

**Testimony**

of

**Franklyn P. Salimbene, Esq.  
Arborway Committee, Chair**

before

**The Department of Environmental Protection  
10 July 2001**

regarding

**EOTC's Petition for Substituting  
310 CMR 7.36 (2)(d)**

**Summary**

In 1991, the Massachusetts Department of Environmental Protection (DEP) promulgated the following regulation: "Before December 31, 1997 construction of the following facility shall be completed and opened to full public use: 1. Green Line Arborway Restoration." [310 CMR 7.36 (2)(d)]

On January 7, 1999, the Executive Office of Transportation and Construction (EOTC) requested that DEP allow it to substitute Green Line Arborway Restoration with an articulated compressed natural gas bus service. EOTC submitted to DEP the 1999 LS Transit Systems (LSTS) Arborway Report and other documents to support that request. On September 1, 2000, DEP denied EOTC's request. Further, however, DEP granted EOTC additional time within which to demonstrate the infeasibility of Green Line Arborway Restoration, ultimately imposing a June 15, 2001, deadline for such a showing. On that date, EOTC submitted to DEP two reports, a light rail feasibility study prepared by URS Consultants (hereinafter URS Report) and an alternatives analysis prepared by Systra (hereinafter Systra Report).

It is the view of the Arborway Committee that EOTC has neither demonstrated the infeasibility of light rail restoration nor demonstrated that the proposed CNG bus alternative achieves equal or greater emission reductions. The request, therefore, must be denied.

## **I. Introduction**

A May 2, 1999, Boston Sunday Globe article entitled "Statistics, 'conclusions' do not an analysis make" made the point that government agencies often hire consultants to produce findings that support policies that those agencies want to pursue. (Appendix 1) In the article, Rep. Daniel Bosley (D-North Adams), co-chair of the Joint Committee on Governmental Regulations stated that "...there are some very reputable firms out there that you can hire to do whatever study and reach whatever conclusions you want." Senate President Tom Birmingham was more succinct, "You literally can get what you pay for."

The issue of Arborway transit service was decided by EOTC long before its 1999 request to substitute 310 CMR 7.36 (2)(d). At least two years earlier in 1997, EOTC announced that Arborway Green Line service would be abandoned in favor of a CNG bus service. (Appendix 2, Jamaica Plain Gazette, 10/24/97) EOTC's June 15 submittal to DEP is, in sum, an effort to lend credibility and support to a pre-determined transit policy decision that it intends to pursue. The decision was made irrespective of and contrary to the public process that preceded it. (Appendix 3, Chronology). It was also made without any reference to DEP and in disregard of the regulatory regime governing Arborway transit.

### **A. It is DEP's responsibility under the regulation to determine the feasibility of a transit project.**

A memorandum from EOTC General Counsel Robert DiAdamo to Assistant Secretary James Scanlan is the most recent evidence of that disregard. Submitted to DEP as part of EOTC's June 15 petition, the memorandum in effect argues that: (1) only EOTC has the right to determine what is feasible regarding Arborway service, (2) DEP has no right to question that determination, and (3) having satisfied itself as to its findings, EOTC is free to choose any substitute it wishes.

EOTC's reading of the regulation is selective and self-serving to the extreme. In referring to section 7.36 (4)(a), which states:

EOTC may substitute other transit improvement projects in place of those listed in 310 CMR 7.36. To replace a project EOTC must demonstrate to the Department that a specific project listed in 310 CMR 7.36 is infeasible due to associated adverse engineering, environmental, or economic impacts.

the EOTC memorandum asserts that it is EOTC's responsibility under this regulation to balance engineering, environmental, and economic factors and then determine the feasibility of the project. Further, the memorandum continues that if EOTC determines to its own satisfaction that a project is infeasible, "*it may adopt*" as a substitute project any other project that in its view achieves greater or equal emission reductions. In EOTC's reading of the regulation, DEP is simply an agency to which it reports its findings. DEP has no function other than as receptor of EOTC's decision.

EOTC's interpretation notwithstanding, the regulation embraces a much more fundamental role for DEP than the one put forth by EOTC in the memorandum.

Within 60 days of receipt of a complete petition and demonstration for project substitution, *the Department shall review the proposed substitution and shall take action either approving or denying the proposed substitution in writing.* Section (4)(a)(2) (emphasis added)

The regulation is clear. It is for DEP to judge whether EOTC has demonstrated the infeasibility of a project. If upon demonstration, EOTC has not satisfied DEP as to a project's infeasibility based upon environmental and other criteria, it is DEP's added responsibility to order that the project proceed.

**It is true in deciding upon the feasibility of a project that DEP makes a transit decision. Nevertheless, the regulation envisages this admixture of transit and the environment, and places the final responsibility for approving or disapproving a transit project with DEP.** This should be no surprise to EOTC. The regulations governing the Arborway project and others have been in effect since 1991. EOTC accepted their implementation at the time and benefited by their implementation. Thus, EOTC is not a free agent in this instance. It is bound by the regulation and the role that the regulation delegates to DEP.

**B. "Infeasibility" means "incapable of being done." EOTC has not demonstrated that Green Line Arborway Restoration is incapable of being done.**

For a substitute to be approved, 310 CMR 7.36 (4) requires EOTC to demonstrate the "infeasibility" of Green Line Arborway Restoration. The meaning of "feasible" is "capable of being done, effected, or accomplished." (Webster's Encyclopedic Unabridged Dictionary) The meaning of "infeasible" is "not feasible."

Thus, at the outset, for Arborway Green Line service to be infeasible it must be shown to be **incapable of being done**. Such incapability cannot be based simply on the fact that restoring the service is economically inconvenient or that it is difficult in an engineering sense. Indeed, many public works projects are inconvenient or difficult, yet remain feasible because they are capable of being done. Ultimately, then, any adverse engineering, environmental, or economic impacts must be of such a nature as to render Arborway restoration incapable of being done.

Because the Arborway project is a transit commitment undertaken as part of the overall Central Artery project, that project is the controlling example of the meaning of infeasibility. From the beginning many difficult and apparently insurmountable obstacles confronted the Central Artery project. How does one build a roadway under an above-ground highway without first dismantling the highway? How does one manage to anchor a massive bridge across the Charles River with underground piers coming within 6-feet of the Orange Line tunnel without disrupting service or damaging the tunnel? How does one block off streets on the surface, disrupt access to neighborhoods, and still provide

emergency services? How can the state raise \$14 billion to build a road? All fair questions, all with adverse impacts, yet all resolved nonetheless. What may have appeared to be infeasible was actually only difficult. What was thought to be impossible was actually feasible.

**Applying the same measure of infeasibility to Arborway Green Line restoration that has been consistently applied to the Central Artery road project is reasonable and appropriate. Infeasibility is indeed a very high standard. For a transit project to be infeasible it must be incapable of being done.**

To demonstrate the infeasibility of Arborway Green Line restoration, EOTC must show that adverse engineering, environmental, or economic impacts render the project incapable of being done. EOTC has not met this burden. In fact, its representatives and agents have confirmed the opposite. The DiAdamo memorandum states that EOTC has concluded "that it would not be impossible to reinstitute the [Arborway Green Line] service." William Gallagher, URS consultant for the feasibility study, speaking of Green Line restoration stated: "So, basically, this is how we see it could be restored. It's possible." (Transcript, Arborway Light Rail Restoration Public Meeting, 1/17/01, p. 26) Indeed, Dennis DiZoglio, Director of Planning at the MBTA, went even further and admitted that Green Line restoration is feasible. (Transcript, Arborway Light Rail Restoration Meeting, 5/30/01, p. 87.

Despite these admissions the URS and Systra Reports have been submitted by EOTC to demonstrate infeasibility. However, rather than presenting an even-handed, objective review of the project as envisaged by the regulation, the reports present pages of misleading commentary and a raft of inaccurate numbers. The comparative analysis included in the Systra Report is particularly misrepresentative of the merits of light rail versus the bus alternative.

To expose the unreliability of these reports, this testimony will review the major topics of project costs and ridership projections. In addition, other related issues will be addressed. We believe that the errors in the EOTC submittal are obvious enough so as to allow even a casual observer to conclude that they are not reliable.

### **C. DEP's authority under the regulation supercedes that of EOTC.**

Under 310 CMR 7.36 (4), DEP has been given broad responsibility. Rather than being relegated solely to the task of counting particulates and measuring emissions, DEP has been granted the authority of evaluating the engineering, environmental, and economic impacts of Green Line Arborway restoration. Then, as a result of its own evaluation, DEP is to decide the issue of infeasibility. DEP is not beholden to EOTC's judgment on this matter. The Arborway Committee believes that after a review of all testimony DEP cannot find this project to be infeasible. To find otherwise would be clearly wrong.

## **II. A fair analysis of both capital and operational costs shows Green Line Arborway Restoration to be less expensive than the proposed bus alternative.**

In any discussion about costs, it must be admitted that rail service is generally more costly to construct and maintain than bus service. It would certainly be cheaper for EOTC to provide a bus service for the 5000 daily South Shore riders who commute to Boston on Old Colony commuter rail than it has been to rebuild and operate the Old Colony Railroad. It also would be cheaper for EOTC to bus the entire Green Line than it is to buy light rail vehicles, and build and maintain the current light rail system. No one would contest this. And yet, if EOTC were to make all service decisions on the basis of cost, EOTC would abandon all rail service in favor of bus service because bus service is always cheaper to build and maintain.

The question under the regulation, however, is not whether light rail is more costly than bus, but whether light rail costs are of such a magnitude as to render the Green Line Arborway project infeasible. The facts do not support such a conclusion. Indeed, had EOTC provided a more candid account of costs, it would show that light rail is less expensive than the proposed CNG bus alternative.

### **A. The capital cost of restoring light rail service is overestimated.**

The cost of restoring Green Line Arborway service is overestimated in part because EOTC insists that it must purchase 16 additional light rail vehicles to run the service. Current Green Line fleet inventory indicates, however, that no additional new car purchases are necessary. A fleet of 218 cars (118 inaccessible Kinkos and 100 accessible Bredas) is more than adequate to meet the MBTA's peak Green Line fleet requirements. With a restored Arborway service, the peak fleet requirement will rise to approximately 166 cars (149 currently needed + 16 for Arborway service). (Appendix 4, Rollsign, p. 7) The MBTA plans to pair the Bredas and the Kinkos so that each two-car train operates with one accessible and one inaccessible car. The result is that service requirements for the Bredas will be 83 cars with 17 spares, exactly the 20% spare ratio the MBTA requires. Service requirements for the Kinkos will also be 83 cars with 35 spares, a much more generous spare car ratio.

**Thus, no additional LRV purchases are needed to restore service to Arborway.** Yet EOTC calculates a capital cost of \$45.9 million for the purchase of 16 additional LRVs. One reason heard recently for increasing Green Line fleet requirements is that the MBTA plans to operate 3-car trains on the Boston College and Riverside Lines. If that is the case, any increased costs for additional vehicle purchases ought to be assessed as an operating cost against those lines. The Arborway branch should not be made to subsidize improvements in other Green Line services.

## **B. The capital cost for CNG bus service is underestimated.**

### **1) Bus Purchase Costs.**

EOTC estimates the cost of 26 CNG buses needed to operate Arborway service to be \$17.7 million. It is difficult to understand this figure in view of the fact that there are no such buses available for sale on the American market. Nevertheless, assuming the estimate to be correct, it is incomplete. EOTC has failed to include in its cost summary the added costs of bus replacement. (Systra, p. A-1) The Federal Transit Administration's (FTA) "Useful Life Policy" for transit vehicles calculates the life span of a heavy duty articulated transit bus to be 12 years. (Appendix 5, FTA C9030.1C) According to Richard Doyle of FTA Region 1, there is no distinction under this policy between diesel and CNG powered buses. In comparison to the 12-year useful life span of a bus, the useful life span of an LRV is 25 years, more than twice as long. (Appendix 6, FTA 9030.1C)

Thus, the import of FTA's useful life standard is that in order to make a true comparison of vehicle purchase costs for Arborway service, one must calculate the purchase of 2.08 buses to 1 LRV. This type of analysis was incorporated into the 1987 Arborway Study's assessment of vehicle costs for Arborway service. (Appendix 7) It is also confirmed in the analysis of Vukan Vuchic, Professor of Transportation Engineering at the University of Pennsylvania. (Appendix 8) Thus, a proper accounting of vehicle purchase costs for Arborway service must incorporate this useful life standard. To do so would show that over the 25-year useful life period, **the vehicle purchase cost of the CNG bus alternative would be about \$36.9 million (\$682,000 x 26 x 2.08 with no inflation factor included).**

### **2) Bus Facility Costs.**

While including the cost of constructing a light rail storage facility in the summary of capital costs for restoring Arborway Green Line service, EOTC includes no similar cost accounting for a CNG facility. This is a significant omission. The Arborway CNG fleet will be the first of its kind in MBTA history. The T currently has no facility to house, maintain, and fuel CNG buses. It will need to construct one. Yet, EOTC includes no cost factor for this essential element of Arborway bus service.

EOTC is not unaware of the need for a CNG facility. In fact, it has already begun the process for constructing a facility for the Arborway bus fleet at Southampton Street. It held a public meeting and has included the facility in its Silver Line notice of project change. EOTC's omission of the cost of the facility is, therefore, particularly egregious.

The Southampton Street facility, referred to by EOTC as the "Silver Line Maintenance Facility", is much more than a Silver Line facility. It will not only house approximately 50 Silver Line vehicles, but all 26 CNG buses for Arborway service. (Appendix 9) The estimated cost of construction for the facility is \$58.5 million. Standard cost accounting procedures would require assessing one-third of the cost of construction of this facility as a capital cost against Arborway bus service. Yet, it is missing from EOTC's summary of capital costs submitted to DEP. **The cost of a bus facility attributable to Arborway CNG service is one-third of \$58.5 million or \$19.5 million.**

### 3) Bus Stop Costs.

EOTC's assessment of bus shelter costs for the proposed bus alternative is \$1.95 million. This cost assessment seems distorted in two respects. First, it is based only upon service from Forest Hills to Heath Street. Because bus service will run all the way to Park Street, however, the cost of constructing an additional 3 inbound and 2 outbound stops at or near Arlington, Boylston, and Park Street Stations must be added to the \$1.95 million. Since each stop costs \$63,000, total bus stop construction is \$2.27 million. Second, while including a 35% contingency cost factor for light rail stop construction, the same contingency cost factor is omitted from bus stop construction in EOTC's calculation.

**Adding the 35% contingency factor to the adjusted bus stop costs brings the total for bus stop construction to \$3.06 million.** (Note that these figures do not include any transit stop construction costs from Heath to Copley. EOTC omitted these figures from its calculations. Light rail stop reconstruction on Huntington Avenue is currently underway as part of the Huntington Avenue road project. Bus stop reconstruction along Huntington Avenue will commence later in this project.

### **C. The capital cost summary does not demonstrate the infeasibility of Arborway Green Line Restoration.**

On the basis of the foregoing commentary, a more realistic summary of capital costs is set out in Table 1 below. Table 1 includes the cost of facility construction, revised station costs, and the cost of transit vehicle purchase over a 25-year life cycle. The 25-year accounting is consistent with the original 1987 Arborway Study analysis of alternatives and represents good accounting practice. Table 1 excludes the cost of purchasing LRVs for Green Line restoration. As already shown, incurring such costs is not necessary.

Hypothetically, however, even if, as EOTC inaccurately alleges, the purchase of 16 additional LRVs (8 two-car trains) were to be needed for Arborway light rail service, only 8 cars would need to be accessible. As already shown, the MBTA has ample inaccessible LRVs in place. Using EOTC's cost estimate of \$2.87 million per LRV, the cost of 8 accessible LRVs would be \$23 million. This additional cost added to the Green Line restoration figures in Table 1 would result in a total cost of \$53.8 million for light rail compared to \$64.4 million for the bus alternative.

Table 1

Cost Factor	Green Line Restoration	CNG Bus Alternative
Vehicle Purchase		\$36.9 million
Track	\$13.3 million	\$ 4.2 million
Power	\$ 8.5 million	
Stations	\$ 1.6 million	\$ 3.1 million
Utilities	\$ 2.2 million	\$ 0.9 million
Garage Facility	\$ 5.2 million	\$19.5 million
<b>Total Cost</b>	<b>\$30.8 million</b>	<b>\$64.6 million</b>

#### **D. Operational cost figures for Arborway service are unreliable.**

EOTC's submittal to DEP estimates that the operational costs for restoring Arborway Green Line service are \$19.4 million annually. It estimates that operating costs in the Arborway corridor for the bus alternative are \$16.7 million (\$8.6 for CNG service to Arborway and \$8.1 for light rail service to Heath Street). These estimates are neither a demonstration of economic infeasibility nor reliable.

It is very difficult to imagine that a redundant service is more cost effective than a single service. For instance, the CNG option would result in the MBTA operating parallel service for 3.7 miles between Park Street and Heath Street, that is, MBTA buses competing with MBTA streetcars for the same riders on the same route, paying twice as many drivers and wearing down twice as many vehicles. This surely does not make sense. The elimination of such a redundancy is what cost savings is all about.

To demonstrate that a redundant service is more expensive to operate, one need look no further than to previous EOTC operating estimates for Arborway. In 1994, EOTC issued "The New Program for Mass Transportation" (PMT). In it, EOTC calculated that running all E-Line service to the Arborway and eliminating the route 39 bus would result in a net operating cost reduction in the Arborway corridor of \$1.5 million annually. This figure was the result of an increase in annual Green Line operational costs of \$5 million, but a decrease of \$6.5 million in annual bus costs. (Appendix 10)

A second illustration is provided by the 1987 Arborway Study. That study calculated light rail operating costs for restored Arborway Green Line service to Park Street to be \$5.9 million. It further calculated the bus alternative including Green Line service as far as Heath Street to be \$5.3 million. (Appendix 11) The bus estimate, however, was premised on bus service only as far as Copley Square using diesel buses. If the 1987 Study had been prepared using the service routing and mode proposed in the 2001 EOTC submittal, it would have shown a higher operating cost for the bus alternative, not a lower one. The current EOTC submittal extends bus service another 1.3 miles from Copley Square to Park. Further, it utilizes CNG buses, which are twice as expensive to fuel as diesel and 94% more expensive to maintain. (Systra, p. B-2) If applied in the 1987 Study, both of these factors would have resulted in a higher operating cost for the bus alternative and a lower operating cost factor for Green Line restoration.

The 1994 PMT makes sense. The 1987 Arborway Study makes sense. The 2001 EOTC submittal is nonsense. It is unreliable.

#### **E. EOTC's assessment of costs is distorted.**

The analysis presented by EOTC distorts both capital and operating costs. It is inconsistent with prior EOTC reports and is not based upon a fair comparison. In sum, EOTC has not made the case for economic infeasibility.

**III. EOTC's Arborway service ridership analysis is flawed. It is an unreliable measure of the environmental impacts of the transit options presented and, therefore, cannot be used as an indicator of infeasibility.**

In 1998, the City of Seattle issued a Transportation Strategic Plan. In discussing why people choose transit rather than their automobile, the plan listed reliability and travel time as the two most important transit factors. The plan said: "Service should get people where they are going at the same time every day, regardless of weather, accidents, congestion, bus breakdowns and other sources of delay. Travel time is second in importance to reliability." (Strategic Plan, p.28) Echoing the Seattle plan, John Swanson of Daimler/Chrysler Rail Systems, delivering a paper at the American Association of Public Transportation 2000 conference on light rail technology in Dallas, listed reliability as the most important factor. He defined "reliability" as "always punctual, dependable, does not fail." ("Evolution, not Revolution in LRV Design," p. 3)

The twin factors of reliability and travel time must, therefore, be at the heart of any analysis of ridership. Further, because ridership generally corresponds with environmental impacts, it is at the heart of the emissions data presented in the Systra Report. Yet, **Systra consistently calculated shorter bus trip times than were warranted by actual service.** In so doing, EOTC was able to show higher bus ridership than Green Line ridership.

**A. Current route 39 bus service is not reliable according to the MBTA's own standards.**

Consider the following. In an August 1996 service review [hereinafter Route 39 Review] of the route 39 bus conducted by the MBTA, the T in discussing schedule adherence stated that the "delivery of a reliable, on-time service is among the highest ranked customer needs." (Appendix 12) Yet, the Route 39 Review went on to indicate that weekday schedule adherence was only 42.34% against a target of 85%. In other words, less than half of all scheduled weekday trips met the crucial criterion of "on time" service. The Route 39 Review verified that the trip time periods of greatest diversion from weekday schedule adherence occurred inbound from 7:00 a.m. to 5:00 p.m. and outbound for the entire day. (Appendix 12, figures 2 and 3)

The main problem with schedule adherence as reported in the Route 39 Review was that the T generally scheduled less running time for the trip than was actually needed. (Running time was defined in the review as "time scheduled for a bus to travel from one terminus of a route to the other", i.e., from Forest Hills to Back Bay Station.) As a result of this finding, the Route 39 Review recommended that scheduled inbound running times be increased by 4 minutes for all service between 7:00 a.m. and 6:00 p.m. It also recommended that scheduled outbound running times be increased by 6 minutes between 9:00 a.m. and 2: p.m., and by 5 minutes during morning and evening peak. See table six in Appendix 12. A comparison of bus schedules prior to the Route 39 Review and after it indicate that the MBTA has never fully implemented this recommendation.

This discussion of running times is important for two reasons. First, it should alert DEP to the fact that in-street bus service reliability is crucial for meeting the ridership projections indicated in the Systra Report. Where schedule adherence, however, is the victim of underestimated trip times coupled with the compounding factors of downtown traffic congestion and signalized intersections, reliability suffers as has been adequately demonstrated by the Route 39 Review. Second, the discussion of running times should alert DEP to the fact that ridership projections in the Systra Report were based upon underestimated running times for bus service.

**B. A review of running times used by EOTC to compare light rail and bus ridership demonstrates a skewing of data in order to achieve a result favorable to the bus substitute proposal.**

What would a careful review of running times actually show?

First, it would show that peak running times were used to calculate Green Line ridership. (Systra, p. 12) Because of passenger load, peak running times are always longer than off-peak times. So in the model, light rail running times were the longest possible times, i.e., 29.5 minutes Forest Hills to Copley. It is also interesting to note that the 1999 LSTS Report that preceded the Systra Report based light rail ridership on a running time Forest Hills to Copley of only 28.8 minutes. While not a significant difference, it is fair to ask what accounted for the increase in LRV running time between 1999 and 2001? Also, what would have been the Green Line ridership projection if Systra had used the shorter time of 28.8 minutes?

Second, by way of comparison, the running times used to calculate Arborway bus ridership were an average of peak and off-peak times. (Systra, p. 18) **By calculating bus ridership based on an average of peak and off-peak running times, one gets a shorter running time and higher ridership than if one had used peak times only as was done in calculating light rail ridership.** Systra should have compared peak travel times for each mode. This would not only have resulted in a more reliable comparison, but would also have been consistent with the headway analysis, which was based on peak headways for both modes. What is the actual bus peak running time from Forest Hills to Copley Square and on to Park Street? What would have been the result if peak time had been used in the bus calculation?

We get some help in answering these questions by relying on a few available sources. The 1999 LSTS Report estimated peak running time from Forest Hills to Copley Square to be 35.5 minutes by bus. (LSTS, p. 25) For the purposes of this analysis, the Arborway Committee will accept the 35.5-minute bus estimate.

The more challenging estimate of bus travel time, however, is from Copley Square to Park Street. The LSTS Report did not include any information on this leg of the journey. For its calculation, the Systra Report relied upon the trip times of the route 55 bus from Copley to Park Street. Again rather than using peak running times for the route 55 bus, Systra used the average of peak and off-peak, or 9.5 minutes.

To confirm the peak running time of the route 55 bus, we first consulted the route 55 schedule. The schedule indicates an inbound Copley to Park Street morning peak running time of only 8 minutes. The schedule also indicates an outbound evening peak running time of 13 minutes. The average of the two is 10.5 minutes. However, because scheduled running times are often shorter than actual running times, as the Route 39 Review indicated, the Arborway Committee decided to conduct its own survey of route 55 peak running times in both directions between Copley Square and Park Street.

The survey took two forms. First, on Thursday afternoon, June 21, a member of the Arborway Committee sat at the outbound Copley Square bus stop to record the arrival times of the route 55 bus from Park Street. The record showed a significant failure of the route 55 to adhere to its schedule. The service operated as shown in Table 2.

Table 2

Scheduled to Depart from Park Street	Scheduled to Arrive at Copley Square	Actual Arrival at Copley Square
5:20 p.m.	5:33 p.m.	5:48 p.m.
5:50 p.m.	6:02 p.m.	6:10 p.m.
6:20 p.m.	6:31 p.m.	had not arrived by 6:43 p.m.

Second, Arborway Committee members actually rode the route 55 peak service going in both directions for a total of 13 trips during the last three weeks of June. From Copley to Park the average peak running time was 12.8 minutes. From Park to Copley the average peak running time was 10.2 minutes.

As a result of the above discussion, **the average bus peak running time for service from Arborway/Forest Hills to Park Street is significantly longer than the time indicated in the Systra Report.** In fact, on average while Systra estimated a 40.5-minute total running time, a more accurate estimate is 47 minutes. Table 3 shows the breakdown.

Table 3

Route Segment	Peak Inbound Times	Peak Outbound Times	Average Peak Times
Arborway/Forest Hills to Copley Square	35.5 minutes (LSTS Report)	35.5 minutes (LSTS Report)	35.5 minutes (LSTS Report)
Copley Square to Park Street	12.8 minutes (Observed)	10.2 minutes (Observed)	11.5 minutes (Observed)
Total Peak Running Time	<b>48.3 minutes</b>	<b>45.7 minutes</b>	<b>47.0 minutes</b>

### **C. An even-handed application of running time estimates would result in a higher ridership for Green Line Arborway restoration than for the bus substitute.**

The next question is key. What would have been the result of the ridership projections if Systra had calculated a 47-minute peak running time for the bus substitute instead of the 40.5-minute running time? To get close to an answer, on July 10, 2001, in a telephone conversation that took place at 12:15 p.m., I posed the question to Vijay Mahal, the CTPS manager who ran the ridership model for the Systra analysis. Specifically, I asked what would have been the bus ridership results if the running time for the bus had been calculated to be five minutes longer (45.5 minutes) than the calculation used in the Systra Report (40.5 minutes). He answered that **if Systra had calculated peak travel times for the bus to be 45.5 minutes instead of 40.5 minutes, daily light rail ridership would have exceeded bus ridership by 1450.** I did not ask what the ridership numbers would have been if 47-minute peak running times were calculated, but it seems likely that Green Line ridership would have exceeded daily bus ridership by 2000.

The Arborway Committee makes three final points regarding running times. First, the Systra Report alludes to the fact that the proposed bus running times could be shortened if there is some stop consolidation along the route. (Systra, p. 18) This is true. However, in the 1999 LSTS Report, the peak running time of 35.5 minutes for service from Forest Hills to Copley Square had already figured into its calculation the elimination of 17 stops. (LSTS, p. 24) It is near impossible to eliminate any more stops to obtain additional running time savings as alleged by Systra. Second, the Systra Report indicates that the implementation of the anticipated computerized Centralized Control System for bus operations will result in the ability to track buses along the line so as to avoid bus bunching and overcrowding. (Systra, p.18) Any traffic analyst will affirm, however, that tracking a bus in traffic and actually affecting its travel progress in that traffic are two quite different things. Further, any computerized control system used to improve bus service could also be used for light rail operations. Nothing precludes the application of new guidance technologies to Green Line service. Third, the entire discussion of bus running times and bus service reliability is premised on the idea that 40-foot diesel buses and 60-foot articulated CNG buses are the same both in mechanical reliability and in maneuverability in traffic. But they are not. Mechanically, studies show that CNG buses operating the same number of miles as diesel buses experience nearly 10 times more breakdowns. (Prototype Evaluation of New Technology Buses prepared for the MBTA by Booz-Allen, Hamilton, 2000, p. 2.0) More breakdowns mean less reliable service. In regard to maneuverability, experience in New York City with articulated buses seems to indicate longer travel times resulting from the longer length of the bus.

### **D. EOTC's assessment of ridership is distorted.**

As with costs so with ridership projections, EOTC and its consultants have submitted a report so biased in favor of its proposed bus substitute as to be meaningless. Further, because emission projections are based on ridership, the emission savings alleged for the bus substitute in the Systra Report are also not reliable. A more even-handed ridership analysis would have actually projected higher ridership for Green Line service.

#### **IV. A fair analysis of operational issues does not demonstrate the infeasibility of restoring Arborway Green Line service.**

Throughout both the URS and Systra Reports, EOTC trumpets the difficulties of operating light rail vehicles in the street. It seeks to paint a picture of impossibilities. In effect, EOTC argues that the operating environment makes Arborway Green Line restoration infeasible.

The infeasibility standard requires EOTC to demonstrate that engineering, environmental, and economic factors rise to the level of rendering Green Line restoration incapable of being restored. Infeasibility is not demonstrated simply by showing that something is difficult or inconvenient. It requires something much more significant. This, EOTC has not demonstrated.

The main problem that EOTC has in making the "operational issues" argument is the historical fact of Arborway Green Line service. Streetcar service operated on Centre and South Streets in the recent past. The fact that Green Line service ran in the past verifies that it can run today. It is capable of being done. Nothing that EOTC alleges regarding the operational environment makes it infeasible. Indeed, nowhere in the URS feasibility report is it alleged that Green Line restoration is infeasible.

This section of Arborway Committee testimony addresses issues of traffic, parking, and public safety. We do so not because these issues are relevant to the regulation. In our view they are not. The loss of parking spaces, for instance, does not raise any engineering or economic issues as to EOTC's ability to restore Green Line service. Rather, we address the issues because they have been raised by EOTC in such an incendiary manner as to warrant contradiction. We believe that an even-handed analysis of these issues will further demonstrate the unreliability of the entire EOTC Arborway submittal.

#### **A. Light rail vehicles provide more flexibility in the Arborway Corridor than do buses.**

In March 2001, the City of Toronto issued a report entitled "Reducing Car Dependence: Transportation Options for the City of Toronto." The city's objective is to "reduce automobile dependence and improve the competitiveness of transit." In speaking specifically of urban light rail operations, the study affirmed: "...the principal advantages of LRT relate to flexibility of operation in a variety of environments including mixed traffic (depending on train length), partially or fully segregated rights of way and, for limited sections of route, on either underground or elevated structures." This describes the Arborway corridor in a nutshell.

The Arborway transit corridor from Forest Hills to Park Street lends itself to light rail vehicles because of the variety of its operating environment. The Jamaica Plain portion of the route requires in-street operation of LRVs. Huntington Avenue through the Medical Area offers a median strip that allows LRVs to operate at street level, but out of the line of auto traffic. The Back Bay and downtown portions of the line provide a subway that

fully removes LRVs from the streetscape. The only vehicle that can function within each of these environments (in-street, median strip, subway) is a light rail vehicle. In fact, 2-car E-Line trains running to Heath Street currently utilize all three of the corridor's operating environments. **A bus is inflexible. It must operate on the surface, in traffic all the way from one end of the line to the other.**

The relationship between transit vehicle flexibility and environmental impact is clear. Being able to operate LRVs out of the line of auto traffic for more than half the Arborway route and especially downtown where traffic concentrations are highest, is bound to have a positive impact on emissions. Alternatively, operating large buses in traffic for the entire Arborway route is bound to have a negative impact on emissions. **Is it any surprise, therefore, that the Systra analysis of air quality impacts did not include any study of pollution impacts resulting from operating 401 bus trip each day in downtown traffic?**

Another environmental impact resulting from transit vehicle flexibility is a shorter trip time for passengers and more reliable scheduling. As already shown, both are important factors in calculating ridership and resultant air quality impacts. Being able to operate much of the service out of the line of traffic results in shorter trip times and more reliable scheduling, and, therefore, higher ridership.

In its analysis of light rail, the URS Report attempts to argue that in-street operation of light rail is a thing of the past. URS goes to great lengths to deny the very flexibility that defines light rail vehicles. It is true that where there is choice and room, it is wiser to operate LRVs, indeed any transit vehicle, out of the line of traffic. But where there is not room, the only vehicle that has the flexibility to operate across environments in the Arborway corridor is light rail. Simply put, LRVs serve the corridor better than an inflexible bus.

Several cities understand the flexibility of light rail and benefit from it. Operating light rail in the street is feasible because it is being done. In fact, it is being done on streets narrower than those in Jamaica Plain. Refer to the Photo Appendix.

- 1) **Photo A** shows the operation of light rail vehicles in Jersey City, New Jersey, with the New York World Trade Center in the background. Jersey City has chosen to operate light rail in one direction in a segregated lane and in the other direction in mixed traffic with no passing lane.
- 2) **Photo B** shows the operation of light rail in Allentown (Pittsburgh), Pennsylvania. Traffic moves in both directions with no room for parking on one side of the street, but parking on the other. Again no passing is allowed.
- 3) **Photo C** shows the operating environment in Portland, Oregon. The street is only 36-feet wide with one travel lane in each direction. Track is laid on one side of the street, but again there is no passing lane.
- 4) **Photo D** shows light rail operating along Centre and South Streets in the 1980s.

The history of light rail service in Boston and their adaptability to all operating environments demonstrate that light rail is not infeasible. In fact, for Arborway service, light rail is the ideal vehicle.

**B. Buses cannot provide the level and quality of Arborway transit service necessary to sustain ridership and maintain positive air quality impacts.**

Because service quality and ridership are interrelated, it is important to ask whether the CNG bus alternative is a viable option to light rail in the Arborway corridor. Can the CNG Arborway to Park Street bus option provide the consistent, long-term benefits that EOTC claims? The answer is that it cannot. And it was given by the MBTA at a presentation to the Arborway Advisory Committee on January 29, 1996. (Appendix 13)

Plagued by complaints of poor schedule adherence, bus bunching, and overcrowding, the MBTA explained the difficulties of operating the route 39 bus service in the Arborway corridor. It listed the following as factors contributing to poor Arborway bus service:

1. The 10.3 mile length of the route
2. The number of traffic signals buses confront (45)
3. Heavy pedestrian traffic
4. Commercial drop-offs/double parking
5. Emergency vehicles
6. School buses
7. Snow banks

The proposed CNG bus substitute for Arborway service compounds these operational problems by extending the bus route an additional 1.3 miles from Copley Square to Park Street. It is hard to imagine that adding an additional 15 to 20 traffic signals, heavier concentrations of commercial and pedestrian activity, and more traffic generally will result in a quality and reliability of service that will increase rather than decrease ridership. There are no transit planners, other than those paid by EOTC, who would advise introducing 401 inbound and 401 outbound 60-foot articulated bus trips each day into such an environment. Such a service scenario is not sustainable.

In a review of the Systra Report, Prof. Vuchic affirms: "Extending buses into downtown would represent a major deterioration of transit service: instead of offering reliable and fast travel in fully controlled tunnels, independent of street traffic, transit service would become strongly affected by, as well as a major contributor to street traffic congestion." (Appendix 8)

Roelof I. Th. Koolen, Transportation Research Centre in Rotterdam, in a paper entitled "Successful Public Transport in Urban Regions" delivered at the Dallas light rail conference, makes a similar point. Speaking specifically on the quality of public transit, he states: "To be a self-evident part of social activity, public transport must complement the environment. Don't let public transport be an unwelcome guest in city centers. Buses are banned from city centers because of pollution and noise." (p. 9)

Consistent with these warnings by the experts, the City of Boston Transportation Department has raised several concerns regarding the EOTC bus proposal. In a June 29, 2001, letter to General Manager Robert Prince of the MBTA, Commissioner Andrea d'Amato questions the transit effectiveness of Arborway bus service to Park Street and rightly worries that EOTC has not conducted adequate traffic analysis. (Appendix 14) The reality is that Arborway bus service not only will adversely affect downtown traffic, but also will deteriorate if it is extended into downtown Boston. The MBTA's 1996 presentation predicts as much and the experts agree.

Because the regulation requires any substitute project to achieve equal or greater emission savings both in the long term and the short term, DEP must be certain that any proposed substitute is sustainable long term. The service scenario for this substitute, however, is clear. If allowed by DEP, EOTC will operate this substitute bus service for a few years at most. Time will prove that the service, plagued by delays and schedule disruptions, loses ridership. The residents of Back Bay and Beacon Hill will continue to complain. The Boston Transportation Department will refuse to contribute resources to the operation of the service. All will ultimately agree that the service should be rerouted elsewhere. The single seat to Park Street will be lost. DEP will be out of the picture. The entire Arborway regulation would have been for naught.

**Because Arborway bus service to Park Street is neither sustainable as a long-term service nor capable of providing a quality of service that will attract and maintain ridership, it cannot be relied upon by DEP or EOEA to deliver the positive emission benefits touted by EOTC.** Only light rail is flexible enough to provide sustainable service throughout the entire Arborway corridor. Only Green Line service will guarantee reliable, permanent service from Arborway/Forest Hills to downtown Boston.

### **C. Light rail impacts on traffic and parking in Jamaica Plain are exaggerated while bus impacts are underestimated.**

EOTC alleges that the operating environment along Centre and South Streets has changed since 1985 when streetcars last ran. It claims that traffic has worsened and parking is at a premium. Added to these issues are the requirements of the Americans with Disabilities Act, which was passed in 1991. EOTC argues, despite the observations of its consultants, that in all respects Green Line service would make matters worse while 60-foot articulated bus service would not. Is this true?

#### **1) Traffic.**

In evaluating light rail impacts, the place to begin is traffic. EOTC alleges that traffic has increased since 1985. In the URS Report, EOTC sets out its analysis of traffic volumes along the Jamaica Plain end of the corridor (an analysis which it did not conduct in the Back Bay or downtown sections of the corridor). The analysis lists daily traffic volumes along selected portions of Centre and South Streets and South Huntington Avenue. It concludes only that traffic volumes are highest along Centre Street.

There is no question that traffic is an issue in Jamaica Plain as it is elsewhere. While traffic is not a factor within the contemplation of the regulation, it does have an impact on transit service. The question, however, is whether light rail vehicles can operate within the current traffic environment. One way of answering the question is to compare traffic today with traffic in the mid-1980s when streetcars last operated. Surprisingly, however, EOTC does not offer any comparative information in its traffic analysis. This is indeed strange since its argument regarding traffic seems to be premised on an increase in traffic volume after 1985. If one was to compare traffic in 2001 with traffic in the mid-1980s, what would such a comparison show?

The 1987 MBTA Arborway Study provides information that allows such a comparison. It also reviewed traffic along Centre and South Streets. (Appendix 15) It focused particularly on traffic at the Centre Street intersection with Green and Myrtle Streets near the post office. That intersection was targeted because it "experienced the highest traffic volumes" of any signalized intersection along either street. The intersection remains today the most problematic. The consultants at the time counted vehicles entering and exiting the intersection. Because the south side of the intersection corresponds with the area north of Harris Street, which was studied by URS, it provides a good comparative measure of traffic volumes on Centre Street between the mid-1980s and today.

In the 1987 Study, Centre Street vehicle counts south of Green Street toward Harris Street were 1147 between 4:00 and 5:00 p.m. In 2001, URS counted 1156 vehicles south of Green Street between 5:00 and 6:00 p.m. **The measure shows no significant difference in traffic volumes between 1987 and 2001.** A remarkable finding!

To confirm the accuracy of the comparison between the 1987 Arborway Study and conditions on Centre Street today, four members of the Arborway Committee conducted traffic counts at the intersection of Centre, Green, and Myrtle Streets between 2:00 p.m. and 6:00 p.m. on Thursday, June 21, 2001. The date was selected because the 1987 Study also recorded a four-hour traffic count at this location on a Thursday afternoon (May 28, 1987) and because schools were still in session. Again the similarities in numbers are remarkable.

During the entire four-hour period on June 21, 2001, the number of vehicles entering the intersection from all four directions totaled 4925. (Appendix 16) During the same time period, the 1987 Study showed a total of 4864 vehicles entering the intersection from Centre and Green Street. (The 1987 Study did not indicate the 4-hour vehicle total entering the intersection from Myrtle Street although it did indicate that 11 vehicles entered the intersection from Myrtle between 4 and 5 p.m.) Assuming that at least 22 vehicles entered from Myrtle Street during the four-hour period, the comparative vehicular totals are shown in Table 4.

Table 4

Entering Intersection from	1987 Vehicle Count	2001 Vehicle Count
Centre Street Northbound & Southbound	3857	3631
Green Street Westbound	1007	1214
Myrtle Street Eastbound	22 (est.)	80
Total Intersection Vehicle Count	4886	4925

In the 1987 Arborway Study, these figures led the MBTA consultants to conclude that "there is no appreciable difference in traffic impacts of future bus or streetcar operations at the intersection of Centre, Green, and Myrtle Streets." By extrapolation, the 1987 Study concluded generally that the difference in impact of either transit mode on traffic circulation in Jamaica Plain would be "negligible."

While unstated in the 2001 URS Report, the URS consultants drew a similar conclusion. Speaking about traffic volumes at the January 17, 2001, Arborway Light Rail Restoration Public Meeting, Mr. Beegan of URS said: "When we looked at all of this...our general conclusion was that the introduction of the [light rail] service should not have a negative impact on congestion on the corridor." (Meeting Transcript, p. 37)

The only conclusion to be reached is that the traffic levels in both 1987 and 2001 during the busiest times of the travel day are similar. There is no evidence to the contrary. If light rail could operate in the traffic environment of the mid-1980s, it can operate in the traffic environment of 2001. The infeasibility of Arborway Green Line service based on traffic volume has not been demonstrated. Green Line service is feasible because it is capable of being done. Indeed, it has been done under the same traffic volumes.

## **2. Parking.**

As with traffic the issue of parking capacity is not within the contemplation of 310 CMR 7.36 (4). To raise it as an issue under the regulation is false. The entire premise of 310 CMR 7.36 is to promote public transit as an alternative to the automobile. The regulation intends to prioritize public transit. To argue that a 310 CMR 7.36 transit project should not be implemented because it will make auto travel and parking more inconvenient contradicts the basic premise of the regulation. It stands the regulation on its head. Under such a test, few transit projects would be implemented.

There is no doubt that some parking will be lost regardless of the vehicle type selected for Arborway service. The amount of parking lost, however, is directly related to the length of handicap accessible stops that EOTC claims that it needs. For Green Line Arborway service, EOTC states that stops must be 150 feet long. The fair question is-- why? The answer is that EOTC wants to make a political issue out of parking!

**Arborway Green Line service does not require 150-foot stops. This is no national standard or objective justification for such a length.** In fact, transit authorities across the country that want to operate light rail in mixed traffic make compromises in platform length for the sake of the service. And they do so without compromising on the issue of accessibility. Portland, Oregon, is a perfect example. On July 20, 2001, Portland will institute streetcar service using 67-foot cars on narrow city streets. To accommodate more parking rather than less, the transit authority agreed to construct 45-foot platforms for its 67-foot cars. As noted by Charlie Hales of the City of Portland, the shorter platform length was selected because it resulted in the loss of only three parking spaces at each stop. Photo Appendix E and F show Portland's accessible streetcar platforms.

In the end, it's a question of flexibility. How flexible does EOTC want to be? This was exactly the question raised in an internal MBTA memo dated October 21, 1991. (Appendix 17a) In it, the T's then Manager of Operations Planning addressed the issue of platform length on a restored Arborway Green Line. Speaking about the length of LRVs and the length of platforms to accommodate them, he said: "There are operational reasons why each of these might not be appropriate, but I do not know how flexible we are willing to be." After a further review of the issue, he wrote a follow-up memo dated October 29, 1991, in which he concluded: "Although there is still uncertainty regarding the actual operating strategy for the restored Arborway Line, **a shorter platform of 65 feet would be acceptable under most future circumstances. This length would be fine both for single-car operation and for two-car trains with the low floor car in the lead.**" (Appendix 17b)

In a January 30, 2001, letter to Dennis DiZoglio of the MBTA, the Arborway Committee laid out a strategy for saving parking spaces along the Arborway route. (Appendix 18) We received no response. In addition to our analysis, the City of Boston has also studied the parking issue. In a 1992 report that evaluated 100-foot stops, the city's consultant found that constructing 100-foot stops would result in the loss of only 13 stops on South Street and 24 stops on Centre Street, none of which would be in the business district. (Appendix 19)

Thus, despite experiences in other cities, studies by the City of Boston, and its own internal findings, EOTC chooses not to consider available alternatives to the 150-foot LRV stop length. And it does so only for cynical political reasons.

### **3) Commercial deliveries and bicycles.**

The issues of commercial deliveries and bicycles are played just as cynically by EOTC. Regarding deliveries it is again important to recall that streetcar service in the 1980s was perfectly compatible with retail activities. In fact, without the streetcar connection to

downtown as a draw to Centre Street, the retail environment would have suffered from low levels of foot traffic in the vicinity. But the streetcar was there. Retailers understood that deliveries could not impede streetcar service so they regularly took deliveries during early morning or from the rear of their shops. Not only did early or rear deliveries make it easier for merchants to receive their goods, but also early and rear deliveries freed the street from the obstructions caused by delivery trucks that double-parked. Instead today, without the discipline that streetcar service brings to the street, deliveries are made at any time and from any place on the street.

Is it at all surprising that there is no mention in EOTC's submittal about the capability of merchants to receive deliveries from the rear of their shops? In fact, **rear access for commercial deliveries exists on both sides of the street for all but two stores between the Monument and the Green Street intersection.** Photo Appendix G and H show rear access at several retail locations behind Centre Street. In addition to rear access, several merchants continue to arrange for deliveries before 9:00 a.m. when Centre Street is relatively free of parked cars. Photo Appendix I shows a recent early morning delivery.

As for bicycles, it is true that making LRV stops accessible will narrow the lane adjacent to stop locations for cyclists on Centre and South Streets. In the 1.5 mile stretch, there will be six locations where cyclists will need to exercise caution. Keeping perspective on this issue, however, is important.

**First, the number of cyclists using Centre and South Streets daily as travel routes is extremely small in comparison to the thousands of transit riders who use it. Second, the state has provided cyclists with two well-maintained alternative routes to Centre and South Streets.** Within a quarter of a mile on either side of Centre Street there are two bicycle-ways, each maintained by the state and each exclusive for cyclists. These two bicycle-ways along the Southwest Corridor Park to the east of Centre and South Streets, and along the Jamaicaaway to the west provide direct and continuous access into the center of Boston. For many cyclists, commuting along Centre and South Streets is a matter of choice, not necessity. (Appendix 20)

Further, while EOTC trumpets the problems that cyclists may encounter along the Arborway route, it fails to mention the benefit that Green Line service can bring to cyclists. Low-floor LRVs are capable of carrying bicycles. The MBTA has a bicycle policy that allows cyclists to ride on its Red, Blue, and Orange Lines. With the introduction of the full complement of Breda cars into service on the Green Line, all light rail lines will be able to allow access for cyclists. Other light rail systems, like Portland, already provide such accommodation. (Photo Appendix J)

**D. The allegations by EOTC regarding public safety are contrary to the historical record, unsubstantiated by fact, and at variance with the experience of other cities.**

In a submittal that will long be remembered for its one-sidedness and lack of candor, the arguments made by EOTC around the issue of public safety stretch the limit. In its attempt to create an issue where none exists, EOTC offends the sense of perspective and impartiality that is necessary in any truthful discussion of the merits and demerits of public decisions. EOTC raises the safety issue in the context of both the construction of a light rail facility at the Arborway Yard and the delivery of emergency services.

First, regarding the LRV facility at the Arborway Yard, the Systra Report warns: "If the LRV maintenance facility...is located at the Arborway Yard...escaping CNG could collect at the ceiling and be ignited by the overhead electrical equipment required by LR T operation...." (Systra, p. 34) This is a non-issue because EOTC knows that a CNG facility and an electric facility can exist on the same site. The issue is raised only to cause alarm in the public and weaken the case for Green Line Arborway restoration. In fact, if EOTC were to be truly candid about the issue of overhead electrical wires and CNG storage, it would have admitted that the very design that Systra criticizes at the Arborway Yard is being incorporated by the MBTA into its proposed Southampton Street garage where both CNG articulated buses and electric trolley buses will be stored. What hypocrisy!

Second, EOTC raises the issue of emergency vehicle movement along Centre and South Streets. The argument is that Green Line streetcars "will not be able to move off to the side of the road.... This could cause some delay to the emergency vehicle's response time...." (URS Report, p. 42) This is the sum total of this safety allegation. No statistical analysis, no data from other cities, nothing save two opinion letters, again unsubstantiated, from former city officials. And to increase the level of incredulity, Systra, referring to buses, chimes in: "The driver would be able to move out of the way of an emergency vehicle." (Systra, p. 22) Are 60-foot long, 8.5-foot wide articulated buses invisible or able to leap tall buildings at a single bound?

At a January, 1995, meeting held at JP Licks in Jamaica Plain under the auspices of Mayor Menino, a group of six individuals representing the business association and residents met with Deputy Fire Chief Hartnett of the Boston Fire Department among others. Chief Hartnett was asked about the matter of light rail service and emergency vehicles. In answering the question, he stated several times that **the fire department would be able to function equally well regardless of the type of transit vehicle that operated along Centre and South Streets.** As a follow-up, I asked him specifically whether there were any fire department statistics that measured the response times of fire department vehicles before 1985 when Green Line service was running and after 1985 when buses were running. He responded that he would check and report back at the next meeting. When he returned, he confirmed that he had discovered no variations in the response times of fire department vehicles before 1985 in comparison to response times after 1985.

Why is Chief Hartnett's response believable? He has served at the Jamaica Plain station and knows the street pattern. He knows the emergency travel routes that are used regularly today by emergency vehicles as alternatives to Centre and South Streets. Fire and public safety officials in other cities that operate streetcars in mixed traffic support his observations. (Appendix 21) **There is no historical evidence or data to support the claim that Arborway streetcar service will negatively affect the delivery of emergency services.** Both the 1987 Arborway Study and URS statements confirm that Green Line restoration will have no negative impact on traffic congestion.

**As for the proposed substitute, CNG 60-foot articulated buses are large vehicles that have their own travel constraints in heavy traffic.** There will be over eight hundred bus trips along Centre and South Streets each day under the EOTC bus proposal for Arborway service while there will be less than 600 LRV trips along the street. The chances of an emergency vehicle confronting a large bus are, therefore, far greater. In addition, again looking at the entire corridor, the operation of LRVs out of mixed traffic for 3.7 miles of the 5.6 mile route can only benefit traffic flow generally and emergency vehicle movement particularly on Huntington Avenue, in the Back Bay, and on Beacon Hill. Despite arguments by EOTC, public safety considerations do not demonstrate the infeasibility of Arborway Green Line restoration. As with all in-street matters, any perceived safety issues are resolvable.

A good example of a city working pro-actively to resolve these kinds of issues is Toronto. Toronto is a city with significant streetcar operations in mixed traffic. The Toronto Transit Commission has created a standing committee composed of representatives of the major public service agencies in the city. Known as the Emergency Procedures Committee, its purpose is to establish protocols and procedures that deal with issues that may arise from potential conflicts between transit and the delivery of emergency services. A copy of its charter is included in Appendix 22. EOTC and the MBTA would benefit from the example of Toronto.

**E. The 1991 agreement between the City of Boston and the MBTA to restore Arborway Green Line service demonstrates that there are no operational issues that cannot be resolved with planning and coordination between government agencies.**

On October 23, 1990, a staff summary was prepared for the MBTA Board of Directors. (Appendix 23) The summary sought the approval and authorization of the Board for the execution of an agreement to rebuild South Street in Jamaica Plain. In explaining the request, the summary stated:

The Authority has negotiated an agreement with the City of Boston regarding the restoration of trolley service on the Arborway Line and the division of responsibilities necessary to re-implement service. Consequently, no alternatives [to light rail service] are recommended.

**Following the approval of the Board, the MBTA and the City of Boston entered into an agreement to restore Arborway Green Line service. The agreement was signed on January 24, 1991.** (Appendix 24) The agreement is an example of public officials working together for the best interests of the citizens that they serve. The agreement remains not only an enforceable document, but also a promise unfulfilled. As we near the end of this administrative phase of Arborway Green Line restoration, we again turn to government officials to do the right thing.

The agreement set out the various steps that the City and the MBTA would take in order to restore the service. While specifically signed with regard to the reconstruction of South Street, the agreement addressed issues of traffic enforcement, parking, accessible LRV stop construction, loading zones, and track and railbed reconstruction. If public safety had been an issue, it would have been raised in the agreement. It was not raised because it is not a real issue.

#### **V. Claims that Green Line Arborway Restoration would place the central subway over capacity are not credible.**

In its submittal EOTC argues that the central subway is incapable of accommodating a restored Arborway Line. EOTC claims that the subway is already at capacity. Because improving Huntington Avenue headways from 8.5 minutes to 6 minutes would result in two more trains entering the Copley junction during a typical rush hour, the MBTA claims that restoration would put the subway over capacity.

Stephen Kaiser, a traffic and transportation engineer, contradicted the capacity claim. Testifying at the July 10, 2001, DEP hearing, Dr. Kaiser stated: "The evidence is that the MBTA has imposed a very low capacity constraint on the Green Line which is not historically justifiable...." Agreeing that the central subway is not at capacity, Prof. Vuchic stated: "All experts familiar with Green Line operations know that its tunnel capacity is not exhausted." (Appendix 8)

In addition to these expert opinions, it is important to recall that when Arborway Green Line service was suspended in 1985, the MBTA was forced to add additional service on the other Green Line branches. This was done in order to maintain carrying capacity in the face of the removal of Arborway streetcars from the central subway. Over time these improvements in D-Line (Riverside) and B-Line (Boston College) services have come to be viewed as permanent, but they were simply implemented to make up for the loss of Arborway service in 1985. A restored Arborway service would simply return to the service distribution that existed in 1985.

Further, even assuming for argument sake that the central subway is at capacity, which it is not, it is also important to calculate the impact of restored Arborway service on the B and D Lines. These lines operate during peak at 5-minute headways. (Appendix 4) Removing one train from each line during one peak hour reduces headways by 30 seconds. Instead of one train every 5 minutes, there would be one train every 5.5 minutes. The C Line in this scenario would not experience any headway impact at all.

Finally, the argument that the central subway is at capacity raises an issue of fundamental environmental justice. The logical result of the MBTA's subway capacity argument is that no additional service from any Boston neighborhood can ever be added to the central subway. The very neighborhoods that suffer from the highest levels of pollution and environmental degradation, like Jamaica Plain and Roxbury, are forever locked out of the subway and denied the benefits of clean electric transit service. On the other hand, electric Green Line service will only be provided to those communities where the air is already significantly cleaner. This is fundamentally unjust.

## **VI. Conclusion.**

Ten years ago in 1991 DEP enacted 310 CMR 7.36 (2)(d) mandating the restoration of Arborway Green Line service. Two years ago in 1999 EOTC submitted its first petition for substituting Green Line restoration with a CNG bus service. The 1999 petition was rightfully rejected by DEP. It was inapposite and unpersuasive.

Since 1999, EOTC has had ample opportunity to prove its case that Arborway Green Line service is infeasible. Instead it has once again provided a biased and contorted petition that is neither professional nor reliable. In so doing it has failed to demonstrate the infeasibility of restoration.

The fair question is why does EOTC continue to fail. The answer is clear. Because Arborway Green Line restoration is feasible. EOTC will never be able to demonstrate otherwise.

**After a review of the URS and Systra Reports in support of EOTC's petition for project substitution under 310 CMR 7.36 (4), DEP is warranted in rejecting the petition. Not having demonstrated infeasibility, EOTC must be ordered to restore Arborway Green Line service.** Any action by DEP other than an order to restore Arborway Green Line service would be clearly wrong, arbitrary, and capricious.

According to the September 1, 2000, Administrative Consent Order, DEP's directive to EOTC to restore the service must include a schedule for completion of Arborway restoration that includes benchmarks, milestones, and action items. In contemplating those items, the Arborway Committee requests the opportunity to provide input to DEP.