

***The Arborway Green Line:  
Why the MBTA is Wrong – Again!***



***A Review of the MBTA's Service  
Reliability and Travel Forecasts  
for the Arborway Project***

***by the Arborway Committee***  
**[www.arborway.net/LRV](http://www.arborway.net/LRV)**

**February 16, 2005**

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**Comments to:  
The Executive Office of Environmental Affairs  
The Executive Office of Transportation  
The Department of Environmental Protection**

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## **I. Introduction**

The Arborway Service Reliability and Neighborhood Impacts Report (hereinafter Impact Report) dated January 13, 2005, and the Travel Forecast for the Arborway Streetcar Restoration Analysis (hereinafter Travel Report) dated January 19, 2005, issued by the MBTA regarding the Arborway Green Line Restoration Project are the predictable result of the transit authority's long-standing goal of abandoning the Arborway Green Line. The conclusions reached by the reports are unjustified on the record, not supported by a fair interpretation of the facts, and in breach of public process.

In 2002, the MBTA at the request of the Department of Environmental Protection (DEP) established a public review process in Jamaica Plain to plan for the restoration of Green Line service. A public oversight committee, the Arborway Rail Restoration Project Advisory Committee (ARRPAC), was appointed to meet regularly, solicit public comment, review data, and provide input on the project. ARRPAC was composed of both residents and merchants, and individuals who favored and who opposed restoration.

Between spring 2002 and spring 2003, ARRPAC met regularly to discuss issues that were incorporated into the Expanded Environmental Notification Form (3/18/03). Since spring 2003, however, ARRPAC has met only twice, and since February 2004, it has not met at all. Despite repeated requests to the MBTA by ARRPAC members to convene a meeting, the MBTA refused to do so. Members were told that there was nothing to report. This was untrue.

There was much to report. During 2004, while keeping its public advisory committee in the dark, the MBTA was busily gathering materials and preparing its reports on the Arborway project in secret. The data used in developing the reports were prepared in secret, individuals mentioned in the reports were interviewed in secret, and the reports themselves were written in secret.

Having intentionally excluded its own public advisory committee from the process of developing the Impact and Travel Reports, the conclusions reached in these secret reports are no surprise. Hidden from public view and absent public input, the reports' conclusions were driven by one overarching goal—to kill the Arborway project at any cost. They are based upon half-truths, distortions, and incomplete statistical analysis. The public at large and governmental decision-makers in particular are not well served by reports such as these.

The comments that follow will demonstrate several of the many ways in which these secret reports are deceptive, misleading, and false.

## **II. Historical Overview**

From the moment in 1990 when the Executive Office of Transportation (EOT) committed with the Conservation Law Foundation (CLF) to restore Arborway Green Line service, the MBTA's objective has been the opposite: to abandon the Arborway project.

To accomplish its objective, the initial MBTA strategy was simply to apply the "Watertown solution", i.e., shut the line down "temporarily", provide initial ample bus replacement service, wait 10-15 years to allow the track and road bed to deteriorate, foster opposition in the community, and then abandon the line. So on October 24, 1997, more than ten years after "temporary suspension" of Arborway Green Line service, the MBTA without any reference to DEP or to the Central Artery/Tunnel regulatory scheme, announced with photographs in the Jamaica Plain Gazette that the permanent Green Line replacement service was to be an articulated bus service.

Aware of the December 1997 deadline for restoring Arborway Green Line service imposed by 310 CMR 7.36, the MBTA requested that DEP allow first a delay and then a permanent substitution of the restoration project. During the next four years through two sets of DEP hearings (1999 and 2001), and a full year of community meetings at the Agassiz School in Jamaica Plain (2000-2001), the MBTA attempted to prove the case for abandoning the line and substituting rail service with bus service.

Responding to the MBTA's initial showing in March 1999, DEP in a letter dated April 26, 1999 correctly noted that the MBTA had not provided information relevant to proving its case for substitution. Using language directly from 310 CMR 7.36 (4)(a), DEP noted, for example, that the regulation requires that any MBTA proposal for substituting Arborway Green Line service would have to consider Green Line service from Arborway to Park Street as the base case, not, as the MBTA considers in these Impact and Travel Reports, bus service only to Copley Square/Back Bay.

At subsequent public hearings in May 1999 and 2001, the MBTA was not able to prove its case for a substitute bus service. Ultimately, DEP issued its final order on November 7, 2001—that Green Line service is feasible and must be restored. [[See Appendix 1](#)]

Not to be deterred, however, and emboldened by a change in state administrative leadership following the 2002 elections, the MBTA has worked behind closed doors with an eager Boston city administration to accomplish once again its long-intended objective of abandoning the Arborway Green Line. The recent secret reports are the latest attempt by the MBTA to bring credibility to its already twice reviewed and rejected objective.

If the MBTA had brought to the task of restoring Arborway Green Line service the same level of energy and commitment that it has expended in seeking to abandon the service, the restored Arborway Green Line would today be a model of urban public transportation.

See full Arborway chronology on the next page.

## **Arborway Green Line Restoration: Chronology**

- 1986 Non-binding referendum vote on the state ballot favoring retention of Arborway Green Line service by 67% to 33%.
- 1987 Jamaica Plain Neighborhood Council votes to support restoration of Arborway Green Line; JP Business Association also votes to support restoration
- 1987 Boston City Council passes resolution supporting Arborway Green Line restoration
- 1988 MBTA study showing that Green Line service would increase transit ridership while bus service would result in a decrease in transit ridership
- 1988 Boston Globe editorial supports Arborway Green Line restoration
- 1989 State legislators, the City, and the MBTA reach an agreement to restore Green Line service (agreement not honored by the MBTA)
- 1990 Boston City Council passes second resolution supporting Arborway Green Line restoration
- 1991 State transportation bond bill authorizes the expenditure by the MBTA of \$10 million for construction of a light rail facility at the Arborway Yard in Jamaica Plain (money not spent)
- 1991 State Department of Environmental Protection issues 310 CMR 7.36(2)(d) as part of the State Implementation Plan (SIP) mandating restoration of Arborway Green Line service by 12/31/97
- 1993 Boston Globe published second editorial supporting Arborway Green Line restoration
- 1994 The US Environmental Protection Agency issues 40 CFR Part 52 [MA-24-1-6557] Vol. 59, No. 191 (10/4/94), page 50495, approving Arborway Green Line restoration as part of the Massachusetts SIP
- 1995 State transportation bond bill authorizes the expenditure by the MBTA of \$20 million for reconstruction of the Arborway Green Line infrastructure in Jamaica Plain (money not spent)
- 1996 Jamaica Plain Neighborhood Council renews its support for retention of Arborway Green Line service by a vote of 13 - 1 - 1
- 1997 41 Centre/South Street merchants petition Mayor to support light rail service; JP Business Association votes to oppose Green Line restoration
- 1998 MBTA moves to abandon Arborway Green Line service by asking DEP to amend regulation 310 CMR 7.36(2)(d)
- 2000 DEP issues a preliminary decision rejecting the MBTA request to amend the regulation
- 2001 Jamaica Plain Neighborhood Council renews its support for restoration of Arborway Green Line service by a vote of 14 - 2
- 2001 DEP issues final decision requiring Green Line restoration; includes project in ACO
- 2002 MBTA organizes ARRPAC; design process begins
- 2003 EOEA issues EENF Certificate supporting the restoration project
- 2004 MBTA seeks to reverse DEP's final decision

### **III. Review of the Arborway Service Reliability and Neighborhood Impacts Report**

What follows is an evaluation of three elements in the Impact Report: service reliability, emergency access, and traffic and parking. The section concludes with a consideration of viable impact mitigation measures, a consideration not undertaken in the Impact Report.

#### **A. Service Reliability**

From the outset, the Impact Report assumes that streetcars can only operate in a perfect world. Then to demonstrate that the world is imperfect, as if such a demonstration is needed, the Report goes on to posit dozens of occurrences that “could affect,” “might impact,” “have the potential to inhibit,” or “raise concerns about” service reliability. This is no surprise. Anything “might” happen. The Report’s argument is, however, that these things will invariably happen with the maximum negative impact on service. This is not credible.

Summarizing its assessment of service reliability in the chart on page 15 of the Impact Report, the MBTA concludes that restored Arborway Green Line service would not meet the MBTA’s Service Delivery Policy. This policy sets the requirement that 95% of all trips must operate within five minutes of their scheduled trip times. The chart concludes, however, that only 88% of streetcar trips would meet the policy rather than the required 95%.

What’s wrong with the chart’s conclusions?

First, of the 879 alleged trip cancellations or turn-backs, approximately 40% of them (329 trips) are referred to as “off-corridor turnbacks.” Basically, “off-corridor turn-back” means that a streetcar is removed by the MBTA from service on the Arborway branch of the Green Line because it is needed on the Riverside Line or Beacon Street. Off-corridor turn-backs have nothing to do with the operating characteristics of the Arborway corridor. So to include such a calculation on the chart misrepresents by a significant percentage the true impact of the operating environment on Arborway streetcar service. Further, as noted in the EENF (p. 3-36), the Arborway project is an environmental justice project. If environmental justice means anything, it means that underserved poor and minority neighborhoods like Jamaica Plain and Mission Hill should not be victimized by a turn-back policy that benefits wealthier suburbs like Newton and Brookline.

Second, relying on data from Green Line Operations, the chart lists 92 trips that would be cancelled or turned back because of disablements. The data apparently have been gathered from throughout the Green Line system and likely include disablements caused by the spate of Breda car derailments, and disablements of the 30-year old fleet of Boeing cars. The Breda derailments have resulted in the MBTA’s decision to cancel the contract and begin the task of contracting for the purchase of a new fleet of low-floor cars. As for the Boeing fleet, it is slated for retirement upon purchase of the new low-floor fleet. Neither the Breda nor the Boeing track record with regard to disablements is a fair

indication of disablements on a restored Arborway Line, however. Not only is it unlikely that these cars will still be in service when the restored Arborway line is opened, but it is also fair to consider that neither the Breda nor the Boeing cars have ever operated as regular service vehicles on the E-Line to Heath Street. The better measure of disablements is the Type 8 Kinki cars, which operate all E-Line service. If the MBTA had calculated disablements based on this car, the number of projected disablements would have been far lower, but the MBTA chose not to do that.

Third, the chart's conclusions assume that Green Line service will operate at 6-minute peak headways. The number of alleged turn-backs and cancelled trips is then calculated on that basis. The problem is, however, that the MBTA made it clear at several ARRPAAC meetings that its intent was to operate service at 8- or 10-minute peak headways. At these levels of headways, the number of turned back trips would be no where near as high as that purported by the chart. Also to consider is the fact that headways during evenings, weekends, and perhaps even mid-days will be longer than 6 minutes. Factoring in 6-minute headways rather than the more realistic 8-, 10-, or 15-minute headways further distorts the Impact Report's service reliability finding.

Fourth and specific to the alleged number of trip cancellations indicated in the chart, the Impact Report does not demonstrate the methodology used in converting the enumerated causes for delay into the alleged number of trips turned back or cancelled. Such an omission simply underscores the secret nature of the report. The only conclusion to be reached is that in calculating impacts on service, every alleged auto accident in the corridor whether it occurred on the tracks or not, whether it occurred on the wider stretch of the corridor along South Huntington Avenue or not, whether it required emergency assistance or not, and whether the damaged autos were able to pull off to the side of the road or not, was used in the calculation for trip cancellations. The trip calculation figure is simply not credible.

Having been less than candid in demonstrating that a restored Green Line service would not meet the MBTA's Service Reliability Policy, the Impact Report totally excludes any reference to the service reliability of the current Route #39 substitute bus service, and with good reason. It is well documented that the Route #39 bus service has one of the poorest service reliability ratings of any bus route in the entire MBTA system.

To verify the service reliability record of the #39 bus, the Arborway Committee obtained from the MBTA through a request to "inspect public records" a copy of the Route #39 Service Review (1996). As reported in that review, the Route #39 bus has a weekday service adherence record of only 43% (p. 8). Admittedly, the report is from 1996, but it was the only the service review provided to us by the MBTA. Nevertheless, it is realistically indicative of the current service, which experiences missed trips, failures to maintain headways, CNG bus mechanical malfunctions, overcrowding, and the removal of articulated buses from service in snow.

Much of the difficulty encountered by #39 bus operations is caused by its operating environment. The #39 bus operates the full 5.1-mile length of the corridor in street daily

contending with traffic along Huntington Avenue and in the Back Bay, navigating its way through approximately 50 signalized traffic intersections, and interacting with heavy downtown pedestrian foot traffic. It is little wonder, therefore, that bus commute times are increasing faster than streetcar and subway commute times and will continue to do so. This is especially true of the Route #39 bus, which the MBTA insists on running into the teeth of downtown Boston traffic. Such bus operations are bound to become a captive of that traffic. In the long run, such service is not sustainable, desirable, or environmentally effective.

It is interesting to note further that to remedy the appalling 43% service reliability rating of the #39 bus, the 1996 Service Review recommended that the MBTA simply increase by approximately 6 minutes the published trip times for the #39 bus to bring it into compliance with policy. This lowering of the standard of service on the line by increasing published trip times, however, is simply a recognition of the statistical conclusions reached in the 2004 MassINC report referenced above. Rush hour bus travel times will continue to increase at much faster rates than streetcar travel times. This will require continuing increases in scheduled bus trip times and continuing degradation of service.

Even if one were to accept the MBTA's conclusion that Arborway Green Line service reliability will be at 88%, the Green Line would provide a more reliable service to those who travel the Arborway corridor than the current Route #39 bus with its 43% service reliability rating.

## **B. Emergency Access**

In Boston, as in every city, fires unfortunately happen. They can sometimes disrupt the rhythm of life in the city. Nevertheless, fire services and streetcar services have coexisted for more than a century. Every emergency call does not mean a disruption in streetcar service and every streetcar line does not mean poor fire service. In previous conversations with fire and transit officials from Philadelphia, San Francisco, and Toronto, the message has always been that in their experience streetcar service has little or no impact on the ability of fire personnel to get to a fire. [See Appendix 2] The MBTA, however, with the City of Boston's connivance has overstated the impacts of transit and fire operations on the delivery of their respective services.

The Impact Report draws an intentionally frightening picture of the effect of restored streetcar service on fire safety. Yet the report ignores the actual historical record of fire service in Jamaica Plain. It ignores the experience of fire services in other cities. It misrepresents the number of likely in-street meetings between fire and light rail vehicles. It omits reference to current practices adopted by Engine 28 and Ladder 10 in traveling to fire calls in the neighborhood. It pulls out all the stops to make the case against streetcar service, but it does not and cannot demonstrate that fire response times will be negatively affected by restoring streetcar service to any greater extent than the effect of the current 60-foot articulated bus service on fire response times. As Secretary Herzfelder noted on page two of her 2003 Certificate for this project: "...many of these issues are not new or particular to the restoration of light rail."

Historically, the Boston Fire Department (BFD) and Arborway streetcar service have coexisted successfully. This was made very clear when BFD chose the location for its current Centre Street firehouse. In 1982, BFD decided to move out of its old fire station next to the Post Office on Centre Street. In choosing its new location, it chose another Centre Street location, across from Dunkin Donuts. During the entire process of discussing, selecting, and building on the site, streetcar service operated on Centre Street. Streetcars ran right by the front doors of the new firehouse as it was being built, as it was being dedicated, and as it operated in 1984 and 1985. [See [Appendix 3](#) for a researcher's summary of the events leading to the opening of the new firehouse.]

Was the operation of streetcars on Centre Street a problem for BFD? Apparently not, for if streetcars were a problem, would not BFD have chosen a location away from the streetcar line? Instead, however, BFD distributed flyers throughout Jamaica Plain hailing the new Centre Street location. [See [Appendix 4](#)] Commissioner George Paul expressed pleasure with the central Jamaica Plain location and said: "We are very pleased with the [new] site...." Mayor Kevin White commented that the new Centre Street fire station would "deal positively with the neighborhood needs."

Further, during the entire public process from 1992 through 2001 that led to the November 6, 2001 DEP order to restore Arborway service, the Menino administration made no public comment and submitted no public testimony in opposition to the restoration of streetcar service. Even with the creation of ARRPA in 2002 that provided a seat to BFD, the police department, and Boston EMS, no safety official claimed or argued that restoration of streetcar service would compromise their ability to deliver their services.

Yet, safety officials were willing to speak in secret with the MBTA and outside of the hearing and questioning of ARRPA. What was going on? The answer is suggested in a 1999 letter to the Arborway Committee from Denise L. Goren, then Deputy Mayor for Transportation for the City of Philadelphia. On page two of her letter she said:

"In all candor (and under the rubric of what one might call dishonor among thieves) transit managers who dislike streetcars (because it makes their work somewhat more difficult, regardless of the ridership and external benefits) are not above co-opting others, such as police, fire, or traffic officials, in expressing opposition to continuance of streetcar service." [See [Appendix 2](#)]

In addition to ignoring this historical record and the current experiences in other streetcar cities, the Impact Report overstates the extent of likely Arborway streetcar interference with emergency vehicle movement in the future. For instance, in discussing the number of fire calls answered by Engine 28 and Ladder 10, the Impact Report does not distinguish whether those calls were answered during peak transit service hours or off-peak hours, whether they were answered on Sundays or early mornings. It even does not indicate whether those calls were answered at 2:00 or 3:00 a.m., when streetcar service does not operate. The language of the Impact Report, however, is that fire calls will

always and only be made in the middle of rush hour when the corridor is gridlocked with auto traffic. A more honest assessment would have stated and considered that fire calls have come and will come a various times, often with little or no impact on traffic or transit flow.

Also, the Impact Report ignores current BFD practice in responding to calls during peak traffic periods. Not every call results in an emergency trip down Centre or South Street. A casual observer would notice, for example, that BFD in responding to calls at or near Forest Hills during rush hour will often avoid South Street altogether and travel up Burroughs or Centre Street to the Arborway and then to Forest Hills. There are alternatives to travel on Centre and South streets. Engine 28 and Ladder 10 drivers are canny, understand the impacts that traffic presents, and often with success operate around them.

Further, in discussing responses to fire calls, the Impact Report makes the basic assumption that streetcar service will operate throughout the service period in 146' two-car consists at 6-minute headways. It does so to jack up the number of potential conflicts between emergency vehicles and streetcars. Yet as already noted, stated MBTA intentions regarding their Arborway service plan contradict their own report's assumptions on these matters. The MBTA's plan of choice is to operate service at 8- or 10-minute headways during rush hour. Compared with the suggested 6-minute headways, the more likely 8- to 10-minute headways reduce by 25% to 40% the possibility of a streetcar being on the street simultaneously with a fire engine. In addition to these more likely headways, it is also more likely that the MBTA will not operate two-car consists throughout the entire service period. It will operate single cars during early mornings, evenings, perhaps mid-day, and during much of the weekend. This is historical MBTA practice and it can be observed in current operation along other Green Line branches.

Finally, in focusing entirely on Engine 28 and Ladder 10 in Jamaica Plain, the report omits any reference to other fire stations in the corridor and the impact on those stations of restored Arborway Green Line service. One of those stations houses Engine 37 on Huntington Avenue in Roxbury. This station is greatly affected by Route #39 bus traffic and other traffic along Huntington Avenue, especially at the intersection with Ruggles Street. Because of heavy traffic volume, Engine 37 has a poorer response time record than does Engine 28 in Jamaica Plain. For example, while the average response time for Engine 28 as reported in the Impact Report is 3.5 minutes, statistics indicate that response times for Engine 37 average about 3.8 minutes with 4.0-minute response times during morning rush hours. [See Appendix 5—fall 2000 figures]

What would be the positive impact of removing all 300 daily Route #39 articulated bus trips from Huntington Avenue—impacts on general traffic flow, on roadway wear and tear, on Engine 37's response times? The Impact Report is intentionally silent on those impacts.

The bottom line is that, while it is true that streetcars cannot pull to the side of the road, it is also true from the historical record that streetcars and fire trucks have coexisted

successfully on Centre and South streets in Jamaica Plain. The report's projected number of incidents of streetcars and fire trucks actually meeting in-street is greatly exaggerated. And the report's conclusion that every meeting will result in an interference either with the delivery of transit service or the delivery of fire service is simply not credible.

### **C. Traffic and Parking**

#### 1) Traffic

There is no question that traffic is an issue in Jamaica Plain as it is elsewhere. The Impact Report would lead one to conclude, however, that since 1985 when streetcars last operated on Centre and South streets, traffic has increased so much that restored streetcar service would not be viable. Again the report distorts the facts, as a comparison of traffic counts from 1987 and 2001 indicates.

The 1987 MBTA Arborway Study (p. E-1) provides information that allows for such a comparison. It reviewed traffic along Centre and South streets. 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 Centre or South streets. The intersection remains today the most problematic. The consultants for the 1987 Study 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 the MBTA's 2001 URS study of the Arborway corridor, it provides a good comparative measure of traffic volumes on Centre Street in the mid-1980s and the early 2000s.

In the 1987 Study (Figure E-1), Centre Street vehicle counts south of Green Street toward Harris Street were 1,147 between 4:00 and 5:00 p.m. In 2001 Study (p. 8), vehicle counts in the same area were 1,156 between 5:00 and 6:00 p.m. The measure shows no significant difference in traffic volumes between 1987 and 2001.

Because the hours noted were slightly different, to confirm the accuracy of the comparison between the 1987 counts and the much more recent counts, 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). In both instances schools were still in session.

During the entire four-hour period on June 21, 2001, the number of vehicles entering the intersection from all four directions totaled 4,925. During the same time period, the 1987 Study showed a total of 4,864 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 the following table:

Entering Intersection from	1987 Vehicle Count	2001 Vehicle Count
Centre Street Northbound & Southbound	3,857	3,631
Green Street Westbound	1,007	1,214
Myrtle Street Eastbound	22 (est.)	80
<b>Total Intersection Vehicle Count</b>	<b>4,886</b>	<b>4,925</b>

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." (1987 Arborway Study, Table 5-4).

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 at the Agassiz School, 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 the early 2000s.

## 2) Parking

The Impact Report concludes that a total of 111 parking spaces will be lost because of the restoration of streetcar service. This is clearly wrong.

First, of the 111 spaces, the report identifies 8 spaces as "illegal spaces." If a space is an illegal space, it is not a space. You cannot lose something that does not exist.

Second, of the remaining 103 spaces, 25 spaces are to be lost as a result of rebuilding the street to meet both ADA and MUTCD requirements (Impact Report, p. 16). The fact is, however, that the City of Boston intends to rebuild the street whether streetcars are

restored or not. This means that in keeping with code requirements, the 25 spaces identified as lost because of streetcar restoration will be lost when the street is rebuilt even if bus service is retained. These surely cannot be counted as lost as a result of streetcar restoration.

As for the remaining 86 spaces, these may indeed be lost because of streetcar platform location and construction. While losing these spaces, however, there is potential to gain other spaces by eliminating several redundant bus stops along the route and requiring buses to stop at the same stops used by streetcars. This would reduce below 86 the number of spaces lost. In fact, on South Street from Sedgwick Street to Forest Hills, if all bus stops were consolidated with streetcar stops, there would actually be a total increase of on-street parking.

Consolidation of bus and streetcar stops is not only possible, but it is also desirable for intermodal transfers between streetcar service and the Routes 38, 41, and 48. For the purposes of the Impact Report, however, the MBTA assumes that these stops will not be consolidated. Why?

Over and above such detail, however, the Impact Report indicates that the total existing parking occupancy rate on Centre and South streets, and South Huntington Avenue is currently 71% (p. 17). This means that on average only 71% of all available parking spaces are occupied. There is, therefore, excess parking along the corridor. In fact, even if all spaces alleged by the MBTA to be lost are actually lost, the parking occupancy rate on South Huntington Avenue will be only at 85%, while the occupancy rates on Centre and South streets will be appreciably below 85%, which ARRPAC consultants indicate is commonly accepted as the measure of capacity.

One additional point related to parking is worthy of note. The results of a 2003 survey of Centre Street shoppers conducted by Centre/South Main Streets indicated that of those surveyed on the street, only 21% arrived by automobile. While one might expect that there is more demand for parking in the business district, the results of the Centre/South Main Streets' survey are remarkable. (See Appendix 6)

### 3) Bicycles

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 this 1.5 mile stretch of the line, however, there are only five locations where cyclists will need to exercise caution. Yet even in these locations, there is adequate room for cycles to pass between the platform and the rail. As reported in the Jamaica Plain Gazette (August 15, 2003, p. 19), several local cyclists performed a simulated test to gauge conditions for cycling at stop locations along the restored streetcar route. After conducting the simulation it was reported that the cyclists were satisfied that there was adequate room for cycling. Jeff Ferris, one of the cyclists involved in the simulation, said: "It was much easier than I expected it to be. It was bikeable." (See Appendix 7)

Also, there are alternatives to Centre and South streets for many cyclists. 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 Jamaicaway to the west of Centre Street and South Huntington Avenue 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.

Further, while the Impact Report presents 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 low-floor 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.

#### 4) Deliveries

Regarding commercial deliveries it is important to recall that streetcar service in the 1980s was perfectly compatible with retail activities. Retailers understood that deliveries could not impede streetcar service. As a result 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 to emergency vehicles and other traffic caused by delivery trucks that double-parked. Even today, several merchants continue to use rear access for deliveries, and others still arrange for deliveries before 9:00 a.m. when the business district is relatively free of parked cars. A regime that encourages rear access and early morning deliveries would serve all interests who have a stake in Centre Street. Such a regime can once again become the norm.

#### **D. Mitigation**

It is remarkable that an analysis of impacts on transit operations caused by environmental factors would not consider measures to lessen those impacts. There are several that have merit and that should have been included in the Impact Report.

- 1) Emergency Procedures Committee—The Toronto Transit Commission (TTC) operates significant in-street light rail service. It long ago established a committee composed of officials from the transit authority and the various Toronto emergency services to develop operating protocols, troubleshoot, and conduct training sessions for their respective drivers. The objective is to assure that streetcar operators and emergency services personnel have procedures in place that allow them to interact on the street with minimum impacts on transit and emergency service. (See Appendix 8)

- 2) Community Advisory Committee—To assure that streetcar service operates to the advantage of all, a community advisory committee would allow for a regularized channel for residents, merchants, and transit users to discuss issues relating to Arborway service with transit and emergency services officials.
- 3) “switchbacks”—In exaggerating the number of potential service turn-backs, the report cites Heath Street as the only location where service would be turned back. Yet, it is possible with a simple in-street switch configuration to allow turn-backs at almost any point along the line.
- 4) light rail vehicle design—Throughout the Impact Report, the MBTA refers to the 146-foot length of a two-car consist. Why does each car have to be 72 feet long? Buses come in different lengths, so do streetcars. In designing the next fleet of soon-to-be ordered low-floor streetcars, opportunities abound for varying the lengths of these cars so that they are amenable to the greatest extent possible to their operating environments. Who says one car fits all?
- 5) off-street parking—If on-street parking were to be severely affected by restoration, a point which the report clearly does not prove, four off-street locations recommend themselves for potential improvements in parking availability. Either through decking, eminent domain, or leasing, additional residential and commercial parking could be obtained at the Blanchard’s lot, the Galway lot, the Curley lot, and the St. Thomas Church lot.
- 6) parking bans—Many merchants are at their shops between 6:00 and 9:00 a.m. At that time of the day, the demand for parking in the business district is minimal. It would be easily possible to ban all parking during that period on the in-bound (northbound) side of Centre Street to accommodate commercial deliveries and to increase rush-hour travel maneuverability.
- 7) bus stop consolidation—As already discussed, this is easily accomplished.
- 8) MBTA policing—With the reestablishment of the Arborway rail line, reason to increase MBTA police presence in Jamaica Plain would exist. Such a presence in patrol along the service route would provide better enforcement not only to remove obstacles to service, but also to assist generally in traffic movement and protection.

In addition to these possible long-term mitigation measures, a number of construction mitigation measures can also be pursued. An informal subcommittee of ARRPAC composed of one merchant and one resident suggested a series of such measures. These can be found in [Appendix 9](#).

## **IV. Review of the Travel Forecasts for the Arborway Streetcar Restoration Analysis**

The Travel Report consists of seriously flawed methodology in estimating future ridership once the Arborway streetcar line is re-established, and it therefore provides an inaccurate result in terms of the environmental benefits and cost-effectiveness of this project. The study fails to properly identify the major travel and socioeconomic assumptions of the route, uses questionable modeling methodology, and reports an inaccurate travel demand analysis. Contrary to the findings of this report, restoration of the Arborway streetcar line through Jamaica Plain will actually result in significant ridership increases on transit, important environmental benefits, and provide the citizens of the Boston region with a highly useful and cost-effective transit improvement.

Restoration of streetcar service to Jamaica Plain by extending the E line of the Green line involves the consolidation of two transit services that are parallel and duplicate each other on major sections of the route. By combining two transit modes (the #39 bus from Copley to Forest Hills and the E-line train from Park Street to Heath Street) into one superior service, rail restoration will result in improved headways on the line, the elimination of the need of a surface-to-subway transfer, and provide greater comfort and speed of travel for transit riders and automobile users in this region. Because of the improved capacity of the system and reduced travel delays in the corridor, there will be an increase in overall transit ridership and a reduction of automobile use. Removing cars and buses from the corridor will not only result in significant reduction of pollutants in these city neighborhoods, but it will lead to more efficient transportation and reduced traffic congestion for those who continue to drive their cars in this area.

In predicting ridership on the restored Arborway streetcar line, the CTPS was tasked to provide a travel demand analysis. To avoid the possibility that wrong or biased assumptions were used, the DEP and the MBTA should have had an independent outside consultant provide this ridership analysis. However, it is important to recognize that this type of analysis has no bearing on the requirement that Arborway streetcar service must be restored as a SIP commitment, and that rail restoration is a legally mandated fact.

### **A. Methodological Flaws in the Travel Report**

#### **1) Input Data is flawed and limits benefits of streetcars while favoring automobiles**

By using input data that favors car use compared to transit utilization, the CTPS *Travel Forecasts* study provides an inaccurately low result for ridership gains that will be created by streetcar restoration. In estimating automobile traffic use, the consultants from VHB develop two sets of roadway networks to be used in the travel demand model. One of these assumes traffic improvements such as better geometric design and signal coordination (page 2), thus creating an advantage for automobile travel in the corridor and thereby resulting in less demand for transit. However, the ridership analysis does not assume any improvements in Green line operations, even ones that are currently being implemented or ones that will invariably be a component of restored service. For example, enhancing transit operations in

the corridor, there will be improved boarding and alighting from ADA-accessible platforms, all doors on inbound service will likely open (as a “proof of purchase” system of fares is implemented), and there may be signal coordination and prioritization. None of these improvements are considered in the *CTPS Travel Forecasts* analysis.

In looking at the fare system for transit as a determinant for ridership, the model does not take into account that transit passes are used, and that these transit passes are often subsidized by employers as much as 30% to 50% of the cost. If this were to be considered, a higher ridership would result in the model. Also, trip times for rail are inflated in the Forest Hills to Heath Street portion of the route. The model assumes a trip time of about 14.4 minutes for rail service compared to 12 minutes for the Rt. 39 bus. This is an unreasonably high figure, as there will be about half of the stations for rail as there are for the bus (8 rail stops versus 16 bus stops). Also, dwell times will be lessened, since the streetcars will not need to weave in and out of traffic from their stops, there will be improved platforms, low floor cars, and fewer stops. With a two-car streetcar, there will be six doors open for boarding, representing increased accessibility to the streetcars over buses and leading to shorter travel times from Forest Hills to Heath Street for the streetcar compared to the bus.

Rail restoration is wrongly penalized in the *Travel Forecasts* analysis because the study fails to consider many of the feeder bus routes that integrate with the streetcar line. For example, the Rt. 21 and 31 bus from Mattapan, the Rt. 34 and 34E from Walpole and Dedham, the Rt. 40 and 50 from Hyde Park, the Rt. 35, 36, and 37 from West Roxbury and Roslindale, as well as the Rt. 51 from Brookline and the Rt. 16 from Dorchester all intersect with restored Arborway streetcar service at Forest Hills. These routes would likely see major increases in ridership, both for people traveling to Jamaica Plain and for those going to the Longwood Medical Area. Ridership increases on these feeder routes should be included in the transit analysis, and increased ridership that would be stimulated on these buses would also reduce car trips in all of those communities. Future travel routes from this line to a new Green line extension to Somerville (via Lechmere) are also not considered, even though this new transit line will be likely implemented within a decade.

In terms of how rail integrates with the roadway geometry along the corridor, the streetcars will run in a dedicated right-of-way with street crossings from Brigham Circle to Northeastern and in a subway from there to Park Street. With restored streetcar service, there will be no need for buses to parallel the route, and the elimination of about 300 daily bus trips will result in significant air quality improvements and reduced congestion benefits. Traffic flow will improve in the corridor and congestion and pollution will decrease. In the Forest Hills to Heath Street section, there will be no adverse effect on traffic from streetcars compared to buses. Since there will be fewer stations and slightly fewer trips on a new high-capacity service, there will actually be less stopping and starting of transit vehicles, and traffic flow will be safer and flow more smoothly. With a signal prioritization system implemented, cars that are following behind a streetcar will likely see a reduced travel time, as drivers will be able to travel faster through the corridor.

## 2) Incorrect socioeconomic inputs underestimate streetcar use

The CTPS *Travel Forecasts* report uses MAPC population and job forecasts that do not take into account the tremendous increases in job growth for the Longwood Medical Area. The demographic assumptions fail to take into account all of the growth happening in the Longwood Medical Area, as the Boston Globe pointed out on January 31, 2005. The Globe noted:

- (a) The Longwood Medical area is a 213 acre space
- (b) Merck company completed the 300,000 sqft. Scolnick Center last year
- (c) Mass College of Pharmacy opened a 6 story \$93 million building with 4 floors of student housing
- (d) Research space of 1.1 million square feet is being planned, called Longwood North and Blackfan research centers
- (e) The Children's Hospital is building an expansion of its main clinical building
- (f) The Karp Laboratories recently opened, a 295,000 sq ft. tower

And all of those folks who work there will need transportation to get there!

The *Travel Forecasts* study underestimates employment growth and travel in the corridor, again penalizing ridership on the restored Arborway line. Also, employment growth must be measured along the entire corridor, since riders on Arborway streetcars will be attracted to growth along the entire corridor, and not just in Jamaica Plain.

The *Travel Forecasts* study calculates ridership based in part on the percentage of transit-dependent households, the number of cars owned by households, and the incomes of people in adjacent neighborhoods. There is an assumption that people with low incomes and without cars are the primary users of transit. Evidence from our own Boston area and other cities proves that given excellent service, even wealthy people with several cars in their driveways will leave their cars behind to ride rail. They won't leave their cars behind to ride a bus and be stuck in traffic!

## 3) Travel Forecasts study fails to account for preference within a mode choice

The ridership analysis describes a model methodology (page 11) that consists of four steps, one of which is "mode choice." Mode choice describes the available modes of travel, such as walking, driving, and using transit (page 16). However, the methodology does not differentiate between different types of transit that exist within a mode, such as differences in transportation use between rail transit and bus transit. This is an important flaw in the methodology of the study, since recent and historical experience has shown that there is a strong preference for rail over buses, especially for "choice" transit riders (those who are not dependent on transit). If all other factors are kept the same, such as travel time, population and employment data, and headways, people are much more likely to use a rail-based mode of transit over a bus-based form of transit. This well-observed phenomenon has been termed the "Sparks effect," since people prefer electric rail over rubber based buses. Generally, a 30% to 40% increase in ridership is seen when a bus route is converted to rail. This study fails to take this important factor into account.

#### 4) Incorrect and outdated travel assumptions are used

The CTPS *Travel Forecasts* analysis uses many outdated figures for costs and travel patterns. The data for trip attractions and travel data is from 1990-1991 (page 15), which fails to factor the tremendous growth and changes that have happened in the entire corridor over the past 15 years, such as development at Northeastern University, the Prudential Center, and the Longwood Medical Area. For “trip productions,” the model calculates the number of home-based non-work trips only by the number of vehicles per household, thus not accounting for walking and transit-based trip production by households that do not own a car or choose to not use their car for non-work related trips (page 12). In calculating “trip attractions,” the study excludes “non-motorized trip ends” (page 15, paragraph 5), thereby excluding walking and bicycle riding as a transportation mode in this corridor. Therefore, walking to access transit was not considered for calculating mode choice coefficients for work based, shopping, or social trips (Tables 9 and 10, pages 21 and 22). Since transit users in the Jamaica Plain corridor would be more likely to walk to transit, rather than drive to transit, excluding “non-motorized trip ends” from this analysis unfairly portrays transit use by people in this corridor. Finally, in this section of the report, transit users are penalized by “path building conventions” that assign a “transfer wait time” factor of 4.0, meaning that waiting for transit is 4 times more burdensome than spending a minute riding in transit. However, there is no such value assigned for automobile drivers who are stuck in traffic and experience travel delays. For people driving cars, the CTPS *Travel Forecasts* analysis considers being stuck in traffic for one minute the same as driving 60 mph for one minute in terms of travel time. Transit trip tables are based on outdated figures from 1994 MBTA boarding counts, again underestimating current rail use.

In assigning mode choice, several other faulty assumptions are made which ultimately lead to making automobile travel more likely and result in inaccurately low transit utilization. One such incorrect assumption is that “terminal time,” which is the time needed to park and unpark a vehicle, is presumed to be from one to five minutes. This time allotment is too short, since many people who park in the Boston CBD or in the Arborway corridor (Longwood Medical Area, Northeastern, etc.) spend much longer times parking. As an extreme example, but one that is prevalent in this corridor, employees at Brigham and Women’s Hospital park at off-site lots (Chestnut Hill, Boston Medical Center, etc.) and are then shuttled to the hospital. For them, “terminal times” can be 30 minutes in each direction!

The *Travel Forecasts* study assumes incorrectly and grossly underestimates that auto costs are 9.8 cents per mile (using 1991 dollars). These costs are unrealistic, and federal and state sources often use figures such as 40-50 cents per mile for auto costs (see Table below). Parking costs from the 1991 survey are used and are wrongly assumed to remain constant over time. Garages in the Longwood Medical Area routinely charge about \$300 monthly to park. Costs for auto travel are minimized further by dividing them by occupancy rates for shared rides. In such a way, the costs of driving are marginalized compared to the costs of transit, which skews the data to show low ridership increases in the restored Arborway streetcar line.

Cost of Owning and Operating Automobiles, Vans and Light Trucks (Cents per Mile)								
Vehicle Size	1981	1984	1991	1996	1998	2001	1981-2001	1996-2001
Subcompact	18.9	22.7	28.9	32	31.3	32.2	70.40%	0.60%
Compact	21.4	23.3	29.5	35.8	35.6	42.3	97.70%	18.20%
Intermediate	23.8	27.8	33.4	44.3	44.3	46.9	97.10%	5.90%
Full-size	26.6	30.6	37.9	46.3	49.2	51.1	92.10%	10.40%

Source: Federal Highway Administration-Our Nation's Highways (total costs over 5 years, based on 70,000 miles; includes depreciation, financing, insurance, registration fees, taxes, fuel maintenance and repairs)

### 5) Biased and negative language

The *Travel Forecasts* study uses negative terminology in describing the Arborway rail restoration project, thereby creating potential bias on the part of the reader. The study notes that rail restoration will “divert” bus trips and “shift trips” from one mode to another, and implies that streetcars will have an impact on “competing buses” (page 27). This negative language serves to create an impression that rail restoration will adversely affect other public transit modes, whereas it will actually have a beneficial effect on the entire system.

The *Travel Forecasts* study minimizes the importance of transit in this area (page 26, table 18). By comparing transit trips to auto trips in the entire eastern Massachusetts region, even where there is no transit available, the study reports a transit utilization rate of about 10%. This implies that transit is a small component of the overall transportation system in the Boston metropolitan area, thereby minimizing its importance. Transit utilization should be measured specifically for this corridor and the subregions of the city served by this line, in which case a much higher percentage will be found. The positive qualities of transit and the benefits it brings to peoples’ lives should be celebrated and promoted, which this study fails to do.

### **B. False Conclusions on Ridership and Utilization**

Because it uses inaccurate, outdated, and biased inputs for a modeling system that favors automobile use, the CTPS *Travel Forecasts* analysis for the Arborway corridor ultimately generates incorrect figures for streetcar utilization on this line. The numbers of new riders and potential tremendous growth in transit utilization are wrongly minimized by this report.

Presently, there are 21,490 inbound boardings on the E line from Forest Hills to Copley (Table 19, page 27). The Rt. 39 bus has only 8,800 daily inbound boardings, even though it runs the length of the corridor from Forest Hills to Copley station. Even though the bus currently has better service frequency than the train, a much greater number of people take the train rather than the bus. The CTPS *Travel Forecasts* analysis predicts a 6% increase in transit boardings in the corridor from now until 2010, which itself is an underestimate, considering the massive

growth in development that is in progress or planned. The study then predicts that improving service in the corridor by extending the light rail line to Forest Hills would result in 31,920 boardings compared to 32,160 boardings if the current train/bus situation is continued. Therefore, the study implausibly purports that ridership in the corridor would actually decrease if an improved Green Line service were implemented! This is clearly inaccurate. A one-seat ride, with faster travel times, on a high capacity system, with new ADA-accessible platforms and low floor cars cannot result in lower transit use than the corridor sees now. As previously noted, these figures also do not take into account the multiple bus lines that will see increased use as feeder routes for the rail line, such as the Rt. 34 and Rt. 21 buses in particular.

The station level boarding results are similarly inaccurate and underestimate the number of streetcar boardings. The study assumes that there will be only a 0-3% increase in boardings by 2010, again not taking into account the massive growth in the corridor. With all the new development happening at Longwood, Copley, and elsewhere, is it not reasonable to assume that there will be increased boardings in the Brigham to Copley section of this line? To have an idea of increased utilization of this line, one needs only to look at CTPS data from 1995 and compare it to data for the 2003 base year, as reported in this analysis. For many stations, inbound boardings alone have approached or surpassed boardings in both directions from 1995. A conservative estimate would predict a 5-10% increase in boardings along this route in the next few years.

Station	1995 CTPS Boardings (both directions)	2003 CTPS Boardings (inbound)
Copley Square	14,758	8,210
Prudential	1,446	1,530
Symphony	1,623	1,420
Northeastern	3,007	2,360
Museum	1,503	1,420
Longwood	2,500	2,600
Brigham	1,846	1,910

The figures for boardings in Jamaica Plain are similarly grossly underestimated (Table 20, page 30). In many cases, the numbers for station boardings for the restored streetcar line are less than current number of inbound boardings for buses, in spite of all the aforementioned benefits of the extended Green Line. For example, the CTPS *Travel Forecasts* study predicts 200 daily inbound riders on streetcars in 2010, compared to the 216 daily riders who currently board the Rt. 39 bus. At Perkins Street, the study predicts 150 daily inbound riders on streetcars in 2010, compared to 423 daily riders who currently board the Rt. 39 bus. When one considers that stations for the streetcar will be consolidated, thereby resulting in riders from two adjacent bus stops boarding the streetcar at one stop, the predictions for streetcar use are unjustifiably low. At the Jamaica Plain Center station, the study predicts an inbound ridership of 600 people, compared to the 743 people who currently board the Rt. 39 bus at the two adjacent stations. It is clear that this figure is underestimated. For comparative purposes, the JP Center station has similarities to Coolidge Corner on the C line (3,449 daily boardings) and to Newton Centre on the D line (1,749 daily boardings). It would be useful to equate boardings at these two stations to JP Center because of the similarities of the surrounding areas to the center of Jamaica Plain.

In the assessment relating to air quality, there are several important omissions in the CTPS *Travel Forecasts* study. The air quality report does not specifically look at point-of-service pollution that is caused by buses. In its analysis, the study handles the pollutants emitted by the MBTA bus system off-model, but does not find that the removal of 300 buses from the streets of Boston have any environmental impacts. It then concludes that changes that occur in emissions between no-build (maintain Rt. 39 bus) and build models (add streetcar, eliminate bus) are constant and based solely on the reduction of automobile trips from either option. Therefore, the CTPS *Travel Forecasts* study fails to account not only for local bus pollution and its effects on air quality, but it also does not take into the account air quality improvements that will result from removing hundreds of buses from the often-congested streets of central Boston. It does not consider the reduction in automobile congestion that removing these buses will lead to, which will directly improve local air quality. By reporting all of these figures on a regional basis, it dilutes their importance, since even a large source of pollution will have only a minimal effect if spread over a wide-enough area.

Also, the *Travel Forecasts* study does not report on an important product of pollution that results from buses and wheel based transport, which are small particulates (PM 10 or less). Small particle pollution from the combustion of organic materials is an extremely serious health threat -- it poses much more of a danger to human health than present levels of other common air pollutants such as ozone, sulphur dioxides and carbon monoxide. Persons with existing lung and heart problems are particularly at risk, especially if their local environment is strongly affected. These occur as a result of sulphur and nitrogen oxides forming mainly ammonium sulphate and nitrate particles by reaction in the atmosphere with ammonia. Such particulates are 'transboundary', in that they can be generated and distributed quite evenly over large areas and capable of drifting large distances. Because of their small size, these particulates cannot be blocked from entering the lungs by the human respiratory filtering system, and these substances can then cause harm.

### **C. The Summit Analysis and Cost-Utility Figures are Wrong**

The CTPS *Travel Forecasts* study concludes (pages 32-35 and Appendix A) with a “Summit Analysis,” which is a calculation of user benefits related to costs for Arborway rail restoration. Again, the analysis uses incorrect input data and the results therefore underestimate the utility of streetcar restoration. The parameters for assessing automobile utility (page 32) do not reflect various real costs associated with car travel, such as the actual time it takes to park a vehicle and the subsidized high costs of roadway repairs and policing of highways. The costs of parking in Boston must be calculated, including the costs at the destination and the costs or garaging a car at home. The model fails to take into account the benefits to car drivers of having more people take transit, especially in terms of reduced roadway congestion.

In terms of the actual calculations, the CTPS *Travel Forecasts* study overestimates the costs of the Arborway restoration project, both the capital and operating costs, and it underestimates the user benefits. If the correct input data were used in calculating cost effectiveness, the Arborway rail project would likely receive a high rating, one that is less than \$10 per hour of user benefit. For example, on Table 22 in the Appendix, the *Travel Forecasts* study

inappropriately assesses a capital cost of \$23 million for street reconstruction in the corridor. Since the street will need to be reconstructed no matter what, this cost cannot be borne by the streetcar restoration project and should instead be considered a part of the City of Boston's routine roadway improvement budget.

The CTPS *Travel Forecasts* study wrongly factors in a substantial cost of \$37 million for the purchase of light rail vehicles, which is based on the need to purchase 16 additional light rail vehicles to run the service. Currently, the Green Line peak fleet requirement is 149 cars. If 16 additional cars are needed to run Arborway service, that would result in the need for 166 cars for the system. However, the MBTA has 118 Kinko cars and plans to have 100 accessible cars (some of which are the already-purchased Breda cars). Therefore, even accounting for a 20% spare ratio, the MBTA already has an adequate number of light rail vehicles and will not need to purchase any additional ones. Alternatively, the capital cost of rail vehicles (\$37 million) should be apportioned to all four segments of the Green line, and not just for the Arborway project, since any purchase of new cars will benefit the entire system. Finally, the savings from not needing to implement buses should be subtracted from the capital budget for this project, since buses will not need to be purchased or can be reassigned to other lines when rail restoration is completed. Therefore, the capital costs of this project should be under \$60 million (not \$94 million). If comparative costs are used from projects done in other cities, this figure becomes even smaller. For example, Philadelphia recently reconstructed its Girard Avenue line at under \$60 million for 8 miles. The Arborway reconstruction project, which at two miles is only one-fourth the length of the Philadelphia project, should cost much less than that.

Tables 23 and 24 calculate the operating costs of providing Arborway service, considering the additional cost of extending streetcar service for 2.5 miles versus the savings benefit of eliminating the Rt. 39 bus over a route of 5.1 miles. The first inaccuracy is that the restored segment of the Arborway rail route is 1.9 miles, not 2.5 miles, which would then reduce the figures by 25%. Both the MBTA's *Arborway Alternatives Analysis* (Systra Consulting, 2001, page 12), and the MBTA's *Analysis of Restoration of Light Rail to the Arborway* (URS Consultants, 2001, page 7) confirm that the length of the restored streetcar line is 1.9 miles. The second fallacy is that the costs of streetcar service are calculated as if entirely new service with new operators will be used for the restored route. In fact, the same operators who run light rail cars from Park Street to Heath Street will continue to run the trains to Forest Hills, thereby reducing the labor component of costs to only the additional cars running at any given time over the route. Therefore, the operating costs of about 5 additional streetcar trips per hour (at peak times) should be considered as additional costs of this project, and these should be factored for less than 2 miles of the restored route.

When corrected factual numbers are used in the equation for cost effectiveness, the Arborway restoration project scores extremely well, having a Cost Effectiveness rating of about \$9, which would rank it "High" from the FTA. This would make the project eligible for Federal funds as a New Starts submission. This number is derived from the sum of Capital costs (actual annualized cost is \$6 million) and Operating costs (\$3.2 million to run the trains, then subtract \$4.9 million savings from eliminating redundant buses) divided by the User benefits figure (which is 0.5). This User benefits number is approximately double the figure used in the CTPS

analysis, thereby reflecting the real utilization improvements engendered by this line because of ridership increases. These ridership increases are a consequence of improved travel times in the corridor, a more comfortable ride with frequent headways, new platforms and other improvements, and reflect actual socioeconomic factors in the corridor.

#### **IV. Conclusion**

As demonstrated, the conclusions reached by the Impact and Travel Reports are unjustified on the record, not supported by a fair interpretation of the facts, and in breach of public process. Streetcar restoration to Jamaica Plain will provide a superior transit service that will result in reduced travel times and increased transit ridership. Green Line restoration will lead to environmental benefits to the entire corridor and region, and the implementation of a restored light rail route will result in reduced automobile utilization. Arborway streetcar restoration will be a benefit to the residents and merchants along the entire corridor. It will reap significant increases in ridership while costing comparatively little. Yet, a reading of the MBTA reports discloses none of this.

For example:

While overstating the case with regard to the negative operational impacts along the Jamaica Plain portion of the corridor, the Impact Report makes no calculation for the positive impacts on traffic circulation, parking, and emergency access that restored Green Line service and the consequent removal of approximately 300 daily in-street bus trips would bring to the Medical Area, Huntington Avenue, the Fenway, and Back Bay.

By calculating operating, maintenance, and other MBTA costs on a per mile basis, and by insisting that the Arborway corridor is only 2.2 miles rather than the actual 5.5 miles, MBTA costs for Green Line restoration are artificially inflated in the Travel Report while bus costs based in the report upon a 5.1 mile corridor from Arborway to Back Bay Station create the false impression that bus service is more cost effective.

In selecting the cost effectiveness ratio (CE) for the project, the Travel Report relies upon the false bus cost factor as the numerator and several user benefits as the denominator; the user benefits that the report considers, however, exclude the streetcar's faster travel times and the significant roundtrip surface fare reduction from \$1.80 to \$1.25 that would result from streetcar restoration, both user benefits.

In calculating ridership impacts to 2010, the Travel Report does not consider available data that shows significant increases in average "bus and trolleybus" commute times in Massachusetts versus much smaller increases in "streetcar and subway" commute times. According to MassINC's 2004 report "MASS.commuting", while streetcar commute times between 1990 and 2000 increased by only 9.9%, bus commute times increased significantly by 21.3%. As this trend continues, commuters will be less inclined to use bus transit, for even the increase in automobile commute times, 18.1%, were shorter than the bus times. Ignoring these trends and assuming constant travel times for the period up to 2010, the Impact Report skews ridership projections against light rail and presents a false picture of future bus ridership.

In calculating air quality impacts, the Travel Report does not consider the reassignment of the 18 articulated buses CNG buses that currently serve the Arborway route; yet the reassignment of these buses to routes like Route #1 or Route #77 would add significant transit capacity to those heavy ridership corridors resulting in positive impacts on air quality and ridership;

Also with regard to reassigning the 18 articulated buses, the Travel Report does not consider the capital cost savings to the MBTA that those buses represent in converting other lines to newer buses without having to make additional new bus purchases.

In these and in other respects, had the MBTA met its obligation to convene and consult with its public advisory committee, and to discuss the reports as they were being prepared, is there any question but that these and other issues would have been raised? Is there any question but that the conclusions of the Impact and Travel Reports would be different?

A fair review of the Impact and Travel Reports, therefore, shows that they are flawed and biased. They contain significant errors, fail to utilize correct input data, selectively omit necessary information, and use nuanced and slanted language throughout. They do not contribute the necessary level of objective and reliable information needed by public policy makers seeking to make sound decisions. They should be discounted.

The decision to complete the Arborway Green Line restoration project is a battle of truth versus disinformation. Restoration of streetcar service in the Arborway corridor will be one of the most cost effective and environmentally sound transit projects in the Boston region. DEP should and must reaffirm its determination to see the line restored.

*To view appendix, visit*  
<http://www.arborway.net/lrv/doc4.html>