



**Worcester
Municipal
Research
Bureau**

AN INDEPENDENT VOICE FOR RESPONSIBLE GOVERNMENT

**CONNECTING THE HEART OF THE
COMMONWEALTH WITH THE HUB
OF THE UNIVERSE:
MAKING THE CASE FOR
EXPANDING COMMUTER RAIL
SERVICE BETWEEN WORCESTER
AND BOSTON**

Report No. 00-1
January 27, 2000

EXECUTIVE SUMMARY

The MBTA should introduce expanded commuter rail service to Worcester consisting of ten operations in each direction per weekday as promised in the final environmental impact report issued by the Executive Office of Environmental Affairs in 1997. That report projected that by 2001 daily weekday inbound ridership at the Worcester Station would reach 414 passengers. The MBTA's most recent ridership audit (February 1999) indicates that current inbound ridership is 917 or more than double the projected number. From these figures (which do not include the number of passengers returning to Worcester), it would appear that the demand warrants additional service. Furthermore, even under the new system of assessing the efficiency of MBTA services that was established in the FY00 State Budget, it is likely that the expanded commuter rail service between Worcester and Boston would be deemed economically feasible. Finally, the amount of commuter parking available and planned in Worcester compares very favorably with other stations on the Framingham line. (Worcester has one parking space available for every 2.2 passengers whereas Framingham has one for every 13.5 passengers.) The main obstacle to expanded service appears to be the limited availability of rolling stock (locomotives and particularly passenger coaches) that expanded rail service would require. In order to expedite the introduction of expanded commuter rail service promised by the MBTA following the completion of the Grafton station the Research Bureau makes the following recommendations:

- Local and state officials should vigorously lobby the MBTA, the Executive Office of Transportation and Construction and the Cellucci Administration for the initiation of expanded commuter rail service. This effort should emphasize the sizable local demand for expanded commuter rail service, its economic feasibility, and its importance to the economic development agenda of the Worcester area. It should also emphasize that expanded commuter rail service between the two largest cities in New England is necessary if the State's efforts to implement a regional transportation plan are to be successful.

Two additional studies would help to strengthen the case for expanded commuter rail service. The City of Worcester should work with the local business community to find a way to conduct these studies in a timely and cost effective way.

- A market study that focuses on demand for commuter rail service in the Worcester area should be undertaken to determine the number of potential passengers, the times during which area residents commute to and from Boston, and the demand for off-peak rail service in the afternoons and evenings.
- Worcester and the adjacent communities should commission an analysis of the existing rail schedule to determine whether a more efficient schedule could allow for expanded service using existing rail resources. This study should also assess the feasibility of reallocating underutilized passenger coaches from other commuter rail lines.

INTRODUCTION

Efforts have been underway to expand service between Worcester and Boston on the Framingham line of the commuter rail since 1991. The benefits of expanded commuter rail service to the Worcester area are clear. First, residents of Massachusetts would be better able to take advantage of the more affordable housing available in the Worcester area while still having access to workplaces in the Boston area¹. Second, with commuters more able to leave their cars at home, pollution and traffic congestion would be reduced. Third, the chances of successfully developing market-rate housing downtown, long considered essential to the revitalization of Worcester's central core, would be improved.

The interim service schedule of five trains per day that now serves an estimated 917 inbound commuters to Boston each weekday was initiated in late 1994. In 1997 the commuter rail extension project's final environmental impact report was issued by the Executive Office of Environmental Affairs. This report promised an expanded schedule of ten trains per day following the opening of the rail station in Grafton:

By mid-1997 with the Grafton station in operation, the train schedule will be increased to provide the proposed Basic Service consisting of ten operations in each direction per day....In fact only the Grafton

¹ According to a MassInc-Heinz Foundation study conducted in 1999 "The Road Ahead: Emerging Threats to Workers, Families & the Massachusetts Economy", a major reason for the exodus of highly skilled workers from Massachusetts is the high cost of living in the Boston area.

station will be constructed by mid-1997. Minor schedule adjustments will be necessary to allow for less running time between Worcester and Framingham without stations in Westborough, Southborough and Ashland. (Worcester commuter rail extension project, Final Environmental Impact Report, page 3-2.)

The Final Environmental Impact Report also projected that by 2001 daily weekday ridership at the Worcester station would reach 414 passengers. The MBTA's most recent ridership audit indicates that current inbound ridership is more than twice that figure (917). Ridership has grown 60% since 1996, when MBTA audits estimated that 568 passengers boarded the commuter rail at the Worcester station each weekday. Recently, the MBTA announced that the Grafton station would open in February, 2000, but that the promised ten-train-per-day schedule would not be initiated until the completion of additional stations in Westborough, Southborough, and Ashland.

This report seeks to examine the factors that have prevented the expansion of service to date, and to offer recommendations on how the City administration can help to expedite the initiation of the promised commuter rail service between Worcester and Boston. A systematic review of various documents and reports associated with the Extension Project and interviews with knowledgeable officials and staff from a variety of state and local agencies indicates that two major obstacles have prevented the initiation of the promised full schedule commuter rail service: questions about the economic feasibility of the expanded service and the limited availability of the rolling stock (locomotives and passenger coaches) that an expanded service schedule would require.

I. ECONOMIC FEASIBILITY

The MBTA must now assess the economic feasibility of new service requests much differently from the way it did at the onset of the Worcester commuter rail extension project. Prior to this year's state budget debate, which resulted in substantial revisions to the MBTA's governing legislation (MGL Chapter 161A), the standard of economic feasibility for the MBTA's operational activities was assessed by estimating the percentage of operational and maintenance costs (not including capital and debt service costs) that would be covered by fare revenues. According

to the draft environmental impact report released by the Executive Office of Environmental Affairs in 1994, the standard used by the MBTA to assess economic feasibility was whether the new service could be expected to generate enough fare revenue to cover 33.3% of the service's operational and maintenance costs. This report further stated (page 3-47) that the Worcester commuter rail extension project would exceed this standard by recovering 42% of costs.

The passage of the State's FY00 budget resulted in a number of significant changes in the way in which the MBTA is funded and how it manages its fiscal affairs. Consequently, the MBTA will now be held more accountable for the fiscal efficiency of its operations. The MBTA's governing board must set targets which will be used to evaluate the efficiency of the system as a whole and its individual services. System efficiency will no longer be measured as a cost recovery ratio, but rather according to the Net Operating Investment per Passenger Mile ratio (NOIPM). The NOIPM is calculated as:

(Operating Expenses-Operating Revenues)/Total Passenger Miles=NOIPM

Note: Operating expenses do not include capital and debt service costs

The MBTA is mandated to make every effort to achieve a NOIPM of \$0.20/passenger mile by 2006. Commuter rail service in Massachusetts is operated by Amtrak under a contractual arrangement with the MBTA. Passenger fares are the primary source of revenue generated by commuter rail service. Passengers traveling from Worcester to Boston currently pay a fare of \$4.75 each way. Passengers have the option of purchasing a monthly pass for \$136 or a 12-ride ticket for \$47.50.

According to a 1990 Stone and Webster study examining the economic feasibility of the Worcester commuter rail extension project, the average fare collected is approximately 90% of the cash fare, or \$4.28 per passenger. The MBTA's most recent passenger audit recorded 917 passengers boarding the commuter rail at the Worcester station each weekday. The fares currently generated by these passengers make the Worcester station the second biggest source of daily fare revenue overall and the source of the highest average revenue per train on the Framingham line (see Figure 1).

Figure 1

DAILY FARE REVENUE GENERATED

| Station | Inbound Ridership* | Avg. Fare** | # of daily trains | Estimated Daily Revenue | Estimated Avg.per train |
|-----------------|--------------------|-------------|-------------------|-------------------------|-------------------------|
| Worcester | 917 | \$4.28 | 5 | \$3,920.18 | \$784.04 |
| Framingham | 1634 | \$2.93 | 19 | \$4,779.45 | \$251.55 |
| W. Natick | 1338 | \$2.70 | 18 | \$3,612.60 | \$200.70 |
| Natick | 883 | \$2.70 | 17 | \$2,384.10 | \$140.24 |
| Wellesley Sq. | 696 | \$2.25 | 16 | \$1,566.00 | \$97.88 |
| Wellesley Hills | 567 | \$2.25 | 16 | \$1,275.75 | \$79.73 |
| Wellesley Farms | 518 | \$2.25 | 16 | \$1,165.50 | \$72.84 |
| Auburndale | 374 | \$2.03 | 10 | \$757.35 | \$75.74 |
| W. Newton | 374 | \$2.03 | 10 | \$757.35 | \$75.74 |
| Newtonville | 512 | \$1.80 | 10 | \$921.60 | \$92.16 |

Prepared by: Worcester Municipal Research Bureau

* Based on a one day audit conducted on 2/11/99

** Based on 90% of the full fare

Note: Analysis is for inbound train service only

The Stone and Webster report also estimated that the annual net operational and maintenance costs of expanding the current interim commuter rail schedule from 5 to 10 inbound departing trains daily was \$5.1 million². In order to achieve the NOIPM economic feasibility standard of \$0.20/passenger mile standard without the intermediate stations, the added Worcester service would need to collect an additional 750 fares each weekday. Since it is likely that the vast majority of passengers who board trains in Worcester also make use of outbound service originating in Boston and pay an additional fare to return to Worcester³, approximately 375 additional inbound passengers would be required to meet the new economic feasibility standard⁴.

Given that Worcester's current ridership is more than twice that projected by the MBTA and has grown 60% since 1996, it is likely that an expanded commuter rail service schedule would attract the necessary additional ridership required to meet the State's new economic feasibility standard.

² Annual net cost refers to the costs that would be borne in addition to the costs of existing service.

³ MBTA ridership audits count inbound (leaving Worcester for Boston) passengers only.

⁴ If 750 additional tickets were purchased each weekday, \$1,669,200 in added revenue and 17,277,000 additional passenger miles would be generated. NOIPM= (\$5,100,000-\$1,669,200)/ 17,277,000= \$0.20

A. Parking Availability

While availability of the parking spaces that would be necessary to serve both existing and new commuter rail passengers departing from Worcester has been a concern for some, upon closer examination it is clear that Worcester has substantially more parking available to its commuters than any other station on the Framingham line (see Figure 2). Currently the Worcester station has one parking space available for every 2.2 passengers, while the Framingham station provides one for every 13.5 riders.

According to Worcester's Department of Traffic Engineering, the City has plans to add an additional 175-200 new parking spaces for commuters in the Union Station area. While it is unlikely that there will be a parking space for every commuter if each chooses to drive his own vehicle to the station each morning, it is clear that the parking situation in Worcester is and will be substantially more convenient than at any other station along the Framingham-Worcester line.

Figure 2

PARKING AVAILABILITY

| Station | Daily Inbound Ridership | Parking Spaces* | Ratio of parking spaces to riders |
|-----------------|-------------------------|-----------------|-----------------------------------|
| Worcester** | 917 | 418 | 1 for every 2.2 |
| Framingham | 1634 | 121 | 1 for every 13.5 |
| W. Natick | 1338 | 163 | 1 for every 8.2 |
| Natick | 883 | 71 | 1 for every 12.4 |
| Wellesley Sq. | 696 | 260 | 1 for every 2.7 |
| Wellesley Hills | 567 | 50 | 1 for every 11.3 |
| Wellesley Farms | 518 | 135 | 1 for every 3.8 |
| Auburndale | 374 | 35 | 1 for every 10.7 |
| W. Newton | 374 | 45 | 1 for every 8.3 |
| Newtonville | 512 | 0 | NA |
| Back Bay | NA | 0 | NA |
| South Station | NA | 0 | NA |

Source: MBTA and City of Worcester Traffic Engineering Department

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* Includes MBTA and private lots.

** Does not include downtown parking lots (i.e., fashion outlet garage)

B. Assessments

The State legislature also revisited the issue of municipal assessments in its recent changes to the MBTA's governing legislation. Worcester currently is not charged an assessment by the MBTA. While the assessment formula has changed, it appears that Worcester will not have to pay any additional funds to the MBTA. Starting in July, 2001, municipalities that pay assessments to regional transit authorities will have 100% of those payments credited toward their MBTA assessment. In FY99 Worcester contributed \$1,433,939 to its Regional Transit Authority (RTA); \$1,469,788 is budgeted for FY00. According to the policy analyst for the MBTA's Advisory Board, barring some additional change in the law or the way the assessments are calculated it is highly likely that the credit Worcester receives for its RTA payments will cover its additional assessment to the MBTA.

II. OPERATIONAL ISSUES

A major obstacle preventing the expansion of commuter rail service between Worcester and Boston involves the scarcity of the rolling stock (particularly passenger coaches) that would be required to provide adequate service. A more technical train schedule analysis is needed before it can be determined what additional equipment will be required to increase service to the promised 10 inbound trains per weekday (see Figure 3).

Fitchburg, which is currently served by 10 inbound trains to Boston's North station, is among the municipalities with which Worcester is competing for scarce railroad resources. Fitchburg has long sought an additional daily express train to Boston. Its efforts have included attempts to purchase the multi-million dollar trainset that would be needed for express service.

Figure 3

Monday Through Friday Current Interim Service

| INBOUND | 500 | 552 | 504 | 556 | 558 | 510 | 562 | 514 | 516 | 518 | 520 | 566 | 522 | 524 | 528 | 530 | 532 | 534 | 536 |
|----------------------|------|------|------|------|------|------|------|------|-------|-------|------|------|------|------|------|------|------|-------|-------|
| READ DOWN | AM | AM | AM | AM | AM | AM | AM | AM | AM | PM | PM | PM | PM | PM | PM | PM | PM | PM | PM |
| Depart Worcester | | 6:15 | | 6:45 | 7:15 | | 7:45 | | | | | 2:05 | | | | | | | |
| Depart Framingham | 6:15 | 6:45 | 7:00 | 7:15 | 7:45 | 8:00 | 8:15 | 8:45 | 10:05 | 12:15 | 2:05 | 2:35 | 3:45 | 5:40 | 6:30 | 7:30 | 9:20 | 11:05 | 12:05 |
| W. Natick | 6:19 | 6:50 | 7:04 | 7:20 | 7:49 | 8:04 | 8:19 | 8:49 | 10:08 | 12:18 | 2:08 | 2:35 | 3:49 | 5:43 | 6:34 | 7:34 | | 11:08 | 12:08 |
| Natick | 6:24 | | 7:09 | 7:25 | 7:54 | 8:09 | 8:24 | 8:54 | 10:13 | 12:23 | 2:13 | 2:38 | 3:53 | 5:48 | 6:39 | 7:39 | | 11:13 | 12:13 |
| Wellesley Sq. | 6:29 | | 7:14 | 7:30 | | 8:14 | 8:29 | 8:58 | 10:17 | 12:27 | 2:17 | 2:43 | 3:57 | 5:54 | 6:44 | 7:44 | | 11:17 | 12:17 |
| Wellesley Hills | 6:32 | | 7:18 | 7:34 | | 8:17 | 8:33 | 9:01 | 10:20 | 12:30 | 2:20 | 2:47 | 4:00 | 5:58 | 6:47 | 7:47 | | 11:20 | 12:20 |
| Wellesley Farms | 6:35 | | 7:21 | 7:37 | | 8:20 | 8:36 | 9:04 | 10:23 | 12:33 | 2:23 | 2:50 | 4:03 | 6:01 | 6:50 | 7:50 | | 11:23 | 12:23 |
| Auburndale | 6:39 | | 7:25 | 7:41 | | 8:24 | | 9:07 | 10:26 | 12:36 | 2:26 | 2:53 | 4:06 | | | | | | 12:26 |
| W. Newton | 6:42 | | 7:28 | 7:44 | | 8:28 | | 9:11 | 10:29 | 12:39 | 2:29 | | 4:09 | | | | | | 12:29 |
| Newtonville | 6:45 | | 7:31 | 7:48 | | 8:32 | | 9:14 | 10:32 | 12:42 | 2:32 | | 4:12 | | | | | | 12:32 |
| Back Bay | 6:57 | 7:15 | 7:42 | 8:00 | 8:15 | 8:44 | 8:53 | 9:26 | 10:45 | 12:55 | 2:45 | 3:08 | 4:25 | 6:20 | 7:10 | 8:05 | 9:50 | 11:43 | 12:43 |
| Arrive South Station | 7:02 | 7:20 | 7:47 | 8:05 | 8:20 | 8:49 | 8:58 | 9:31 | 10:50 | 1:00 | 2:50 | 3:13 | 4:30 | 6:25 | 7:15 | 8:10 | 9:55 | 11:48 | 12:48 |

| OUTBOUND | 501 | 505 | 507 | 509 | 511 | 565 | 513 | 515 | 519 | 571 | 523 | 575 | 577 | 529 | 579 | 533 | 535 | 537 | |
|----------------------|------|------|------|------|-------|-------|-------|-------|------|------|------|------|------|------|------|------|-------|-------|-------|
| READ DOWN | AM | AM | AM | AM | AM | PM | PM | PM | PM | PM | PM | PM | PM | PM | PM | PM | PM | PM | |
| Depart South Station | 5:20 | 7:00 | 7:35 | 9:05 | 11:05 | 12:05 | 1:05 | 2:40 | 4:30 | 4:55 | 5:05 | 5:30 | 6:05 | 6:15 | 7:15 | 8:20 | 10:05 | 11:05 | |
| Back Bay | 5:25 | 7:05 | 7:40 | 9:10 | 11:10 | 12:10 | 1:10 | 2:45 | 4:35 | 5:00 | 5:10 | 5:35 | 6:10 | 6:20 | 7:20 | 8:25 | 10:10 | 11:10 | |
| Newtonville | | | | | 11:21 | 12:21 | 1:21 | 2:56 | 4:46 | | 5:22 | 5:47 | | 6:32 | 7:32 | 8:36 | 10:21 | 11:21 | |
| W. Newton | | | | | 11:24 | 12:24 | 1:24 | 2:59 | 4:49 | | 5:25 | 5:50 | | 6:35 | 7:35 | 8:39 | 10:24 | 11:24 | |
| Auburndale | | | | | 11:27 | 12:27 | 1:27 | 3:02 | 4:53 | | 5:28 | 5:54 | | 6:39 | 7:39 | 8:42 | 10:26 | 11:26 | |
| Wellesley Farms | | | | 9:26 | 11:31 | 12:31 | 1:31 | 3:06 | 4:57 | | 5:32 | 5:58 | | 6:43 | 7:43 | 8:46 | 10:30 | 11:30 | |
| Wellesley Hills | | | 7:23 | 7:59 | | 9:29 | 11:34 | 12:34 | 1:34 | 3:09 | 5:01 | | 5:35 | 6:02 | 6:47 | 7:46 | 8:49 | 10:33 | 11:33 |
| Wellesley Sq. | | | 7:27 | 8:03 | 9:33 | 11:37 | 12:37 | 1:37 | 3:12 | 5:05 | | 5:38 | 6:06 | 6:51 | 7:50 | 8:52 | 10:36 | 11:36 | |
| Natick | | | 7:32 | 8:08 | 9:38 | 11:42 | 12:42 | 1:42 | 3:17 | 5:10 | | 5:43 | 6:11 | 6:56 | 7:55 | 8:57 | 10:41 | 11:41 | |
| W. Natick | | | 7:36 | 8:12 | 9:42 | 11:46 | 12:46 | 1:46 | 3:21 | 5:14 | 5:25 | 5:48 | 6:15 | 6:35 | 7:00 | 8:00 | 9:01 | 10:46 | 11:46 |
| Arrive Framingham | 6:00 | 7:40 | 8:17 | 9:46 | 11:50 | 12:50 | 1:50 | 3:25 | 5:18 | 5:30 | 5:53 | 6:19 | 6:40 | 7:05 | 8:04 | 9:05 | 10:50 | 11:50 | |
| Arrive Worcester | | | | | | 1:20 | | | | 6:00 | | 6:49 | 7:10 | | 8:34 | | | | |

Monday Through Friday Promised Basic Service

| INBOUND | 502a | 504a | 506 | 506a | 510 | 514 | 518 | 520a | 526 | 530 |
|-----------------------------------|------|------|------|------|------|-------|------|------|------|------|
| READ DOWN | AM | AM | AM | AM | AM | AM | PM | PM | PM | PM |
| Depart Worcester to South Station | 6:00 | 6:50 | 7:20 | 7:40 | 8:10 | 11:30 | 3:05 | 5:45 | 7:40 | 9:50 |

| OUTBOUND | 505 | 509 | 513 | 515a | 519 | 521 | 521a | 523 | 527 | 531 |
|-----------------------------------|------|------|------|------|------|------|------|------|------|-------|
| READ DOWN | AM | AM | PM | PM | PM | PM | PM | PM | PM | PM |
| Depart South Station to Worcester | 6:30 | 9:45 | 1:15 | 4:25 | 4:40 | 5:25 | 6:10 | 6:20 | 8:10 | 11:00 |

Prepared by: Worcester Municipal Research Bureau

III. CONCLUSION AND RECOMMENDATIONS

Since Worcester's current financial position would preclude a large capital investment in railroad equipment, its efforts should be directed towards encouraging the Executive Office of Transportation and Construction and the MBTA to distribute existing resources based on efficiency and demand. Public officials of Worcester and adjacent communities can make a strong case to both the MBTA and the Executive Office of Transportation and Construction for initiating the commuter rail service that was promised following the completion of the Grafton station. Currently, over 900 passengers board the commuter rail in Worcester each weekday despite the fact that only 5 trains per day operate each way. This figure does not include the passengers who return to Worcester from Boston each weekday. Initiation of more frequent and convenient train service to Boston would likely attract the additional passengers necessary to make the expanded service economically feasible under the MBTA's new financial guidelines.

Fitchburg, a city of just over 40,000 residents, is currently served by ten inbound trains each weekday and has only 201 daily riders. Not only are there 4-1/2 times

the number of passengers boarding from Worcester each weekday, the City offers these passengers more convenient parking options than any other station on the Framingham-Worcester line. It may be possible to reallocate underutilized passenger coaches to Worcester from the Fitchburg line without reducing the total number of daily trips between Fitchburg and Boston.

In order to expedite the introduction of the expanded commuter rail service promised by the MBTA following the completion of the Grafton station, the Research Bureau makes the following recommendations:

- Local and state officials should vigorously lobby the MBTA, the Executive Office of Transportation and Construction and the Cellucci Administration for the initiation of expanded commuter rail service. This effort should emphasize the sizable local demand for expanded commuter rail service, its economic feasibility, and its importance to the economic development agenda of the Worcester area. It should also emphasize that expanded commuter rail service between the two largest cities in New England is necessary if the State's efforts to implement a regional transportation plan are to be successful.

Two additional studies could help to strengthen the case for expanded commuter rail service. The City of Worcester should work with the local business community to find a way to conduct these studies in a timely and cost effective way.

- A market study that focuses on demand for commuter rail service in the Worcester area should be undertaken to determine the number of potential passengers, the times during which area residents commute to and from Boston, and the demand for off-peak rail service in the afternoons and evenings.
- Worcester and the adjacent communities should commission an analysis of the existing rail schedule to determine whether a more efficient schedule could allow for expanded service using existing rail resources. This study should also assess the feasibility of reallocating underutilized passenger coaches from other commuter rail lines.