wellesley Square commuter rail station. Preliminary analysis indicates that the most suitable alignment would be along Manor Avenue and Weston Road. With small vehicles that require limited room to turn around, the route could begin at the corner of Overbrook Road and Manor Avenue, and cover all segments in both directions. Alternatively, the northern end could include a one-way clockwise loop, from Weston Road at state Route 9 west on Route 9 to Overbrook Road and north on Overbrook to Manor Avenue, returning east on Manor Avenue to Weston Road, and south to Wellesley Square.

Winchester

The greatest potential for new transit service in this town would be for a route from tract 338100 (in the northeast corner of the town) to Winchester Center. Preliminary analysis indicates that the most suitable alignment would run from Winchester Hospital west on Fairmount Street, south on Washington Street, and west on Mount Vernon Street to the Winchester Center commuter rail station. There, connections can also be made to MBTA local bus Route 134. Outbound trips would follow the same alignment in the opposite direction. Alternatively, part of the route could be run as a one-way loop, running in one direction via Highland Avenue rather than Washington Street. However, Washington Street runs closer to more residences than Highland Avenue, and the two are less than one quarter mile apart at most points.

Westwood

The best potential for new transit service in this town would be for a feeder route from tracts 412100 and 412200 (which include most of the town west of the Washington Street corridor) to the Route 128 commuter rail station on the Attleboro/Stoughton Line. Preliminary analysis indicates that the most suitable alignment would run from near the border of Westwood and Walpole on High Street (state Route 109) over High and Pond Streets and High Street again to Route 128 (I-95), then south on that highway to the exit to Route 128 Station. Alternatively, buses could take the East Street exit and go to Dedham Corporate Center Station on the Franklin Line. However, train service to Boston from Route 128 Station is more frequent, and running time to Boston is shorter from there than from Dedham Corporate Center.

Canton

The greatest potential for new transit service in this town appears to be for a route from Massasoit Community College to Canton Junction. This route would run in almost a straight line from the college via Randolph Street and Washington Street, where a connection could be made to MBTA-funded local bus Route 716, and would continue via Chapman and Beaumont Streets to the Canton Junction commuter rail station. Blue Hills Regional Technical School adjoins the college, and the Massachusetts Hospital School is about halfway between the college and the station. The route could serve town residents commuting to the college or to points along the rail line, as well as reverse-commuting students or faculty. However, more information about the typical geographic distribution of students' homes is needed to predict the viability of such a route.

Salem

Most of this city now has MBTA bus service that can be used both for local transportation and for travel to Boston. The main exception is tract 204400, which includes the Salem Neck peninsula. The Salem Willows residential neighborhood is located at the northern end of the tract, but the only transit service at present is near the southern end. MBTA bus service to Salem Willows was discontinued in 1978. Although the route had insufficient ridership to support an MBTA route with full-size buses, demand now might be sufficient for a non-MBTA minibus route.

The former MBTA bus route to Salem Willows, Route 453, ran from downtown Salem, where it connected with other MBTA bus routes and with commuter rail. When Route 453 was last operated, the commuter rail station was south of New Derby Street, but it has now been relocated north of Bridge Street. A restored Salem Willows bus route should originate at the present rail station.

Old Route 453 started on Washington Street north of Church Street. The outbound routing followed Church and Brown Streets, Washington Square West, Essex and Webb Streets, and Fort Avenue to Island Avenue at the outer end of the peninsula. The inbound route was the reverse of this as far as Essex Street at Washington Square West. From there, it followed Hawthorne Boulevard, New Derby Street, and Washington Street to the end of the line. A restored route would probably be the same as this, along with an extension to the present station, unless present traffic patterns require some revisions in the downtown area.

Waltham

Most of this city now has MBTA bus service that can be used both for local transportation and for travel to Boston. The main exceptions are the northeast sides of tracts 368901 and 369100 along Trapelo Road. Private-carrier and city-sponsored bus service has been run on Trapelo Road at various times in the past. Future service should run to Waverley Square in Belmont, where it would connect with the Fitchburg commuter rail line, with MBTA trackless trolley Route 73 to Harvard Square, and with MBTA bus Route 554 to Waltham Center, Newton Corner, and downtown Boston. An extension of trackless trolley service along Trapelo Road would not be cost-effective.

Route 554 could be extended, but more vehicles would be needed in order to maintain the present frequency on the existing route. The viability of a Trapelo Road service would depend in part on what kind of redevelopment of former state and county hospital sites along the road takes place.

Peabody

Much of this city now has MBTA bus service that can be used both for local transportation and for travel to Boston. The main exception is tract 210300, which includes the geographic center of the city. A route through this tract along Lowell Street could link residential areas with the North Shore Mall and with existing MBTA bus routes to other North Shore points and Boston. A further extension west into tract 210100 (in the northwest corner of the city) would reach an even more heavily populated but unserved area.

2. INITIAL CENSUS TRACT SCREENING AND RESULTS

Summary of Screening Criteria

In the initial analysis, criteria were selected to help identify suburban communities that may be able to support transit. Ratings of high (3), medium (2), or low (1) were assigned to each census tract based on four different sets of criteria.

The first set of criteria was used to identify areas that could support suburban transit for reverse-commute purposes; that is, work trips to suburban employment locations from homes in Boston, Cambridge, or intermediate suburbs. These criteria were employment density, number of residents with access to commuter rail lines serving suburban communities, and the presence of a college.

The second set of criteria was used to evaluate census tracts for traditional-commute-type transit; that is, work trips to Boston or Cambridge from suburban homes. These criteria were population density, commuter rail and major rapid transit station parking capacity, number of suburban residents employed in Cambridge and Boston, and percent households with less than one vehicle per employed adult.

The third set of criteria was used to identify areas that could support suburban-commute transit; that is, work trips with both ends in suburbs. These criteria were percent of households with less than one vehicle per employed adult, population density, employment density, number of low-income households, percent of residents with disabilities, number of intra-town commuters, presence of a major shopping center, presence of a college, and percent minority or non-English-speaking residents.

The fourth set of criteria was used to identify areas that could support suburban mobility transit; that is, non-work trips with both ends in suburbs. These criteria were ages of residents, percent of households with less than one vehicle per employed adult, population density, number of low-income households, percent of residents with disabilities, presence of a major shopping center, presence of a college, presence of a hospital, and percent minority or non-English-speaking residents.

All of the cities and towns in the Boston Region MPO area were included in the screening analysis except for Arlington, Belmont, Boston, Braintree, Brookline, Cambridge, Chelsea, Everett, Malden, Medford, Milton, Newton, Quincy, Revere, Somerville, and Watertown. Except for Braintree and Quincy, these are the "inner 14 cities and towns" that made up the old Metropolitan Transit Authority service area, and all are served by MBTA rapid transit, light rail, or local bus routes. Braintree and Quincy now also have MBTA rapid transit and bus service.

Details of Reverse-Commute Suburban Transit Screening Criteria

Each census tract received a rating of high (3), medium (2), or low (1) on each of the criteria below. For each criterion, an explanation of how the ratings were assigned is provided.

1. **Employment Density -** Higher employment density resulted in a higher rating.

Data Source and Analysis Method: MAPC

Low (1) Rating = Census tracts with fewer than 50 employees per acre.
Medium (2) Rating = Census tracts with 50 to 149 employees per acre.
High (3) Rating = Census tracts with 150 or more employees per acre.

2. **Number of Residents with Access to Commuter Rail Lines Serving the Suburban Community -** A larger proportion of Boston/Cambridge urban core residents (or non-urban core residents with direct commuter and rapid transit rail access), who are employed in the suburban community results in a higher rating.

Data Source: 2000 Census Journey-to-Work Data; Analysis Method: Natural Breaks (A Natural Breaks analysis means that the data are sorted by observed clustering rather than by pre-defined categories.)

Low (1) Rating = Census tracts with no direct commuter rail access.
Medium (2) Rating = Census tracts in which up to 40% of the jobs are held by individuals residing in cities or towns with direct commuter rail access to these tracts.
High (3) Rating = Census tracts in which over 40% of the jobs are held by individuals residing in cities or towns with direct commuter rail access to these tracts.

3. **Presence of Major College or University -** The presence of a major college or university within five miles of a census tract's geographic center resulted in a medium rating. A tract in which is located a college or university with a substantial proportion of commuter students received a high rating.

Data Source: S. Peterson, CTPS; Analysis Method: Description of analysis is stated above.

Low (1) Rating = Census tracts with no major college or university.
Medium (2) Rating = Census tracts with a college or university within five miles of the tract geographic center.
High (3) Rating = Census tracts with a college or university that has commuter students as 50% or greater of enrollment. (One census tract in Beverly with two colleges received a high rating although the commuter population was less than 50% at each college.)

Rating Results for Reverse-Commute Suburban Transit Analysis

Figure 2-1 shows census tracts that received high ratings when screened through the reverse-commute criteria described above. These tracts are listed below, with brief summaries of the reasons for their high ratings. (A tract cluster is defined as a group of adjoining tracts.)

Clusters of Census Tracts with High Ratings under Reverse-Commute Criteria

1. Waltham, Wellesley, and Weston (368400, 500, 600, 800, 901, 902; 404100, 201, 202, 400; 367100, 200) – This cluster of census tracts received a high rating in this analysis, for access to commuter rail and rapid transit to the suburbs and for the presence of a major college or university.

2. Lynn, Salem, and Swampscott (206100, 200, 400, 600, 700; 207000, 100; 204101, 102, 300, 400; 202200) – This cluster of census tracts received high ratings in this analysis, for access to commuter rail and rapid transit to the suburbs and for the presence of a major college or university.

3. Beverly, Danvers, Hamilton, Manchester, and Wenham (217201, 202, 300, 400, 500, 600; 211400, 215100, 216100, 218100) – This cluster of census tracts received high ratings in this analysis, for access to commuter rail and rapid transit to the suburbs and for the presence of a major college or university.

4. Melrose and Wakefield (336100, 200, 402; 335400) – This cluster of census tracts received high ratings in this analysis for access to commuter rail and rapid transit to the suburbs .

5. Framingham (383501, 502) – These two census tracts received a high rating because of the location of a major college or university and for access to commuter rail and rapid transit to the suburbs.

6. Needham (403100, 200) – These two census tracts received a high rating in this analysis for access to commuter rail and rapid transit to the suburbs.

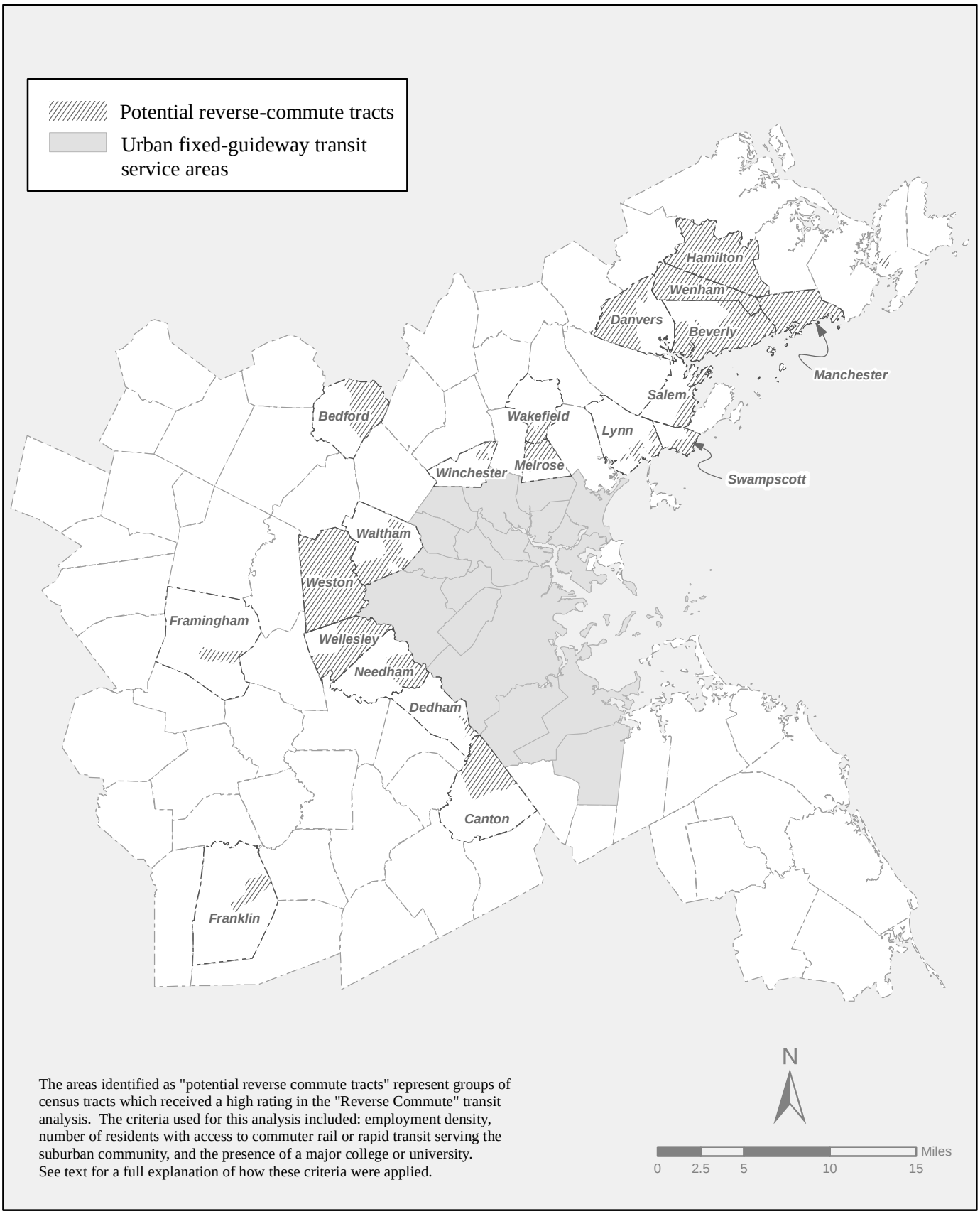
Individual Census Tracts with High Ratings under Reverse-Commute Criteria

1. Bedford (359100) – This census tract received a high rating for the presence of a college or university.

2. Canton (415300) – This census tract received a high rating for the presence of a college or university and a medium rating for access to commuter rail and rapid transit to the suburbs.

3. Dedham (402200) – This census tract received a high rating for access to commuter rail and rapid transit to the suburbs.

4. Franklin (442101) – This census tract received a high rating for the presence of a college or university and a medium rating for access to commuter rail and rapid transit to the suburbs.



The areas identified as "potential reverse commute tracts" represent groups of census tracts which received a high rating in the "Reverse Commute" transit analysis. The criteria used for this analysis included: employment density, number of residents with access to commuter rail or rapid transit serving the suburban community, and the presence of a major college or university. See text for a full explanation of how these criteria were applied.

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Figure 2-1

Tracts with High Ratings for Reverse-Commute-Type Service Potential

5. Gloucester (221600) – This census tract received a high rating for access to commuter rail and rapid transit to the suburbs.

6. Winchester (338100) – This census tract received a medium rating for employment density and access to commuter rail and rapid transit to the suburbs.

Details of Traditional-Commute Suburban Transit Screening Criteria

1. **Population Density** – Higher population density resulted in a higher rating.

Data Source and Analysis Method: MAPC

Low (1) Rating = Census tracts with fewer than 19 people per acre.
Medium (2) Rating = Census tracts with 19 – 74 people per acre.
High (3) Rating = Census tracts with more than 74 people per acre.

2. **Commuter Rail Parking Capacity –** Closer proximity to a commuter rail or rapid transit station with no parking, or with parking filled to capacity on a typical weekday, resulted in a higher rating.

Data Source: 2003 CMS; Analysis Method: Description of analysis is stated above.

Low (1) Rating = Census tracts with geographic centers more than five miles from any commuter rail or rapid transit station with constrained parking facilities.
Medium (2) Rating = Census tracts with geographic centers between three and five miles from commuter rail or rapid transit stations with constrained parking facilities.
High (3) Rating = Census tracts with geographic centers less than three miles from commuter rail or rapid transit stations with constrained parking facilities.

3. **Number of Suburban Residents Employed in Boston/Cambridge -** A larger proportion of suburban community residents employed in the Boston/Cambridge urban core resulted in a higher rating.

Data Source: 2000 Census; Analysis Method: Normal (Bell) Distribution

A normal (bell) distribution has 16% of the values in the data set as high and low while the majority (68%) of the values fall in the middle of the curve.

Low (1) Rating = Census tracts with 2.3% - 9.9% of resident workers employed in Boston or Cambridge.
Medium (2) Rating = Census tracts with 10 % - 27% of resident workers employed in Boston or Cambridge.
High (3) Rating = Census tracts with more than 27% of resident workers employed in Boston or Cambridge.

4. **Auto Ownership** - A larger proportion of households with less than one vehicle per employed adult resulted in a higher rating.

Data Source: 2000 Census; Analysis Method: Natural Breaks

Low (1) Rating = Census tracts with less than 9% of households having less than one vehicle per employed adult.
Medium (2) Rating = Census tracts with 9% - 13.9% of households having less than one vehicle per employed adult.
High (3) Rating = Census tracts with 14% or more of households having less than one vehicle per employed adult.

Rating Results for Traditional-Commute Suburban Transit Analysis

Figure 2-2 shows census tracts that received high ratings in this analysis based on the criteria described above. These tracts are listed below, with brief summaries of the reasons for their selection. (A tract cluster is defined as a group of adjoining tracts.)

Clusters of Census Tracts with High Ratings under Traditional-Commute Criteria

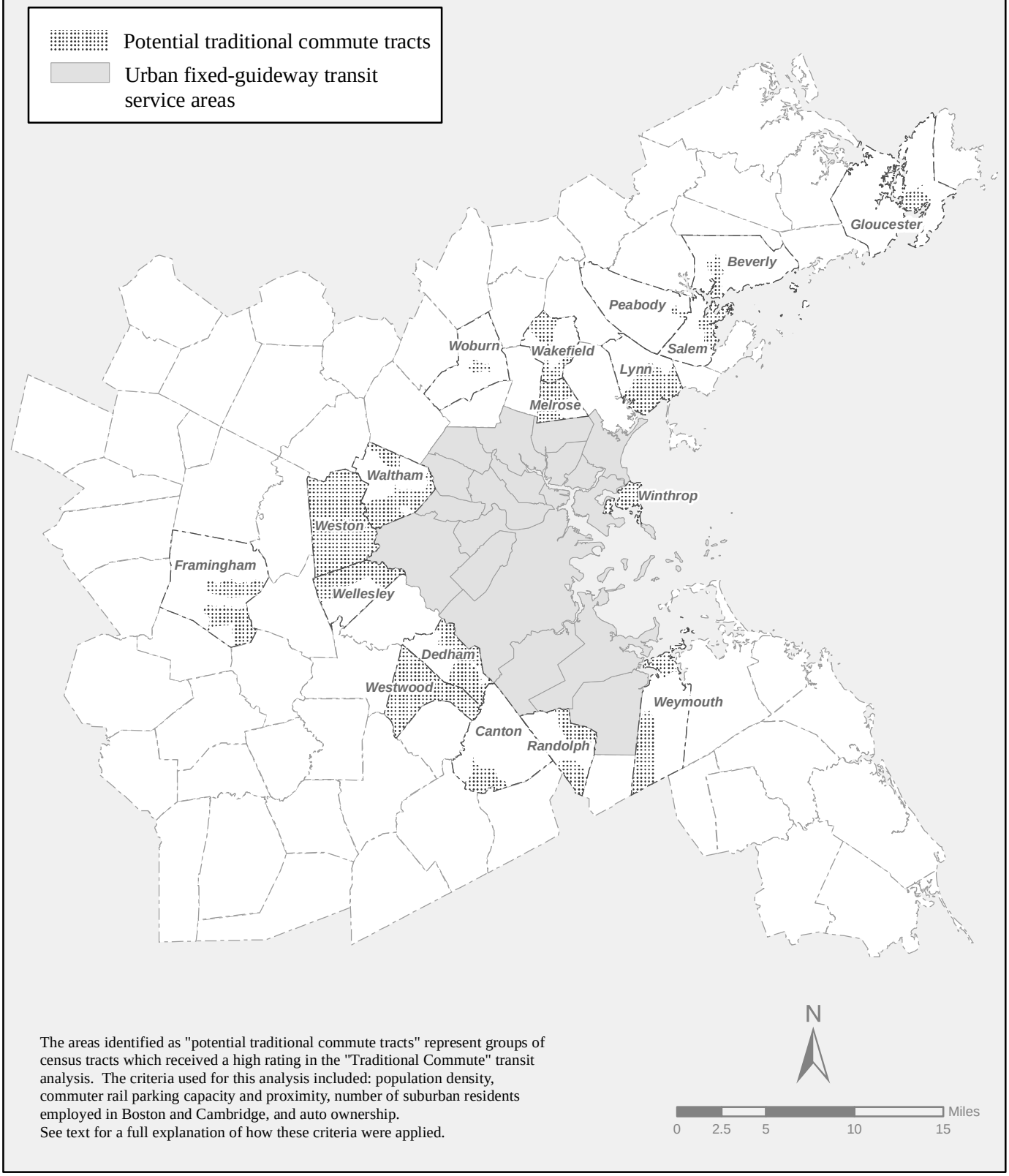
1. Lynn (205200, 500, 700, 800, 900; 206000, 100, 200, 300, 400, 500, 600, 700, 800, 900; 207000, 100, 200) – Census tracts in this cluster received high ratings for proximity to commuter rail or rapid transit parking lots that fill to capacity. All but one of the tracts received a high rating under the auto ownership criteria. All received medium ratings under the population density criteria. Sixteen of the eighteen tracts received medium ratings for percentage of resident workers employed in Boston or Cambridge.

2. Waltham, Wellesley, Weston (368101, 300, 400, 500, 600, 800, 902; 369100; 404100, 201, 301, 302; 367100, 200) - Census tracts in this cluster received high ratings for proximity to commuter rail and rapid transit parking lots that fill to capacity. All of the tracts received medium or high ratings under the population density criteria and for percentage of resident workers employed in Boston or Cambridge.

3. Beverly and Salem (217300, 400; 204101, 200, 300, 400, 500) - Census tracts in this cluster received high ratings for proximity to commuter rail and rapid transit parking lots that fill to capacity. They also received high ratings under the auto ownership criteria, and medium ratings under the population density criteria.

4. Dedham and Westwood (402101, 102, 300, 400; 412100, 200, 300) - Census tracts in this cluster received high ratings for proximity to commuter rail and rapid transit parking lots that fill to capacity and for percentage of resident workers employed in Boston or Cambridge.

5. Melrose and Wakefield (336100, 200, 401, 402; 335100, 400) - Census tracts in this cluster received high ratings for proximity to commuter rail and rapid transit parking lots that fill to capacity. They also received medium or high ratings under the auto ownership criteria, and for percentage of resident workers employed in Boston or Cambridge.



The areas identified as "potential traditional commute tracts" represent groups of census tracts which received a high rating in the "Traditional Commute" transit analysis. The criteria used for this analysis included: population density, commuter rail parking capacity and proximity, number of suburban residents employed in Boston and Cambridge, and auto ownership.
See text for a full explanation of how these criteria were applied.

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Figure 2-2
Tracts with High Ratings for Traditional-Commute-Type Service Potential

6. Winthrop (180100, 200, 300, 400, 500) - Census tracts in this cluster, which covers the entire town, received high ratings under the auto ownership criteria, and for the percentage of resident workers employed in Boston or Cambridge. They also received medium ratings under the population density criteria.

7. Framingham (383100, 300, 400, 500) - These census tracts received high ratings for proximity to commuter rail parking lots that fill to capacity. They also received medium or high ratings under the auto ownership criteria.

8. Gloucester (221400, 500, 600, 700) - These census tracts received high ratings under the auto ownership criteria and for proximity to commuter rail parking lots that fill to capacity. They all received medium ratings under the population density criteria.

9. Weymouth (422100, 301, 700, 800) - These census tracts are all located in the same town but do not all adjoin each other. Census tracts 422100 and 422301, located in the southwest corner of Weymouth, received high ratings for proximity to commuter rail or rapid transit parking lots that fill to capacity. They also received medium or high ratings under the other three traditional-commute criteria. Tracts 422700 and 422800, located in the northern edge of Weymouth, received high ratings for the percentage of resident workers employed in Boston or Cambridge and medium or high ratings under the other three traditional-commute criteria.

10. Randolph (420100, 302) - These census tracts are located in the same town but do not adjoin each other. Both tracts received high ratings for the percentage of resident workers employed in Boston or Cambridge and for proximity to commuter rail and rapid transit parking lots that fill to capacity.

Individual Census Tracts with High Ratings under Traditional-Commute Criteria

1. Canton (415102) - This census tract received a high rating for the percentage of resident workers employed in Boston or Cambridge and for proximity to commuter rail and rapid transit parking lots that fill to capacity.

2. Peabody (210800) - This census tract received a high rating for proximity to commuter rail parking lots that fill to capacity.

3. Woburn (33502) - This census tract received a high rating for proximity to commuter rail parking lots that fill to capacity, and also under the auto ownership criteria.

Details of Suburban-Commute Suburban Transit Screening Criteria

1. **Auto Ownership** - A larger proportion of households with less than one vehicle per employed adult resulted in a higher rating.

Data Source: 2000 Census; Analysis Method: Natural Breaks

Low (1) Rating = Census tracts with less than 9% of households with less than one vehicle per employed adult.

Medium (2) Rating = Census tracts with 9% - 13.9% of households with less than one vehicle per employed adult.
High (3) Rating = Census tracts with 14% or more of households with less than one vehicle per employed adult.

2. **Population Density** – A higher population density resulted in a higher rating.

Data Source and Analysis Method: MAPC

Low (1) Rating = Census tracts with fewer than 19 people per acre.
Medium (2) Rating = Census tracts with 19 – 74 people per acre.
High (3) Rating = Census tracts with more than 74 people per acre.

3. **Employment Density -** Higher employment density resulted in a higher rating.

Data Source and Analysis Method: MAPC

Low (1) Rating = Census tracts with fewer than 50 employees per acre.
Medium (2) Rating = Census tracts with 50 – 149 employees per acre.
High (3) Rating = Census tracts with more than 150 employees per acre.

4. **Low-Income Households -** A higher proportion of households with incomes below 75% of the MPO median resulted in a higher rating. The Boston Region MPO median income was $55,800 in 1999, and 75% of that was $41,850. This is the same criterion that is used in the 2003 MPO environmental justice methodology.

Data Source: 2000 Census; Analysis Method: Description of analysis is stated above.

Low (1) Rating = Census tracts with 7% - 19% of household incomes below 75% of MPO median.
Medium (2) Rating = Census tracts with 20% - 43% of household incomes below 75% of MPO median.
High (3) Rating = Census tracts with more than 43% of household incomes below 75% of MPO median.

5. **Residents with Disabilities -** A higher proportion of residents with disabilities resulted in a higher rating. The census classifies an individual as having a disability if any of these three conditions are true: they were 5 years or older and had a sensory, physical, mental, or self-care disability; they were 16 years or older and had a going-outside-the-house disability; they were between 16 and 64 years old and had an employment disability.

Data Source: 2000 Census; Analysis Method: Normal (Bell) Distribution

Low (1) Rating = Census tracts in which 5% - 10.6% of residents have disabilities.
Medium (2) Rating = Census tracts in which 10.7% – 21.2% of residents have disabilities.
High (3) Rating = Census tracts in which more than 21.2% of residents have disabilities.

6. **Number of Intra-town Commuters -** A larger proportion of residents of a tract employed within the same city or town or in a city or town adjoining the one of residence resulted in a higher rating.

Data Source: 2000 Census; Analysis Method: Normal (Bell) Distribution

Low (1) Rating = Census tracts with 21% - 31.9% of resident workers employed in the same city or town or in an adjoining one.
Medium (2) Rating = Census tracts with 32% - 52.9% of resident workers employed in the same city or in an adjoining one.
High (3) Rating = Census tracts with 53% or more of resident workers employed in the same city or in an adjoining one.

7. **Presence of Minority and/or Non-English-speaking Populations -** A census tract with high proportions both of non-English-speaking residents and of minority residents received a high rating. A tract with a high proportion either of non-English-speaking residents or of minority residents, but not both, received a medium rating. A tract with low proportions both of non-English-speaking residents and of minority residents received a low rating. A tract was classified as having a high proportion of minority residents if at least 21% were minorities. This was based on the 2003 Boston Region MPO environmental justice criterion. A tract was classified as having a high proportion of non-English-speaking residents based on a natural breaks analysis.

Data Source: 2000 Census and 2003 Environmental Justice Analysis;
Analysis Method: Description of analysis is stated above.

Low (1) Rating = Ninety of the study-area census tracts received low ratings.
Medium (2) Rating = One hundred and ninety of the study-area census tracts received medium ratings.
High (3) Rating = Thirty-eight of the study-area census tracts received high ratings.

8. **Presence of a Major Shopping Center -** A census tract with a geographic center three to five miles from a major regional shopping center serving shoppers from a wide range of municipalities was given a medium rating. A tract with a geographic center within three miles of such a shopping hub was given a high rating.

Data Source: D. Kruse, CTPS; Analysis Method: Description of analysis is stated above.

Low (1) Rating = Census tracts with no major shopping centers within five miles of the census tract's geographic center.
Medium (2) Rating = Census tracts with a major shopping center three to five miles from the census tract's geographic center.
High (3) Rating = Census tracts with a major shopping center within three miles of the census tract's geographic center.

9. **Presence of Major College or University -** The presence of a major college or university within five miles of a census tract's geographic center resulted in a medium rating. A tract in which is located a college or university with a substantial proportion of commuter students received a high rating.

Data Source: S. Peterson, CTPS; Analysis Method: Description of analysis is stated above.

Low (1) Rating = Census tracts with no major college or university.
Medium (2) Rating = Census tracts with a college or university within five miles of the tract's geographic center.
High (3) Rating = Census tracts with a college or university that has commuter students as 50% or more of enrollment. (One census tract in Beverly with two colleges received a high rating although the commuter population was less than 50% at each college.)

Rating Results for Suburban-Commute Suburban Transit Analysis

Figure 2-3 shows census tracts that received high ratings in this analysis based on the criteria described above. These tracts are listed below, with brief summaries of the reasons for their selection. (A tract cluster is defined as a group of adjoining tracts.)

Clusters of Census Tracts with High Ratings under Suburban-Commute Criteria

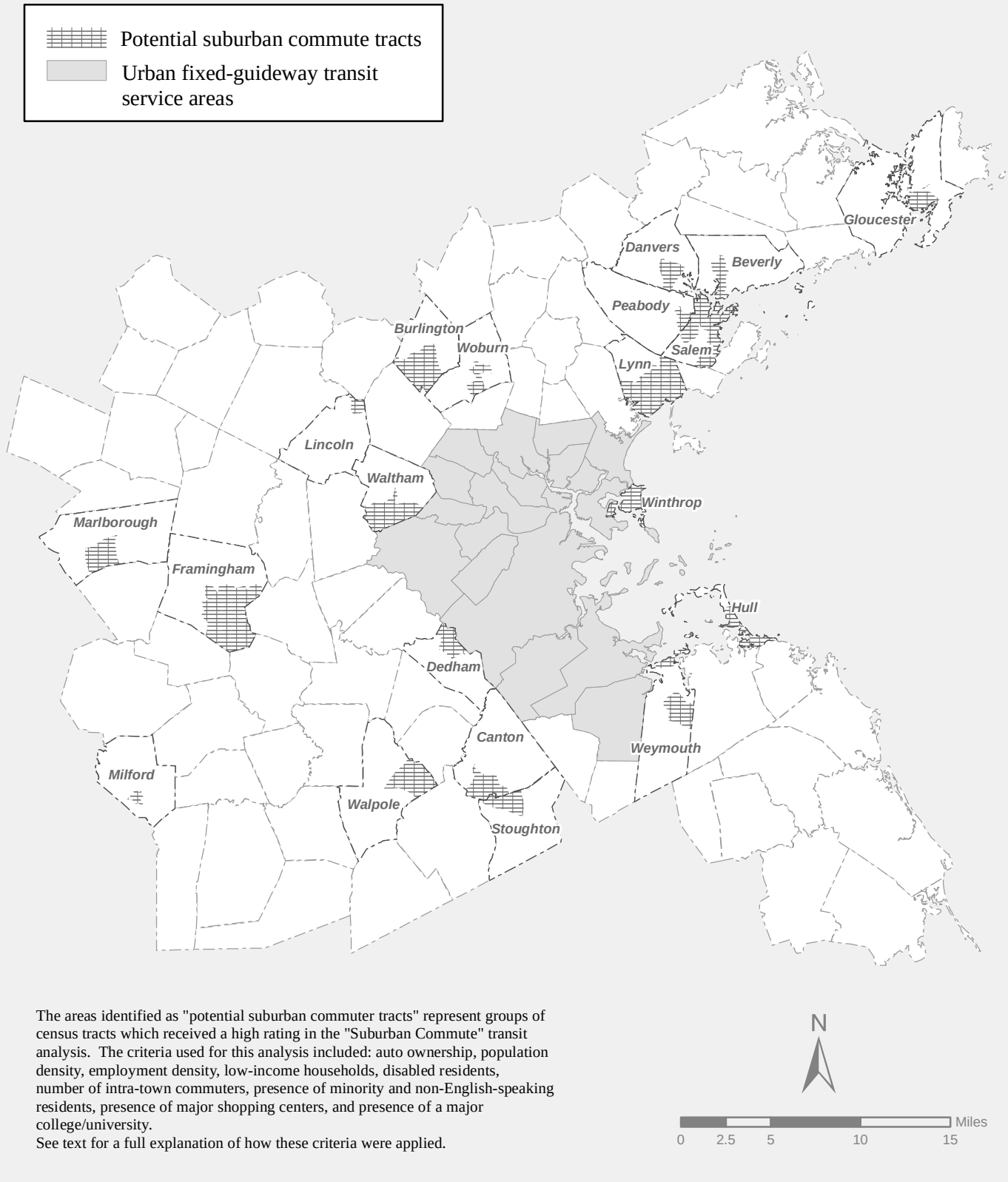
1. Lynn (205200, 500, 600, 700, 800, 900; 206000, 100, 200, 300, 400, 500, 600, 700, 800, 900; 207000, 100, 200) - This cluster of census tracts received mostly high ratings under the criteria for auto ownership, low-income households, percent of residents with disabilities, and minority or non-English-speaking residents. Also, all of the tracts received medium ratings under the population density criteria.

2. Beverly, Peabody, Salem (217300, 400; 210700, 800; 204101, 102, 200, 300, 400, 500, 600, 702) - This cluster of census tracts received mostly high ratings under the criteria for auto ownership, low-income households, percent of residents with disabilities, percent of resident workers employed in the same or an adjacent city or town, and minority or non-English-speaking residents.

3. Framingham (383100, 200, 300, 400, 501, 502, 600) - This cluster of census tracts received mostly high ratings under the criteria for auto ownership, low-income households, percent of residents with disabilities, percent of resident workers employed in the same or an adjacent city or town, and minority or non-English-speaking residents.

4. Waltham (368300, 400, 500, 600, 700, 800) - These census tracts received mostly high ratings under the criteria for auto ownership, population density, low-income households, percent of residents with disabilities, percent of resident workers employed in the same or an adjacent city or town, and minority or non-English-speaking residents.

5. Winthrop (180100, 200, 300, 400, 500) - Every census tract in Winthrop received a high rating under the criteria for auto ownership and the percent of resident workers employed in the same or an adjacent city or town. These tracts also ranked medium or high



The areas identified as "potential suburban commuter tracts" represent groups of census tracts which received a high rating in the "Suburban Commute" transit analysis. The criteria used for this analysis included: auto ownership, population density, employment density, low-income households, disabled residents, number of intra-town commuters, presence of minority and non-English-speaking residents, presence of major shopping centers, and presence of a major college/university.
See text for a full explanation of how these criteria were applied.

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Regionwide Suburban Transit Opportunities Study, Phase II

Figure 2-3
Tracts with High Ratings for Suburban-Commute-Type Service Potential

for the percent of residents with disabilities and medium under the criteria for population density and low-income households.

6. Gloucester (221400, 500, 600, 700) - This cluster of census tracts in the central part of Gloucester all received high ratings under the criteria for auto ownership, low-income households, and percent of resident workers employed in the same or an adjacent city or town.

7. Canton and Stoughton (415102, 456300) - These two census tracts adjoin each other in Canton and Stoughton. They received medium or high ratings under the criteria for auto ownership, low-income households, percent of residents with disabilities, percent of resident workers employed in the same or an adjacent city or town, and minority or non-English-speaking residents.

8. Woburn (333300, 502) - These census tracts received high ratings under the criteria for low-income households, and medium or high ratings under the criteria for auto ownership, percent of residents with disabilities, and percent of resident workers employed in the same or an adjacent city or town.

Individual Census Tracts with High Ratings under Suburban-Commute Criteria

1. Burlington (332400) - This census tract received a high rating under the criteria for presence of a shopping center and medium ratings under criteria for employment density, low-income households, percent of residents with disabilities, percent of resident workers employed in the same or an adjacent town, and minority or non-English-speaking residents.

2. Danvers (211200) - This census tract received high ratings under the criteria for the presence of a shopping center and for percent of resident workers employed in the same or an adjacent city or town. It received medium ratings under the criteria for low-income households and for percent of residents with disabilities.

3. Dedham (402101) - This census tract received high ratings under the criteria for the presence of a shopping center and for percent of resident workers employed in the same or an adjacent city or town. It received medium ratings under the criteria for auto ownership, low-income households, percent of residents with disabilities, and minority or non-English-speaking residents.

4. Hull (500102) - This census tract received high ratings under the criteria for the percent of residents with disabilities and for the percent of resident workers employed in the same or an adjacent city or town. It received medium ratings under the criteria for auto ownership and low-income households.

5. Lincoln (360100) - This census tract received high ratings under the criteria for auto ownership and for the percent of resident workers employed in the same or an adjacent city or town. It received medium ratings under the criteria for population density, low-income households, and minority or non-English-speaking residents.

6. Marlborough (321300) - This census tract received high ratings under the criteria for low-income households and for minority or non-English-speaking residents. It received medium

ratings under the criteria for auto ownership, population density, percent of residents with disabilities, and percent of resident workers employed in the same or an adjacent city or town.

7. Milford (744300) - This census tract received high ratings under the criteria for low-income households and for percent of residents with disabilities. It received medium ratings under the criteria for auto ownership, percent of resident workers employed in the same or an adjacent city or town, and minority or non-English-speaking residents.

8. Walpole (411200) - This census tract received a high rating under the criteria for presence of a major shopping center. It received medium ratings under the criteria for population density, low-income households, percent of residents with disabilities, percent of resident workers employed in the same or an adjacent city or town, and minority or non-English-speaking residents.

9. Weymouth (422800) - This census tract received a high rating under the auto ownership criteria. It received medium ratings under the criteria for population density, low-income households, percent of residents with disabilities, and percent of resident workers employed in the same or an adjacent city or town.

Details of Suburban-Mobility Suburban Transit Screening Criteria

1. **Age -** A larger proportion of residents between the ages of 11 and 18 or over the age of 75 resulted in a higher rating. Because the census was taken in 2000, which was five years ago, data were extracted from the census for residents between the ages of 6 to 10 and over the age of 70.

Data Source: 2000 Census; Analysis Method: Natural Breaks

Low (1) Rating = Census tracts with less than 23% of residents between the ages of 6 and 10 or over the age of 70 in the year 2000.
Medium (2) Rating = Census tracts with 23% - 26% of residents between the ages of 6 and 10 or over the age of 70 in the year 2000.
High (3) Rating = Census tracts with 27% or more of residents between the ages of 6 and 10 or over the age of 70 in the year 2000.

2. **Auto Ownership** - A larger proportion of households with less than one vehicle per employed adult resulted in a higher rating.

Data Source: 2000 Census; Analysis Method: Natural Breaks

Low (1) Rating = Census tracts with less than 9% of households with less than one vehicle per employed adult.
Medium (2) Rating = Census tracts with 9% - 13.9% of households with less than one vehicle per employed adult.
High (3) Rating = Census tracts with 14% or more of households with less than one vehicle per employed adult.

3. **Population Density** – A higher population density resulted in a higher rating.

Data Source and Analysis Method: MAPC

Low (1) Rating = Census tracts with fewer than 19 people per acre.
Medium (2) Rating = Census tracts with 19 – 74 people per acre.
High (3) Rating = Census tracts with more than 74 people per acre.

4. **Low-Income Households -** A higher proportion of households with incomes below 75% of the MPO median resulted in a higher rating. The Boston Region MPO median income was $55,800 in 1999, and 75% of that was $41,850. This is the same criterion used in the 2003 MPO environmental justice methodology.

Data Source: 2000 Census; Analysis Method: Description of analysis is stated above.

Low (1) Rating = Census tracts with 7% - 19% of household incomes less than 75% of MPO median.
Medium (2) Rating = Census tracts with 20% - 43% of household incomes less than 75% of MPO median.
High (3) Rating = Census tracts with more than 43% of household incomes less than 75% of MPO median.

5. **Residents with Disabilities –** See criteria set 5 under Suburban-Commute-Mobility for details.

Data Source: 2000 Census; Analysis Method: Normal (Bell) Distribution

Low (1) Rating = Census tracts in which 5% - 10.6% of residents have disabilities.
Medium (2) Rating = Census tracts in which 10.7% – 21.2% of residents have disabilities.
High (3) Rating = Census tracts in which more than 21.2% of residents have disabilities.

6. **Presence of Minority and/or Non-English-speaking Populations -** See criteria set 5 under Suburban-Commute-Mobility for details.

Data Source: 2000 Census and 2003 Environmental Justice Analysis;
Analysis Method: Description of analysis is stated above.

Low (1) Rating = Ninety of the study-area census tracts received low ratings.
Medium (2) Rating = One hundred and ninety of the study-area census tracts received medium ratings.
High (3) Rating = Thirty-eight of the study-area census tracts received high ratings.

7. **Presence of a Major Shopping Center -** See criteria set 8 under Suburban-Commute-Mobility for details.

Data Source: D. Kruse, CTPS; Analysis Method: Description of analysis is stated above.

Low (1) Rating = Census tracts with no major shopping centers within five miles of the census tract's geographic center. (302 out of 318 tracts)
Medium (2) Rating = Census tracts with a major shopping center three to five miles from the census tract's geographic center. (4 out of 318 tracts)
High (3) Rating = Census tracts with a major shopping center within three miles of the census tract's geographic center. (12 out of 318 tracts)

8. **Presence of Major College or University -** See criteria set 9 under Suburban-Commute-Mobility for details.

Data Source: S. Peterson, CTPS; Analysis Method: Description of analysis is stated above.

Low (1) Rating = Census tracts with no major college or university. (298 out of 318 tracts)
Medium (2) Rating = Census tracts with a college or university within five miles of the tract's geographic center. (7 out of 318 tracts)
High (3) Rating = Census tracts with a college or university that has commuter students as 50% or more of enrollment. (One census tract in Beverly with two colleges received a high rating although the commuter population was less than 50% at each college.) (13 out of 318 tracts)

9. **Presence of Major Medical Center** - Census tracts that have no hospitals located in them received a low rating. Tracts that have hospitals located in them with a large number of beds received a high rating.

Data Source: S. Peterson, CTPS; Analysis Method: Natural Breaks

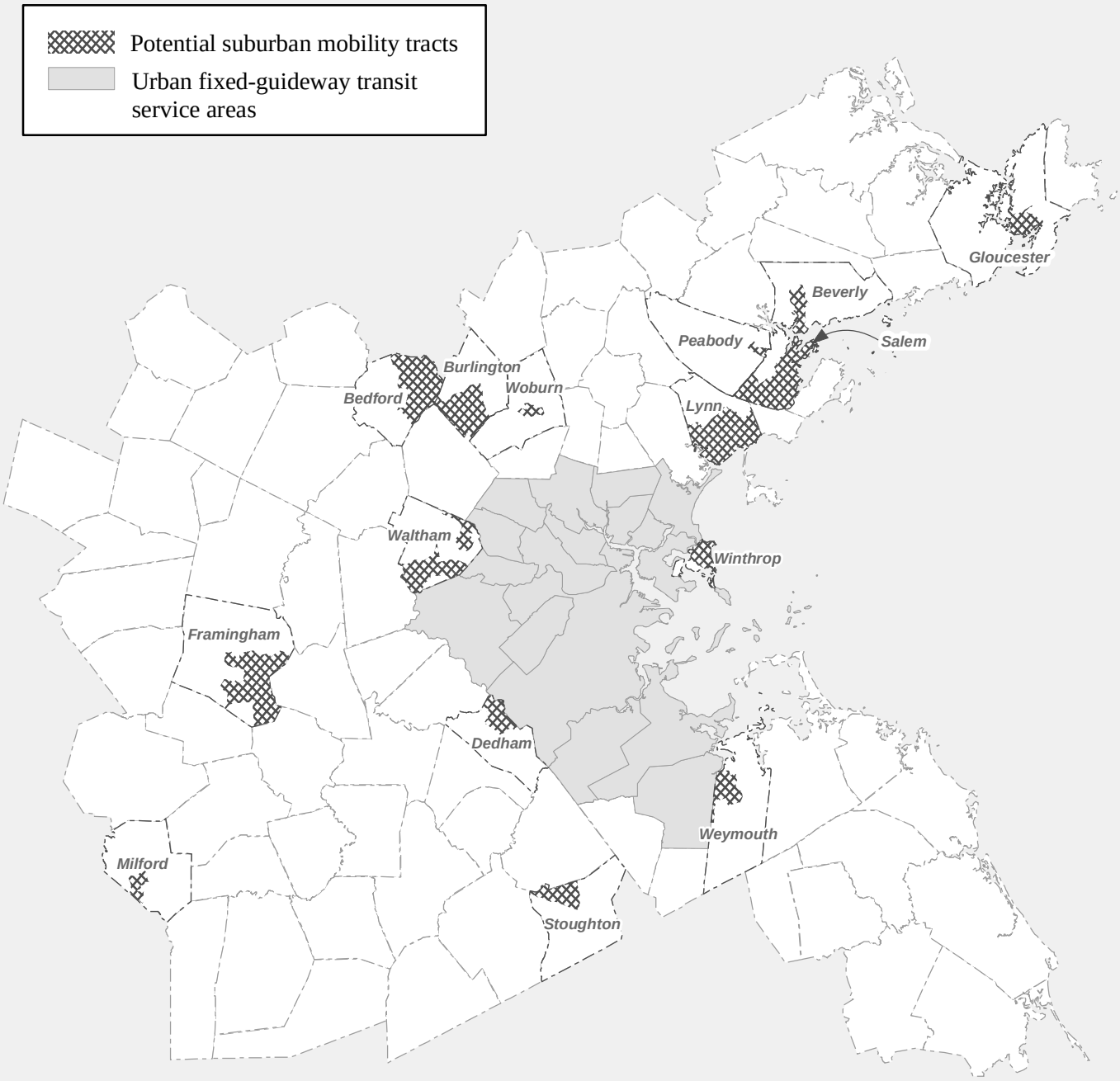
Low (1) Rating = Census tracts with no hospitals. (289 out of 318 tracts)
Medium (2) Rating = Census tracts with hospitals that have fewer than 250 beds. (23 out of 318 tracts)
High (3) Rating = Census tracts with hospitals that have more than 250 beds. (6 out of 318 tracts)

Rating Results for Suburban Mobility Suburban Transit Analysis

Figure 2-4 shows census tracts that received high ratings in this analysis based on the criteria described above. These tracts are listed below, with brief summaries of the reasons for their selection. (A tract cluster is defined as a group of adjoining tracts.)

Clusters of Census Tracts with High Ratings under Suburban Mobility Criteria

1. Beverly, Lynn, Peabody, Salem (217300, 400; 205200, 500, 600, 700, 800, 900; 206000,100, 200, 300, 400, 500, 600, 700, 800; 207000, 100, 200; 210300, 800; 204101, 200, 300, 400, 500, 701, 702) - This cluster consists of over 30 census tracts adjoining each other in Lynn, Salem, Beverly, and Peabody. All of the tracts in this cluster received medium or high ratings under the criteria for auto ownership, population density, low-income households, percent of residents with disabilities, and minority or non-English-speaking residents.



The areas identified as "potential suburban mobility tracts" represent groups of census tracts which received a high rating in the "Suburban Mobility" transit analysis. The criteria used for this analysis included: age, auto ownership, population density, low-income households, disabled residents, presence of minority and non-English-speaking residents, presence of major shopping centers, and presence of a major medical center.
See text for a full explanation of how these criteria were applied.

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Regionwide Suburban Transit Opportunities Study, Phase II

Figure 2-4
Tracts with High Ratings for Suburban-Mobility-Type Service Potential

2. Waltham (368300, 400, 500, 700, 800; 369000) - All but one of the census tracts in this cluster received a high rating under the auto ownership criteria. All of the tracts received medium or high ratings under the criteria for population density, low-income households, percent of residents with disabilities, and minority or non-English-speaking residents.

3. Framingham (383100, 300, 400, 501, 600) - All of the census tracts in this cluster received a high rating under the criteria for minority or non-English-speaking residents. These tracts also received medium or high ratings under the criteria for low-income households and percent of residents with disabilities.

4. Winthrop (180100, 200, 400, 500) - All of the census tracts in this cluster received high ratings under the auto ownership criteria. These tracts also received medium or high ratings under the criteria for population density, low-income households, and percent of residents with disabilities.

5. Bedford and Burlington (359100 and 332400) - These two census tracts adjoin each other in Bedford and Burlington. They received medium or high ratings under the criteria for age, low-income households, percent of residents with disabilities, minority or non-English-speaking residents, and the presence of a major medical center.

Individual Census Tracts with High Ratings under Suburban-Mobility Criteria

1. Dedham (402101) - This census tract received a high rating for the presence of a major shopping center and medium ratings under the criteria for age, auto ownership, low-income households, percent of residents with disabilities, and minority or non-English-speaking residents.

2. Milford (744400) - This census tract received a high rating under the low-income-household criteria and medium ratings under the criteria for age, auto ownership, percent of residents with disabilities, minority or non-English-speaking residents, and the presence of a major medical center.

3. Stoughton (456300) - This census tract received high ratings under the criteria for low-income households and percent of residents with disabilities. It received medium ratings under the criteria for age, auto ownership, and minority or non-English-speaking residents.

4. Weymouth (422400) – This census tract received a high rating under the criteria for age and low-income households. It received medium ratings under the criteria for population density, percent of residents with disabilities, and minority or non-English-speaking residents.

5. Woburn (333502) - This census tract received high ratings under the criteria for auto ownership and low-income households. It received medium ratings under the criteria for age, percent of residents with disabilities, and minority or non-English-speaking residents.

3. ANALYSIS OF POTENTIAL NEW TRANSIT SERVICES

Chapter Overview

As discussed in Chapter 2, the initial analysis for this project subjected each of the census tracts in the study area to several sets of screening criteria. This generated four lists of tracts that appeared, on the basis of various socioeconomic characteristics, to have the best potential to support suburban transit services. The next step, as discussed in Appendix A, was to compile, for each of the tracts on these lists, an inventory of transit services provided currently or in the recent past. The vast majority of the tracts were found to already have at least some bus service either provided directly or partly funded by the MBTA. Several of these also have stations on the MBTA commuter rail system.

Tracts with high potential for supporting suburban transit services according to the screening criteria, but having none at present, were found in eight towns. In order of appearance in Chapter 2, these were Wellesley, Manchester-by-the-Sea, Hamilton, Wenham, Needham, Franklin, Winchester, and Westwood. Each of these towns has one or more MBTA commuter rail stations, but these do not serve the same kinds of local transportation functions envisioned for the Suburban Mobility Funding Program, and some of the identified tracts are not served directly by any station.

Because only eight towns were found with tracts meeting the strict criteria of high potential for supporting suburban transit service, but having none currently, the search was widened slightly. Under the expanded standards, tracts with potential to support new transit service could also be considered if their only existing service was either very infrequent or was beyond convenient access distance from many of the trip generators in the tract. These additional tracts were selected from two groups. The first of these included tracts identified under more than one set of screening criteria as having potential to support transit service. From this group four tracts, in Salem, Weston (two), and Canton, were selected. The second group included tracts identified under only one set of screening criteria as having potential to support transit service. From this group two tracts, in Waltham and Peabody, were selected. Each of these municipalities other than Peabody currently has MBTA commuter rail service, but in most cases it does not serve the selected tracts directly.

All other tracts that were identified as having potential to support suburban transit services already have fairly high levels of such service. Information sources available for this analysis did not reveal any need for new services in these tracts. However, this should not rule them out for improvements that may subsequently be brought to the attention of CTPS by those with greater familiarity with the areas in question.

As described in the remainder of this chapter, a more detailed analysis of present land uses and road networks in the tracts listed above was conducted, and attempts were made to design new suburban transit routes that would meet the needs indicated by the preliminary screening criteria. This resulted in suggestions for new routes in seven of the municipalities listed above: Wellesley, Winchester, Westwood, Salem, Canton, Waltham, and Peabody. The analysis was unable to identify new transit

services that could efficiently meet the needs identified in the other six communities (Manchester-by-the-Sea, Hamilton, Wenham, Needham, Franklin, and Weston).

Summary of Findings

Of the eight towns including census tracts identified as having potential to support suburban transit service but not currently having any, five were found upon further analysis to have insufficient potential. Specifically, Manchester-by-the-Sea, Hamilton, Wenham, and part of Needham were all previously identified as having potential to support reverse-commuting service because of proximity to commuter rail. However, none of them contain either individual large employers or clusters of smaller employers that could be served effectively by new transit connections from the commuter rail lines. Part of Franklin received a high rating under the reverse-commuting criteria because of the presence of a major college or university and access to commuter rail. However, the college is within convenient walking distance of the rail station.

The remaining three towns on the list of those having tracts with no transit service are Wellesley, Winchester, and Westwood. In Wellesley, a feeder route from tract 404300 (in the northwest corner of the town) to the Wellesley Square commuter rail station for traditional commuting should be given further consideration. In Winchester, a route from Winchester Center to Winchester Highlands and Winchester Hospital in tract 338100 should be considered. This could serve traditional commuting, reverse commuting, and medical appointments, and provide connections to commuter rail and local bus service. In Westwood, a feeder bus route from tracts 412100 and 412200 (which include most of the town west of the Washington Street corridor) to the Route 128 commuter rail station for traditional commuting should be considered.

Only two towns with limited present transit service, Canton and Weston, had tracts that were ranked high for new transit service potential under more than one set of screening criteria. In addition, although Salem overall has substantial transit service, one tract with limited transit service in Salem ranked high under multiple criteria sets.

Depending on enrollment data, a new feeder bus route from Canton Junction Station to Massasoit Community College in tract 415300 in Canton may merit further consideration. Such a route would provide direct connections to commuter rail and MBTA local bus service. Also in Canton, transit service to tract 415102 (in the southwest corner of the town) could be improved if jurisdictional issues would permit a consolidation of MBTA-funded Route 716 from Mattapan to Cobbs Corner with BAT Route 14 from Cobbs Corner to Brockton.

In Salem, tract 204400, which includes Salem Neck and Salem Willows, ranked high under all four sets of screening criteria. Restoration of transit service to this tract as a non-MBTA route should be considered.

Further analysis of Weston found that concentrations of employment are probably insufficient to merit reverse-commuting service, and that population is too dispersed to allow for efficient operation of feeder service for traditional commuting.

A review of the tracts with limited present transit service but rated high in potential for such service under only one set of criteria identified only two locations where new transit service should be considered. These were the Trapelo Road corridor on the edge of tracts 368901 and 369100 in northeast Waltham, and the Lowell Street corridor in tract 210300 (between state Route 128 and U.S. Route 1) in Peabody.

Results of Analysis of Tracts with No Present Transit Service

Wellesley

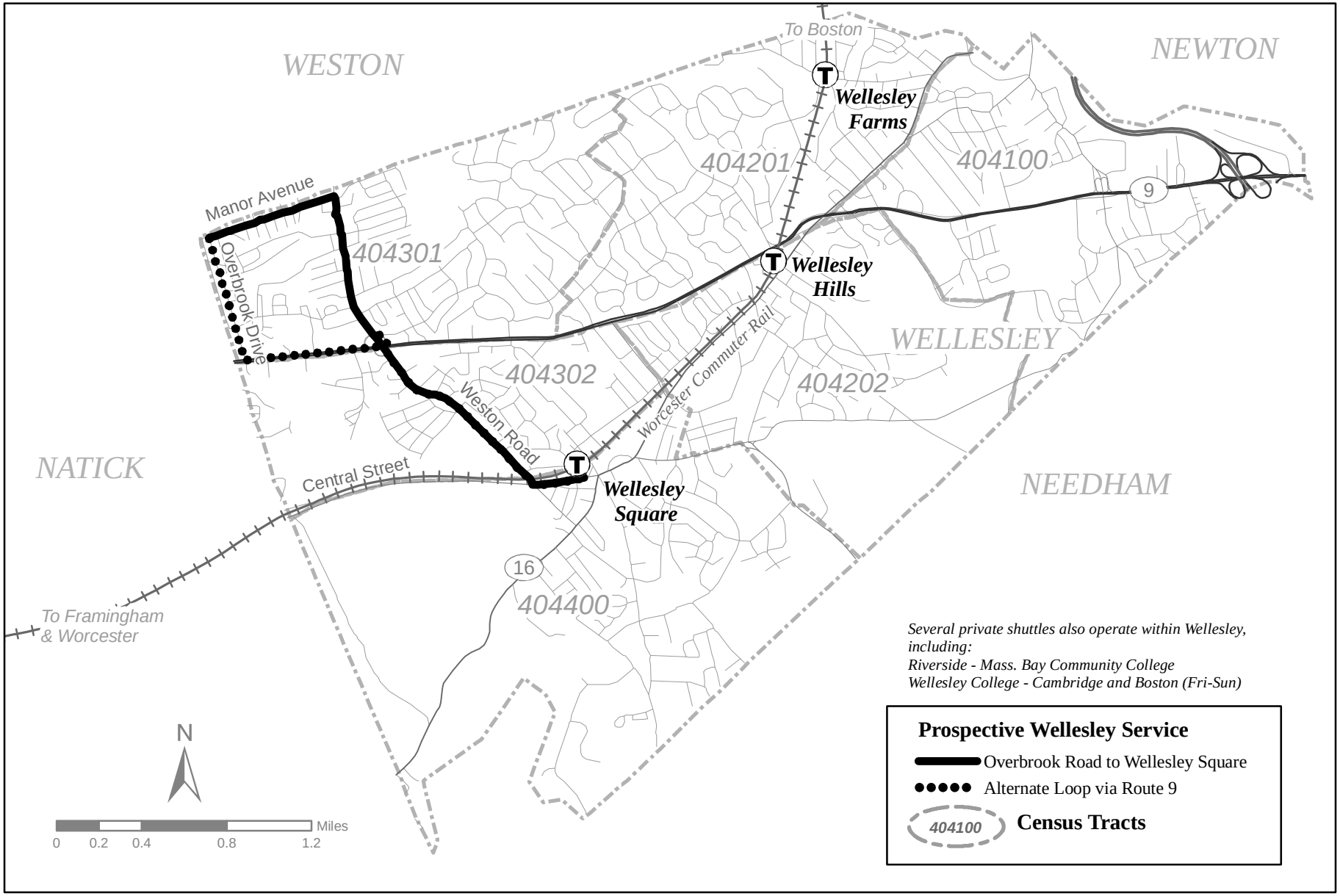
Findings

Sections of Wellesley were identified as having potential to support new transit services under two sets of screening criteria. Tracts 404100, 404201, 404202, and 404400 were selected under the reverse-commute criteria, with high ratings for access to commuter rail and for the presence of a major college or university. Tracts 404100 and 404201 were also selected under the traditional-commute criteria, as were tracts 404301 and 404302, because of high ratings for commuter rail parking lots that fill to capacity and medium or high ratings for population density and for percentage of workers employed in Boston or Cambridge. (Figure 3-1 shows the location of each of the census tracts in Wellesley.)

Upon further examination, it was concluded that the best potential for new transit service in Wellesley would be for a traditional-commute feeder route from tract 404301 (in the northwest corner of the town) to the Wellesley Square commuter rail station. Preliminary analysis indicates that the most suitable alignment would be along Manor Avenue and Weston Road, where fixed-route bus service has been operated in the past. With small vehicles that require limited room to turn around, the route could begin at the corner of Overbrook Road and Manor Avenue, and cover all segments in both directions. Alternatively, the northern end could include a one-way clockwise loop, from Weston Road at state Route 9 west on Route 9 to Overbrook Road and north on Overbrook to Manor Avenue, returning east on Manor Avenue to Weston Road, and south to Wellesley Square. The information used in narrowing down the possibilities to this one route is presented below.

Details of Analysis

Land use in Wellesley is predominantly residential. Much of the employment within the town is located in the Wellesley Hills and Wellesley Square commercial districts, each of which is clustered near a commuter rail station. Several small or moderate-size office parks are located in the east side of the town in tracts 404100 and 404201 but are not within convenient walking distance of commuter rail. According to the 2000 census Journey-to-Work figures, tract 404100 employed by far the greatest number of reverse-commuters from Boston to Wellesley, with a total of 693. Another 114 workers came to this tract from Cambridge and 432 from Newton. In the recent past, the 128 Business Council operated shuttle services to several of the employment locations in this tract from the Riverside Green Line terminal in Newton and from the Wellesley Hills commuter rail station, but these were poorly patronized and the employers chose not to continue funding them. This suggests that if reverse-commuting service were operated to only this tract again in the near future, it would not be successful either.



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Regionwide Suburban Transit Opportunities Study, Phase II

Figure 3-1

Existing Services and Suggested Route - Wellesley

Of the other tracts listed as having potential for reverse-commuting service, tract 404400 employed the largest number of Boston workers, at 319, and tract 404202 was next, at 305. The Wellesley Square commercial district is in tract 404400. Wellesley College is also located in that tract. It has a primarily resident student body, but on Fridays, Saturdays, and Sundays, the college provides bus service for students to several other colleges in Cambridge and Boston. This service is operated with full-size transit buses, run under contract by a charter bus company. The contractor has changed several times over the years when the contract has been re-bid. The limited schedule suggests that demand for service at other times is not perceived as being great enough to justify it.

The Wellesley Hills commercial district is in tract 404202. Mass. Bay Community College, which has a large population of commuting students, is located on the border of tracts 404202 and 404201. The college already provides free shuttle bus service from the Riverside terminal from 7:30 AM to 4:30 PM and at 9:15 and 10:15 PM. Babson College is also located in tract 404202, but has a much smaller enrollment than Mass. Bay (about 1,700 versus about 5,000), and most Babson students live on campus. Babson does not provide transportation service. If there is a perceived need for transit service to Babson, it might be feasible to extend the Mass. Bay shuttle there on some trips.

Given the findings above, suggestions for new suburban transit service for Wellesley should concentrate on traditional commuting trips to Boston or Cambridge rather than on reverse-commuting trips. Such service was previously analyzed by CTPS in conjunction with the 2003 update to the MBTA's Program for Mass Transportation. The findings then were as follows:

> From the border of Natick and Wellesley to Wellesley Hills Square almost all residential development on the south side of the railroad in Wellesley is within 1.5 miles of either the Wellesley Square Station or the Wellesley Hills Station. Much of this is within walking distance of one of the stations. Therefore, there is little ridership potential for feeder bus service from that part of the town. The border of Newton is about 1.5 miles east of Wellesley Hills via either of the main roads (Route 16 and Route 9). Along the rail corridor, Wellesley Farms is 1.0 miles east of Wellesley Hills and the Weston town line is 0.5 miles further, so most homes are within walking distance of one station or the other. This leaves the area north of the railroad between the Natick border and Wellesley Hills to be evaluated.
>
> Between the Natick town line and Wellesley Square the rail line ranges from 1.4 to 1.6 miles south of the Weston border. East of Wellesley Square the rail line curves north, and by Wellesley Hills it is only 0.9 miles from the Weston border. Wellesley Square Station is 1.4 miles from the border of Natick, but large ponds extend for about half of this distance on both sides of the rail line, and the Wellesley College campus occupies most of the rest of the south side. Wellesley Hills Station is 1.2 miles east of Wellesley Square. These conditions leave little residential land beyond theoretical walking distance of a station.
>
> Access to Wellesley Square from north of Route 9 is constrained by a limited number of pedestrian crossing points on that highway. Potential crossing points for a bus route are likewise limited. The orientation and physical characteristics of

streets on the north side of Route 9 are not well suited for bus operation. Further study would be needed to determine whether there are feasible routes that would serve enough population to be justified.

As far as can be determined, the only streets in the Wellesley tracts north of Route 9 between the Natick border and Wellesley Hills that have been used in the past for fixed-route bus service are Manor Avenue, Weston Road, and Overbrook Road. These were once included in a route to Wellesley Square, and could be used again in such a route. Most of the other streets north of Route 9 wind around over hills and are suitable mostly for local traffic. If bus service were to be implemented in this area, town officials and residents should have substantial input as to the alignment.

Manchester-by-the-Sea

For reasons set forth below, it was concluded that Manchester-by-the-Sea (shown in Figure 3-2) would not generate substantial demand for new fixed-route suburban transit service, so no new route is suggested.

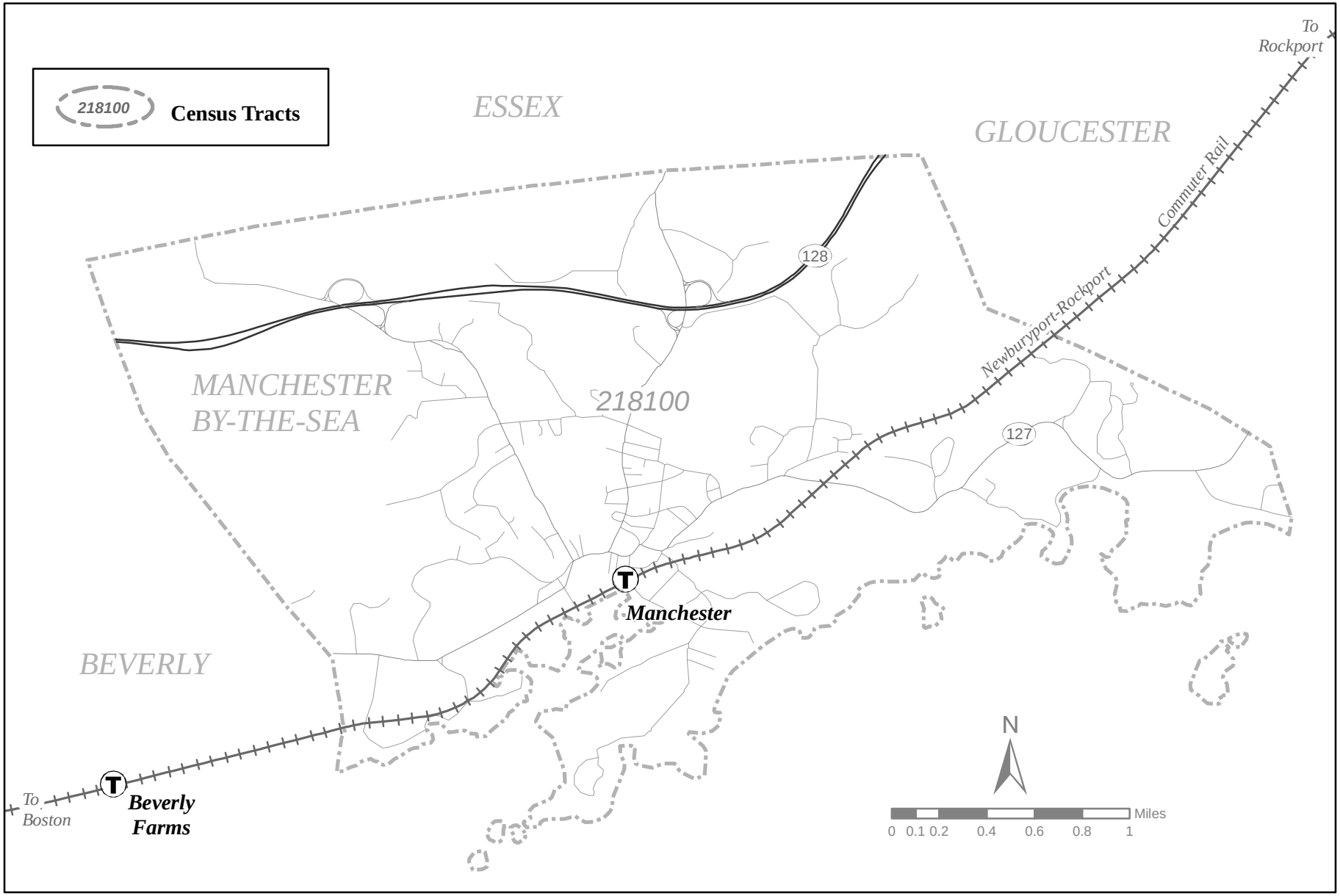
The entire town of Manchester-by-the-Sea is included in census tract 218100. This tract was identified as having potential to support new transit service under the reverse-commute criteria. It was one of a group of adjoining tracts selected because of access to commuter rail and presence of a major college or university. However, there are no colleges or universities in tract 218100 itself. Land use in the tract is predominantly residential, with no individual large employers. Most of the employment within the town is located within a one-mile radius of the commuter rail station. According to the 2000 census Journey-to-Work figures, only 23 Boston residents were employed in tract 218100. A total of 207 residents of all intermediate cities and towns with stations on the commuter rail line between Boston and Manchester-by-the-Sea were employed in tract 218100, but 126 were from the adjoining city of Beverly, which has a large land area and dispersed population.

Hamilton and Wenham

For reasons set forth below, it was concluded that neither Hamilton nor Wenham (shown in Figure 3-3) would generate substantial demand for new fixed-route suburban transit service, so no new route is suggested for either one.

These two adjoining towns are covered by one census tract each. Tract 215100 includes the entire town of Hamilton. Tract 216100 includes the entire town of Wenham. These tracts were included in the same group as Manchester-by-the-Sea that was identified as having potential to support new transit service under the reverse-commute criteria for access to commuter rail and presence of a major college or university. Both of these towns are also primarily residential, with no individual large employers. Most of the employment within the towns is located within a one-mile radius of the commuter rail station that they share on their border.

According to the 2000 census Journey-to-Work figures, only 27 Boston residents were employed in Hamilton and only 55 in Wenham. An additional 524 residents of



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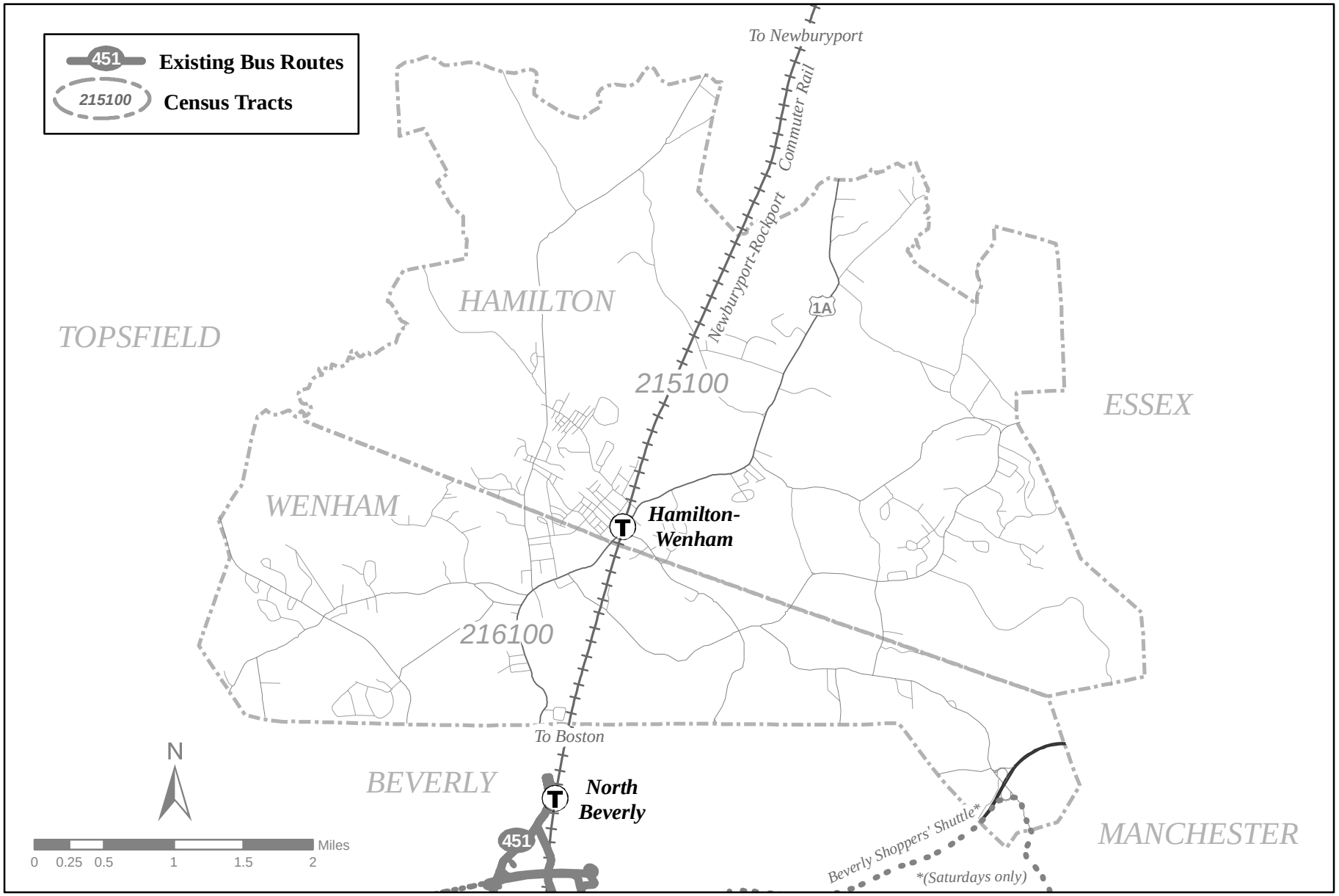
Regionwide Suburban Transit Opportunities Study, Phase II

Figure 3-2

Existing Services - Manchester-by-the-Sea



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Regionwide Suburban Transit Opportunities Study, Phase II

Figure 3-3

Existing Services - Hamilton and Wenham

cities and towns with commuter rail stations between Boston and Hamilton/Wenham Station were employed in either Hamilton or Wenham. Of these, 356 came from Beverly, which adjoins Wenham to the south. An extension of MBTA bus Route 451 from North Beverly into Wenham and Hamilton could serve some work trips from Beverly to those towns, but many homes in Beverly are beyond convenient access distance from this route.

Gordon College is located on the eastern edge of Wenham, and Gordon-Conwell Theological Seminary is on the east side of Hamilton. Both of these are relatively small institutions. Gordon College has about 1,650 undergraduates. Gordon-Conwell awards about 350 graduate degrees a year, but this includes students at two other campuses. The college and seminary both have predominantly resident student bodies, although capacity constraints require that some students find off-campus housing. It does not appear that either Hamilton or Wenham would be a suitable location for new reverse-commuting transit service.

Needham

For reasons set forth below, it was concluded that Needham (shown in Figure 3-4) would not generate substantial demand for new fixed-route suburban transit service, so no new route is suggested.

Two census tracts in Needham (403100 and 403200) were identified as having potential to support new suburban transit service under the reverse-commute criteria for access to commuter rail. These criteria were based on the proportion of workers in a tract residing in areas with access to commuter rail rather than on absolute numbers. Land use in both of the tracts cited above is almost entirely residential. Small businesses located there are mostly within walking distance of the Hersey, Needham Center, or Needham Heights commuter rail stations. According to the 2000 census Journey-to-Work figures, 116 Boston residents were employed in tract 403100 and 188 in tract 403200. The number among these that could be expected to use new transit connections at the Needham end would be insufficient to justify such service. There are no intermediate communities between Boston and Needham on the Needham commuter rail line.

Franklin

For reasons set forth below, it was concluded that Franklin (shown in Figure 3-5) would not generate substantial demand for new fixed-route suburban transit service, so no new route is suggested.

In Franklin, tract 442101 was identified as having potential to support suburban transit service under the reverse-commute criteria. It received a high rating for the presence of a college or university and a medium rating for access to commuter rail. It was not selected under any of the other criteria sets. According to the 2000 census Journey-to-Work figures, only 32 Boston residents and only 64 residents of communities between Boston and Franklin on the Franklin commuter rail line were employed in tract 442101. Dean College is located in this tract. The Franklin/Dean College commuter rail station is just outside the edge of the tract, but is within walking distance of the college

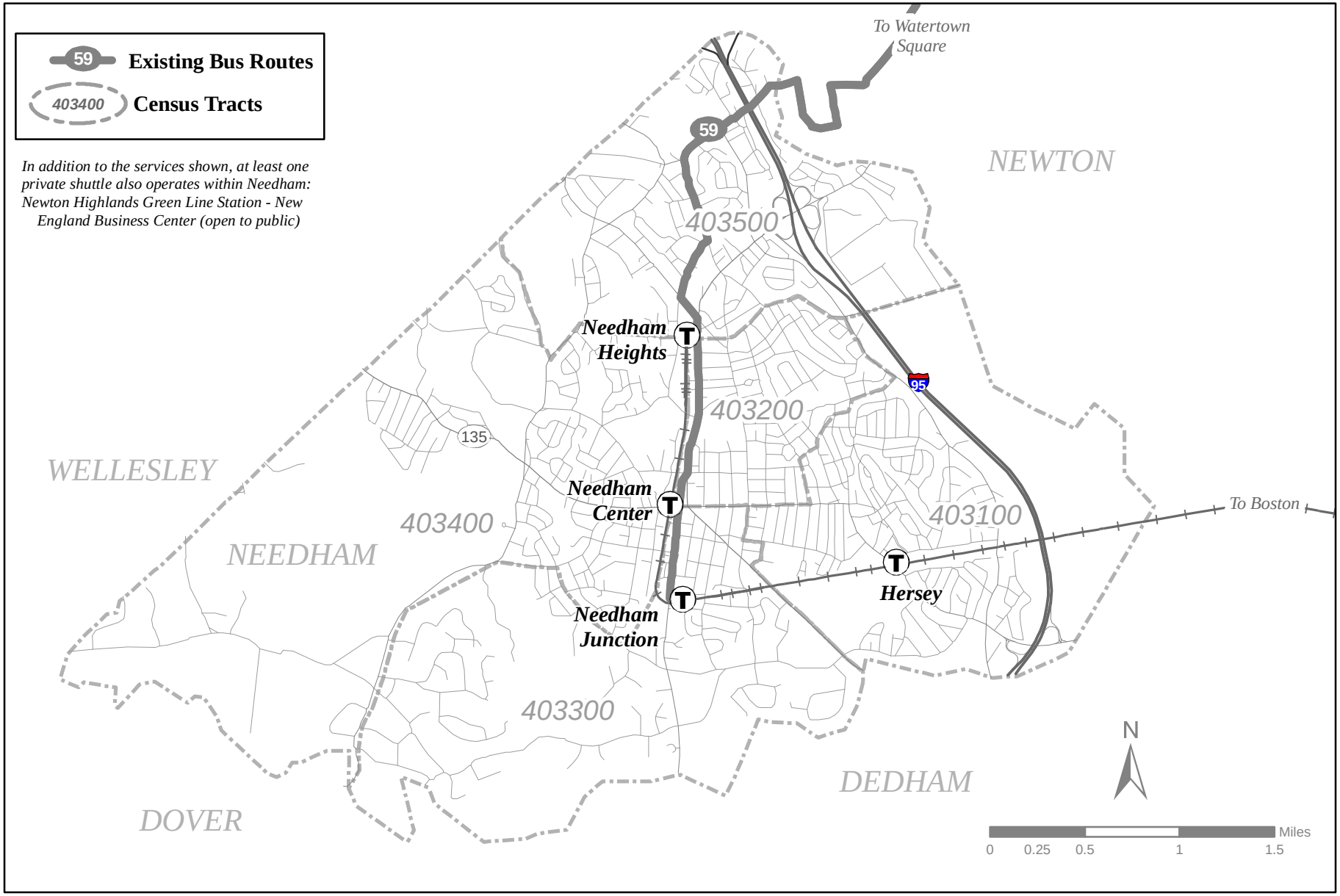

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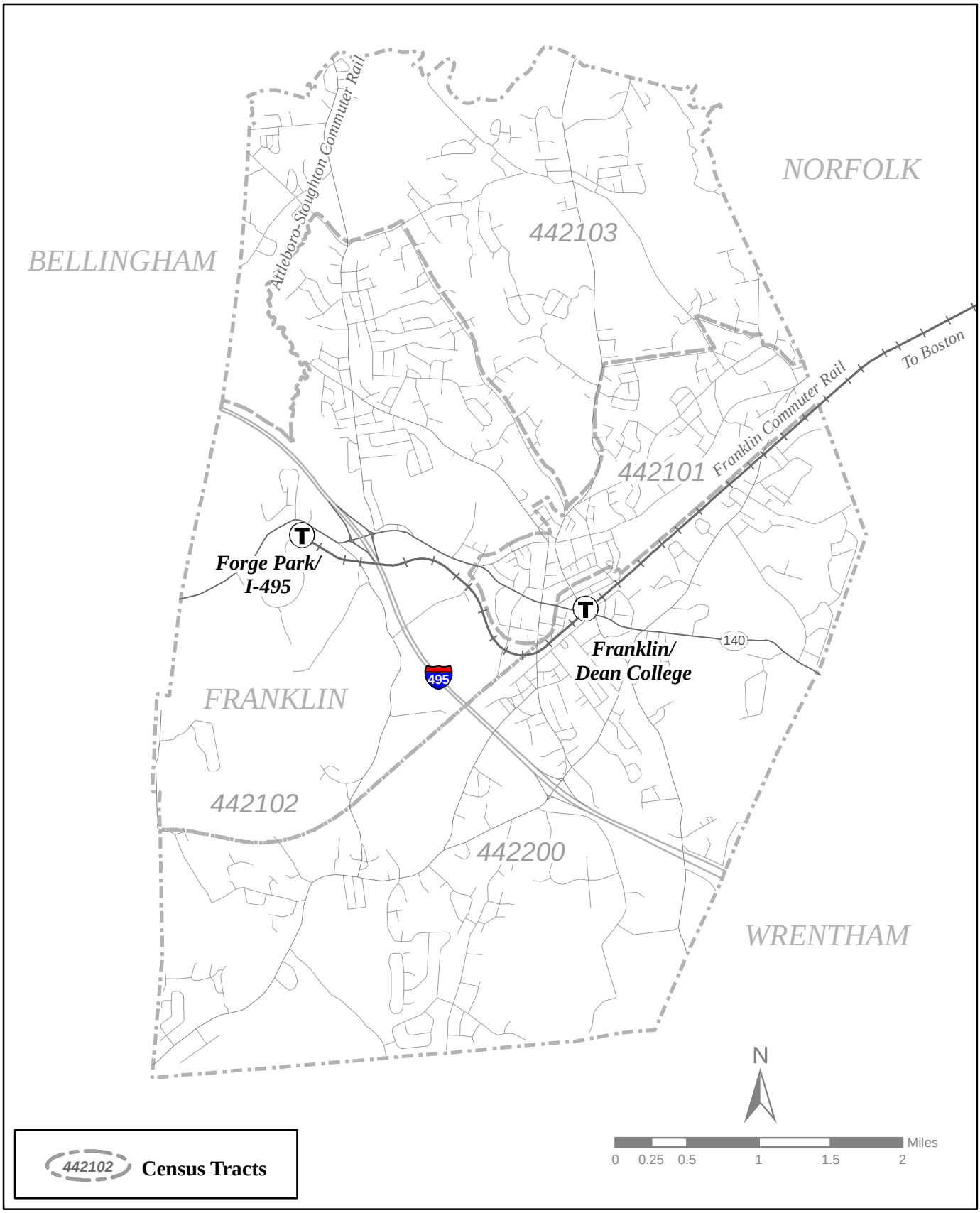
Figure 3-4

Existing Services - Needham



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Regionwide Suburban Transit Opportunities Study, Phase II

Figure 3-5

Existing Services - Franklin

and most of the other employment locations in the tract. It is unlikely that a transit connection between the station and this tract would serve many riders.

Winchester

In Winchester (shown in Figure 3-6), tract 338100 was identified as having potential to support suburban transit service under the reverse-commute criteria. It received medium ratings for employment density and access to commuter rail. Land use in this tract is mostly residential, but Winchester Hospital is located there and is currently being expanded.

At present, there is no direct public transportation service to Winchester Hospital. The Winchester Center commuter rail station is about 1.3 miles away, in another tract. A bus connection from the station to the hospital could serve hospital employees living in areas with convenient access to the Lowell commuter rail line. Most of the demand generated by the hospital would be concentrated around shift-change times. However, the route would also pass through a thickly settled neighborhood that currently has no direct transit service, so it could also be used as a general-purpose connection to Winchester Center, the commuter rail station, and MBTA bus Route 134.

Preliminary analysis indicates that the most suitable alignment would run from Winchester Hospital west on Fairmount Street, south on Washington Street, and west on Mount Vernon Street to the station. Outbound trips would follow the same alignment in the opposite direction. Alternatively, part of the route could be run as a one-way loop, running in one direction via Highland Avenue rather than Washington Street. However, Washington Street runs closer to more residences than Highland Avenue, and the two are less than one quarter mile apart at most points.

According to the 2000 census Journey-to-Work figures, only 53 Boston residents and only 41 residents of Medford, the only community between Boston and Winchester on the Lowell commuter rail line, were employed in tract 338100. Communities beyond Winchester on the Lowell Line had 127 residents employed in tract 338100. During peak hours, inbound and outbound train arrivals at Winchester are close enough together that the same connecting bus trips could serve passengers traveling in either direction. Steep hills in the section of the town where the hospital is located could present some operational challenges for service with full-size transit buses, but should not be an obstacle for minibuses.

Westwood

Findings

The town of Westwood (shown in Figure 3-7) has three census tracts (412100, 412200, and 412300). All three were included in a group identified as having potential to support suburban transit service under the traditional-commute criteria. They were rated high for proximity to commuter rail lots that fill to capacity and for percentage of workers employed in Boston and Cambridge.

Upon further examination, it was concluded that the best potential for new transit service in Westwood would be for a feeder route from tracts 412100 and 412200 to the

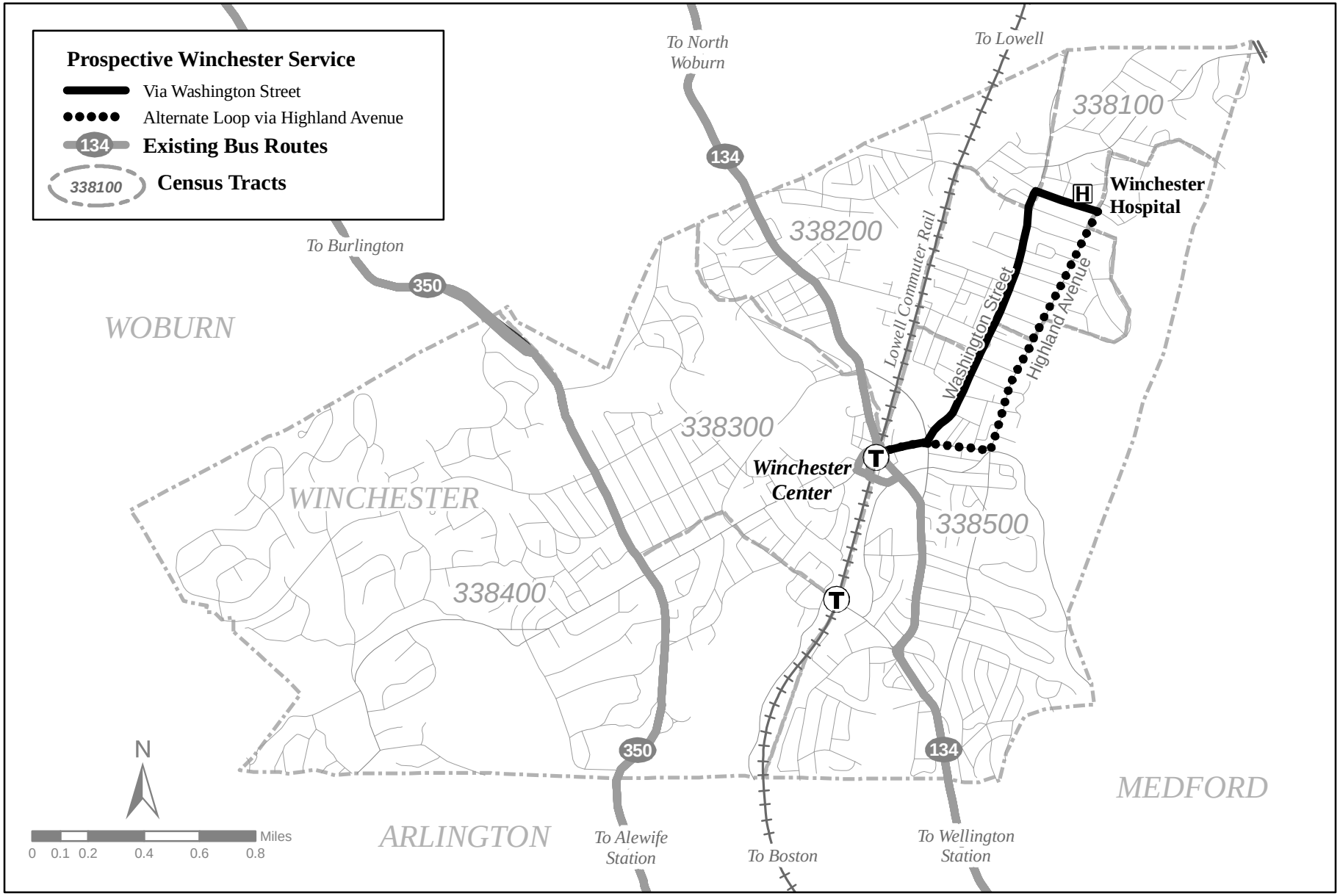

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Figure 3-6

Existing Services and Suggested Route - Winchester

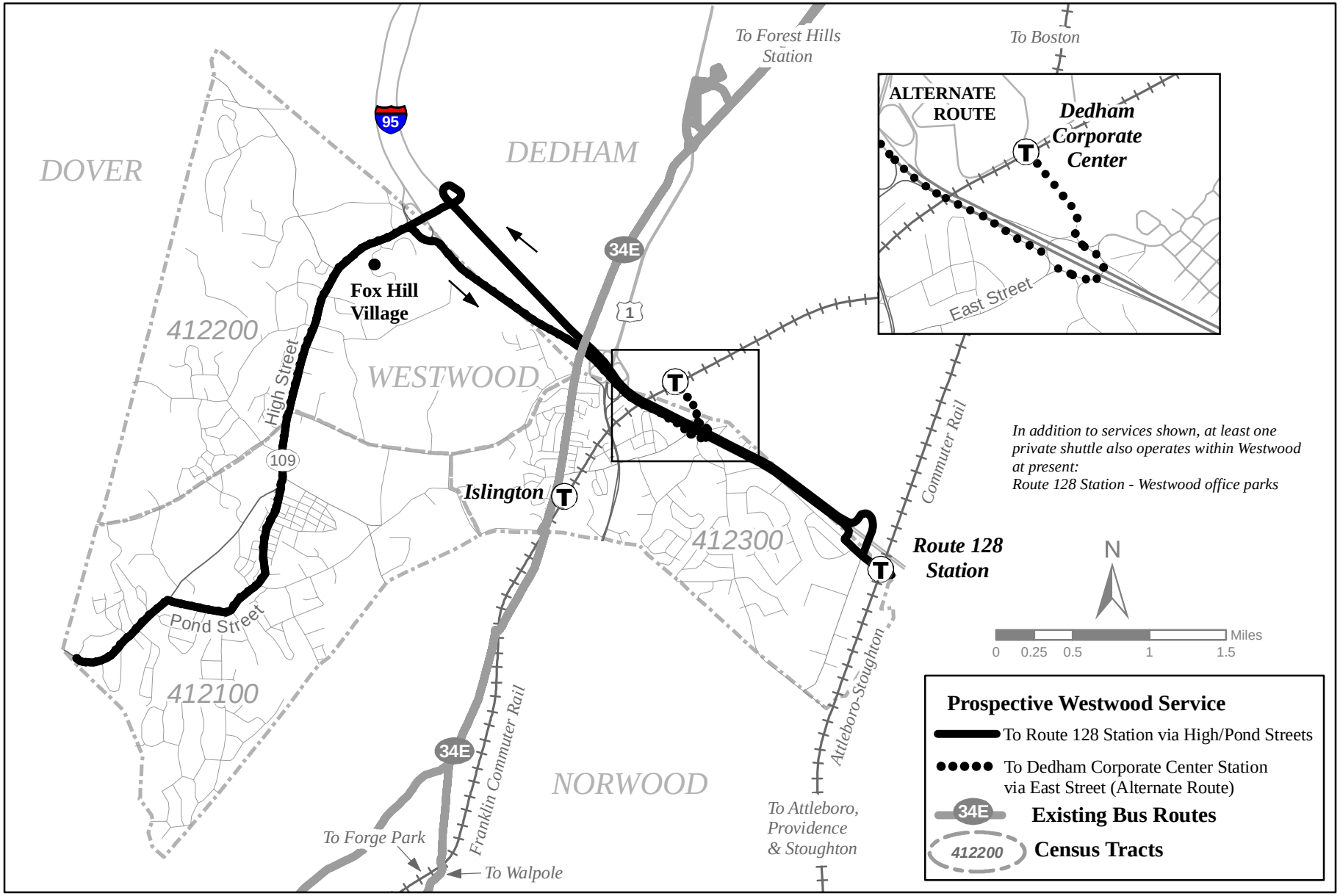

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Figure 3-7

Existing Services and Suggested Route - Westwood

Route 128 commuter rail station on the Attleboro/Stoughton Line. Preliminary analysis indicates that the most suitable alignment would run from near the border of Westwood and Walpole on High Street (state Route 109) over High and Pond Streets and High Street again to Route 128 (I-95), then south on that highway to the University Avenue exit to Route 128 Station. Alternatively, buses could take the East Street exit from Route 128 and go to Dedham Corporate Center Station on the Franklin Line. However, train service to Boston from Route 128 Station is more frequent, and running time to Boston is shorter from there than from Dedham Corporate Center.

A side-diversion into the Fox Hill Village retirement community off High Street just south of Route 128 could be included on either alignment. However, Fox Hill already provides shared-ride van services for residents.

Details of Analysis

The Franklin and Attleboro/Stoughton commuter rail lines both run through tract 412300. Islington Station on the Franklin Line is located in that tract. It has only 39 parking spaces, but they were not all full when last observed by CTPS. Route 128 Station on the Attleboro/Stoughton Line is on the border of Westwood and Dedham, but can be accessed only through tract 412300. This station has 2,589 commuter parking spaces, and additional spaces for intercity rail passengers. When last checked by CTPS it had substantial available capacity.

The 1993 commuter rail passenger survey found boardings with trip origins in Westwood at 11 stations on four routes, with Islington and Route 128 together accounting for 50.6% of the total. Dedham Corporate Center Station on the Franklin Line attracted the second-largest share of Westwood riders, at 35.3%, slightly below the 36.6% at Route 128. This station is in Dedham, just outside the border of Westwood, and is closer than Route 128 to many homes in Westwood. This station also had substantial excess parking capacity when last observed by CTPS. The other eight stations used for trips from Westwood in 1993 accounted for a combined total of 14.0%, with individual shares ranging from 0.4% to 6.4%. Presumably, passengers chose to use these eight stations at least in part on the basis of convenience of access, as parking capacity at the top three stations would have been sufficient for them.

At present, there is no bus service for the general public in tracts 412100 or 412200. A private-carrier bus route between Milford and downtown Boston formerly ran through both of these tracts on state Route 109, with a side-diversion over Pond Street in tract 412100. In its final years, this route was partly funded by the MBTA's Inter-District Carrier Program. It was discontinued in 2003 because of low ridership. By that time, service had declined to one round-trip per day, scheduled for Boston commuting. (In 1997, when there were still two round-trips per day, a one-day observation found three passengers alighting in Westwood from one of the two outbound PM peak trips.)

Provision of efficient bus service between Westwood and Boston has always been difficult because of a lack of a direct route on limited-access highways. The route that was discontinued in 2003 ran between the northern border of Westwood and downtown Boston via state Route 128 and the Massachusetts Turnpike. This routing was 19 miles long, compared with a straight-line distance of about 11 miles. The scheduled time from the center of Westwood to Copley Square in Boston was 30

minutes, but this was subject to traffic delays. At present, the fastest scheduled train time from Islington Station to Back Bay Station is 24 minutes, but from Route 128 Station to Back Bay scheduled times are as short as 13 minutes. The bus route had no dedicated parking facilities.

The road layout in Westwood would not allow for very direct bus routings from tract 412100 or 412200 to any commuter rail station either. One possibility would be to follow the former bus alignment as far as Route 128 and then turn south on that highway either to Dedham Corporate Center Station or to Route 128 Station. The distance to Route 128 Station would be longer, but from there train service is more frequent and scheduled running times to Boston are shorter. The main advantages of such a route over private auto access to the railroad stations would be that riders would not have to personally contend with traffic on heavily traveled Route 128 and would not have to pay for parking ($3.00 a day at Route 128 or $2.00 a day at Dedham Corporate Center in 2005).

Results of Analysis of Tracts with Limited Present Service, and Rated High under Multiple Criteria Sets

Salem

In Salem (shown in Figure 3-8), tract 204400 was identified as having potential to support suburban transit service under all four sets of screening criteria. Under the reverse-commute criteria it was rated high for access to commuter rail. Under the traditional-commute criteria it was rated high for proximity to commuter rail lots that fill to capacity. Under the suburban-commute-mobility criteria it was rated high for auto ownership, low-income households, percent of residents with disabilities, percent of workers employed in the same or adjacent town, and minority or non-English-speaking residents. Under the suburban-mobility criteria it was ranked high for most of the same criteria as for suburban-commute-mobility. A potential routing for a new transit service is described below.

This tract consists mostly of the Salem Neck peninsula. The Salem Willows residential neighborhood is located at the northern end of the tract, but the only transit service at present is near the southern end. The only large concentration of employment in the tract is at the Salem Harbor power station, near the south end. Previous MBTA bus service to Salem Willows was discontinued in 1978 because of low ridership. However, restoration of service as a non-MBTA route should be considered now.

The former MBTA bus route to Salem Willows, Route 453, ran from downtown Salem, where it connected with other MBTA bus routes and with commuter rail. When Route 453 was last operated, the commuter rail station was south of New Derby Street, but it has now been relocated north of Bridge Street. A restored Salem Willows bus route should originate at the present rail station.

Old Route 453 started on Washington Street north of Church Street. The outbound routing followed Church and Brown Streets, Washington Square West, Essex and Webb Streets, and Fort Avenue to Island Avenue at the outer end of the peninsula. The inbound route was the reverse of this as far as Essex Street at Washington Square West.

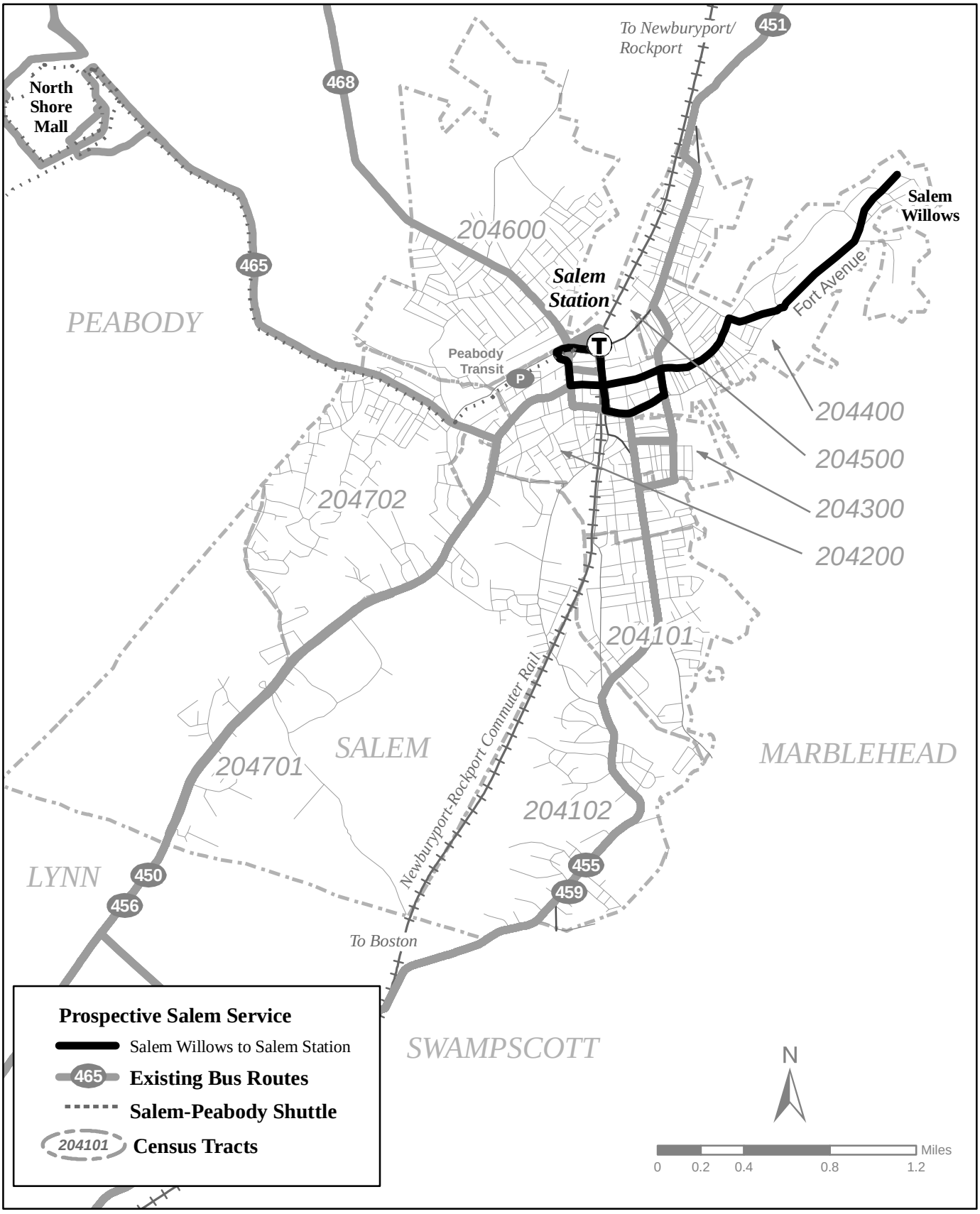

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Figure 3-8

Existing Services and Suggested Route - Salem

From there, it followed Hawthorne Boulevard, New Derby Street, and Washington Street to the end of the line. A restored route would probably be the same as this, along with an extension to the present station, unless present traffic patterns require some revisions in the downtown area.

Weston

For reasons set forth below, it was concluded that Weston (shown in Figure 3-9) would not generate substantial demand for new fixed-route suburban transit service, so no new route is suggested.

The town of Weston has two census tracts (367100 and 367200). Both were included in a group identified as having potential to support suburban transit service under the reverse-commute criteria. They were rated high for access to commuter rail and for presence of a major college or university. Both tracts were also included in a group having potential to support suburban transit service under the traditional-commute criteria.

Land use in Weston is predominantly residential. Except for one office complex in the southeast corner of tract 367200, there are no large concentrations of employment in the town. The Fitchburg commuter rail line has three stations (Kendal Green, Hastings, and Silver Hill) in tract 367100, but there are no commuter rail stations in tract 367200. Of the three stations, only Kendal Green has road connections that would be suitable for operation of connecting transit service. During peak hours, some inbound and outbound train arrivals are close enough together to allow one connecting transit trip to serve both, but some trips would need separate connections.

The 2000 census Journey-to-Work figures show a total of 310 Boston residents employed in tract 367200, but only 18 in tract 367100. Total workers going to tract 367200 from intermediate communities on the Fitchburg Line were: Cambridge 73, Belmont 41, and Waltham 186. Cambridge and Belmont sent no workers to tract 367100, but Waltham sent 43. From points further out on the Fitchburg Line, 79 workers went to tract 367200 and 36 to tract 367100.

At present, the commuter rail system carries very few riders traveling between adjoining suburbs, so a reverse-commuting connection would not be expected to attract many riders going from Waltham to Weston. It is questionable whether a connecting transit service could capture a large enough share of work trips to tract 367200 from other communities along the Fitchburg Line to make operation worthwhile. The Fitchburg Line currently has only two outbound trips arriving at Kendal Green before 9:00 AM. As an alternative to a connection from that station, a connection could be operated from the MBTA Riverside terminal in Newton. This would connect both with the Green Line and with express bus Route 500, which has six arrivals before 9:00 AM.

Regis College is located in tract 367200. Enrollment includes commuters as well as students residing on campus. The college already operates scheduled shuttle service from Riverside, but ridership figures are not readily available.

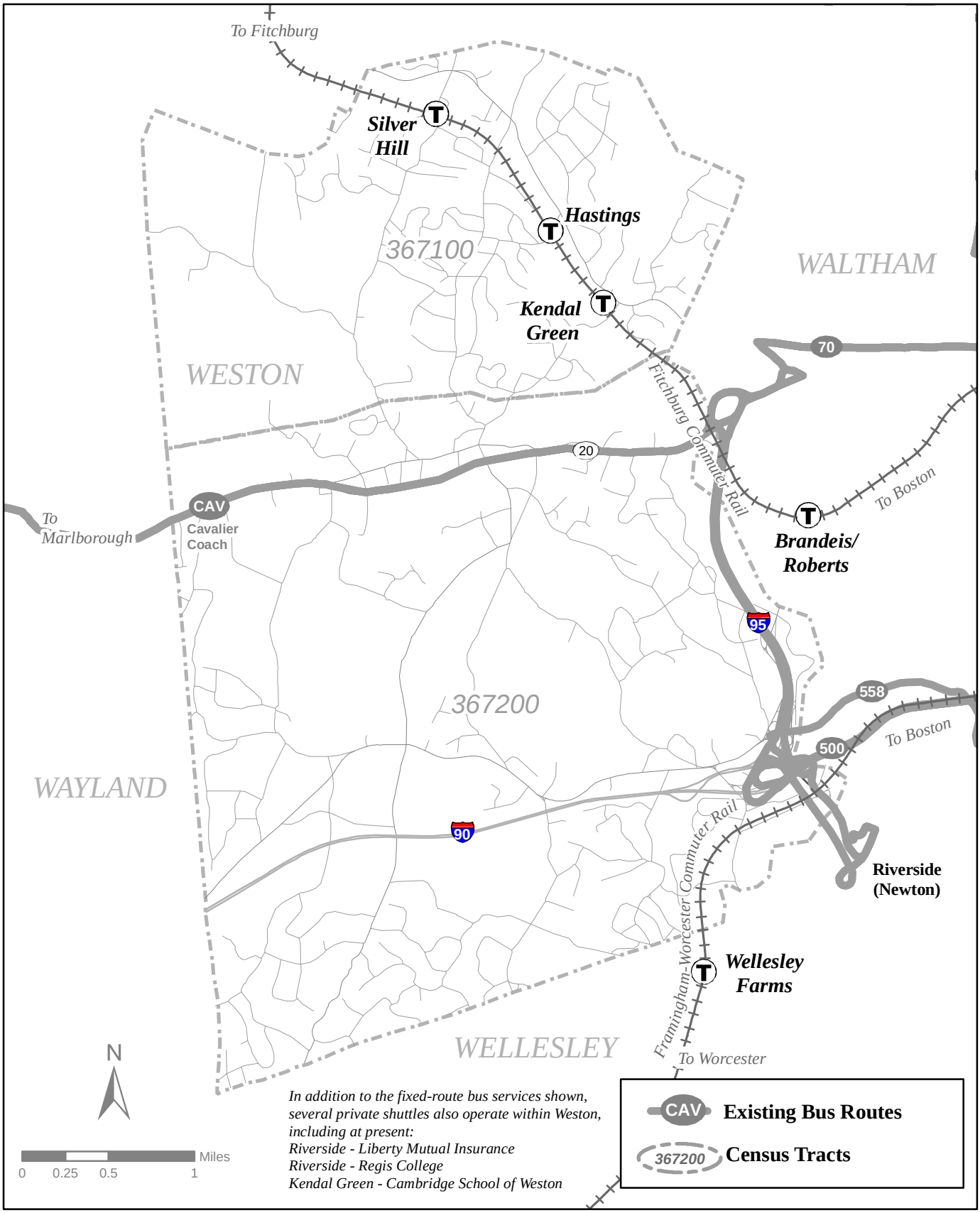

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Figure 3-9

Existing Services - Weston

Under the traditional-commute criteria, the Weston tracts received high or medium ratings for percentage of workers employed in Boston or Cambridge and for proximity to commuter rail parking lots that fill to capacity. Population density was, however, much lower than the minimum standard of 19 people per acre for a medium rating. In the 2000 census results, Weston as a whole had only 1.05 residents per acre. Density did not differ greatly between the two tracts. Under the criterion of percent of workers employed in Boston or Cambridge, a high rating applies if more than 27% of the labor force in a tract is employed in Boston or Cambridge. Based on 2000 census data, about 32% of the labor force of Weston as a whole worked in Boston or Cambridge, accounting for the high rating.

All three commuter rail stations in Weston on the Fitchburg Line have very limited parking capacity. This line runs both to Boston (North Station) and to Cambridge (Porter Square). Because of the road layout in Weston and the dispersal of the population throughout the town, it would be difficult to design a bus connection to the Fitchburg Line that would be reasonably direct and could also stop within convenient walking distance of a significant share of the homes in the town. The same problems would be encountered in designing bus connections from Weston to other transit facilities, such as the Riverside MBTA terminal.

Canton

Findings

The town of Canton (shown in Figure 3-10) has four census tracts, of which two (415300 and 415102) were identified as having potential to support suburban transit service under various screening criteria. Upon further examination, it was concluded that the best potential for new transit service in Canton would be for a connector from Massasoit Community College to the Canton Junction commuter rail station. Such a connection could serve students and faculty commuting to the college from other points along the rail line, and Canton residents working in Boston, Cambridge, or other communities on the rail line. This route would run in almost a straight line from the college via Randolph, Washington, Chapman, and Beaumont Streets. The Blue Hills Regional Technical School adjoins the college, and the Massachusetts Hospital School is about halfway between the college and the station.

Details of Analysis

Under the reverse-commute criteria, tract 415300 was rated high for the presence of a college or university and medium for access to commuter rail. Much of the land in this tract is taken up by parks and golf courses. There are few large concentrations of employment in the tract except for office parks on both sides of Washington Street (state Route 138) on the north side of Interstate Route 93. These can be accessed by an MBTA-subsidized private-carrier bus route from Mattapan Station, operated as MBTA Route 716.

The college in tract 415300 is Massasoit Community College. It is not served directly by any transit route open to the general public, and is about 1.3 miles from the nearest point on Route 716. At present, service on Route 716 requires only one vehicle. Published schedules indicate that departures from both Mattapan and Cobbs Corner occur immediately after arrivals, with no layover time at either end. Therefore, any

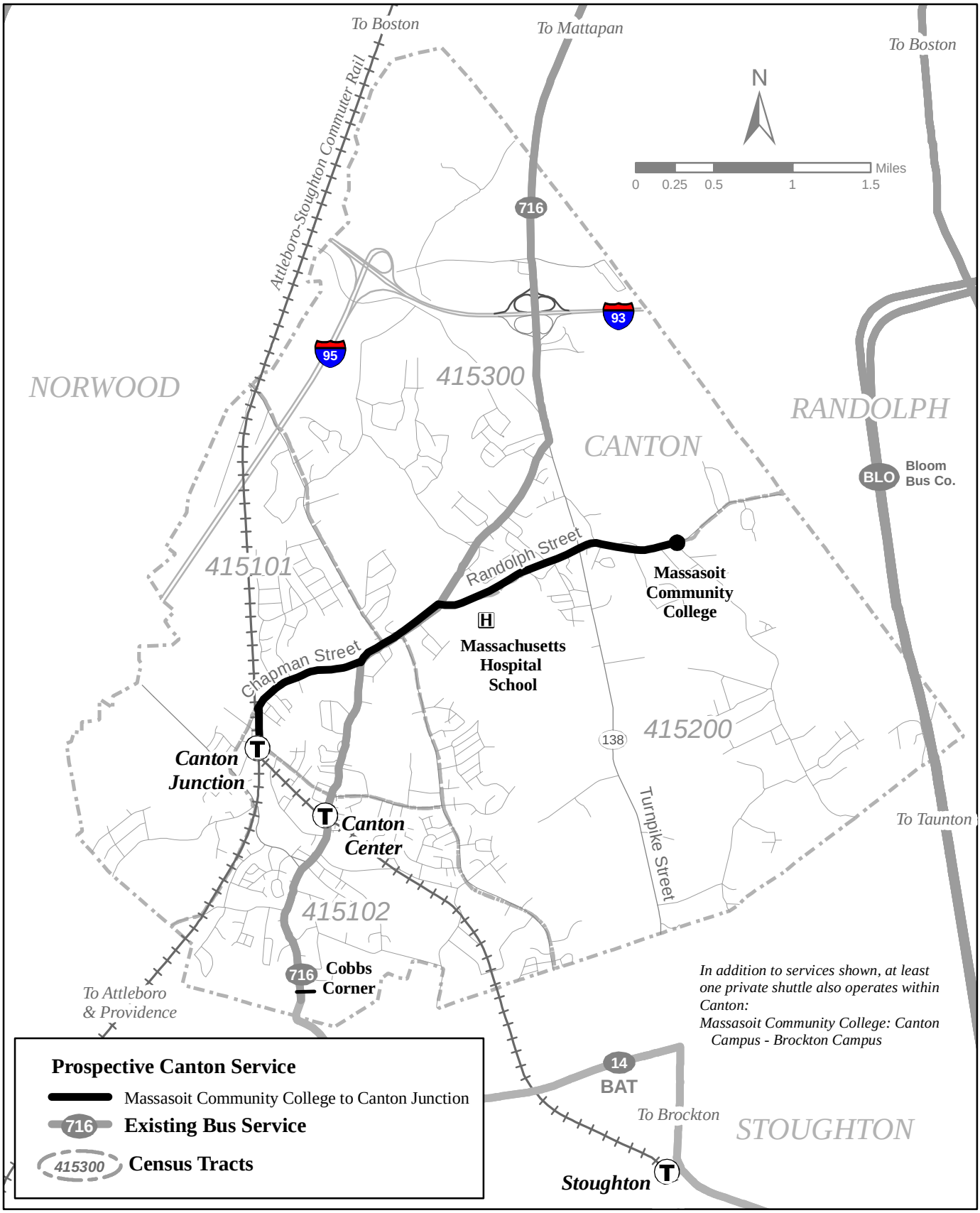

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Figure 3-10

Existing Services and Suggested Route - Canton

expansion of the route, such as adding a side-diversion to the college, would require either assignment of a second vehicle or scheduling of headways longer than the present 60-minute intervals.

Information on residences of students enrolled at Massasoit has not been obtained for this analysis. However, it would be expected that as one of many community colleges in the state system, this one would not draw students from a very large geographical area, and would not draw many from Boston. Therefore, it is doubtful that ridership just from Boston to the college would be sufficient to justify a new transit connection. A bus link to Canton Junction Station on the Attleboro/Stoughton Line could be run on a direct routing, and could serve students and faculty with origins at points along the line in addition to Boston, as well as local commuters within Canton. Although this tract was not rated high for traditional commuting to the urban core, it might be feasible to schedule a Massasoit bus route to carry residents of the tract to Canton Junction for work trips to Boston or other points along the rail line.

Under the traditional-commute criteria, tract 415102 was ranked high for percentage of resident workers employed in Boston or Cambridge, and proximity to commuter rail parking lots that fill to capacity. Under the suburban-commute-mobility criteria it was ranked medium or high for auto ownership, low-income households, percent of residents with disabilities, and percent of workers employed in the same or adjacent towns. This tract is relatively small in area. Almost all homes in it are within one mile of either Canton Junction Station, Canton Center Station, or both. Therefore, for reasons discussed below, feeder bus service to commuter rail would not be expected to attract many riders from this tract. A route from Massasoit Community College to Canton Junction would pass through tract 415102 only in the immediate vicinity of the station.

Few commuter rail passengers that make walk-in or drop-off access trips of less than a mile to a station would be likely to switch to using a bus service that they would have to pay to ride. Park-and-ride passengers could save money by switching to a bus if the round-trip fare were lower than the parking fee, but most such passengers have access distances of over one mile. In the 1993 commuter rail survey, about 5-10% of the passengers who boarded at Canton Junction Station drove and parked from origins within Canton and less than one mile from the station. Not all of these origins were in tract 415102, however. The parking fee then was $1.00 but it is now $2.00. This increase may have made some park-and-ride passengers from origins near the station more willing to switch to other access modes than they would have been in the past. Nevertheless, the potential for diversions from this source is limited.

Bus Route 716 runs through tract 415102 on Washington Street. It can be used for local transportation within the tract, but intervals between trips range from one to three hours. Therefore, for travel within the tract, it is often more convenient to walk than to wait for a bus.

The outer terminal of Route 716 is Cobbs Corner, on the border of Canton, Sharon, and Stoughton. Brockton Area Transit (BAT) Route 14 from Stoughton, Westgate Mall, and Brockton also terminates there, but the schedules of the two routes are not well coordinated. If potential demand is sufficient, consideration should be given either to improving scheduled connections between the two routes, or to extending some trips

on one or both routes into the territory currently served by the other to increase one-seat-ride possibilities. As noted above, the present schedule of Route 716 has no slack time that would allow for extensions without use of more vehicles or longer headways. Published schedules for BAT Route 14 show departure times but not arrival times, so it is unclear whether any extension would be possible with existing vehicles and headways.

Results of Analysis of Tracts with Limited Present Service, and Rated High under One Criteria Set

Waltham

Most of Waltham (shown in Figure 3-11) has extensive transit service, but the northeast sides of tracts 368901 and 369100 do not. Tract 368901 was ranked high under the reverse-commuting criteria, for access to commuter rail or rapid transit to the suburbs. However, the section of the tract that does not now have transit service also does not have good access to either commuter rail or rapid transit. Tract 369100 was ranked high under the traditional-commute criteria for proximity to commuter rail parking lots that fill to capacity. The best potential for new transit service to these tracts would be for a route along Trapelo Road from Waverley Square in Belmont.

From 2000 to 2003 Waltham Citibus Route 14 served the northeast side of tract 368901 on Trapelo Road. Earlier private-carrier bus service on Trapelo Road that had operated since the 1920s was discontinued in 1979. At present, the most direct transit connection to Boston from Trapelo Road is provided by MBTA Route 73, which runs from Waverley Square to the Harvard Red Line station in Cambridge. Route 73 is a trackless trolley line, and ridership potential on Trapelo Road has never been sufficient to justify extension of the power distribution system beyond Waverley. Dual-mode vehicles similar to those now used on the Silver Line Waterfront routes could be used to provide through service from Harvard to Trapelo Road, but the capital cost of such vehicles is much greater than that of conventional buses.

Another possible strategy would be to extend some trips on MBTA bus Route 554 (Waverly Square - Downtown Boston via Newton Corner and Mass. Pike) along Trapelo Road beyond Waverley. This routing would be rather indirect if used to travel through to Boston, but would provide a connection to Route 73 at Waverley as well as to several MBTA bus routes at Waltham Center. The current Route 554 schedule provides insufficient layover time at Waverley to allow for extending the route beyond that point. This would necessitate either assigning more vehicles to the route, or lengthening the headway. Changing the headway would disrupt the coordination between the schedule of Route 554 and that of Route 553 on shared segments between Waltham Center and Boston, but adding a vehicle without changing the headway would result in excess layover time. Therefore, a separate non-MBTA shuttle on Trapelo Road might be the most cost-effective solution.

According to the 2000 census Journey-to-Work figures, tract 368901 was the work location of only 53 Boston residents, 21 Cambridge residents, and 33 Belmont residents. Therefore, a Trapelo Road bus route would have to attract riders in addition to reverse-commuters to succeed. These could include traditional commuters to Boston and

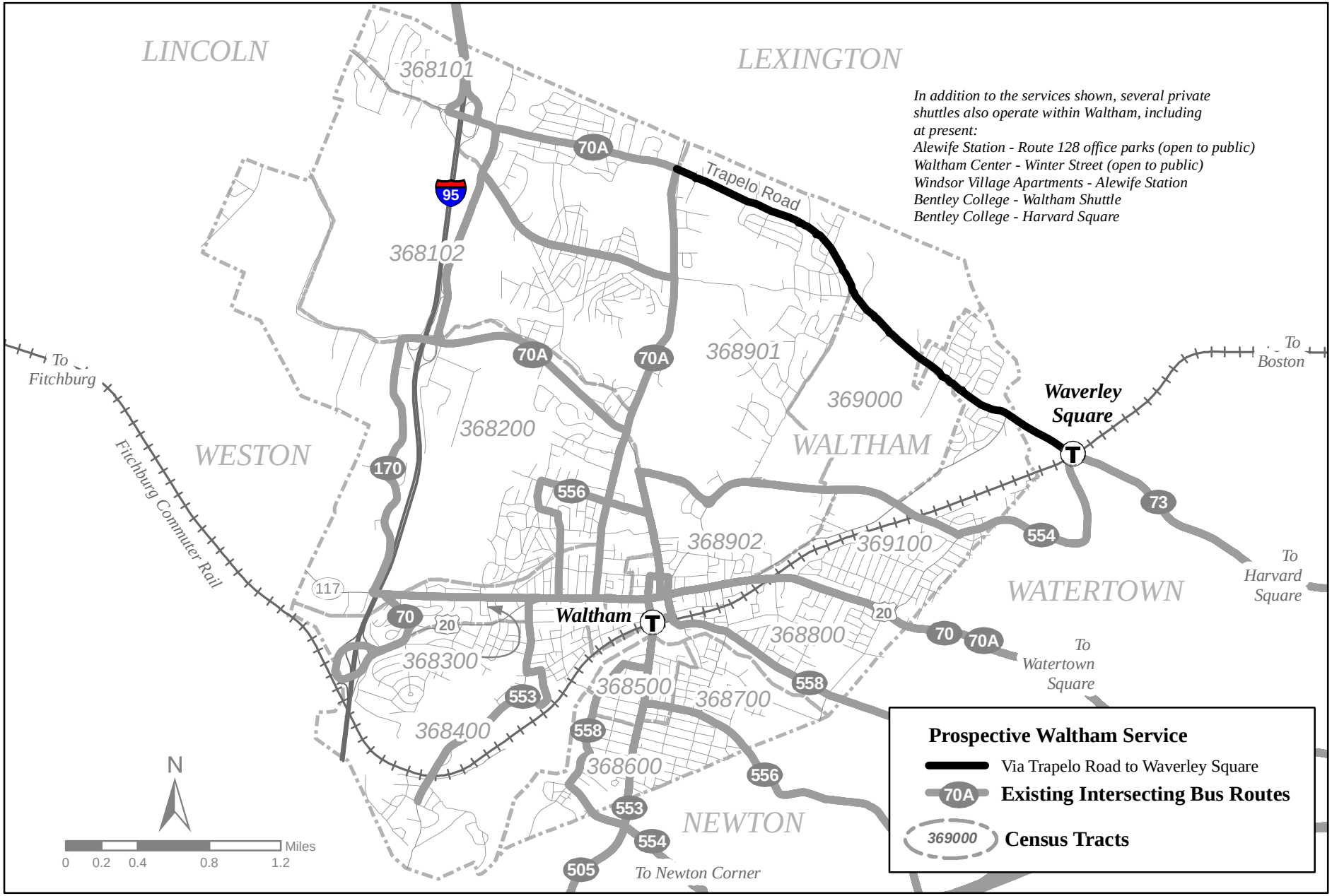

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Figure 3-11

Existing Services and Suggested Route - Waltham

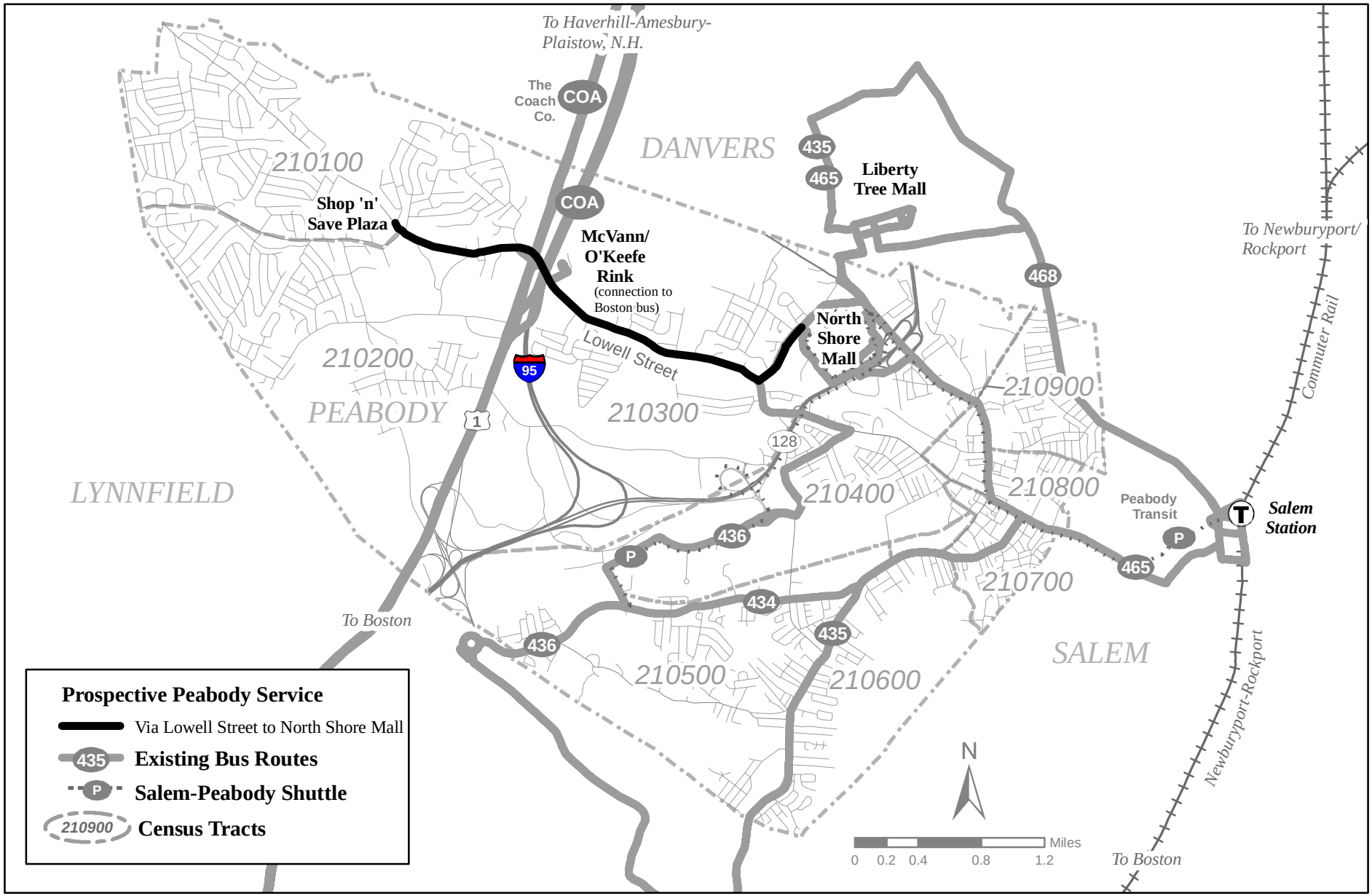
Cambridge from the northeast sides of both tract 368901 and tract 369100. The viability of a Trapelo Road service would depend in part on what kind of redevelopment of former state and county hospital sites along the road takes place.

Peabody

In Peabody (shown in Figure 3-12), tract 210300 received medium ratings under the suburban mobility criteria for auto ownership, population density, low-income households, percent of residents with disabilities, and minority or non-English-speaking residents. The best potential for new transit service in this tract would be for a route on Lowell Street from the North Shore Mall.

At present, the only local transit service in tract 210300 is in the northeast corner, at the North Shore Mall. Most of the homes in this tract are on streets that connect with Lowell Street, which runs across the tract on an east-west alignment. Bus service has been operated along Lowell Street at various times in the past. A reinstituted route could link the residential areas with the North Shore Mall, both as a final destination and as a transfer point for buses to other locations. By transferring to MBTA Route 465, passengers could continue to the Liberty Tree Mall or Endicott Plaza in Danvers. If it were extended a short distance beyond the border of tract 210300 on the west end, a Lowell Street route could provide direct service to the Shop and Save Plaza at Russell Street. It could also reach a much more densely populated area than that in tract 210300, but one that also has little existing transit service.

A subsidized private-carrier bus route provides peak-direction peak-period service between a stop in Peabody at Lowell Street and U.S. Route 1, just east of the border of tract 210300, and downtown Boston. A bus route on Lowell Street could also provide connections to and from this route. Scheduled inbound times from this stop to Haymarket Station in Boston range from 40 to 47 minutes. For comparison, MBTA bus Route 434 from Peabody Square to Haymarket has a scheduled inbound trip time of 56 minutes.



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Regionwide Suburban Transit Opportunities Study, Phase II

Figure 3-12

Existing Services and Suggested Route - Peabody

APPENDIX A - PRESENT AND PAST TRANSIT SERVICES IN CENSUS TRACTS RATED HIGH IN POTENTIAL FOR SUPPORTING NEW SERVICES

Introduction

As discussed in Chapter 2, the initial screening process for this project generated four lists of census tracts that appeared to have the best potential to support suburban transit services on the basis of various socioeconomic characteristics. The first list included clusters of tracts or individual tracts with high potential to support reverse-commuting transit services. The second list included clusters of tracts or individual tracts with high potential to support traditional (toward Boston) commuting transit services. The third list included clusters of tracts or individual tracts with high potential to support intra-suburban transit commuting services. The fourth list included clusters of tracts or individual tracts with high potential to support intra-suburban transit services for purposes other than commuting.

The four lists were compiled without regard for existing transit services, but the project was specifically limited to suggesting new suburban services for tracts that currently have none. Therefore it was necessary to eliminate from the list those tracts with existing service before suggesting potential new services.

This appendix describes, for the census tracts that were included on each of the four lists, the transit services provided currently or in the recent past. The majority of these tracts already have some form of transit service. For these, the issues would be how well these services meet commuting or local mobility needs and whether there are ways in which they could be made to better meet these needs. Inclusion of information on past services no longer operating may help to prevent the repeating of past mistakes. Many of the tracts appear on more than one of the lists. In such cases, the transit service descriptions are included only in the discussion for the first list on which the tract appears.

Summary of Municipalities or Census Tracts without Existing Bus Service

As detailed in subsequent sections of this appendix, the vast majority of tracts identified as potentially able to support suburban transit services already have at least some bus service, either provided directly or partly funded by the MBTA. Several of these also have stations on the MBTA commuter rail system. Towns or tracts with no existing bus service for the general public are discussed in this section, in their order of appearance in Chapter 2.

Wellesley – This town currently has three commuter rail stations, but no public bus routes. Bus service was formerly operated along the Route 9 and Route 135/Route 16 corridors, but was phased out because of low ridership. Private-carrier feeder bus routes to Wellesley Hills Station from tract 404202 and to Wellesley Square Station from tracts 404301 and 404302 were discontinued in the 1970s. Mass. Bay Community College provides free all-day shuttle service to the Riverside Green Line terminal for students. Wellesley College provides weekend service to Cambridge and Boston for students.

Manchester-by-the-Sea – This town currently has one commuter rail station but no bus service. A 1979 plan for a network of bus routes throughout most of the town was apparently never implemented. Private-carrier bus service from Manchester to the neighboring communities of Beverly and Gloucester was operated for many years, but was discontinued in the mid-1960s.

Hamilton and Wenham – These two towns are served by one commuter rail station on their common border, but they currently have no bus service for the general public. MBTA bus Route 451 currently terminates in North Beverly, a short distance from the southern border of Wenham. Until 1971, some service on this route continued through Wenham to Hamilton/Wenham Station, but it was discontinued due to low ridership. Even earlier, this route had continued through Hamilton to Ipswich.

Needham (Tract 403100) – This tract has one commuter rail station, but currently has no bus service for the general public. A town-sponsored bus system that operated from 1976 to 1991 included a loop route through this tract. The entire system was shut down when the town eliminated funding for it. An older private-carrier bus route connecting this tract to MBTA Route 36 in West Roxbury was discontinued in 1979 because of low ridership.

Franklin (Tract 442101) – This tract currently has one commuter rail station, but no bus service for the general public. Dean College, one of the main trip generators in this tract, is within convenient walking distance of the rail station. In January 2002, the town of Franklin took preliminary steps toward establishing a local bus system focusing on the downtown area, much of which is in tract 442101. However, this system never started. More recently, plans by the town to apply for funding under the Suburban Mobility Program were not carried through.

Winchester (Tract 338100) – The town of Winchester has two commuter rail stations and two MBTA bus routes, but none of these serve this tract directly. Winchester had a town-sponsored bus system from about 1979 to 1981, but it was discontinued when MBTA funding for all such systems was suspended. It is unclear if that system included a route in tract 338100.

Westwood (Tracts 412100 and 412200) – This town currently has one commuter rail stop and one MBTA bus route, but they do not serve tract 412100 or tract 412200 directly. An MBTA-funded private-carrier bus route formerly ran through both tracts on state Route 109 on the way from Milford to downtown Boston. This route was discontinued in 2003 because of low ridership.

Transit Services in Tract Clusters Identified as Having High Potential to Support Reverse-Commuting Transit

1. Waltham, Wellesley, and Weston (368400, 500, 600, 800, 901, 902; 404100, 201, 202, 400; 367100, 200) – This cluster of census tracts received high ratings under the criteria for access to commuter rail and rapid transit to the suburbs and presence of a major college or university.

Waltham – Tracts 368400, 368500, 368600, 368800, 368901, and 368902 are all located in Waltham, and all except tract 368901 are in the southern half of that city. All of the listed tracts currently have some MBTA bus service, and two of them have commuter rail service provided by the Fitchburg Line. Waltham Station, which all of the bus routes in the city run past, is in tract 368800. Brandeis/Roberts station is in tract 368400, on the southern edge of the Brandeis University campus.

The MBTA bus routes serving Waltham Station in 2005 are 70 (Cedarwood - University Park Cambridge), 70A (North Waltham - University Park), 170 (Oak Park, Bedford - Dudley Square), 505 (Central Square, Waltham - Downtown Boston via Moody Street), 553 (Roberts - Downtown Boston via Newton Corner), 554 (Waverley Square - Downtown Boston via Newton Corner), 556 (Waltham Highlands - Downtown Boston via Newton Corner), and 558 (Riverside - Downtown Boston via Newton Corner). All of these routes except for 170 and 505 can be used either for local travel within Waltham or for travel between Waltham and outside points. Route 170 is intended mainly for travel to and from office and industrial parks along state Route 128. Route 505 can only be used for travel to and from downtown Boston, but the streets it runs on in Waltham are also served by local routes.

In tract 368800, in addition to service to Waltham Station, Route 558 runs along River Street near the southern border. Routes 70 and 70A run along the northern border on Main Street.

In tract 368400, Route 553 runs along South Street. Route 70 runs along the northwest corner of this tract on Weston Street. In tract 368500, Routes 505, 553, and 554 run entirely along Moody Street. Route 556 runs along Moody and High Streets. Route 558 runs along Moody, Spruce, and Crescent Streets. In tract 368600, Routes 505, 553, and 554 run entirely along Moody Street. Route 558 runs along Crescent Street and Woerd Avenue.

Tract 368902 is served by Route 554 all along its northern border on Beaver Street, and all along its western border on Lexington Street. Part of the Lexington Street border is also served by Route 70A. The segment of the southern border on Main Street is served by Routes 70 and 70A. Tract 368901 is served by Route 70A along most of its western border on Lexington Street and by Route 554 along its southern border on Beaver Street. Bentley College is located in tract 368901.

In addition to this MBTA service, from 2000 to 2003 a local bus system called Citibus was sponsored by the city of Waltham. It included some routes along the same streets as MBTA routes, and some on different streets. Like the MBTA routes, all Citibus routes converged at Waltham Station.

Tract 368400 was served by Citibus Route 17 (Waltham Center to Riverside MBTA station via Brandeis), which ran westbound on Felton Street, Hope Avenue, and South Street, and eastbound on South, Prospect, and Main Streets. Part of the Felton Street segment was in tract 368800.

Citibus Route 16 (Waltham Center to Riverside MBTA station via Moody Street) ran through tracts 368500 and 368600 on Moody Street. Citibus Route 12 (Waltham Center to Winter Street) ran along the western border of tract 368902 on Lexington Street. Citibus Route 14 (Waltham Center to Waverley Square, Belmont) ran along the western and northern borders of tract 368901 on Lexington Street and Trapelo Road.

The Citibus system shut down in July 2003, when the initial funding ran out and was not renewed. The *Daily News Tribune* of Waltham reported that in the final year of operation the system (which included other routes in addition to those listed above) carried 73,000 riders, equivalent to about 150 individuals making round-trips each weekday. (Passengers transferring among routes may have been double-counted.) The annual operating cost was $750,000, of which fare revenue covered $56,000, or 7.5%.

A May 2001 CTPS point-check at Waltham Station had found a total of 29 Citibus passenger boardings and 9 alightings there between 7:25 and 9:35 AM. A fall 2002 survey had indicated that about 85 passengers boarded Citibus vehicles anywhere along their routes between 7:00 and 10:00 AM.

Wellesley – Tracts 404100, 404201, 404202, and 404400 are all located in Wellesley. At present, there is no bus service for the general public in that town. There are three commuter rail stations in the town. Wellesley Square Station is on the border of tracts 404302 and 404400. Wellesley Hills Station is in tract 404202, just outside the edge of tract 404201. Wellesley Farms Station is in tract 404201.

Mass. Bay Community College, in tract 404100, is classified in the analysis as a major college or university with a substantial proportion of commuter students. The college's website shows that free shuttle bus service from the Riverside Green Line terminal is provided from 7:30 AM to 4:30 PM and at 9:15 and 10:15 PM. Total enrollment is reported to be 5,000, but some of that is at a smaller campus in Framingham. There is no on-campus housing.

Wellesley College is located in tract 404400, but does not have a large commuter population, resulting in only a medium rating for colleges. On Fridays, Saturdays, and Sundays, the college provides bus service for students to several other colleges in Cambridge and Boston. Some trips on this route make an intermediate stop at the Woodland Green Line station.

In the past, an MBTA bus route from Framingham to Newton Corner ran through Wellesley via Central Street (state Route 135) and Washington Street (state Route 16), making local stops. It passed through tracts 404201 and 404202 and ran along the border between tracts 404302 and 404400. This route was transferred to an unsubsidized private carrier in 1981, and was discontinued in 1989.

Another private-carrier route (eventually subsidized by the MBTA) formerly ran through Wellesley on Worcester Road (state Route 9) on the way from Worcester to Boston, with local stops in Wellesley. It passed through tract 404301 and along the borders of tracts 404201 and 404202. The portion of the route in Wellesley was discontinued in 2000.

Tract 404202 had a medium rating on colleges, because Babson College is located there. Babson's website does not show any shuttle connections. For many years a private-carrier bus route was run between Babson and Wellesley Hills Square via Forest Street and Abbott Road. This service ended in the mid-1970s, after ridership had fallen to about 25 per day.

Weston – Tracts 367100 and 367200 are located in Weston. Tract 367100 includes all of the town north of the right-of-way of the discontinued Central Massachusetts Branch rail line, and tract 367200 includes the rest of the town south of there. At present there is no local bus service for the general public within the town.

A private-carrier bus route funded by the Executive Office of Transportation (EOT) runs through tract 367100 on Boston Post Road (mostly U.S. Route 20) on the way from Northborough to Boston. Buses will stop on signal at "any safe location" along the route. As of spring 2005 there were two round-trips a day, with one scheduled for commuting to Boston and the other for reverse-commuting. In 1980 a private carrier was granted operating rights for bus service on state Route 30 and on Wellesley Street in Weston as part of proposed new variations of through routes from Framingham to Boston. This service was either short-lived or never implemented, however.

The MBTA's Framingham/Worcester commuter rail line runs through the southeast corner of tract 367100. There has never been a station within the tract, but Wellesley Farms Station in Wellesley is about one-half mile outside the border of Weston and attracts some riders from the latter town. A plan in the 1990s to build a park-and-ride station on the Framingham/Worcester Line on Riverside Road in tract 367100 was dropped after a site that had been identified was developed instead as an office park. Regis College is located in tract 367100.

The MBTA's Fitchburg commuter rail line runs through tract 367200, and has three stations in that tract: Kendal Green, Hastings, and Silver Hill. There are no reverse-commuting destinations within the immediate vicinity of any of these stations. The Cambridge School of Weston, a private secondary school, is located about one mile from Kendal Green Station. The school provides shuttle bus connections to and from the station for commuting students.

2. Lynn, Salem, and Swampscott (206100, 200, 400, 600, 700; 207000, 100; 204101, 102, 300, 400; 202200) – This cluster of census tracts received high ratings in the reverse-commute analysis under the criteria for access to commuter rail and rapid transit to the suburbs and presence of a major college or university.

Lynn – Tracts 206100, 206200, 206400, 206600, 206700, 207000, and 207100 are all located on the southeast side of the city of Lynn, between Western Avenue and Lynn Harbor or Nahant Bay. Lynn has a much higher population density than most of the other cities

and towns included on the high-priority lists. Census tract boundaries are drawn on the basis of total population, so the tracts in Lynn are relatively small in area. Lynn also has an extensive network of MBTA buses. This network has been revised several times in recent years, to match service levels and routings with changing needs. Present transit services by tract are described below, following an overall summary of the bus network.

The transit network in Lynn has been centered for many decades at Central Square, on the border of tracts 206800 and 206900. Neither of these is included in the high-priority reverse-commuting list, but almost all of the local bus routes serving other Lynn tracts converge there, and most of the express routes between Lynn and Boston also pass through. The boundary line between these tracts runs along the right-of-way of the Newburyport/Rockport commuter rail line, and Lynn Station on that line is on the west side of Central Square.

Local bus routes terminating at Central Square in 2005 are 426W (Wonderland via Cliftondale), 429 (Northgate Shopping Center), 431 (Neptune Towers), 435 (Liberty Tree Mall via Peabody Square), 436 (Liberty Tree Mall via Goodwins Circle), 439 (Bass Point, Nahant), and 456 (Salem Depot via Highland Avenue).

Local routes that serve Central Square as an intermediate point include 441W (Marblehead - Wonderland via Paradise Road), 442W (Marblehead - Wonderland via Humphrey Street), and 455W (Salem Depot - Wonderland via Loring Avenue).

The express bus routes serving Lynn can also be used for local trips. Express Route 426 (Haymarket via Cliftondale) originates at Central Square. Express bus routes that serve Central Square as an intermediate stop include Routes 441 (Marblehead - Haymarket via Paradise Road), 442 (Marblehead - Haymarket via Humphrey Street), 455 (Salem Depot - Haymarket via Loring Avenue), and 459 (Salem Depot - Downtown Crossing via Loring Avenue).

The only local routes that serve Lynn but do not go through Central Square are 424W (Eastern Ave. & Essex St. - Wonderland) and 450W (Salem Depot - Wonderland via Highland Avenue). Express bus routes that do not go through Central Square are 424 (Haymarket - Eastern Ave. & Essex St., run only outbound, in PM peak hours), 434 (Peabody Square to Haymarket via Goodwins Circle, used for only one inbound AM peak trip and one outbound PM peak trip), 448 (Marblehead - Downtown Crossing via Paradise Road), 449 (Marblehead - Downtown Crossing via Humphrey St.), and 450 (Salem Depot - Downtown Crossing via Highland Avenue).

In tract 206100, service on Franklin Street is provided by Route 429. Service on Common and Market Streets along the southern border is provided by Routes 426, 426W, 455, 455W, and 459. Service on Washington Street is provided by Route 435. Service on Western Avenue along part of the northern border is provided by Routes 424, 424W, 434, 450, and 450W.

The western border of tract 206200 along Washington Street is served by Route 435. From an operations standpoint, this tract is one of the more difficult in which to provide bus service, because it is centered on a steep hill. For a number of years, service around the hill was provided by the East Lynn Loop, sponsored by the city and partly funded

through the MBTA suburban transportation program. In tract 206200, streets served included Rockaway Street, Rock Avenue, Grant Street, Bay View Avenue, Hollingsworth, Herbert and High Rock Streets, and Rogers Avenue. This route was discontinued in March 2003, because of low ridership. Bus service in various forms had been operated in this neighborhood since the 1930s, when it replaced a streetcar route.

Service along the east side of tract 206400 is provided by Routes 456, 424, and 424W on Eastern Avenue. Service along the southern border on Essex Street is provided by Routes 455, 455W, and 459. In the past, there was a route along the western border, on Chatham Street, but it was eliminated in a 1981 service consolidation.

In tract 206600, Routes 441, 441W, 442, 442W, 448, and 449 all run on Lewis Street. Two midday round-trips on a variation of Route 439 also run on Lewis Street.

In tract 206700, Routes 441, 441W, 442, 442W, 448, and 449 all run on Broad Street. Trips going toward Nahant on Route 439 run on Nahant Street, on the western border of the tract. Two midday round trips on a variation of Route 439 also run on Broad Street.

Tract 207000 has service by Routes 441, 441W, 442, and 442W on the Lynnway. (Routes 448 and 449 also run on the Lynnway, but do not make local stops.) Route 431 runs eastbound on Neptune Boulevard and Tremont Street and westbound on State and Summer Streets. Service on Common Street, along the northern border, and on Market Street, along the eastern border, is provided by Routes 426, 426W, 455, 455W, and 459.

Service along the northern border of tract 207100, on Western Avenue and Common Street, is provided by Routes 426, 426W, 455, and 455W. The Western Avenue segment is also served by Routes 424, 424W, 434, 450, 450W, and 459. Route 431 serves a short section of Commercial Street on the eastern border of the tract.

Salem – Tracts 204101, 204102, 204300, and 204400 are all located along the eastern edge of Salem. Salem State College is in tract 204101. Several MBTA bus routes serve that city. All of these routes terminate at the Salem commuter rail station (on the Newburyport/Rockport Line) in tract 204500, which is not one of those on the high-priority reverse-commuting list.

MBTA bus Routes 455, 455W, and 459 run along Loring Avenue and Lafayette Street, through tracts 204102, 204101, and 204300, on the way to and from Salem Station. The only bus service in tract 204400 is provided by Route 451, at the west end. Bus service along Fort Avenue through the length of this tract, which includes Salem Willows, was operated for many years but was discontinued by the MBTA in 1978 because of low ridership. A loop bus route along Canal Street and Jefferson Avenue, partly in tract 204101 and the northern edge of 204102, was formerly operated by a private carrier under contract from the MBTA as Route 718. This route was discontinued in 2002 because of low ridership.

Swampscott – Tract 202200 is located on the east side of Swampscott and includes about one-third of the land area in that town. The Newburyport/Rockport commuter rail line runs through Swampscott, but not through tract 202200. MBTA bus Routes 442, 442W,

and 449 all run through tract 202200 on Humphrey Street. Routes 441, 441W, and 448 also run through the northern section of this tract on Humphrey Street, and along part of the western border of the tract on Salem Street.

3. Beverly, Danvers, Hamilton, Manchester, and Wenham (217201, 202, 300, 400, 500, 600; 211400, 215100, 216100, 218100) – This cluster of census tracts received high ratings in the reverse-commute analysis under the criteria for access to commuter rail and rapid transit to the suburbs and presence of a major college or university.

Beverly – Tracts 217201, 217202, 217300, 217400, 217500, and 217600 are located in Beverly, and include most of the southern and eastern sections of that city.

Beverly has five commuter rail stations. The most heavily patronized of these is Beverly Depot, which is served by trains on both the Newburyport and Rockport Lines. It is located in tract 217400. This tract has one of the highest population densities, and therefore smallest areas, among Beverly tracts. North Beverly Station, on the Newburyport Line, is located in tract 217100, which is not on the high-priority list. The other three stations are all on the Rockport Line. Montserrat Station is on the border of tracts 217500, 217100, and 217600. Prides Crossing and Beverly Farms are both in tract 217600.

In 2005 the only MBTA bus route serving Beverly is Route 451, which has two variations. Tracts 217400 and 217500 are served along their shared border by Route 451 on Cabot Street. Southbound buses make a short diversion over Rantoul and Elliot Streets. A longer side-diversion on Elliot Street in both directions goes to the Cummings Center office complex, which includes a branch of North Shore Community College. Before 1:00 PM, buses run through tract 217300 northbound on Cabot Street and southbound on Tozer and Sohier Roads. After 1:00 PM the direction of the one-way operation is reversed.

Additional bus service to several sections of Beverly is provided by the Beverly Shoppers Shuttle, under sponsorship of the city and with funding from the MBTA. This route runs along the border between tracts 217201 and 217202 on Elliot Street. It runs through the southern edge of tract 217300 on Elliot, Beckford, and Colon Streets. On the border of tracts tract 217400 and 217500 it runs on Rantoul and Cabot Streets, the same as MBTA Route 451. The Essex Street segment is on the northwest border of tract 217600.

Danvers – Tract 211400 is in Danvers and includes the southwest side of that town. In 2005, MBTA bus Route 465 operates on Pine Street on the southeast edge of this tract. This service is the northbound-only segment of a one-way loop. There is no other MBTA service within the tract. The Coach Company operates express bus service to Boston, passing through tract 211400 on either Route I-95 or U.S. Route 1, but these buses do not currently stop anywhere in Danvers. They did make a stop near the Maple Street (state Route 62) interchange until 2000, when it was replaced by a stop in Peabody.

North Shore Community College has two campuses in this tract. MBTA bus Route 468 from Salem formerly served the Maple Street campus. That segment of the route was discontinued in 2002 because of low ridership.

Hamilton and Wenham – Tract 215100 includes the entire town of Hamilton. Tract 216100 includes the entire town of Wenham. At present, there is no bus service for the general public in either of these towns. Hamilton/Wenham Station on the Newburyport commuter rail line is located on the boundary line between the two towns. MBTA bus Route 451 (North Beverly – Salem Depot) formerly continued beyond North Beverly via state Route 1A through Wenham to Hamilton/Wenham Station. It was cut back to North Beverly in 1971. At one time, this bus route had continued even further, via Route 1A through Hamilton to downtown Ipswich, near the commuter rail station in that town. At the time they were in operation, local ridership was insufficient to support these extensions, and the commuter rail line served most of the through transit ridership in the area. Gordon College is located at the east end of Wenham, near the borders of Manchester and Beverly. This is primarily a residential college. Bus service was provided to it briefly in the early 1960s, as a side-diversion of a private-carrier route between Gloucester and Peabody via state Route 128.

Manchester – Tract 218100 includes the entire town of Manchester-by-the Sea (formerly Manchester). At present, there is no bus service for the general public in this town. The Rockport commuter rail line has a station at the town center. Historically, there was also a West Manchester Station at Harbor Street, and a Magnolia Station at Magnolia Avenue near the border of Gloucester. Both stations were lightly patronized and were discontinued prior to the establishment of the MBTA.

Bus routes from downtown Manchester to downtown Beverly and to downtown Gloucester via the present state Route 127 were operated by various private carriers from the 1920s to the 1960s. During the 1960s a private-carrier bus route between Gloucester and the North Shore Shopping Center (now the North Shore Mall) via state Route 128 included a side-diversion to downtown Manchester. A few trips a day on this route were run through to downtown Boston.

In 1979, operating rights were granted to Manchester Transportation Services, Inc., for several bus routes in Manchester. These included routes from Manchester Station to the east and west ends of the town via Route 127, and on several streets north of the downtown area but south of Route 128. It is unclear whether these bus routes were ever implemented, but if so, they were apparently short-lived.

4. Melrose and Wakefield (336100, 200, 402; 335400) – This cluster of census tracts received high ratings in the reverse-commute analysis, because of their accessibility by commuter rail and rapid transit.

Melrose – Tracts 336100, 336200, and 336402 are all located in Melrose. All three tracts currently have some MBTA bus service, and two of them have commuter rail service by the Haverhill/Reading Line. Melrose Highlands Station is in tract 336100. Melrose/Cedar Park Station is on the border of tract 336100 and tract 336402. Wyoming Hill Station is on the southern border of tract 336402.

In 2005, MBTA bus Route 131 from Melrose Highlands to the Oak Grove Orange Line station runs through tract 336100 on Franklin Street, and along part of the border between tracts 336100 and 336200 on Main Street. Most AM peak and midday trips run inbound (toward Oak Grove) via Porter and East Streets in tract 336200, but outbound directly on Main Street. PM peak and early evening trips use Upham Street, on the south border of tract 336200, outbound, but Main Street inbound. Routes 136 and 137 between Reading and Malden also serve Main Street in Melrose along the border of tracts 336100 and 336200 and the east edge of tract 336402. Additional service through tract 336402 on Wyoming Avenue and Pleasant Street is provided by Route 132 from the Redstone Shopping Plaza in Stoneham to Malden Station. An older configuration of Route 132 formerly served Washington Street and Lynde Avenue in tract 336402 as part of a one-way loop. This was discontinued in 1994, when the route was extended into Stoneham.

Wakefield – Tract 335400 is located on the south side of Wakefield, on the border of Melrose. The Haverhill/Reading commuter rail line runs through this tract and Greenwood Station is located there. In 2005 MBTA bus Routes 136 and 137 both run through the tract on Main Street, on the way between Reading and Malden Station. At one time, a private-carrier bus route ran between Wakefield Square and Stoneham Square, following Oak, Main, and Forest Streets through tract 335400. This route was discontinued by the early 1960s.

5. Framingham (383501, 383502) – These two census tracts received high ratings because of their inclusion of a major college or university and their access to commuter rail.

These two tracts are located along the south side of state Route 9, in the Framingham Center area. The Framingham State College campus is located in tract 383502. There is currently no direct rail passenger service to either of these tracts, but both are connected to the vicinity of Framingham Station on the Framingham/Worcester commuter rail line by routes of the Framingham LIFT bus system. This town-sponsored system is partly funded by the MBTA. In 2005, LIFT routes 2 and 3 are essentially clockwise and counter-clockwise versions of the same loop line. LIFT 2 runs northbound through tract 383502 on Union Street and southbound through tract 383501 on Concord Street. LIFT 3 serves these streets in the opposite direction. LIFT 7 also serves Union Street in both directions. All three routes serve the western end of Main Street in tract 383502, and west of Framingham Center, LIFT 7 serves Worcester Road along the northern border of the tract. LIFT 7 is partly funded by EOT.

A proposed new bus route to be called LIFT 9 would follow state Route 9 along the northern borders of tracts 383501 and 383502. In 2005, a Peter Pan Bus Lines route between Worcester and Boston serves stops along Route 9, making two inbound trips in the AM peak and two outbound trips in the PM peak. There is no off-peak service. (East and west of Framingham, these buses use the Massachusetts Turnpike rather than Route 9.) This service is partly funded by EOT. Historically, there was much more local bus service along the Route 9 corridor, but a combination of factors including heavy traffic, pedestrian safety concerns, and dwindling ridership resulted in its near discontinuance.

In 2001, CTPS conducted a feasibility study for the MBTA of a commuter rail extension over an existing freight line from Framingham Station through Framingham Center to

Marlborough and Northborough. This would have included a station near the Framingham State College campus. Such an extension was given a medium priority rating in the 1993 update to the MBTA's Program for Mass Transportation. More recently, a shorter extension from Framingham Station just to the college campus has been under study by consultants as one alternative to reduce automobile use by students at the college.

6. Needham (403100, 200) – These two census tracts received a high rating in the analysis because of their access to commuter rail and rapid transit.

Tract 403100 is located in the southeast corner of the town and tract 403200 is to the west of it, in the town center. The Needham commuter rail line runs through tract 403100 and along the western border of tract 403200. Hersey Station is in tract 403100, and Needham Center Station is at the southwest corner of tract 403200. Needham Heights Station is just outside the northwest corner of tract 403200.

In 2005, one MBTA bus route (Route 59 Needham Junction - Watertown Square) serves Needham. It runs through the western edge of tract 403200 on Chapel Street and Highland Avenue. This route connects at Newton Highlands with the D branch of the Green Line. From 1976 to 1991 a town-sponsored bus system operated several loop routes, all starting at Needham Center Station. This system shut down after the town declined to continue funding it. In the final years of operation, tracts 403100 and 403200 were both served by routes of this system.

For many years a private-carrier bus route ran on Great Plain Avenue through tract 403100 and along the southern border of tract 403200. This route connected at Spring Street in West Roxbury with MBTA bus Route 36 to the Forest Hills Orange Line terminal. Service on this route ended in 1979, after having declined to one round-trip per day.

Transit Services in Individual Tracts Identified as Having High Potential to Support Reverse-Commuting Transit

1. Bedford (359100) – This census tract received a high rating for the presence of a college or university.

Tract 359100 includes the sections of Bedford northeast of the line of the abandoned railroads from the border of Lexington through Bedford center to the border of Billerica. In 2005, MBTA bus Route 62 serves the southern edge of this tract on Great Road and Loomis Street. After crossing out of the tract, the route re-enters for a short distance on Springs Road, approaching the Bedford VA Hospital. The town sponsors a demand-responsive bus service, open to all, called Bedford Local Transit. Service runs weekdays from 9:00 to 11:55 AM, and from 1:00 to 2:55 PM. In addition, fixed-route service is run twice a day between Bedford Common and the Burlington Mall. Within tract 359100, this bus runs on Great, Shawsheen, and Burlington Roads.

The eastern edge of tract 359100 has several bus routes designed to bring commuters to office parks located there. These include MBTA Routes 170 and 351, and Lowell Regional Transit Authority (LRTA) Route 18 from Lowell to Burlington. In tract 359100,

these routes use the Middlesex Turnpike, Crosby Drive, and Burlington Road. The area served is non-residential.

The Bedford campus of Middlesex Community College is located in this tract. The south entrance is on Springs Road, a short distance beyond the end of MBTA Route 62.

2. Canton (415300) – This census tract received a high rating for the presence of a college or university and a medium rating for access to commuter rail and rapid transit to the suburbs.

Tract 415300 includes the sections of Canton north of Dedham and Randolph Streets. There are two commuter rail stations (Canton Junction and Canton Center) within the town, but neither one is within this tract. Tract 415300 is served directly by a private-carrier bus route, run under contract to the MBTA as Route 716. In 2005 this route runs from Cobbs Corner, on the border of Canton, Sharon, and Stoughton, through Milton to the MBTA Mattapan terminal. There, passengers can transfer to several MBTA bus routes, or to the High Speed Line trolley to Ashmont Station. In tract 4415300, Route 716 runs on Washington and Turnpike Streets. It has nine round-trips on weekdays and four on Saturdays.

Massasoit Community College is located in this tract. The campus is on Randolph Street, and is not within convenient walking distance of Route 716. The college provides a shuttle bus between the Canton campus and another in Brockton, with three round-trips per day. It is theoretically possible, though impractical, to travel from the Canton campus to Boston by transferring first from the campus shuttle to a Brockton Area Transit (BAT) bus to downtown Brockton. Continuing from there, one can either take a commuter train to South Station or a BAT bus to a Red Line connection at Ashmont Station.

3. Dedham (402200) – This census tract received a high rating for access to commuter rail and rapid transit to the suburbs.

Tract 402200 is located in the southeast corner of Dedham, on the border of the Hyde Park neighborhood of Boston. It is relatively small in land area because of its high population density. The Franklin commuter rail line runs through tract 402200 for a short distance, but has no stations within it. Endicott Station is about one-half mile beyond the southwest border of the tract, and Readville Station is about one-half mile beyond the northeast border. The Attleboro/Stoughton commuter rail line forms the southeast edge of the tract, but has no station there. Part of the northeast border of the tract is formed by right-of-way of the abandoned Dedham Branch rail line, now owned by the town. Passenger service on this line ended in 1967. It had included an East Dedham Station at Walnut Street, on the border of tracts 402200 and tract 402400.

In 2005, MBTA bus Route 33 originates at the intersection of River and Milton Streets just north of the border of this tract, and goes to the Forest Hills Orange Line terminal. The Dedham Bus, a town-sponsored service partly funded by the MBTA, runs between Dedham Manor and a connection with MBTA bus Routes 52 and 36 at Spring Street in West Roxbury. Trips running toward Spring Street and 6 of the 10 trips going toward Dedham Manor pass along the northwest corner of tract 402200 on Oakdale Street. The Dedham Manor loop on Bonham, Trenton, and Sherman Roads and Sprague Street is in

the southeast corner of this tract. Route 36 goes to Forest Hills. Route 52 goes to Newton and Watertown, connecting with the D branch of the Green Line at Newton Centre. The Dedham Bus also connects at Dedham Square with MBTA Route 34E to Forest Hills.

4. Franklin (442101) – This census tract received a high rating for the presence of a college or university and a medium rating for access to commuter rail to the suburbs.

Tract 442101 is located in the middle of the east side of the town of Franklin. It is relatively small in land area because of its high population density. At present, there is no bus service for the general public in this town. The Franklin commuter rail line runs along the southeast side of tract 442101. Franklin/Dean College Station is just outside the edge of the tract. The college itself is in tract 442101 and is within walking distance of the station.

From the early 1940s to the early 1960s a private-carrier bus route was run from Franklin through Norfolk to Walpole, and starting in the early 1950s it was run through to the Forest Hills Orange Line terminal. This route passed through a corner of tract 442101 on Chestnut Street. In January 2002, the town of Franklin took preliminary steps toward establishing a local bus system focusing on the downtown area, much of which is in tract 442101. However, this system never started. More recently, plans by the town to apply for funding under the Suburban Mobility Program were not carried through.

5. Gloucester (221600) – This census tract received a high rating for access to commuter rail to the suburbs.

This tract is located near the center of Gloucester, and is bounded by Washington Street, state Route 128, and the Rockport commuter rail line. It is relatively small in land area because of its high population density. Gloucester Station on the Rockport Line is just beyond the border of tract 221600, in tract 221500.

Bus service throughout Gloucester is operated by the Cape Ann Transportation Authority (CATA). Most CATA routes run through the Gloucester central business district in tract 221500. Routes are identified by color codes. In 2005, the Blue Line (Gloucester to Rockport via Lanesville) runs on Washington Street, on the western border of tract 221600. This route includes a side-diversion to Gloucester Station. The Green Line (Gloucester Business Express Loop) also serves tract 221600, running on Washington Street northbound and on Maplewood Avenue southbound.

6. Winchester (338100) – This census tract received a medium rating for employment density and access to commuter rail and rapid transit to the suburbs.

Tract 338100 is located in the northeast corner of the town. The Lowell commuter rail line forms part of the western border of this tract, but has no station in that segment. Winchester Center Station is about one-half mile south of the southern border of tract 338100. Historically, there was a Winchester Highlands Station at Cross Street, just outside the border of tract 338100. It was closed in 1978, and for many years before that it had been served only by a few peak-period trains.

In 2005, the MBTA operates two bus routes through Winchester (Route 134 and Route 350) but neither one passes through tract 338100. The nearest that Route 134 gets to that tract is about one-half mile away, and Route 350 is even further away.

About 1979, a town-sponsored bus system, Winchester Community Transit, was started, with assistance from the MBTA's Suburban Transportation Program. Details on specific routings are not readily available. This system shut down in 1981, when budget constraints resulted in suspension of MBTA funding to all systems in the program. When MBTA funding became available again in 1984, the Winchester system was not revived, suggesting that it had not been heavily used.

Transit Services in Tract Clusters Identified as Having High Potential to Support Traditional-Commuting Transit

Many of the census tracts that were rated high for traditional-commuting potential were also rated high for reverse-commuting potential. To avoid repetition in such cases, the reader will be referred back to the discussions of these tracts in the reverse-commuting sections.

1. Lynn (205200, 500, 700, 800, 900; 206000, 100, 200, 300, 400, 500, 600, 700, 800, 900; 207000, 100, 200) – This cluster of 18 census tracts received high ratings for proximity to commuter rail and rapid transit parking lots that fill to capacity. All but one of these tracts also received a high rating for the auto ownership criteria. A medium rating for the population density criteria was given to all of these tracts. Finally, 16 of the 18 tracts received a medium rating for percentage of workers employed in Boston or Cambridge.

Of these tracts, 206100, 206200, 206400, 206600, 206700, 207000, and 207100 also received high ratings for reverse-commuting potential, and are discussed in a previous section of this appendix. That section also includes a listing of the local bus routes in Lynn. Because of population density, most of the census tracts in Lynn are fairly small, so they will be discussed below in groups.

Tracts 205200, 205500, and 205800 are all located along the Western Avenue corridor, which crosses Lynn between Saugus and Salem but passes north of the downtown Lynn business district. Tracts 205700 and 205900 are not directly on Western Avenue, but tract 205700 is just north of tract 205800, and tract 205900 adjoins tracts 205700 and 205500. In tract 205200, bus service in 2005 is provided by MBTA bus Route 435 on Euclid Street on the northeastern border, by Routes 424, 424W, 435, 450, and 450W on Western Avenue near the southeastern edge, and by Routes 434 and 436 on Chestnut Street and Broadway near the southwest side. Route 435 also serves Chestnut and Boston Streets, in or along the edge of this tract. Service on Chatham Street, on the border between tracts 205100 and 205200, was operated in the past, but was eliminated in a 1981 route consolidation. Service along Magnolia Avenue in tract 205200 was also eliminated in 1981.

In tract 205500, about half of the land area is occupied by the Pine Grove Cemetery. Route 435 passes through the southeast side of the tract on Boston Street. A few trips on Route 435 serve Parkland Street, on the north border of the tract, and Linwood Street and several others along the west side. A separate Linwood Street route was

discontinued in 2002 because of very low ridership. On Western Avenue near the southeast edge of the tract, service is provided by Routes 424, 424W, 434, 450, and 450W.

In tract 205700 service on Summer and Boston Streets is provided by Routes 426 and 426W. Service on Myrtle Street, near the eastern edge, and on Holyoke Street, along the northern edge, is provided by Route 429.

In tract 205800 service along the southeastern border on Western Avenue is provided by Routes 424, 424W, 450, 450W, 455, 455W, and 459. Service on Summer Street is provided by Routes 426 and 426W. Service on Boston Street, along the northern edge, is provided by Route 429.

Service to tract 205900 is provided by Route 429, along the southern border, on Boston Street. In the past, there was also service on Walnut, Grove, and Forest Streets in this tract, but the 1981 route consolidation eliminated those segments.

The 206-series tracts account for most of the sections of Lynn southeast of Western Avenue and east of Common or Market Streets. Tract 206000 is the only one in the series that includes streets on both sides of Western Avenue. Service on the segment of Western Avenue in this tract is provided by Routes 424, 424W, 434, 450, and 450W. Service on Boston Street along the northern border, and on Franklin Street along part of the eastern border, is provided by Route 429. Service on Common Street, along the southern border, is provided by Routes 426, 426W, 455, 455W, and 459.

In tract 206300, service on Chestnut Street is provided by Route 436. Service on Essex Street, along the southern border, is provided by Routes 455, 455W, and 459. A route was formerly run along Chatham Street on the eastern border, but was eliminated in the 1981 service consolidation.

Service along the northern border of tract 206500 is provided by Routes 455, 455W, and 459, on Essex Street. Route 456 runs through the tract on Trinity Avenue, Timson Street, and Eastern Avenue. Routes 424 and 424W also run on Eastern Avenue. Route 436 runs through the west end of the tract, on Chestnut Street. A route discontinued in 1981 ran through the tract on Chatham Street.

Central Square, where the Lynn commuter rail station is located, and where most of the bus routes in Lynn converge, is on the border of tracts 206800 and 206900. In tract 206800, Union and Silsbee Streets are used by Routes 436, 455, 455W, 456, and 459. Routes 426, 455, 455W, and 459 all use Market Street. Route 429 uses Central Avenue, Oxford Street, and Market Street. Route 435 uses Liberty and Buffum Streets going toward Central Square, and Central Avenue and Washington Street leaving. Route 431 uses Central Avenue and Oxford Street. All of these routes have to enter the 206900 side of Central Square to reach the Lynn Busway. The arrival routing is Silsbee, Mt. Vernon, Spring, Broad, and Market Streets. The departure route is Union Street.

The other routes serving Central Square stay almost entirely on the tract 206900 side. Route 439 loops on the Lynnway, Market Street, the Lynn Busway, and Union and

Exchange Streets to Broadway. Buses on Routes 441, 441W, 442, and 442W arriving at Central Square from the east follow Broad and Market Streets to the busway, and depart to the west via Broad Street and the Lynnway. Eastbound buses on these routes arrive via the Lynnway and Market Street and depart via Union, Exchange, and Broad Streets. Buses on Routes 448 and 449 bypass the busway, running through directly between Broad Street and the Lynnway westbound, and using a short stretch of Market Street as a connecting link eastbound.

The 207-series tracts include the sections southeast of Western Avenue and west of Common or Market Streets. Service along the northern border of tract 207200, on Western Avenue, is provided by Routes 424, 424W, 434, 450, 450W, 455, 455W, and 459. Service through the southern part of the tract, on the Lynnway, is provided by Routes 441, 441W, 442, and 442W. (Routes 448 and 449 also run on the Lynnway, but do not pick up or drop off many passengers there.)

2. Waltham, Wellesley, Weston (368101, 300, 400, 500, 600, 800, 902; 369100; 404100, 201, 301, 302; 367100, 200) – This cluster of 15 census tracts received high ratings for proximity to commuter rail and rapid transit parking lots that fill to capacity. All of the tracts received a medium or high rating under criteria for population density and percentage of workers employed in Boston and Cambridge.

Waltham – The 368-series tracts and tract 369100 are all in Waltham. Of those listed above, tracts 368400, 368500, 368600, 368800, and 368902 also received high ratings for reverse-commuting potential and are discussed in a previous section of this appendix. Tract 368101 is located on the northeast edge of Waltham on the border of Lexington. The nearest commuter rail station is Waltham Station on the Fitchburg Line. In 2005, MBTA service to the portion of tract 368101 east of state Route 128 is provided by bus Route 70A. This route runs on Lexington Street on the east side of the tract and Lincoln Street on the south side, and also runs through the interior of the tract on Trapelo Road and Smith Street.

The Windsor Village apartment complex is located on the Lexington Street side of tract 368101. In addition to Route 70A it is served by a peak-period minibus route to the Alewife Red Line terminal, sponsored by the Route 128 Business Council. The same vehicles provide reverse-commuting service from Alewife to several office complexes in Waltham, including some in tract 368101, on Tracer Lane and on Lincoln Street. Route 14 of the now-discontinued Waltham Citibus service also ran on Lexington Street on the east side of this tract.

Tract 368300 is located along the western half of the Main Street corridor. In this tract, service is provided by MBTA bus Route 70 on Main and Stow Streets and the west end of Weston Street. MBTA Route 170 uses Main Street between Waltham Center and the Route 128 employment areas. The eastern segment of Main Street in this tract is also served by Routes 553 and 556. The latter route also runs on Bacon Street northbound and on Hammond Street southbound. Citibus Route 11 (now discontinued) also ran on Main Street. The 128 Business Council now operates a similar route during the AM and PM peak hours, but it does not make stops in tract 368300.

Tract 369100 is located in the southeast corner of Waltham, on the border of Watertown and Belmont. The Fitchburg commuter rail line runs through this tract, but no longer has any stops there. Historically there were two stations in this tract, Clematis Brook at Beaver Street and Beaver Brook at Main Street. Both stations were closed in 1978. Both had been served only by a few peak-period trains for many years and had been used by few riders.

MBTA bus Routes 70 and 70A run along the southwest border of tract 369100 on Main Street. Route 554 runs through the east side on Beaver and Warren Streets.

Wellesley – The 404-series tracts are in Wellesley. Tracts 404100 and 404201 also received high ratings for reverse-commuting potential and are discussed in a previous section of this appendix. Tracts 404301 and 404302 are located in the northwest corner of Wellesley. Both are bounded to the west by Natick and tract 404301 is bounded to the north by Weston. The Framingham/Worcester commuter rail line forms the southern border of tract 404302. Wellesley Square Station is located on the border of that tract and tract 404400.

Former bus service along state Route 135, just outside tract 404302, and former bus service on state Route 9, on the border of tracts 404301 and 404302, is discussed in the reverse-commute section. For a number of years, there was a bus route from Wellesley Square Station to Route 9 at Oak Street in Natick via Weston Road, Manor Avenue, and Overbrook Road in Wellesley. This route, which provided local service in the present tracts 404301 and 404302, was discontinued in the early 1970s.

Weston – The 367-series tracts are in Weston. Tracts 367100 and 367200 also received high ratings for reverse-commuting potential and are discussed in that section of this appendix.

3. Beverly and Salem (217300, 400; 204101, 200, 300, 400, 500) – This cluster of census tracts received high ratings under criteria for proximity to commuter rail parking lots that fill to capacity and for auto ownership. They also received medium ratings under the population density criteria.

Beverly – The 217-series tracts are in Beverly. Tracts 217300 and 217400 also received high ratings for reverse-commuting potential and are discussed in that section of this appendix.

Salem – The 204-series tracts are in Salem. Tracts 204101, 204300, and 204400 also received high ratings for reverse-commuting potential and are discussed in that section of this appendix.

The Salem commuter rail station (on the Newburyport/Rockport Line) is in tract 204500, and several MBTA bus routes from other parts of Salem terminate there. In 2005, Routes 450, 450W, and 456 run through the western edge of tract 204200 to 204500 via Highland Avenue and Essex Street. Route 465 runs along the border between tracts

204200 and 204500 on Boston Street. Route 451 runs through tract 204500 north of the station into Beverly on Bridge Street.

A loop bus route that included service along Canal Street and Jefferson Avenue in tract 204200 was formerly operated by a private carrier under contract from the MBTA as Route 718. This route was discontinued in 2002 because of low ridership.

4. Dedham and Westwood (402101, 102, 300, 400; 412100, 200, 300) – This cluster of census tracts received high ratings under criteria for proximity to commuter rail and rapid transit parking lots that fill to capacity and for percentage of workers employed in Boston or Cambridge.

Dedham – The 402-series tracts are in Dedham. Commuter rail service to Dedham is provided by the Franklin Line. Endicott Station on this line is on the southeastern border of tract 402400. It also has walk-in access from tract 402300. Dedham Corporate Center Station is also on the southeastern border of this tract, but the only authorized access to it is through tract 402300, on the opposite side of the tracks. Until 1967, commuter rail service from Boston to Dedham was also provided on the Dedham Branch (now abandoned). This line ran from Readville to Dedham Square, with intermediate stations at East Dedham (Walnut Street off Whiting Avenue) and Stone Haven (Mt. Vernon Street). The right-of-way of this line is now partly converted to non-transportation uses.

In 2005, two MBTA bus routes run along the border between tracts 402101 and 402102 on Washington Street. These are Routes 34E (Walpole Center - Forest Hills Station) and 35 (Dedham Mall/Stimson Street - Forest Hills Station). Route 35 terminates at the Dedham Mall in the northwest corner of tract 402400. Additional service through tract 402101 to the Dedham Mall is provided by Route 52 (Dedham Mall - Watertown Yard), which runs on the VFW Parkway.

In addition to the MBTA routes, the Dedham Bus, sponsored by the town with assistance from the MBTA, operates a route that runs through all four of the Dedham tracts listed above. In tract 402101 it runs on Bridge and Ames Streets. It runs through the northeast corner of tract 402400 on Ames and High Streets. In tract 402400 it makes a side-diversion on Washington Street to the Dedham Mall. It then follows High Street, crossing out of the tract and re-entering on Walnut Street, and continues on Oakdale and Cedar Streets. In tract 402300 it runs on Cedar and Sprague Streets. Some trips use a variation on East Street between High Street in tract 402400 and Sprague Street in tract 402300 near Endicott Station. A CTPS count in 2003 found a total of 28 passengers on trips starting between 6:45 AM and 3:00 PM.

Westwood – The three 412-series tracts together cover the entire town of Westwood. Commuter rail service to Westwood is provided by the Franklin and Attleboro/ Stoughton lines. Islington Station on the Franklin Line is near the west side of tract 412300. Route 128 Station on the Attleboro/Stoughton Line is on the eastern edge of tract 412300. The station is partly in Westwood and partly in Dedham, but is not directly accessible from the rest of Dedham.

In 2005, MBTA bus Route 34E runs through the west side of tract 412300 on Washington Street. This route goes to the Forest Hills Orange Line terminal. At present, there is no bus service for the general public in tracts 412100 or 412200. A private-carrier bus route between Milford and downtown Boston formerly ran through both of these tracts on state Route 109, with a side-diversion over Pond Street in tract 412100. In its final years this route was partly funded by the MBTA's Inter-District Carrier Program. It was discontinued in 2003 because of low ridership. By that time, service had declined to one round-trip per day, scheduled for Boston commuting. (In 1997, when there were still two round-trips per day, a one-day observation found three passengers alighting in Westwood from one of the two outbound PM peak trips.)

Another private-carrier route formerly ran through Westwood on the way between Providence, Rhode Island, and Boston. This route included variations on Washington Street and on U.S. Route 1 in Westwood. However, the operating rights did not allow the route to be used for local travel between any point in Westwood and points further north. This route was discontinued about 1989.

From the 1920s to the 1950s a private-carrier local bus route ran between Westwood Center and Norwood Center. In Westwood it ran on Winter Street and Pond Street in tract 412100.

5. Melrose and Wakefield (336100, 200, 401, 402; 335100, 400) – This cluster of census tracts received high ratings for proximity to commuter rail and rapid transit parking lots that fill to capacity. All of the tracts received medium or high ratings under criteria for percentage of workers employed in Boston or Cambridge and for auto ownership.

Four of these tracts also received high ratings for reverse-commuting potential and are discussed in that section of this appendix. The other tracts are discussed below.

Melrose – Tract 336401. This tract is located in the southwest corner of Melrose, on the borders of Malden to the south and Stoneham to the west. Wyoming Hill Station on the Haverhill/Reading commuter rail line is located at the northern edge of tract 336401. The Oak Grove Orange Line terminal is a short distance south of the tract, in Malden. In 2005, MBTA bus Routes 131, 136, and 137 run through the tract on Main Street, providing connections to the Orange Line at Oak Grove and Malden Center. The eastern border of tract 336401 on Lebanon Street and Linwood Avenue is served by some trips on MBTA bus Route 106, which also goes to Malden Center Station. (Until January 2005 these streets were served by now-discontinued Route 130.) West of the center of the tract, Route 132 runs on Washington and Pleasant Streets.

Wakefield – Tract 335100. This tract is located in the middle of the northern half of the town, and is bounded to the north by Reading and Lynnfield. The Haverhill/Reading commuter rail tracks form the southwest border of the tract. Wakefield Station on that line is on the border of tracts 335100 and 335200. Another station, Wakefield Junction, formerly located at the southernmost point of tract 335100, was closed in 1965. The southeast border of tract 335100 is formed by the abandoned Newburyport Branch of the Boston & Maine Railroad. (The right-of-way is now owned by the MBTA.) Passenger service on that line ended in 1959. Until then there were stations at New

Salem Street (Wakefield Center) and Lowell Street on the segment adjoining tract 335100.

In 2005, MBTA bus service through tract 335100 is provided by Routes 136 and 137, both of which run between Reading and Malden Center. In tract 335100, Route 136 runs on Main, Salem, Pleasant, Vernon, Cordis, and Lowell Streets. Route 137 runs on Main and Albion Streets and North Avenue. A few trips make a side-diversion to a medical center on Quannapowitt Parkway. From the 1920s to the 1950s a private-carrier bus route between Lynnfield Center and Wakefield ran through tract 335100 on Vernon Street.

6. Winthrop (180100, 200, 300, 400, 500) – These census tracts, which cover all of Winthrop, all received high ratings under criteria for percentage of workers employed in Boston or Cambridge and for auto ownership. They also received medium ratings for the population density criteria.

At present there is no direct commuter rail or rapid transit service to Winthrop. (An electrified narrow-gauge railroad that formerly served the town was abandoned in 1940.) New commuter boat service to Boston from a terminal in tract 180500 is under consideration by the town.

In 2005, bus service in Winthrop is provided by a private carrier subsidized by the MBTA. There are two basic routes, identified by the MBTA as 712 and 713, and some route variations. Both routes originate at the Orient Heights Blue Line station in East Boston.

Tract 180100 has service on Revere Street, Crest Avenue, Beach Road, and Veterans Road, provided by Route 712. Tract 180200 has service on Main Street provided by both Route 712 and Route 713, and on Hermon and Pauline Streets, provided by Route 713. A few AM peak inbound trips on Route 713 bypass Pauline and Hermon Streets, using Pleasant Street through the west side of the tract. A few trips on each route make side-diversions on Lincoln Street to serve Winthrop Hospital.

Tract 180300 has service on Pleasant and Pauline Streets provided by Route 713. Tract 180400 has service provided by Route 713 on Washington Street. Route 712 provides service outbound on Shirley Street and inbound on Veterans Road.

Tract 180500 includes Winthrop Beach and Point Shirley. North of Washington Street, outbound bus service is provided by Route 712 on Shirley Street, which is the border with tract 180400. Inbound trips use Veterans Road, which is in tract 180400, but only a short distance from Shirley Street. South of Washington Street, service on Shirley Street is provided outbound by Route 712, but inbound by Route 713. From just south of Bay View Avenue to the town line, buses run on Tafts Avenue.

7. Framingham (383100, 300, 400, 600) – These census tracts all received high ratings under criteria for proximity to commuter rail parking lots that fill to capacity. They all received medium or high ratings under the auto ownership criteria.

Commuter rail service to Framingham is provided by the Framingham/Worcester Line. Framingham Station is located near the intersection of several tracts, which are partly bounded by the railroad line. The outbound side of the station is in tract 383300, which is one of those listed above. The inbound platform is in tract 383200, which is not on the list. The station is just outside the northwest corner of tract 383100 and the southwest corner of tract 383400. As discussed in a previous section of this appendix, local bus service in Framingham is provided by the LIFT system.

In tract 383100 in 2005, eight trips a day on LIFT 3 go to Beaver Park Road via Waverley Street and Tarrall Terrace, returning via Beaver Street. LIFT 6, reinstated and expanded on November 29, 2004, now provides hourly service between downtown Framingham and Beaver Park.

Service along Union Street, on the eastern border of tract 383300, is provided by LIFT 2 northbound, LIFT 3 southbound, and LIFT 7 in both directions. Midday trips on LIFT 5 serve Summerville at Farm Pond, an elderly-housing complex on Dudley Road, but the routing is not specified in the published schedules.

In tract 383400, Concord Street, which runs through the approximate center, has hourly bus service by LIFT 3 northbound and by LIFT 2 southbound from 6:30 AM to 6:30 PM on weekdays. On Saturdays, LIFT 3 operates only from 9:00 AM to 4:00 PM, but the LIFT 2 schedule is the same as on weekdays. About half of the trips on LIFT 3 provide service over most of the length of the south border of tract 383400, on Waverley Street.

Union Avenue, which forms the western border of tract 383400, is served by LIFT 2 northbound and by LIFT 3 southbound. It is also served in both directions by LIFT 7, which runs on headways of one to two hours on weekdays. However, these LIFT 7 trips mostly operate close to LIFT 3 or LIFT 2 trips on the same segment. The MetroWest Medical Center is located in this tract, on Union Avenue, about one-half mile from the railroad station.

In tract 383600, the shopping mall areas at the east end are served by LIFT 3 northbound and by LIFT 2 southbound. These routes also serve the Framingham Center end of this tract, along Edgell Road.

Historically, there has been very little transfer activity between the LIFT buses and the commuter trains. CTPS conducted passenger surveys on all LIFT routes between 6:30 AM and 2:30 PM on a weekday in 2003. In this span, LIFT 2 had one transfer from and none to trains. LIFT 3 had one transfer from and three transfers to trains. LIFT 7 had 14 transfers from and four transfers to trains. However, much of the ridership on this route was to or from points outside the tracts of interest here.

The LIFT bus schedules are not well coordinated with the commuter rail schedules, because the buses run on uniform hourly headways, but the trains run on non-uniform headways. The schedules of each mode are constrained by considerations other than making connections with the other, however. Bus schedules with more convenient connecting times and buses serving the railroad station directly should theoretically

attract more riders than the present arrangements, but such services at other suburban MBTA commuter rail stations have not been very successful either.

8. Gloucester (221400, 500, 600, 700) – These census tracts all received high ratings under criteria for proximity to commuter rail parking lots that fill to capacity and for auto ownership. They all received medium ratings under the population density criteria.

Tract 221600 also received a high rating for reverse-commuting, and is discussed in that section of this appendix. The other three tracts listed include locations within a one-mile radius of the downtown Gloucester business district. Because of high population density, the tracts are relatively small in area. Gloucester Station on the Rockport commuter rail line is located in the northwest corner of tract 221500, just beyond the east side of tract 221700.

Bus service throughout Gloucester is operated by the Cape Ann Transportation Authority (CATA). In 2005, most CATA routes run through the Gloucester central business district westbound on Main Street and eastbound on Rogers Street, on the south side of tract 221500. The Blue Line (Gloucester to Rockport via Lanesville) runs on Washington Street, which is the western border of tracts 221500 and 221600 and the eastern border of tract 221700. This route includes a side-diversion to Gloucester Station via Prospect Street and Railroad Avenue.

Western Avenue, on the southern edge of tract 221700, is served in both directions by the Orange Line (Downtown Gloucester to Magnolia) and the Purple Line (Downtown Gloucester to West Gloucester), and westbound-only by the Green Line (Gloucester Business Express Loop). In this tract, the Green Line also serves Centennial and Lincoln Avenues and the northern portion of Washington Street, on the border of tract 221600, northbound. In tract 221500 the Green Line serves Railroad Avenue westbound, Prospect Street eastbound, and Main Street westbound, in addition to short segments on connecting streets.

In tract 221400 three routes run on Main Street near the southern border. These are the Red Line (Gloucester to Rockport via Thatcher Road), the Red/Blue Line (Gloucester to Rockport via Eastern Avenue), and the Yellow Line (Downtown Gloucester to Blackburn Industrial Park). The Yellow Line also runs along the eastern border of tract 221400 on state Route 128, but this is a limited-access highway. The Green Line serves the southwest corner of tract 221400 on Prospect Street eastbound. In the southeast corner of tract 221400 the Red and Red/Blue Lines serve Bass Avenue, and the Red Line serves East Main and Sayward Streets.

9. Weymouth (422100, 301, 700, 800) – These census tracts are all located in Weymouth but do not all adjoin each other. Tracts 422100 and 422301 are located in the southern portion of the town. They received high ratings under criteria for proximity to commuter rail parking lots that fill to capacity. They also received medium or high ratings under the other three criteria used in this analysis. Tracts 422700 and 422800 are located in the northern portion of Weymouth. They received high ratings under criteria for percentage of workers employed in Boston or Cambridge and medium or high ratings under all three of the other criteria used for this analysis.

Commuter rail service to Weymouth is currently provided by the Kingston/ Plymouth Branch of the Old Colony Lines. The only station in Weymouth is South Weymouth. It is not in one of the tracts listed above, but is just outside the east side of tract 422100, in tract 422200. The Greenbush Branch of the Old Colony Lines is currently under construction, and is expected to open in 2007. It will have two stations in Weymouth (Weymouth Landing and East Weymouth), but neither of these will be in one of the listed tracts.

MBTA bus service is currently operated in northern sections of Weymouth. In 2005, all of these routes connect with the Red Line at Quincy Center Station. Routes 220, 221, and 222 all run on part or all of Bridge Street on the northern border of tract 422700 and the southern border of tract 422800. Route 222 also runs south through tract 422700 on Sea and North Streets. Route 221 also runs north through tract 422800 on Neck and River Streets. (Route 221 only runs during peak commuting hours.)

Tracts 422100 and 422301 have no direct MBTA bus service. A private-carrier route to downtown Boston runs along Main Street on the eastern border of both tracts. Another route operated by the same carrier runs to the Braintree Red Line station from several apartment complexes in Weymouth. It also uses the entire segment of Main Street that borders on tract 422301 and the northern third of the segment bordering on tract 422100. Both of these routes operate only during peak hours.

10. Randolph (420100, 302) – These two census tracts in Randolph are not adjoined. Both tracts received high ratings under criteria for percentage of workers employed in Boston and Cambridge and for proximity to commuter rail and rapid transit parking lots that fill to capacity.

The Middleborough/Lakeville commuter rail line runs along part of the eastern border of Randolph. There are no commuter rail stations actually within Randolph, but Holbrook/Randolph Station is just across the border from Randolph tract 420301, in Holbrook, a short distance from the border of tract 420302. Randolph also adjoins Braintree and Quincy, where there are several Red Line stations. In 2005, MBTA bus Route 238 from Holbrook/Randolph Station to Quincy Center runs along the northeast border of tract 420302 via Union and North Main Streets. It also runs through the east side of tract 420100 on North Street. It can theoretically be used for connections to either the Red Line or commuter rail, but most of the commuter rail connections are not close.

MBTA bus Route 240 from the Avon town line to Ashmont Station runs through the center of tract 420302 on South Main Street and along the western border of tract 420100 on North Main Street. Brockton Area Transit (BAT) Route 12 from Brockton to Ashmont follows the same alignment as MBTA Route 240 in Randolph, but BAT has only limited authority to carry passengers traveling between Randolph and Ashmont.

At several times in the past, bus service was run between Randolph and Stoughton, following Warren Street along the northern border of tract 420302. This service was apparently never very successful. For a short time in the 1960s, a variation of Route 240 used Union Street and Centre Street in, or on the border of, tract 420302 between Crawford Square and South Main Street.

Transit Services in Individual Census Tracts Identified as Having High Potential to Support Traditional-Commuting Transit

1. Canton (415102) – This census tract received high ratings under criteria for percentage of workers employed in Boston or Cambridge and for proximity to commuter rail and rapid transit parking lots that fill to capacity.

Two commuter rail stations, Canton Junction and Canton Center, are located in tract 415102. Canton Center Station is served by Stoughton Branch trains. Canton Junction is served both by Stoughton Branch trains and by selected Providence Main Line trains. This tract is also served by a private-carrier bus route, run under contract to the MBTA as Route 716. In 2005, this route runs from Cobbs Corner, on the border of Canton, Sharon, and Stoughton, through Milton to the MBTA Mattapan terminal. There, passengers can transfer to several MBTA bus routes, or to the High Speed Line trolley to Ashmont Station. In tract 415102, Route 716 runs on Washington Street. It has nine round-trips on weekdays and four on Saturdays.

2. Peabody (210800) – This census tract received a high rating under criteria for proximity to commuter rail and rapid transit parking lots that fill to capacity.

This tract is located on the east side of Peabody, on the border of Salem. Peabody Square is on the southern border. Because of the high population density of the tract, it is relatively small in land area. The nearest commuter rail station at present is Salem Station on the Newburyport/Rockport Line. Historically, a branch railroad from Salem split into three branches at Peabody Square, continuing to points northwest, west, and southwest. Passenger service on the last of these lines ended in 1958, but some segments are still active as freight lines. Restoration of passenger service on the route from Salem through Peabody to Danvers was analyzed in the 2003 update to the MBTA Program for Mass Transportation, and received a medium priority rating overall. It is to be examined further in the North Shore Major Investment Study.

In 2005, several MBTA bus routes serve the Peabody Square area. Route 434 provides a single inbound AM peak trip and a single outbound PM trip between Washington and Main Streets on the southern edge of tract 210800 and Haymarket Station in Boston. Route 435 between the Liberty Tree Mall in Danvers and Central Square in Lynn serves tract 210800 on Main and Central Streets. Route 465 from Salem Depot to Liberty Tree Mall via Peabody Square also serves Main and Central Streets in this tract, but includes more of Main Street than Route 435.

A separate, city-sponsored bus line, Peabody Transit, runs AM and PM peak-period feeder service between Peabody and the Newburyport/Rockport commuter rail line at Salem Depot. Schedules are intended to serve traditional-commuting trips to Boston and reverse-commuting trips to Peabody. Points served in Peabody include Peabody Square, the North Shore Mall, and Centennial Park. This route follows the same streets as MBTA Route 465 in tract 210800. A passenger count and survey by CTPS in 2003 on all of the AM Peabody Transit trips found a total of 10 passengers. Of these, 3 boarded in Peabody and transferred to commuter rail at Salem. Six of the other 7 boarded at Salem Depot (including at least 1 but no more than 2 who transferred from a train) and all alighted in Peabody.

3. Woburn (33502) – This census tract received high ratings under criteria for proximity to commuter rail and rapid transit parking lots that fill to capacity and for auto ownership.

This tract is located in the center of Woburn. Because of high population density, it is relatively small in land area. Commuter rail service to Woburn is provided by the Lowell Line, but it does not pass through tract 333502. The only full-time station in Woburn is Anderson/Woburn, located near the northern border of the city. Tract 333502 residents going to and from Boston would be more likely to use Winchester Center Station, in the next town to the south, than Anderson. (From tract 333502 Winchester is in the same direction as Boston, but Anderson is in the opposite direction.) Mishawum Station in Woburn is closer to tract 333502 than Anderson is (though also in the opposite direction from Boston), but has had only peak-period reverse-commuting service since 2001, when Anderson opened.

Historically, a railroad branch known as the Woburn Loop ran through the west side of tract 333502, but the nearest station was just to the south, in tract 333300. Passenger service ended on the northern half of this line in 1959 and on the southern half in 1981, and the right-of-way is no longer intact.

In 2005, several MBTA bus routes serve Woburn. Route 134 (North Woburn - Wellington Station) runs through the west side of tract 333502 on Main Street. Route 354 (Woburn Express - Boston) runs through this tract on Salem and Bow Streets and Montvale Avenue. Although it is an express route, it can also be used for local travel within Woburn or between Woburn and the southern edge of Burlington, with local fares being charged for such trips.

Transit Services in Tract Clusters Identified as Having High Potential to Support Suburban-Commute Transit

1. Lynn (205200, 500, 600, 700, 800, 900; 206000, 100, 200, 300, 400, 500, 600, 700, 800, 900; 207000, 100, 200) – This cluster of census tracts received mostly high ratings under criteria for auto ownership, low-income households, percent of residents with disabilities, and minority or non-English-speaking residents. Also, all these tracts received medium ratings under the population density criteria.

All of the listed tracts except 205600 also received high ratings in either the reverse-commuting or traditional-commuting criteria, and are discussed in those sections above. Tract 205600 is located on the west side of Lynn, on the border of Saugus. In 2005, service to this tract is provided by Route 429 on Holyoke Street, O'Callaghan Way, King's Hill Drive, and Garfield Street. A few late-evening trips use an alternate routing on O'Callaghan Way and Walnut Street. Service on Walnut Street east of O'Callaghan Way was eliminated in a 1981 route restructuring.

2. Beverly, Peabody, Salem (217300, 400; 210700, 800; 204101, 102, 200, 300, 400, 500, 600, 702) – This cluster of census tracts received mostly high ratings under criteria for auto ownership, low-income households, percent of residents with disabilities, percent of resident workers employed in the same or adjacent city or town, and minority or non-English-speaking residents.

Most of the listed tracts also received high ratings in either the reverse-commuting or traditional-commuting criteria, and are discussed in those sections above. The exceptions are discussed in the following paragraphs.

Peabody – Tract 210700 is located on the south side of Peabody Square, on the border of Salem. In 2005, MBTA bus Routes 434 and 435 run through this tract on Washington Street. Routes 435 and 465 and the Peabody Transit route (all discussed in greater detail in previous sections) serve Main Street on the northern border of tract 210700.

Salem – Tracts 204600 and 204702. Tract 204600 is located in the northwest corner of Salem, on the border of Peabody and Danvers. In 2005, MBTA bus Route 468 runs along the southern border of this tract on North Street. Because of low ridership, service on this route has been reduced to two inbound AM peak trips and two outbound PM peak trips. In the past, a bus route from Salem to Beverly via Kernwood Bridge ran through tract 204600. The routing was revised several times, and finally was via Dearborn and Sargent Streets. This route was discontinued in 1971. Another route formerly ran through tract 204600 on Tremont Street on the way from Salem to Peabody. This route was cut back to the city limits in 1970 at the direction of the city of Peabody, and was discontinued entirely in 1978, because Salem ridership alone was insufficient to support it.

Tract 204702 is located in the middle of the west side of Salem, on the border of Peabody. MBTA bus Routes 450, 450W, and 456 run on Highland Avenue on the eastern border of this tract. Route 465 runs on Boston Street, near the northern border. The Peabody Transit route from Salem to Peabody also uses Boston Street.

3. Framingham (383100, 200, 300, 400, 501, 502, 600) – This cluster of census tracts received mostly high ratings under criteria for auto ownership, low-income households, percent of residents with disabilities, percent of resident workers employed in the same or adjacent city or town, and minority or non-English-speaking residents.

All of these tracts except 383200 also received high ratings under the reverse-commuting or traditional-commuting criteria, and are discussed in those sections above. Tract 383200 is located on the southern edge of Framingham, on the border of Ashland and near the border of Sherborn. Framingham Station on the Framingham/Worcester commuter rail line is located in the northeast corner of tract 383200. In 2005, LIFT bus Route 5, reinstated and expanded on November 29, 2004, serves this tract along Waverley Street, with a side-diversion to the Bethany Health Care Center. LIFT 6 runs on Hollis Street (state Route 126). Both routes run hourly.

4. Waltham (368300, 400, 500, 600, 700, 800) – These census tracts received mostly high ratings under criteria for auto ownership, population density, low-income households, percent of residents with disabilities, percent of resident workers employed in the same or adjacent city or town, and minority or non-English-speaking residents.

All of these tracts except 368700 also received high or medium ratings under the reverse-commuting or traditional-commuting criteria, and are discussed in those sections above. Tract 368700 is located on the southern edge of Waltham, on the border

of Newton and near the border of Watertown. In 2005, MBTA bus Route 556 runs along the southern border of tract 368700 on High Street. Some points in the tract are closer to Route 558, which runs on River Street in tract 368800 but can be accessed via several bridges across the Charles River. The discontinued Citibus system did not include any routes in tract 368700.

5. Winthrop (180100, 200, 300, 400, 500) – Every census tract in Winthrop received high ratings under criteria for auto ownership and for percent of resident workers employed in the same or adjacent city or town. These tracts also received medium and high ratings for percent of residents with disabilities and medium ratings under criteria for population density and low-income households. All of these tracts also received high or medium ratings under the traditional-commuting criteria, and are discussed in that section above.

6. Gloucester (221400, 500, 600, 700) – This cluster of census tracts in the central part of Gloucester all received high ratings under criteria for auto ownership, low-income households, and percent of resident workers employed in the same or adjacent city or town. They all also received high or medium ratings under the reverse-commuting or traditional-commuting criteria, and are discussed in those sections above.

7. Canton and Stoughton (415102, 456300) – The two census tracts in this cluster, adjoining each other in Canton and Stoughton, received medium or high ratings under criteria for auto ownership, low-income households, percent of residents with disabilities, percent of resident workers employed in the same or adjacent city or town, and minority or non-English-speaking residents.

Tract 415102 in Canton also received high ratings under the traditional-commuting criteria, and is discussed in that section above. Tract 456300 is located in the northeast corner of Stoughton, on the border of Canton. It also extends as far south as the main business district. The commuter rail station in Stoughton (at the end of the Stoughton Branch) is in tract 456402, but is also close to the southeast corner of tract 456300. Historically, there was a West Stoughton Station at Central Street in tract 456300, but it was closed in 1938.

In 2005, Brockton Area Transit bus Route 14 runs from downtown Brockton or the Westgate Mall through Stoughton Square to Cobbs Corner, on the border of Stoughton, Canton, and Sharon. In Stoughton, this route runs along the border between tracts 456300 and 456401 on Canton and Central Streets. It has 10 round-trips on weekdays, including 4 that run through to downtown Brockton. It can theoretically be used for connections to commuter rail at Brockton Station or Stoughton Station, or to MBTA Route 716 at Cobbs Corner, but schedules are not coordinated for convenient transfers.

In the past, through private-carrier bus service was operated from Stoughton to Mattapan Station, but it was discontinued in 1986 due to low ridership. This route used Washington Street in Stoughton north of the center, on the borders of tracts 456300, 456102, and 456200.

8. Woburn (333300, 502) – These census tracts received high ratings under the low-income household criteria and received medium or high ratings under criteria for auto ownership,

percent of residents with disabilities, and percent of resident workers employed in the same or adjacent city or town.

Tract 333502 also received high ratings under the traditional-commuting criteria, and is discussed in that section above. Tract 333300 is located in the middle of the south side of Woburn, on the border of Winchester. In 2005, MBTA bus Route 134 runs through the middle of this tract on Main Street. Route 354 runs through the top edge of the tract on Montvale Avenue.

Historically, the Woburn Loop of the commuter rail system ran through tract 333300. In the final years, it terminated at a station near High Street. There was also a station at Cross Street in Winchester, just south of the Woburn border. In earlier years there had been a Woburn Highlands Station near Green Street in tract 333300. Passenger service on this segment of the Woburn Loop was discontinued in 1981 because of low ridership and poor track condition, and the right-of-way is no longer intact.

Transit Services in Individual Tracts Identified as Having High Potential to Support Suburban-Commute Transit

1. Burlington (332400) – This census tract received a high rating for presence of a shopping center and medium ratings under criteria for employment density, low-income households, percent of residents with disabilities, percent of resident workers employed in the same or adjacent city or town, and minority or non-English-speaking residents.

Tract 332400 includes the southwest quarter of Burlington. The Burlington Mall, the Lahey Clinic, and several office parks are located there, but the northern half of the tract is residential. This tract now has several transit services. In 2005, MBTA Route 350 (North Burlington - Alewife Station) runs along Cambridge Road on the east side of the tract. Most trips make side-diversions to the Burlington Mall via South Bedford Street and Burlington Mall Road. MBTA Route 351 (Oak Park/Bedford Woods - Alewife Station) runs through the west side of the tract on the Middlesex Turnpike and Fourth, Third, and Second Avenues. Route 354 (Woburn Express - Boston via I-93) terminates at Van DeGraff Drive in the south edge of the tract.

The town-sponsored B Line bus system has six routes, operated as three inter-lined pairs, and one route in each pair goes to the Burlington Mall and other points in tract 332400. Lowell Regional Transit Authority (LRTA) Route 18 follows the same alignment as Route 351 north of Burlington Mall Road, but goes to the Lahey Clinic. The Lexpress bus system, sponsored by the town of Lexington, includes a Route 5 from Lexington Center to the Burlington Mall. In Burlington, this route runs on the Middlesex Turnpike and Burlington Mall Road, and includes a stop at the Middlesex Commons shopping center.

2. Danvers (211200) – This census tract received a high rating for the presence of a shopping center and for percent of resident workers employed in the same or adjacent city or town. It received medium ratings under criteria for low-income households and for percent of residents with disabilities.

This tract includes the Danvers town center. It is currently served by three MBTA bus routes. In 2005, Route 465 (Liberty Tree Mall - Salem Depot via Peabody and Danvers) serves tract 211200 on a clockwise loop on Pine, Holten, Elm, and High Streets. Route 468 (Danvers Square - Salem Depot via Peabody) makes two trips from Danvers in the AM peak and two trips to Danvers in the PM peak. In tract 211200 it runs on High Street. After 7:30 PM, service to Danvers Square is provided by an extension of Route 435 (Liberty Tree Mall - Central Square, Lynn, via Peabody). In tract 211200 it makes the same clockwise loop made by Route 465 at earlier times of day.

There is no through bus service to Boston from tract 211200. The nearest commuter rail station is Salem Depot, on the Newburyport/Rockport Line. Routes 465 and 468 provide service to this station from tract 211200, but transfers between buses and trains require longer waiting times than are typically allowed by passengers who drive to stations. Direct commuter rail service to Danvers ended in 1959. Restoration of commuter rail service on a route to Danvers from Salem via Peabody was examined in the 2003 update to the MBTA's Program for Mass Transportation, and received a medium priority rating. Such an extension is to be studied further as part of the North Shore Major Investment Study.

3. Dedham (402101) – This census tract received high ratings under criteria for presence of a shopping center and for percent of resident workers employed in the same or adjacent city or town. It received medium ratings under criteria for auto ownership, low-income households, percent of residents with disabilities, and minority or non-English-speaking residents. It also received high ratings under the traditional-commuting criteria, and is discussed in that section above.

4. Hull (500102) – This tract received a high rating under criteria for percent of residents with disabilities and for the percent of resident workers employed in the same or adjacent city or town. It received medium ratings under criteria for auto ownership and for low-income households.

Tract 500102 includes approximately the southern two-thirds of the town of Hull, which is on a peninsula. A private-carrier bus route funded by the MBTA and run as MBTA Route 714 connects the entire length of Hull with MBTA bus Route 220 at Hingham Center. In 2005, Route 714 has several variations in the southern part of tract 500102. The main route uses Nantasket Avenue, but some trips make a side-diversion over Park and Atlantic Avenues to serve a medical center, and some trips use Washington Boulevard between Nantasket Avenue and the border of Hingham.

In Hingham, the present variations of Route 714 do not run directly past either of the sites of stations on the Greenbush commuter rail line, now under construction. However, a small change in routing would allow Route 714 to serve the Nantasket Junction Station.

5. Lincoln (360100) – This census tract received high ratings under criteria for auto ownership and for percent of resident workers employed in the same or adjacent city or town. It received medium ratings under criteria for population density, low-income households, and minority or non-English-speaking residents.

Tract 360100 consists mostly of the area on the north end of the town included in the bounds of Hanscom Airport. (Most of the rest of the airport is in Bedford, but part of it is in Lexington.) In 2005, MBTA bus Route 76 runs through this tract on Airport Road, to access the Civil Air terminal in Bedford. On Saturdays, this segment is served by a combined Route 76 and Route 62.

6. Marlborough (321300) – This census tract received a high rating under criteria for low-income households and for minority or non-English-speaking residents. It received medium ratings under criteria for auto ownership, population density, percent of residents with disabilities, and percent of resident workers employed in the same or adjacent city or town.

This tract is located in the middle of the south side of Marlborough. In 2005, Framingham LIFT Route 7 runs along the eastern border of this tract on state Route 85, and along the northern edge on Lincoln Street and Lakeside Avenue. This route goes to Solomon Pond Mall on the north and downtown Framingham on the south. Two private-carrier bus routes subsidized by EOT provide through service from this tract to downtown Boston. One of these runs on West Main Street and Route 85, and has three round-trips a day. The other runs on U.S. Route 20 and has two round-trips a day.

During 2003 a peak-period feeder bus route was run from downtown Marlborough to the Southborough commuter rail station, with limited stops. One of these was off Route 85 near the southern border of Marlborough. This route attracted very few riders. (A one-day CTPS count found no passengers on trips to the station and only two on trips from the station in the AM service span.)

In March 2005 the Worcester Regional Transit Authority implemented a new demand-responsive service for parts of Marlborough, Southborough, and Westborough. This service, called The Local Connection (TLC), is funded through the Suburban Mobility Program. The northern half of tract 3221300 is included in the service area.

7. Milford (744300) – This census tract received high ratings under criteria for low-income households and for percent of residents with disabilities. It received medium ratings under criteria for auto ownership, percent of resident workers employed in the same or adjacent city or town, and minority or non-English-speaking residents.

Tract 744300, which includes the town center, is the most densely populated tract in Milford, and is therefore the smallest in land area. Transit service to this tract was restored on November 29, 2004, after a lapse of several months, when Framingham LIFT Route 6 was reinstated with greatly expanded service frequency. In 2005, this route goes to downtown Framingham, Shoppers World, and the Natick Mall. In Milford it runs on East Main Street, with a side-diversion over Medway and Beaver Streets. There is currently no through transit service from Milford to Boston. Until June 2003, a private-carrier bus route subsidized by the MBTA provided one round-trip per day between downtown Milford and downtown Boston, but it served very few Milford riders. (A one-day observation in 1997 found only one passenger alighting in Milford from one of the two outbound PM peak trips then operating.)

Historically, Milford had rail passenger service from four directions, but the last such service ended in 1959. The feasibility of restoring service to Milford by an extension of the Franklin Line from Forge Park Station over existing freight tracks was studied by the MBTA in 1997. The 2003 update to the MBTA Program for Mass Transportation gave a medium priority to such an extension, but it is not currently being pursued.

8. Walpole (411200) – This census tract received a high rating for the presence of a major shopping center. It received medium ratings under criteria for population density, low-income households, percent of residents with disabilities, percent of resident workers employed in the same or adjacent city or town, and minority or non-English-speaking residents.

This tract is located in the middle of the east side of Walpole, and is bounded on the northeast by Norwood and on the southeast by Sharon. In 2005, MBTA bus Route 34E from Walpole Center to the Forest Hills Orange Line terminal runs through the center of this tract on Washington Street, and along the southern border on High Plain and East Streets.

At various times in the past, private-carrier bus service has been operated over several other streets in tract 411200. These include East Street between High Plain and Washington Streets, Coney Street, and U.S. Route 1. Part of the west side of the tract is cut off from the rest by the track of the Franklin commuter rail line. The western border of the tract is formed by Main Street, which had some bus service to Boston until about 1989.

9. Weymouth (422800) – This census tract received a high rating under the auto ownership criteria. It received a medium rating under criteria for population density, low-income households, percent of residents with disabilities, and percent of resident workers employed in the same or adjacent city or town. It also received high or medium ratings under the traditional-commute criteria, and is discussed in that section of this appendix.

Transit Services in Tract Clusters Identified as Having High Potential to Support Suburban-Mobility Transit

1. **Beverly, Lynn, Peabody, Salem** (217300, 400; 205200, 500, 600, 700, 800, 900; 206000, 100, 200, 300, 400, 500, 600, 700, 800; 207000, 100, 200; 210300, 800; 204101, 200, 300, 400, 500, 701, 702) – This cluster consists of over 30 adjoining census tracts in Lynn, Salem, Beverly, and Peabody. All of these tracts received a medium or high rating under the criteria for auto ownership, population density, low-income households, percent of residents with disabilities, and minority or non-English-speaking residents.

Almost all of the tracts received high or medium ratings in one or more of the previous categories in this appendix and are discussed in those sections. The exceptions are tracts 210300 and 204701.

Tract 210300 is about halfway between the east and west ends of the city of Peabody. In 2005 transit service in the northeast corner of tract 210300 is provided by MBTA Route 436 on Lowell and Prospect Streets and on the North Shore Mall circulation roads and by Route 465 (replaced in the evening by Route 435) at the mall and on Prospect

Street to the north. During peak hours, additional service at the mall is provided by Peabody Transit.

The Coach Company operates express bus service to Boston, passing through Peabody on the Newburyport Turnpike (U.S. Route 1). This service is subsidized by EOT. In Peabody, buses make one stop, at an ice rink parking lot on Lowell Street just east of Route 1. In spring 2005 there were three inbound AM peak trips and six outbound PM peak trips.

The central and western sections of tract 210300 currently have no other transit service. In the past, bus service has been operated along Lowell Street. During 1994, Peabody Transit operated a route from West Peabody to Salem Station via Lowell Street. This route had three inbound AM peak trips and three outbound PM peak trips, but was unsuccessful. Prior to that, Lowell Street service was run as an extension of an express route to Boston from the North Shore Mall, but it was discontinued in the mid-1980s.

Tract 204701 includes areas on the southwest side of the city of Salem, bounded to the west by Peabody and to the south by Swampscott. MBTA bus Routes 450, 450W, and 456 run through tract 204701 on Highland Avenue.

2. Waltham (368300, 400, 500, 700, 800; 369000) – All but one of these adjoining tracts received high ratings under the auto ownership criteria. All of them received medium or high ratings under the criteria for population density, low-income households, percent of residents with disabilities, and minority or non-English-speaking residents.

All of the listed tracts except 369000 also received high or medium ratings in one or more of the three preceding categories, and are discussed in one of those sections. Tract 369000 includes a large area on the east side of Waltham, spanning both sides of Trapelo Road from Beaver Street to the borders of Belmont and Lexington. Much of the land is undeveloped, but the area includes Bentley College, the Walter E. Fernald State School, and various active or closed government facilities. In 2005, MBTA bus Route 554 runs along the southern border of the tract on Beaver Street.

From 2000 to 2003, Route 14 of the now-discontinued Waltham Citibus system ran through the tract on Trapelo Road, connecting with MBTA service at Waverley Square in Belmont and in downtown Waltham. From the 1920s until 1979, private-carrier bus service was operated along this section of Trapelo Road from Waverley Square.

3. Framingham (383100, 300, 400, 501, 600) – The census tracts in this cluster all received high ratings under criteria for minority or non-English-speaking residents. They also received medium or high ratings under criteria for low-income households and percent of residents with disabilities. All of the listed tracts also received high or medium ratings in one or more of the three preceding categories, and are discussed in one of those sections.

4. Winthrop (180100, 200, 400, 500) – All four of these census tracts received high ratings under the auto ownership criteria. These tracts also received medium or high ratings under criteria for population density, low-income households, and percent of residents with

disabilities. All of the listed tracts also received high or medium ratings in one or more of the three preceding categories, and are discussed in one of those sections.

5. Bedford and Burlington (359100 and 332400) – These two census tracts adjoin each other in Bedford and Burlington. They received medium or high ratings under criteria for age, low-income households, percent of residents with disabilities, minority or non-English-speaking residents, and the presence of a major medical center.

Tract 359100 in Bedford also received high ratings for reverse-commuting transit potential. Tract 332400 in Burlington also received high or medium ratings for suburban-commute-mobility transit potential. These tracts are discussed in the corresponding sections of this appendix.

Transit Services in Individual Tracts Identified as Having High Potential to Support Suburban-Mobility Transit

1. Dedham (402101) – This census tract received a high rating for the presence of a major shopping center, and medium ratings under criteria for age, auto ownership, low-income households, percent of residents with disabilities, and minority or non-English-speaking residents. It also received high or medium ratings for traditional-commute and suburban-commute transit potential and is discussed in the traditional-commute section of this appendix.

2. Milford (744400) – This census tract received a high rating under the low-income household criteria and a medium rating under criteria for age, auto ownership, percent of residents with disabilities, minority or non-English-speaking residents, and the presence of a major medical center.

This tract is located to the north and west of tract 744300, which includes the downtown Milford business district. Because of high population density, both tracts are relatively small in land area. At present, there is no transit service in tract 744400, but much of the tract is within walking distance of the end of Framingham LIFT Route 6 in tract 744300. There is currently no through transit service from Milford to Boston. Until June 2003, a private-carrier bus route subsidized by the MBTA provided one round-trip per day between downtown Milford and downtown Boston, but it served very few Milford riders.

3. Stoughton (456300) – This census tract received a high rating under criteria for low-income households and for percent of residents with disabilities. It received a medium rating under criteria for age, auto ownership, and minority or non-English-speaking residents.

This tract also received high or medium ratings for suburban-commute-mobility transit potential. It is discussed in that section of this appendix.

4. Weymouth (422400) – This census tract received a high rating under criteria for age and for low-income households. It received a medium rating under criteria for population density, percent of residents with disabilities, and minority or non-English-speaking residents.

This tract is located on the northwest side of Weymouth, and includes Weymouth Landing. The Greenbush commuter rail line, currently under construction, will include a station on the northern border of this tract. In 2005, MBTA bus service to the west side of the tract is provided by Route 225 (Quincy Center Station - Weymouth Landing), which makes a one-way loop on Summer, Federal, and Washington Streets. An unsubsidized private-carrier bus route between South Weymouth and Braintree Station also runs along Washington Street. Another private-carrier route runs through the tract on Front Street on the way from Whitman to Boston. A few trips on MBTA Route 222 (Quincy Center Station - East Weymouth) run along part of the eastern border of tract 422400 on Essex Street.

Until about 1979, the segment of Middle Street on the eastern border of tract 422400 between Essex and Washington Streets was served by a private-carrier bus route from Ashmont Station. Some trips on that route had used a variation on Broad and Washington Streets through tract 422400.

5. Woburn (333502) – This census tract received a high rating under criteria for auto ownership and for low-income households. It received a medium rating under criteria for age, percent of residents with disabilities, and minority or non-English-speaking residents.

This tract also received high or medium ratings in traditional-commute and suburban-commute transit potential and is discussed in the traditional-commute section of this appendix.