Beyond Alewife: Revisiting Transportation Expansion in Arlington, MA

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Abstract

Following decades of disinvestment and increasing congestion driven by auto-centric transportation policy, public transit is recapturing interest across the country. This national story exemplified by Arlington, Massachusetts. In the 1970's, the MBTA proposed to extend the Red Line through this Boston suburb, but was ultimately halted by powerful local coalition. Despite an abundance of primary documentation, the story of the Red Line extension in Arlington has seldom been told comprehensively. This thesis synthesizes these historical sources and identifies culminating factors which led to the extension being opposed among residents. To provide contemporary relevance, this thesis explores the prospect of a contemporary extension by evaluating generational attitudinal change and analyzing rapid transit suitability. Principal methods include a literature review, interviews, a case study, and a spatial analysis. This research culminates with a synthesis of past and present conclusions which describe the future feasibility of rapid transportation in Arlington.

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Chapter 1: Introduction

National Context

"Cities, states, and metropolitan areas across the United States are looking to invest in a range of public transit projects in order to connect people to jobs and economic opportunity, reduce greenhouse gas emissions from vehicles, and shape development patterns" (Aevaz et al. 2021).

This contemporary affirmation of the benefits of public transportation was not widely espoused 50 years ago, when car travel and highways reigned supreme. The expansion of highways in the mid-20th century coincided with "white flight", where millions of white Americans left urban cities in favor of single-family homes in suburban cities and towns. In this time of intense privatization of American life, the automobile and highways facilitated the movement of wage earners in and out of the downtown cores of cities, all in a private and enclosed space.

Public transportation was the antithesis of the suburban ideal, and for the decades following the collapse of private streetcar companies, investment in this mode of travel floundered. It wasn't until the 1980s that the United States began to construct a significant amount of new subway and rail lines under the practical reasoning that it alleviated congestion and drove economic development (Freemark 2023). Entering the 2010s, many state and municipal governments embraced public transportation projects as a key tool to reduce greenhouse gas emissions and meet climate goals.

Over these five decades, the demographic characteristics of many suburban communities have changed, especially those closest to urban centers. This new generation of suburban

dwellers have recognized the benefits that public transportation can bring, and attitudes have shifted towards a more favorable view of public transit.

This thesis is an examination of one town's change of attitude toward a public transit expansion project, which offers a microcosm of the general shift away from car-centricity, and sheds light into contemporary transportation planning.

Background of the Red Line Extension

The Red Line has been an integral component of Boston's transportation network for well over 100 years. In 2023, it served 119,000 daily riders across five communities in Boston's inner core (O'Hara and Turners 2024, 2; MBTA 2024b). Like much of the MBTA system, the Red Line has been renamed, rebuilt, and expanded over its long history. For much of this time, the Red Line's northwestern extent terminated in Harvard Square. Completed in 1912, this segment connected Cambridge to Boston, forever linking the two cities (Cudahy 1972). For the following half-century, Red Line trains would terminate outbound service in Harvard Square, switch tracks in Elliot Yard, and then run inbound towards Boston and beyond.

During that time, the national attitude shifted towards favoring automotive forms of transportation, spurring massive federal investments in highway construction through the 1956 Interstate Highway Act. By the early 1960s, Route 128 encircled the city, and Interstates 90 and 93 cut into it, bringing commuters from the suburbs right to downtown Boston. The Inner Belt was another proposed six-lane highway, inside Route 128, that would have created an even tighter loop around Boston, bisecting Somerville, Cambridge, Brookline, Roxbury, and Dorchester. However, after thousands of Bostonians were displaced from prior highway projects, public attitude soured on these projects (GBH News 2023). Beginning in 1965, organized efforts

led by planners and residents alike was ultimately successful in pressuring Massachusetts Governor Sargent in 1970 to enact a moratorium on all highway construction within Route 128 (ibid.).

As the region organized against highway expansion, the MBTA began to study an array of future expansion scenarios. Outlined in the Authority's 1966 General Plan, a northwest expansion of the Red Line was identified as a priority. In the report, the Authority considered a number of expansion scenarios for the line, with the preferred being an extension that brought rapid transit service from Harvard Square northwest into Arlington, and further out to an ultimate terminus at Route 128 (MBTA 1966). Following Governor Sargent's 1970 moratorium, state leaders began to seriously study this extension. State and federal funds that were previously earmarked for the Inner Belt and other highway expansion projects were now allowed to be appropriated towards mass transportation (GBH News 2023).

Throughout the 1970s, the MBTA began to formally study the Red Line extension (RLX). This culminated with the 1977 release of the project's environmental impact statement (EIS): an authoritative document outlining the scope, scale, geography, and impacts of the extension. This study detailed the project's enormous potential benefits to the region's transportation network. Thousands of daily automobile trips would be diverted to mass transportation, as the RLX would boast 16-minute travel times between Arlington Center and Park Street, and 30-minute travel times from Route 128 (MBTA 1977). However, the extension out to Route 128 was not formally scoped in the 1977 report, and was intended to be built as a third phase of the project, only after the Alewife and Arlington extensions were completed (ibid.).

Rapid transportation beyond Arlington Heights was formally studied in a draft of the Minuteman Area Transit Study (MATS). This study explored a plethora of alternative station

locations and alignments, including two possible terminal locations along Route 128. Notably, this study draft was released only a month before the final EIS study, signifying that the MBTA during this time was only seriously considering a Harvard Square to Arlington Heights extension in the immediate future.

Barring a handful of disputes in the early 1970s regarding particular alignments and possible land takings, the cities of Cambridge and Somerville worked as collaborative partners with the MBTA when designing their section of the extension (ibid.). The same could not be said of Arlington. Arlington took on a "128 or bust" approach. In the early stages of the project's planning, town's Board of Selectmen voted 4-1 to press for the project to be fully extended to Route 128, but this was out of the scope of the proposed project and initial funding scheme (Boston Globe 1972). Arlington residents and official town boards had an array of concerns about the disruptive nature of the project. They were specifically concerned that the Red Line extension would terminate in Arlington indefinitely while the MBTA worked to acquire more funding. They feared this would necessitate a large terminal station complex in Arlington Center or Arlington Heights and bring about unwanted disruption while transforming these neighborhoods into something of a "Harvard or Mattapan Square" (Hudson 1977).

Opposition to the Red Line extension was organized and effective. In response to a proposed five-story parking garage directly abutting St. Agnes Church in Arlington Center, State Representative John Cusack (D-Arlington) sponsored a bill that prevented the MBTA from building within 75 yards of the church (Boston Globe 1977). This 1976 bill was unsuccessfully vetoed by Governor Dukakis, and remained law for nearly 50 years.

In the spring of 1977, a series of non-binding ballot questions were voted on by Arlington residents, each asking opinions on different scenarios of how the project should or should not

extend through Arlington. For every proposed scenario, a majority of town residents voiced opposition, with only a third being in support of the design outlined in the project's EIS. This onslaught of publicized opposition was one of the last nails in the coffin for the Arlington Red Line extension. In the years following the referendum and the Cusack bill, the MBTA moved forward with phase one of the RLX, extending the line through Cambridge and Somerville, and terminating it at Alewife.

However, over the last few decades Arlington has dramatically changed. A new generation of residents have signaled they want to revisit the MBTA's level of investments in their community. During the 2023 annual Town Meeting, Town Meeting Members (an elected position) voted 169 to 41 to petition the state to repeal the 1976 ban on MBTA construction in Arlington Center (Town of Arlington 2023). Following this town meeting vote, elected state officials representing Arlington sponsored a bill repealing the statutory ban, which became law in December of 2024 (Garballey and Friedman 2024).

At the 2024 annual Town Meeting, members voted 155 to 9 in favor of a measure to formally "seek a partnership with the MBTA to plan significant improvements to the transit infrastructure in Arlington" (Town of Arlington 2023, 22). Sponsors of this measure hope to use this partnership to improve existing MBTA bus service in the town, but also discuss the possibility of bringing rail service to the community. In response, MBTA Commissioner Eng has promised to sit down with town officials (Mohl 2024b).

Additionally, Sean Garballey (D-Arlington), the same State Representative who helped successfully repeal the 1976 MBTA ban, is sponsoring a bill that would establish a special commission to study the financial feasibility and department capability of extending the Red

Line to Arlington. This bill is currently being reviewed by the Joint Transportation Committee, and if approved, the special commission will be formed in early 2025 (Garballey 2023).

Aside from more favorable attitudes among town residents and elected officials, the future of the Red Line extension benefits from the physical characteristics of the proposed alignment. The MBTA still retains rights to the entire right-of-way (ROW) of the proposed project, and the station areas studied in the EIS, Arlington Center and Arlington Heights, continue to exhibit suitable characteristics to support rapid transportation. More so, if the MBTA were to build along its existing ROW and complete a full extension to a terminal along Route 128, tens of thousands of daily commuters across a wide swath of metropolitan Boston would enjoy rapid transit service, fundamentally altering transportation patterns in the state.

Research Questions

The Red Line extension has a rich and well-documented history, yet it lacks synthesis. Sources from the Boston Globe and Arlington Advocate provide invaluable insight into the attitudes, perceptions, hopes, and fears that Arlington residents and its local government had regarding this project throughout the 1970s. The project's 1977 environmental impact statement thoroughly outlines proposed alignments, designs, construction costs, and socioeconomic benefits of the expansion. The draft Minuteman Area Transit Study provides a less authoritative yet sufficiently detailed study for an ultimate extension to Route 128. Considering this abundance of historical documentation, my first research questions is:

1. *What culminating factors led to the Red Line extension being ultimately opposed by a majority of Arlington residents in 1977?*

To add contemporary salience to this research, it is paramount that I also study the future feasibility of a Red Line extension in Arlington and beyond. In evaluating generational attitudinal change and conducing an analysis of rapid transit suitability, I aim to answer my second research question:

2. *To what extent do contemporary attitudes among Arlington residents and regional socioeconomic and land use characteristics shape the feasibility of a future Red Line Extension?*

Chapter 2: Methods

Literature Review

As this research is interested in exploring the way attitudes have shaped public transportation outcomes, I aimed to build an understanding of the factors that have influenced these attitudes through a detailed literature review. This required me to dive into the history of American public transportation, looking into the rapid growth of streetcar companies, and the reasons that led to their ultimate demise in the mid-20th century. This literature, combined with sources discussing the changing views and favorability Americans have had towards public transportation help contextualize the story of the Red Line extension in Arlington.

In the second section of the literature review, I explore sources discussing the evolution of how public transportation is funded. Through building an understanding of the transportation funding landscape between 1950 through today, I was able to contextualize the funding opportunities and limitations the project planners were contending with in the 1970s.

Findings from the literature review helped illuminate some reasons to why Arlington residents may be more favorable towards rapid transit today than they were in 1977. Findings from the funding section of the review further show the significant challenges of acquiring the necessary funding that make substantial transportation expansion a reality.

Case Study

As discussed, there is an abundance of historical documentation regarding the Red Line extension. In order to synthesize this plethora of information, and to answer my first research

question, I conducted a detailed case study on both authoritative project plans and newspapers sources from local reporting.

I began my case study by thoroughly reviewing the three-volume 1,800-page 1977 environmental impact study (EIS), giving special attention to the sections that pertained to the Arlington sections of the Red Line extension. All three volumes of this study were available digitately through the Boston Public Library. This through this review, I developed a deep understanding of the physical characteristics, costs, and implications of the extension project. This was necessary to effectively contextualize oppositional comments and attitudes. To identify these attitudes, I first studied the letters of opinion, comment, position, and statement of various Arlington organizations and individuals, which were contained in the appendix of the EIS.

A number of these letters frequently referred to a complementary study known as the Minuteman Area Transit Study (MATS). After an extensive online search, I found that that the only available copy of the MATS was archived at the Cambridge Historical Commission. I reviewed this study in-person and made digital copies of some of its most important tables and maps. Reviewing this planning study was essential in further understanding the concerns of project opponents, many of whom had reservations that comprehensive planning beyond Arlington Heights was insufficient.

After reviewing this body of official project documentation, I turned to the digitized archive of the Arlington Advocate which was the weekly local newspaper of the town during that time. This source let me gain insight on more informally expressed attitudes and opinions. This analysis provided an unfiltered view of the key actors and organizations of the opposition movement. Many articles provided direct quotations on how these groups and individuals described their motivations, goals, and attitudes. The Arlington Advocate reporting also

illuminated the happenings of a number of pivotal town meetings, as well as the 1977 referendum vote which had an outsized effect on the outcome of the project in Arlington.

To better understand the impact of the referendum vote, I submitted a Freedom of Information Act (FOIA) Request to the Town of Arlington. The Town Clerk then provided me with precinct-level election data, which helped illustrate the geographic distribution of Red Line extension attitudes in the town and allowed me to analyze the relative impact of the opposition campaign.

To fully understand the Red Line extension case, I contextualized these local events with reporting from the Boston Globe, which exhibited a more regional perspective in its coverage. These digitized articles discussed the Red Line extension project as a whole, and provided insight into other project challenges the MBTA was dealing with, such as federal funding constraints.

Interviews

To gain greater understanding of both the historical and contemporary story of transportation expansion in Arlington, I conducted five informational interviews. I interviewed individuals representing varying backgrounds and areas of expertise, ranging from elected officials, transportation professionals and historians, and local advocates and organizers. These interviews provided me with key information on the history of the Red Line extension, the current movement to increase transportation access in the Arlington, and factors that led to the ultimate success of a contemporary transportation expansion project in the region. These interviewees are as outlined below:

Table 2.1: List of Interviewees

Name	Title	Organization
Brad Rawson	Director of Mobility	City of Somerville
JP Lewicke	Town Meeting Member, Activist	Town of Arlington, Extend the Red Line Organization
Nicole Gustas	Activist	Equitable Arlington, Broadway Neighborhood Coalition
Sean Garballey	State Representative, 23rd Middlesex District	Commonwealth of Massachusetts
Steven Beaucher	Author, Historian, Business Owner	Ward Maps, Author of *Boston in Transit*

Spatial Analysis

Spatial analysis methods played an important role in both investigating the historic geographic distribution of Red Line extension attitudes, as well as evaluating the contemporary suitability of the proposed stations.

Geospatial Investigation of Historical Referendum Results

The first spatial analysis method I employed in this research was to digitize and visualize election results from Arlington's 1977 referendum on the Red Line extension. I first had to convert the precinct-level election results I sourced through the FOIA request from a PDF format to a tabular format so that it could be later used in ArcGIS.

In order to map this data, I needed to have accurate precinct boundaries from that time period. Unsurprisingly, a shapefile of historic election precincts in Arlington was not readily available, so I created my own. After sourcing a map of 1970 precinct boundaries in the Arlington Advocate digital archives, I brought the image into ArcGIS and georeferenced it. Once

georeferenced, I created a custom polygon feature layer and traced the precinct boundaries. Once these polygon features were created, I joined them with the digitized election results. Using a simple symbology, I was able to identify the geographic distribution of attitudes towards the Red Line extension, adding depth and insight to my case study fundings.

Suitability Analysis

To evaluate the contemporary salience of the Red Line extension proposals outlined in the 1977 EIS and MATS studies, I conducted a suitability analysis. With this method, I aimed to compare proposed Red Line extension stations to existing rapid transit stations. To do so, I first defined the study area as census block groups within a half-mile radius of existing MBTA rapid transit stops, key bus route stops, and the proposed extension stops. To define this area, I first created a half-mile buffer around my station feature points, dissolved these buffers into a single feature, and then intersected that buffer feature with 2020 census block group boundaries.

Once I had defined this area, I gathered data on a set of factors that commonly relate to public transit ridership for each census block group (Cardozo, García-Palomares, and Gutiérrez 2012). As highlighted in green in table 2.1, these factors included population density, employment density, renter population, vehicle ownership, and walkability. I joined this demographic and land use data to the census block group polygons. To create a representative index of these five factors, I used the dimension reduction tool, which uses a statistical method called principal component analysis to capture the most important patterns in the data, and then combines these patterns into a singular “component.”

This new component acted as a representative index of multiple factors that relate to public transit suitability. To create more spatial variation and to better visualize this suitability

measure, I first created centroid points from each census block group polygon. I used these point features as inputs for spatial interpolation, using the Kriging method. This method estimated suitability values for locations within the study area where data was not available. As the demographic and land use data was only available for entire census block groups, which often span multiple neighborhoods, this method helped produce a map showing suitability on a much more detailed scale, as the data was not confined to the boundaries of the census block group.

This method produced a suitability raster, with each individual "pixel" indicating the particular area's suitability for rapid transit. I rescaled these raster values to a scale from 0 to 10, with 10 being the most suitable. This map, as shown in figure 6.7, was used to visually identify the suitability of existing and proposed rapid transit stations, as well as to assign values to these point features.

Ridership Estimation

An important aspect of testing the Red Line extension's contemporary salience was to estimate ridership. To do so, I used a linear regression model, utilizing results from the previous spatial method as my explanatory variables. However, before I could run this model, I needed to include ridership data to act as my dependent variable. Average station boarding counts from the fall of 2023 were sourced from the MBTA, and then joined to each station point feature.

To create this model, I used the most comparable station locations as my input features. These were defined as having a suitability score of six or less. For context, Arlington Center, the most suitable of the proposed stations, has a suitability score of five. I extracted values from the original, unscaled component suitability raster and applied them to each existing station point. I

used this representative component index as my explanatory variable, and used the average daily boarding count as my dependent variable. The linear model produced the following result:

$$\text{Ridership} = 3032 + (\text{Suitability\_Component} \times -707.8)$$

Using this linear model, I was able to predict the number of daily station boardings for the proposed Red Line extension stations. To further contextualize these ridership estimates, I wanted to compare them to the total working age population of the station's service areas. This statistic would allow me to evaluate the percentage of working age people who would take transit each day. To do this, I first had to create station area boundaries using the network analyst tool. These station areas were defined as the area a person walking 3mph could reach within 15-minutes from the station point.

Next, I joined the centroid points of the census block features with these estimates, and used the "summarize within" tool to calculate the sum total working age population within these station service areas.

Notably, these results showed the Burlington Mall station area having zero workers, which is likely true as there is almost no residential land use within a 15-minute walk from the station. As this station would be a terminal and attract primarily people driving to the station, I generated a more representative service area, using the distance one could drive 15-minutes to the station at 8:30am on a weekday morning. Using the same method described above, I calculated an estimate of the total working-age population within a 15-minute drive of the proposed Burlington station.

Data Sources

For my spatial analysis, I relied on accurate and authoritative data. The list below outlines the data sources used to support this analysis:

Table 2.2: Data Sources

Data	Data Year	Source	Notes
Population Density	2023	American Community Survey 5-Year Estimates via Social Explorer	Used as an input for transportation suitability index
Renter Population	2023	American Community Survey 5-Year Estimates via Social Explorer	Used as an input for transportation suitability index
Vehicle Availability	2023	American Community Survey 5-Year Estimates via Social Explorer	Used as an input for transportation suitability index and for demographic analysis
Housing Tenure	2023	American Community Survey 5-Year Estimates via Social Explorer	Used as an input for transportation suitability index
Walkability	2021	EPA Smart Location Database	Used as an input for transportation suitability index
Working Population	2023	American Community Survey 5-Year Estimates via Social Explorer	Population 16 years or older used to contextualize ridership statistics
Jobs Density	2021	EPA Smart Location Database	Used as an input for transportation suitability index
MBTA Ridership	2023	MBTA Bluebook Open Data	Used as dependent variable in model to estimate RLX station ridership
Mode of Transportation to Work	2023	American Community Survey 5-Year Estimates via Social Explorer	Used to assess demographic change profile in Arlington
Age	2023	American Community Survey 5-Year Estimates via Social Explorer	Used to assess demographic change profile in Arlington
Race	2023	American Community Survey 5-Year Estimates via Social Explorer	Used to assess demographic change profile in Arlington
Age (Historical)	1970	IPUMS NHGIS	Used to assess demographic change profile in Arlington
Race (Historical)	1970	IPUMS NHGIS	Used to assess demographic change profile in Arlington
Mode of Transportation to Work (Historical)	1970	IPUMS NHGIS	Used to assess demographic change profile in Arlington

Chapter 3: Literature Review

Shifting attitudes, local opposition, and funding struggles are not unique to the Red Line's history, nor to the MBTA system. The story of public transportation in nearly every major American city shares these themes. A holistic review of literature on how wider attitudinal and financial patterns have influenced the history of public transportation provides essential context to the Red Line extension story.

Public Transit History & Decline

Author Stanley Mallach (1979) provides a concise and compelling summary of the origins of public transportation and historical perceptions. In his article, he outlines the booming American electric trolley industry in the early 20th century. He illustrates the massive growth of the industry, stating that between 1890 and 1917, trolley companies increased track milage by a factor of 35, and served billions more passengers (Mallach 1979). However, he discusses that alongside this rapid growth came questionable business decisions influenced by rampant corruption, placing the industry on shaky ground. For instance, it was common practice for trolley operators to build tracks in sparsely populated areas simply to drive other operations out of business (ibid.).

Mallach further describes how companies would rarely re-invest profits into system upgrades. Urbanites would complain of unsafe riding conditions, long waits, and insufficient cross-town routes, but companies would seldom act on these (ibid.). During the First World War, labor and material costs skyrocketed, forcing many companies to propose fare increases. However, fares had been set at 5-cents for decades, and this cost was enshrined in municipal

contracts, leading many to believe that this rate was a birthright (Stromberg 2015). Streetcar operators were met with immense pushback from municipalities when they attempted to increase their fare, as politicians feared blowback from angry constituents. Mallach further argues that because of industry's well-known corruption, the public was distrustful of these fare increases and felt exploited by the operating companies (Mallach 1979).

Mallach concludes that this unstable foundation built on financial buccaneering, reckless management, and public distrust helps explain the industry's inability to navigate future transportation competitors like buses and automobiles. This unfortunate scenario ultimately resulted in tens of thousands of miles of trolley tracks to cease operation in the coming decades.

External Pressures

Although comprehensive, Mallach fails to capture the immense pressure consumer choices, and the automobile industry placed on the streetcar companies. Los Angeles is emblematic of these external challenges. By 1920, over 160,000 cars were driving on the city's streets (Rasmussen 2003). This growing traffic volume was enabled in part by the contractual obligations of streetcar companies to maintain the infrastructure of the roads their trolleys operated on (Stromberg 2015). As more motor vehicles populated city streets, conflicts between them and streetcars became commonplace. Cars would often drive onto the streetcar tracks, effectively blocking entire routes and causing hours-long delays (Rasmussen 2003). More so, intersections became increasingly dangerous as without proper signaling, vehicles and trolleys would crash, resulting in numerous injuries and deaths. In Los Angeles, newspaper editorials would often ascribe the blame to the streetcars, further diminishing public opinion of the service (ibid.).

These immense delays were caused by only a handful of people; only about 10% of people were driving at this time (Stromberg 2015). However, their impact was far reaching. With each new delay and crash, those who could afford it would ditch public transportation and opt for the more comfortable automobile, further adding another obstacle for trollies on crowded urban streets (Stromberg 2015). As cars increasingly competed with streetcars in the surface transportation realm, operators that could provide grade-separated public transportation fared far better. Reporting from Bloomberg's CityLab points out that in almost every case, elevated or underground transit systems survived this tumultuous period as they were able to offer consistent and reliable service (English 2018). Only when transit didn't need to share the road with the car, and frequent service continued, was it able to survive.

Conspiracy

This period of streetcar company declines coincided with the rise of General Motors (GM), and subsequently, and a popular conspiracy theory. In the 1930's, GM began to compete with public transportation more directly. Aside from supplying millions of Americans with personal vehicles, GM began to invest in bus manufacturing and promoted them as a cheaper and more flexible alternative to the streetcar (Bianco 1997). In a 1974 testimony to the U.S. Senate, Attorney Bradford Snell describes this as the impetus of a nationwide conspiracy to dismantle America's streetcar system. In his testimony, Snell claims that GM knew that consumers thought of buses as inferior to electric streetcars, and that the company used its massive economic and political advantages to dismantle their competitors through nefarious methods that violated anti-trust laws (Snell 1974). He argues that National City Lines, a subsidiary of GM formed in the

1930s, systematically destroyed more than 100 electric surface rail systems in 45 cities by acquiring local streetcar companies, liquidating them, and replacing them with buses (ibid.).

Snell's argument is corroborated by anti-trust litigation throughout the 1940's and 50's. After over a decade of unscrupulously acquiring and replacing municipal streetcar services with buses, members of National City Lines and General Motors, alongside dozens of individuals from oil and tire companies were indited and convicted of violating the Sherman Anti-Trust Act (Kwinty 1991). Although guilty, these parties only had to pay $5,000 each – a minor slap on the wrist compared to the financial boon they had amassed through their scheme (Kwinty 1991).

Although devastating for the 45 cities they operated in, some argue that the impact the General Motors and National City Line conspiracy had is overstated. In his comprehensive article exploring the demise of America's streetcars, journalist Joseph Stromberg (2015) argues that the GM conspiracy is only one piece to the broader story of decline. He illustrates that National City Lines were only responsible for about 10% of all streetcar system closures nationwide (ibid.). The remainder of systems went bankrupt in part due to direct competition with the automobile, and many systems replaced by municipal operated bus services.

Author Martha Bianco explores the streetcar system decline in Portland, OR, and contradicts Snell as she argues that the municipal transit operator utilized buses long before GM and their subsidiaries began their campaign (Bianco 1997). She states that buses played an important role in bring transportation to residents outside the reach of the existing trolley system, and were a complement service as early as 1917 – long before GM got involved (ibid.).

The body of literature suggests that the demise of America's streetcar system was largely due to public policy choices, not simply direct competition with automobiles or conspiracy. Simply put, once automobiles entered American society, policymakers from the municipal to the

federal level prioritized them over public transportation in every instance. Automakers like General Motors, and car-centric infrastructure were given heavy subsidy, while streetcar companies were left to fend for themselves in an unbalanced market (Stromberg 2015; English 2018; Bianco 1997). The historical grievances the public had towards streetcars operators resulting from insufficient investment, combined with negative media attention suggests that in the end, many mid-century Americans were not upset to see this once ubiquitous mass transit service disappear (Mallach 1979; Rasmussen 2003).

Public Transit Attitudes

The story Mallach and others describe is corroborated by national public transportation ridership trends over the 20th century. A report from the American Public Transit Association (APTA) illustrates that after a ridership boom during World War Two, public transportation ridership faced a steep decline. Fueled by cheap energy and the growth of the suburbs, ridership continuously declined from a high of 23.4 billion annual passengers in 1950 to an all-time low of 6.5 billion in 1975. (Kwinty 1991).

Opinion polling and reporting from existing literature suggests that those who grew up during this era of decline may have more unsavory attitudes towards public transportation and the dense urban living it supported. A study on transportation trends in California illustrates this change, suggesting that Generation X (born between 1965 and 1980) exhibit more favorable attitudes towards car ownership and suburban living when compared to millennials (born 1981 and 1996) (Circella 2021).

Another report on generational transportation trends highlighting that nationwide total vehicle miles travelled peaked in 2004, and have been declining ever since (Davis, Dutzik, and

Baxandall 2012). Using data from the authoritative National Household Travel Survey, researchers suggest this decline was largely driven by 2009's cohort of 16 to 34-year-olds driving 23% less than 2001's cohort of that same demographic (ibid.). This report also shows the same cohort in 2009 walking 16% more often to their destinations, and taking public transportation 40% more than when compared to 2001(ibid.).

Research from the Federal Transit Administration (FTA) further illuminates these generational trends. A 2017 report on transportation modes and attitudes found that the millennial generation is far more transit-diverse than prior generations. Adults from 21- to 36-year-old use rideshare and public transportation services significantly more than older generations, further suggesting a generational mode-share shift (FHWA NHTS 2019). Additional research sponsored by the FTA further quantifies this generational mode share split. This research suggests that 20% of millennials use public transportation once a week, while only 7% of generation X and 10% of baby boomers do so (Sakaria et al. 2013). This study also illuminated that unlike previous generations, millennials view car use as part of an ensemble of transportation options, not simply as a sole mode.

This sentiment is supported by comprehensive survey research conducted for the Rockefeller Institute. For this study, researchers interviewed 703 individuals between the ages of 18 and 35, inquiring about their attitudes, opinions, and habits towards transportation. Their findings report that a 31% of millennials want their primary mode of transportation to be public transportation (Global Strategy Group 2014). This phenomenon is translated to substantial and measurable mode share differences, as suggested by research done at the Urban Land Institute. In their 2013 report, findings derived from a survey of over 1,200 adults show that nationwide, 77%

of millennials commute via car, versus 92% of generation X, and 90% of the baby boomer generation (Urban Land Institute 2013).

Younger Americans want their local governments to prioritize their preferred modes of transportation. A report done for the National Association of Realtors found that it is a high priority among a majority of younger Americans for their state and local governments invest in non-auto modes of transportation (American Strategies 2013). Additional findings from this survey highlight that a quarter of people aged 18-40 want their governments to treat public transportation projects as an "extremely high priority". This is more than double the percentage of older individuals surveyed who indicated such a priority for public transportation(ibid.).

Public Transit Funding

Origins of Public Investment

The story of public transportation funding is another crucial element to understanding the wider context of the Red Line extension. The source and amount of funding for public transportation has varied wildly over the last century. Research suggests that until the start of the 1950s, nearly all funds for public transportation came from private sources. Funding schemes were constructed through fare collection, the selling of bonds, and real-estate speculation (Mallach 1979; Hess and Lombardi 2005). Following decades of mismanagement and declining ridership, these private enterprises faced serious financial hardship. Across the nation, public transit operators were at the brink of economic and physical collapse (Jones 1985). Period sources suggest that political figures representing urban constituencies strongly advocated for the

federal government to be more involved in public transportation throughout the mid-20th century (Altshuler and Luberoff 2003).

Political pressure, combined with a dire financial situation led the federal government to create low-cost loan programs for struggling rapid transit and commuter rail operators as part of the Housing Act of 1961 (Hess and Lombardi 2005). This initial federal investment gave municipal government financial confidence to also begin investing in their local public transportation services (Jones 1985).

The next substantial federal investment in public transportation came from the Urban Mass Transportation Act of 1964. This was the first piece of standalone congressional legislation that directly funded for public transportation, and established the Urban Mass Transportation Administration (UMTA) as the federal regulatory agency (Altshuler and Luberoff 2003). With this legislation, the federal government disbursed federal grants to cover up to two-thirds of the cost of construction, reconstruction, or acquisition of transit facilities.

David Jones's *Urban Transit Policy: An Economic and Political History* describes this as a seminal moment in the history of public transportation. Jones suggests that this funding scheme was intended as a carrot to encourage state and local governments to invest in public transportation. In order to fund the third of the sum not covered by the federal government, cities would have to devise novel funding procedures (Jones 1985). This was the first foray into public transportation funding and operation for many local governments, and in many instances, marked the start of permanent investment (ibid.). This federal tactic to jumpstart local government investment paid off. By 1974, the number of publicly owned transportation systems increased from 54 to 308 (Kirby 1992).

In 1973, the federal government made Federal Highway Act funding more flexible, providing an additional boon to public transportation funding. Under the updated legislation, the federal government would cover 80% of project costs on non-highway related transportation infrastructure (Wachs 1989). The following year, Congress passed the National Mass Transportation Assistance Act. For the first time, this legislation permitted federal funds to be allocated towards not just transportation capital expenses, but also operating expenses, marking a significant shift in the character of federal investment (Taylor and Samples 2002).

In their book published by the Brookings Institution, researchers Altshuler and Luberoff (2003) quantify this investment, further illuminating this period's broad federal support for public transportation. In dollar terms, federal contributions increased from $700 million per year in 1970 to $10.5 billion in 1980 (in 2002 dollars), and the federal government's contribution to total transit spending grew from 6% to 41% (Altshuler and Luberoff 2003). They argue that state and municipal governments were encouraged this sizeable federal investment and increased their contributions to transit from $2.5 billion in 1970 to $7.2 billion in 1980 (in 2002 dollars). This heavy public investment worked to deemphasize the reliance of funding transportation through fare collections. Farebox revenues accounted for only 31% of transit revenues by 1980, down from 70% in 1970 (ibid.).

This 20-year period of heavy federal involvement in public transportation worked to stem off massive declines in ridership seen throughout the 1960's, while also encouraging local and state governments to contribute billions of more dollars towards these systems. In result, nearly a dozen cities across the nation build entire new systems from scratch, while existing systems added hundreds of more miles of track.

Changing Federal Politics and Local Investment

Both governmental sources and academic researchers alike discuss that federal investment in public transportation was caught in political crosshairs at the start of the 1980's. Under the new Regan administration and its austerity campaign, federal funding for public transportation was cut by 20% in 1982 (Hess and Lombardi 2005). However, in a seemingly contradictory measure, the Surface Transportation Act of 1982 outlined that a penny-per-gallon share of the federal gasoline tax was to be dedicated to public transportation funding, providing a new funding stream independent of congressional appropriations (U.S. Congress 1982; ibid.). Revenues from this new tax were used to fund the discretionary grant program for mass transit, but were under the prevue of a cost-effectiveness review procedure. This new procedure placed greater emphasis on lower-cost alternatives, such as bus rapid transit and light rail, and are generally more subject to local pressures rather than broader regional needs (Weiner 2016).

Despite stagnation in federal funding, transportation funding continued to increase throughout the 1980's due to heavy investments from municipal and state sources, as outlined in figure 3.2 (Hess and Lombardi 2005). Sources indicate that state and local governments tripled their public transportation spending, covering over 50% of expenses, while the federal government covered only 20% (Price Waterhouse LLP et al. 1998). This trend of heavy local investment remained steady through the next decade, with the federal government continuing to fund largely capital expenditures, while local governments funded most other expenses (ibid.).

Sources suggest that during the 1990's, federal funding for transportation was made even more flexible with the passage of two pieces of legislation: The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and Transportation Equity Act for the 21st Century of 1998. Similar to prior changes to the Federal Highway Aid Act in the 1970's, this

legislation gave states and Metropolitan Planning Organizations more flexibility when prioritizing transportation funding needs, allowing funds to be spent on transportation agnostic of the mode (Hess and Lombardi 2005; Katz and Puentes 2003). As part of this legislation, the federal government sought to reduce its role in covering transportation operating expenses, again placing a greater emphasis on local and state government's role in providing public funds for transit operation (ibid. 2005).

Author Kevin Shen of the Union of Concerned Scientists characterizes the time from 1990 through the 2010s as a "status-quo" period, where few substantial funding increases or legislative changes were made to public transit policy (Shen 2024). Researchers from the Congressional Budget Office illustrate in figure 3.1 that federal funding from the late 1990s through 2019 this period fluctuated between 9 billion to 17 billion annually, and averaged about 14 billion annually (Musick 2022).

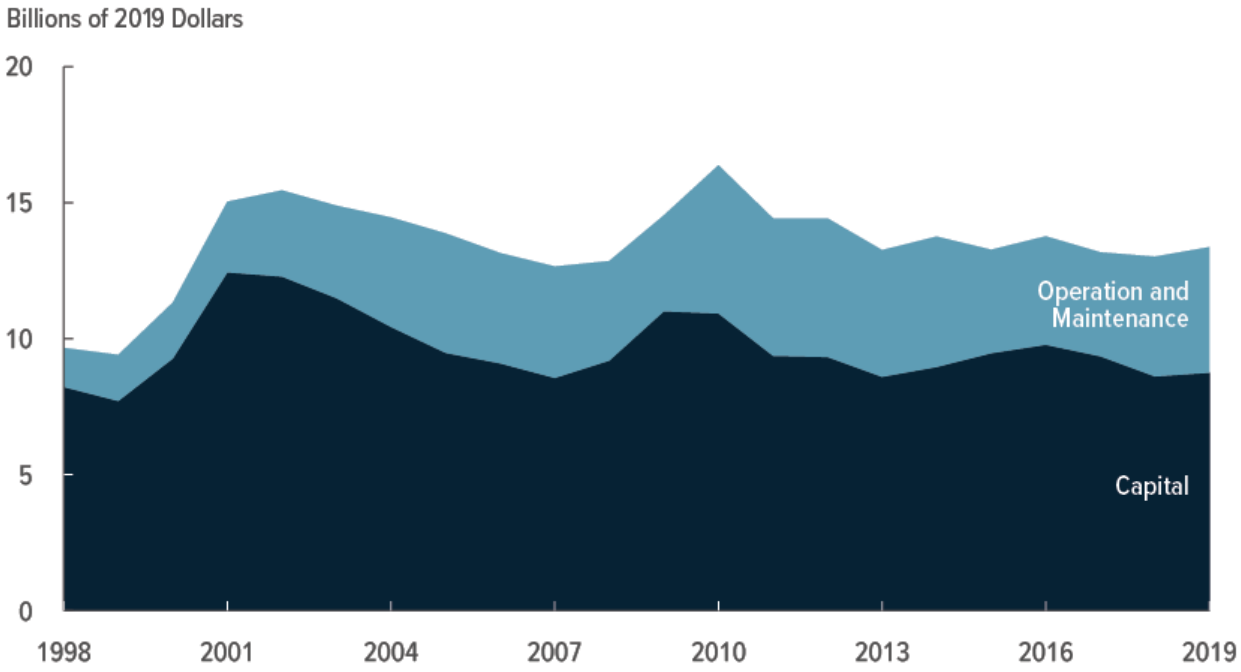


Figure 3.1: Federal funding for public transportation funding since 1998. *Source: Musick 2022*

Change in the Status Quo

The COVID-19 pandemic had an outsized effect on public transportation resulting in a significant departure from the traditional federal funding procedure of prior decades. Between spring 2019 to spring 2020, federal researchers report that public transit ridership dropped 40%, (Musick 2022). Over a quarter of public transit funding comes from fare collection, so unsurprisingly, transit agencies reported a 39% decrease in revenues during this time (ibid.). To avert disaster, the federal government injected $70 billion into the nation's public transportation system. This injection, illustrated in figure 3.2, temporarily brought federal investment to its highest amount ever (ibid.; Shan 2024).

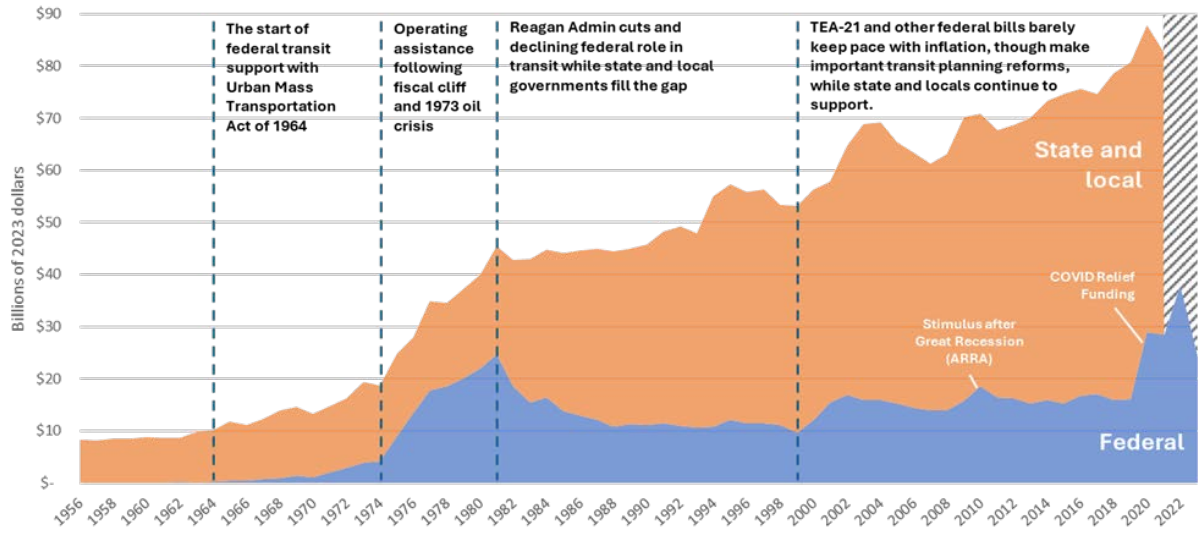


Figure 3.2: Total public spending on public transportation, 1956 – 2022. *Source: Shan 2024*

In 2021, these rescue funds were supplemented by the Infrastructure Investment and Jobs Act (IIJA), authorizing $108 billion towards public transportation – the largest federal investment in the nation's history (FTA 2025a). Federal sources indicate that this funding authorization brings current annual federal spending to an average of about $18 billion (Musick 2022). In addition to this annual funding increase, the IIJA also authorized two new competitive

grant programs for public transportation: the National Infrastructure Project Assistance program and the Local and Regional Project Assistance program. These grants are tailored to providing funding to project that are expected to result in national or localized transportation benefits, respectively (ibid.). Looking forward, the future of federal public transportation funding is uncertain. The Trump Administration aims to decrease federal spending across all sectors, including transportation. Grant programs and spending increases authorized by the IIJA may come to an unpredictable end.

Chapter 4: Red Line Extension Case Study

In this chapter, I will examine three collections of documents that are integral to building understanding on the history of the Red Line Extension. The first document is the 1977 Final Environmental Impact Statement (EIS) on the Red Line Extension, which meticulously and authoritatively articulated the Commonwealth's vision for transportation expansion in Cambridge, Somerville, and Arlington. The second document is the 1977 Draft Minuteman Area Transit Study (MATS), which explored a plethora of public transportation options that would've served Arlington, Lexington, Bedford, and Burlington. Importantly, the alternatives explored in this study are based on the presumption that the Red Line is extended to Arlington Heights as proposed in the 1977 EIS. The MATS thoroughly investigates stations and alignment alternatives extending west from Arlington Heights to East Lexington, Lexington Center, and along Route 128. The third set of documents are examples of public opinion on the project. These sources derive from the town's local newspaper, the Arlington Advocate, as well as from letters of concern and comment sent from official local boards and community organizations to the EIS authors and federal reviewers. These articles and letters give insight into the concerns various individuals, and community and governmental groups had regarding the proposed extension. This chapter will include thorough analysis and commentary of these texts.

Red Line Extension Environmental Impact Statement

The most comprehensive vision for the Red Line Extension is illustrated in the project's Final Environmental Impact Statement (EIS), which was released on August 17th, 1977. This three-volume report was authored by the MBTA and was a central component to the Authority's

application to the Urban Mass Transportation Administration (UMTA) for federal funding for the Red Line extension. This detailed report contains 1,850 pages of demographic analysis, ridership estimates, cost-benefit assessments, alignment alternatives, detailed right-of-way schematics and station designs, costs estimates, descriptions of construction methods, noise and pollutant impact summaries, responses to letters of concern, and more. The EIS details these elements for each section of the proposed extension, starting with Harvard Square, and ending in Arlington Heights.

EIS Summary

The report begins by illustrating the need for public transportation expansion in the Boston metropolitan area. It states that the region had grown by over one million people since the Red Line was last extended to Harvard square in 1912. The Northwest Corridor, which includes the cities and towns of Cambridge, Somerville, Arlington, had grown by over 50,000 people between 1960 and 1970. The report argues that growing congestion resulting from this substantial population increase has contributed to a serious degradation of air quality in region and an unsustainable increase in energy consumption.

The extension illustrated in this report aims to alleviate these issues through the construction of 6.5 miles of new Red Line track through Cambridge, Somerville, and Arlington. Six stations were planned for construction, including a reconstructed Harvard Square station, and five new stations in Porter Square, Davis Square, Alewife, Arlington Center, and Arlington Heights. As shown in figure 4.1, The proposed extension would run north from Harvard Square, following Massachusetts Avenue until reaching Porter Square. The extension would then continue northwest until reaching Davis Square, utilizing a complexly new right-of-way enabled

by deep bore tunnel construction. Continuing from Davis Square towards Alewife, the extension would follow an existing right-of-way along the Fitchburg Freight Cutoff of the MBTA South Acton Commuter Rail Line. From the Alewife station, the proposed extension would run north along the Lexington Branch of the MBTA Commuter Rail right-of way to Arlington Center, and then to Arlington Heights. The track alignments along existing right-of-way would utilize more traditional and cost-effective cut-and-cover tunnel construction.

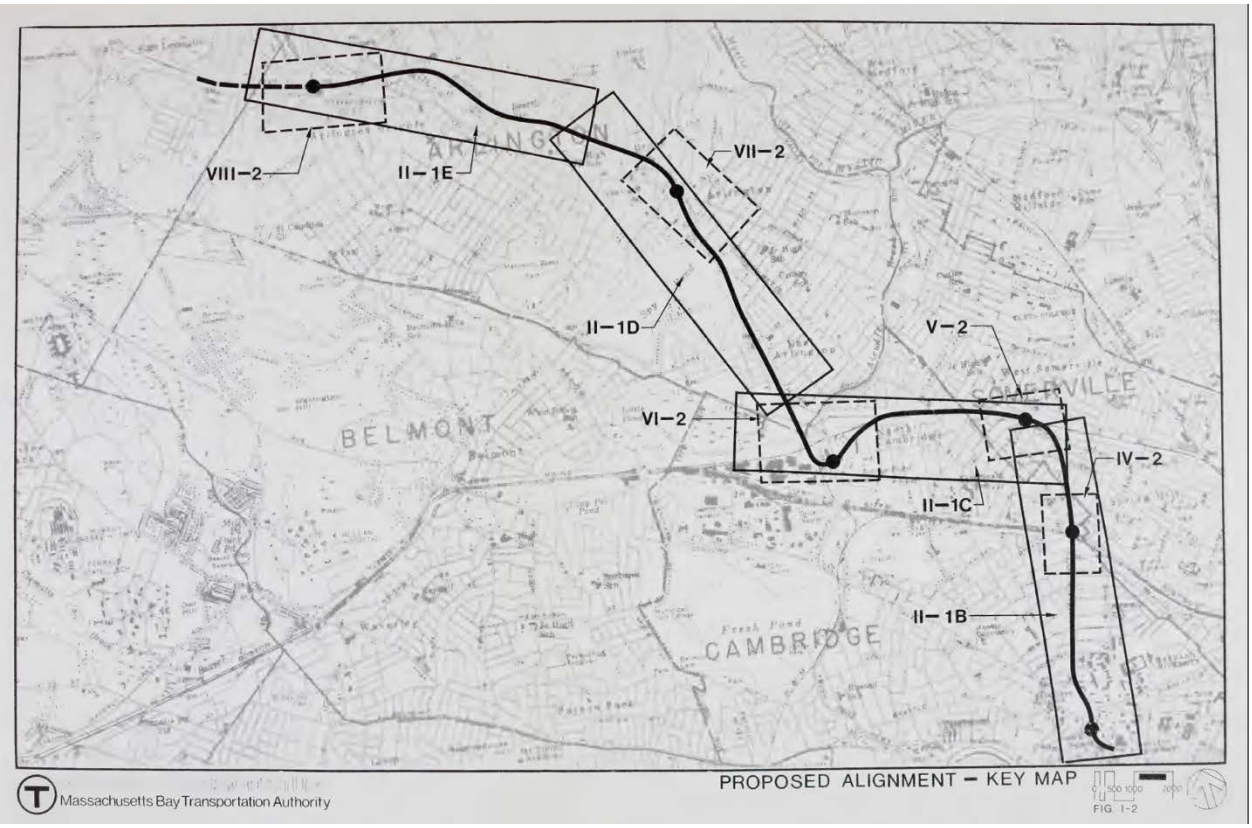


Figure 4.1: The proposed alignment of the Red Line extension**.** *Source: EIS*

In total, the project would require about 1.5 miles of deep bore tunneling and five miles of cut and cover tunneling. The EIS report estimates the cost of the whole extension to be $625,304,000 (approximately $2.7 billion in 2025 dollars). These costs are enumerated in table 4.1, which shows the cost estimates for each station and section of track alignment for the project.

The cost of building the Red Line from Harvard Square to Alewife would equal 61% of total project costs, but only represents 43% of the total length of the extension. The Cambridge-Somerville section of the extension would boast 4 new stations, including the total reconstruction of Harvard Square as well as a large station complex at Alewife with 2,000 parking spaces. The cost of the Arlington section would be 39% of the total cost, and 57% of the total length and include two relatively minimal stations with limited parking facilities.

Table 4.1: Station and alignment construction cost estimates

Item	Type	Method	Length (ft)	1975 Cost	2025 Cost
Harvard Square Station	Station	Cut & Cover	1,220	$ 55,433,000	$ 245,625,534
Harvard Square to Porter Square	Alignment	Deep Bore	4,470	$ 79,886,000	$ 353,977,620
Porter Square Station	Station	Deep Bore	440	$ 45,761,000	$ 202,768,569
Porter Square to Davis Square	Alignment	Deep Bore	3,040	$ 46,761,000	$ 207,199,603
Davis Square Station	Station	Cut & Cover	440	$ 27,588,000	$ 122,243,379
Davis Square to Alewife	Alignment	Cut & Cover	4,730	$ 56,827,000	$ 251,802,396
Alewife Station	Station	Cut & Cover	440	$ 44,987,000	$ 199,338,948
Harvard Square - Alewife Project Wide Items	Other	-	-	$ 26,281,000	$ 116,452,017
Subtotal: Harvard - Alewife Extension			14,780	$ 383,524,000	$ 1,699,408,068
Alewife to Arlington Center	Alignment	Cut & Cover	7,430	$ 36,938,000	$ 163,673,552
Arlington Center Station	Station	Cut & Cover	440	$ 15,420,000	$ 68,326,552
Alewife - Arlington Center Project Wide Costs	Other	-	-	$ 16,329,000	$ 72,354,362
Arlington Center to Arlington Heights	Alignment	Cut & Cover	10,130	$ 109,353,000	$ 484,546,913
Arlington Heights Station	Station	Cut & Cover	440	$ 29,383,000	$ 130,197,086
Turnback and Storage	Alignment	Cut & Cover	1,210	Not reported	Not reported
Arlington Center - Arlington Heights Project Wide Items	Other	-	-	$ 31,600,000	$ 140,020,690
Subtotal: Alewife - Arlington Heights Extension			19,650	$ 239,023,000	$ 1,059,119,155
Total			**34,430**	**$ 625,304,000**	**$ 2,770,743,584**

Source: EIS VI

To give clarity and comparability, cost estimates provided in the EIS have been converted to 2025-dollar amounts. Although these inflation estimates do not account for wider macroeconomic factors, such as changes in availability and technology related to materials, methods, and labor, these estimates can help illuminate the scale of the figures project planners and stakeholders were considering regarding this project. To estimate inflationary costs, the Producer Price Index (PPI) was used, which is best practice when calculating construction cost inflation (Zarenski 2025). In 2025, the PPI sits at 257 was at 58 in 197.

The following formula was used to calculate the inflation rate:

$$\frac{(258 - 58)}{58} * 100 = 343.1\%$$

Using this inflation rate, the following formula was used to estimate 2025 costs:

$$(1975Cost * (343.1/100)) + 1975Cost = 2025Cost$$

Project Details

One explanation to the cost differential between the two main sections of the Red Line extension lies with the construction methods along the ROW. The proposed alignment from Harvard Square to Porter Square, and then continuing to Davis Square, was a heavily populated and built-up environment. Unlike sections further along the extension, this section did not benefit from an existing railroad right-of-way. Cambridge residents and their representatives were highly sensitive of eminent domain takings, due in part to the contentious inner-belt highway expansion plan and the resulting protest movement that occurred only a few years prior to the Red Line extension plan.

Lacking an existing right-of-way, if the MBTA were to utilize a cut-and-cover method through the Cambridge-Somerville section, it would have required numerous takings and significant disruptions. To avoid that tumultuous process, the MBTA proposed using a deep bore tunneling method, which although more expensive, allowed this section of the extension to be constructed without any significant takings and ensuing political turmoil. This higher cost is reflected in table 4.2, which illustrates the cost per foot of track for each section of alignment. On average, the cost per foot of the deep bore method between Harvard Square to Davis Square

alignment cost 44% more than to Davis Square to Arlington Heights cut-and-cover method along existing right-of-way.

Table 4.2: Comparison of cost per foot of track alignment of each proposed RLX section

Alignment	Method	Length (ft)	Cost 1977	Cost 2025	Cost/Ft (2025 $)
Harvard Square to Porter Square	Deep Bore	4,470	$ 79,886,000	$ 353,977,620	$ 79,190
Porter Square to Davis Square	Deep Bore	3,040	$ 46,761,000	$ 207,199,603	$ 68,158
Davis Square to Alewife	Cut & Cover	4,730	$ 56,827,000	$ 251,802,396	$ 53,235
Alewife to Arlington Center	Cut & Cover	7,430	$ 36,938,000	$ 163,673,552	$ 22,029
Arlington Center to Arlington Heights	Cut & Cover	10,130	$ 109,353,000	$ 484,546,913	$ 47,833

Source: EIS V1

The $625 million total cost of the project would be paid for largely using funding authorized from the Federal Aid Highway 1973 and Urban Mass Transit Act of 1964. The federal government would cover 80% of the cost of the project, totaling to about $500 million (approximately $2.2 billion in 2025). This left the Commonwealth of Massachusetts to cover the remaining $125 million (approximately $550 million in 2025).

This massive construction effort was scoped to take about five years, starting in early 1978, and concluding at the end of 1982. As shown below in figure 4.2, much of this construction was planned to happen concurrently so that at the end of the four years the entire extension would be operational. Due to its status as a transportation hub, the Harvard Square complex had the longest expected timeline due to the complexities of simultaneously removing the existing station while building a new facility that could accommodate the plethora rapid transit and bus connections.

The EIS report authors continue by quantifying the transportation impacts this large investment will generate. They claim that the 6.5-mile extension will serve 42,700 daily riders, covert 7,675 daily auto trips to transit, save 1.15 million-person hours per year through

congestion alleviation, and save the agency and state about $4.53 million a year. This cost saving figure assumed that long term, operating rapid transit is more cost effective than operating the multiple bus routes in the area. The report makes it clear that these 42,700 new daily riders would be attracted to the Red Line service because of the drastic time savings it offers. Table 4.3 shows a comparison of the travel times of different modes of transit traveling to Park Street in downtown Boston. The study authors suggest that existing public transportation riders (assuming bus riders, not commuter rail) would be able to reduce their travel times by nearly half by taking the extended Red Line. The time savings for those who primary drive would be less pronounced, but still significant.

Lexington Center and Route 128 locations are briefly discussed, but not studied in this EIS report. Detail on these locations can be found in the following section of this chapter on a complementary transportation study.

Table 4.3: Travel Times to Park Street from RLX Extension Stations.

Start Location	Auto	Existing Transit	RLX
Harvard Square	19	9.6	9.6
Porter Square	21	20.1	12.2
Davis Square	21	23.1	13.8
Alewife	21	25.4	15.9
Arlington Center	22	29.1	18.3
Arlington Heights	26	39.1	21.6
Lexington Center	36	70.4	26.4
Route 128 Station	40	88.6	29.1

Source: EIS V1

Following the summary section, the EIS systematically details each station and connecting segment, starting with Harvard Square. The important information relating to this thesis topic begins in Volume II of the study with a discussion of the Alewife to Arlington Center segment.

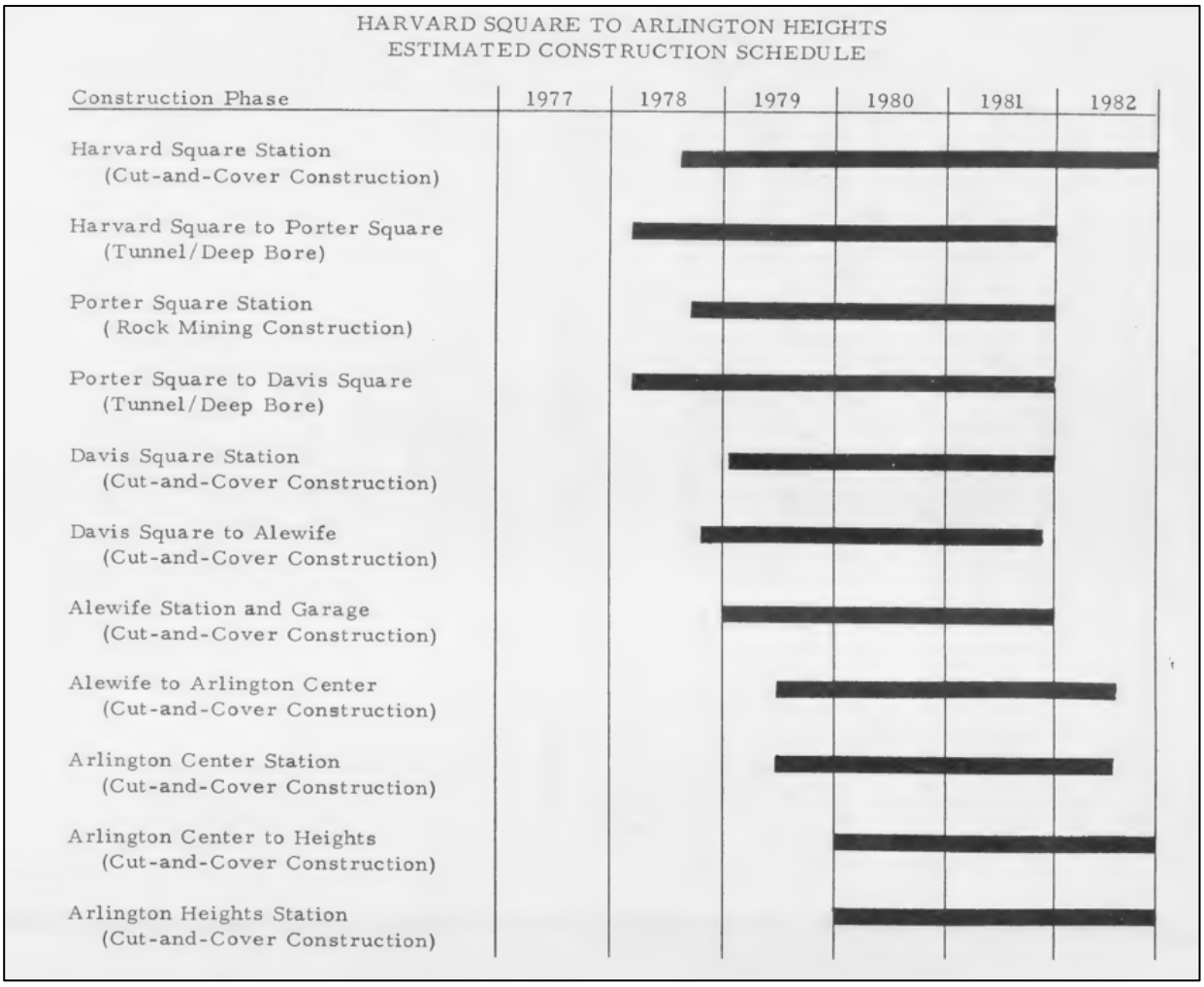


Figure 4.2: Project timeline. *Source: EIS V1*

Alewife to Arlington Center

Track Alignment

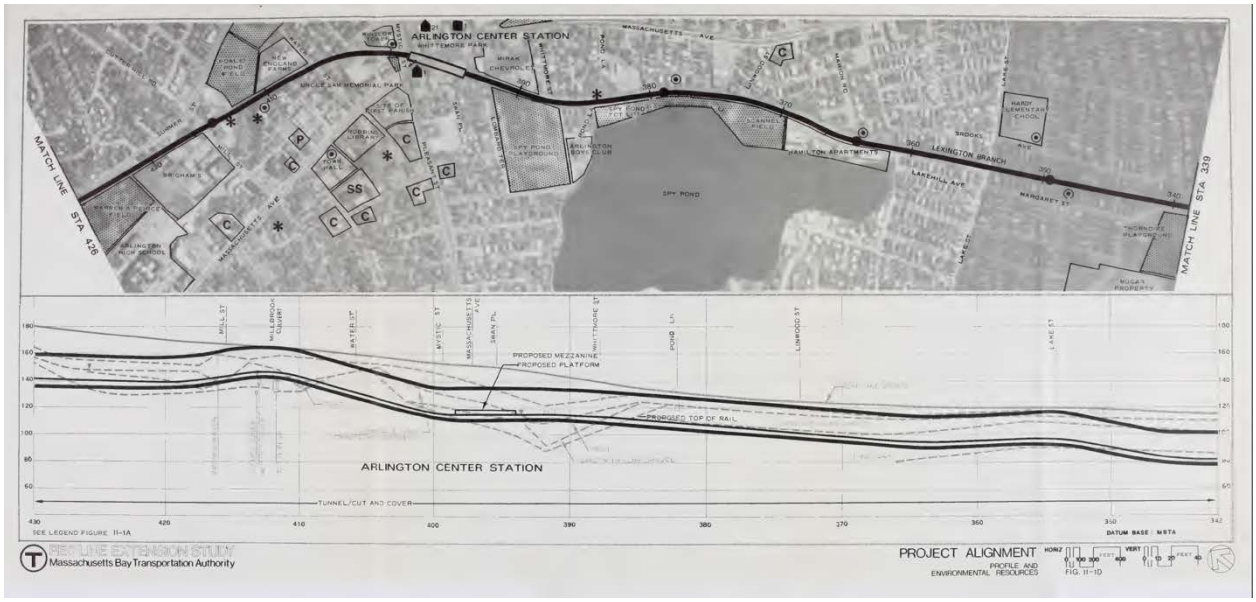


Figure 4.3: Alewife to Arlington Center alignment. *Source: EIS VII*

In this section, I will dive into the 1977 EIS chapter on the Alewife to Arlington Center section of the Red Line extension. As illustrated in figure 4.3, the track alignment for this segment would continue for approximately 1.1 miles, following the existing MBTA right-of-way (ROW) along the Lexington Branch of the Commuter Rail System. In this proposal, Red Line service would come at the expensive of existing commuter rail service. However, the study authors made a clear argument that this was a justifiable tradeoff. During the mid-1970's, only one daily inbound and one daily outbound train served a commuter rail station in Arlington Center. This service was fully suspended in January of 1977. A more significant concern regarding the existing right-of-way was the freight rail service. At the time, about a dozen manufacturers, businesses, and farms routinely received deliveries from freight trains on this ROW. The report concluded that retirement of this freight service was necessary and justified in order to provide mass transportation.

Along this section of right-of-way, the Red Line extension alignment would be constructed using a cut and cover tunneling method. This relatively straightforward construction method would require a 31-foot wide and an 18-to-25-foot-deep depression to be cut into the Lexington Branch ROW. Once excavated, track would be laid down, ventilation shafts would be constructed, and the entire ROW would be decked and covered with about five to ten feet of fill. Figure 4.4 illustrates this construction method, as well as the deep bore tunneling method that was to be used through Cambridge and Somerville. Due to the existence of the at-grade ROW, the EIS report argued that cut-and-cover be used along this section of the Arlington extension, as deep bore tunneling would've been an unnecessary complexity and expense.

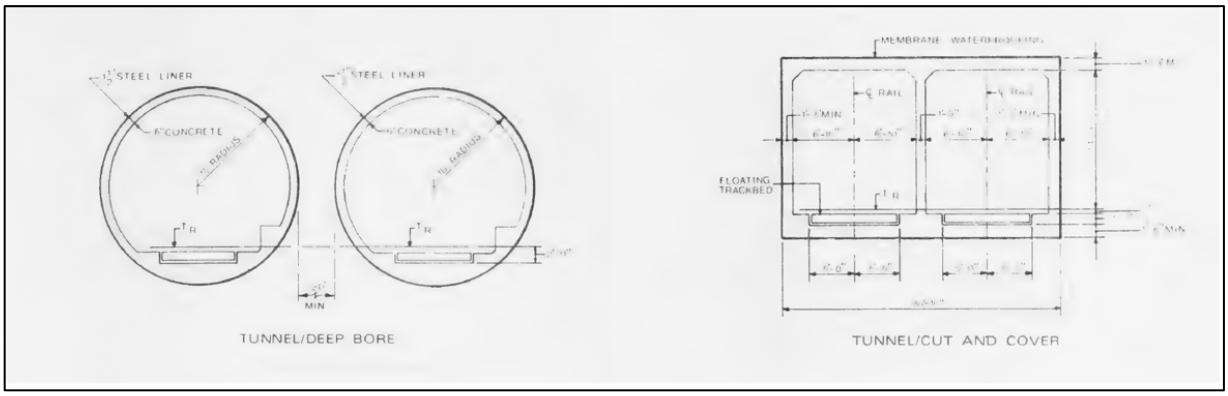


Figure 4.4: Illustration of deep bore (left) and cut and cover (right) tunneling. *Source: EIS VII*

Alongside the existing ROW considerations, noise and construction disturbances are thoroughly enumerated in the EIS. The Red Line extension alignment along this section would pass within a close distance to the houses and backyards of East Arlington residents. In order to minimize disturbances from the construction and operation of the Red Line extension, the study authors outline a number of methods that project engineers would employ. Along this section of track, floating slabs would be installed, a novel railway technology at the time. Floating slabs act to minimize vibration caused by rolling trains, thus reducing noise and physical disturbance. Further in the EIS, an entire chapter is dedicated to a detailed noise and vibration study, which

proports that this technology would reduce disturbances to an acceptable level. The report also makes it clear that in every possible case, the existing railroad along the ROW would be used to move materials and equipment. The report authors argue that utilizing the existing tracks would reduce the need for trucking construction materials, further minimizing disturbances to the neighborhood and local roads.

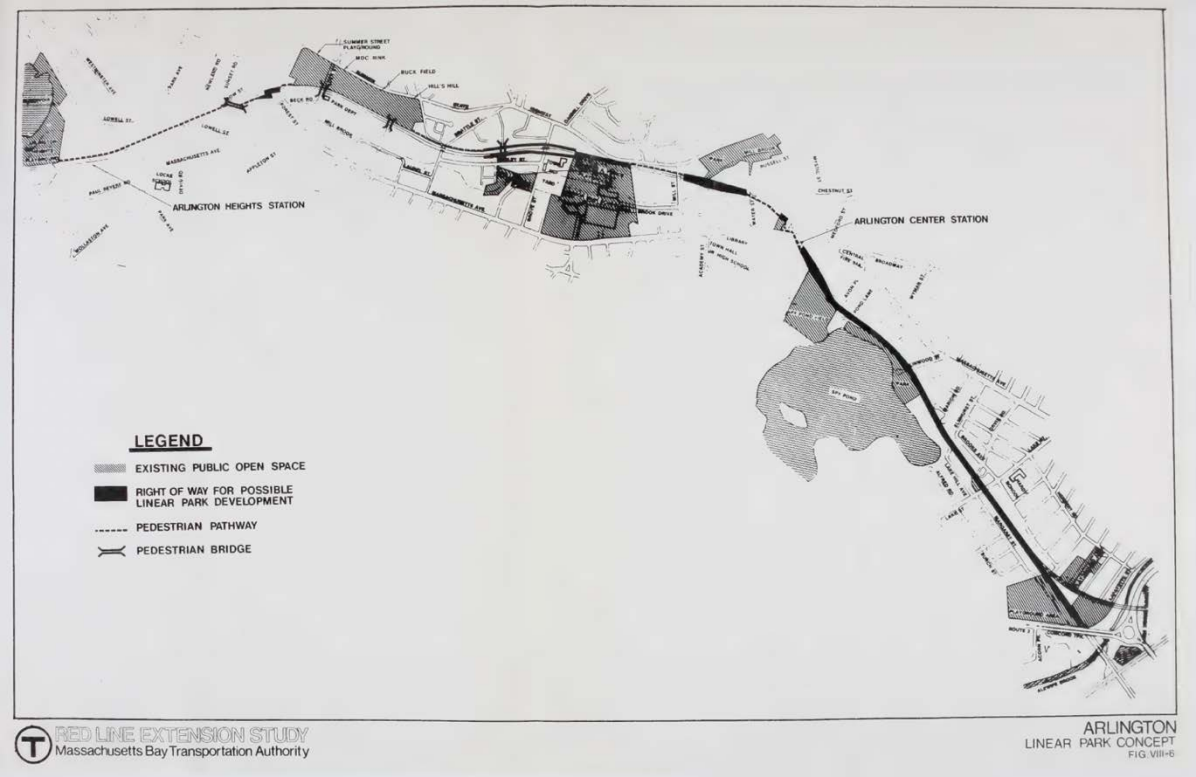


Figure 4.5: Proposed Linear Park through Arlington. *Source: EIS VII*

The EIS authors claim that an additional benefit to the Red Line extension along this section would be that it would allow for the construction of a linear park, a long-stated goal of the town. The study discusses how currently, residents who abut the ROW often cross the existing tracks to visit neighbors, schools recreational fields, and other amenities. The study authors acknowledge resident concerns regarding disruptions to this flow of movement across the ROW in result of track construction. At the same time, they aim to counteract these concerns by espousing the potential for a formalized linear park to be built following the conclusion of

track construction, a plan of which was included in the EIS, as show in in figure 4.5. They argue that in the long run, the Red Line extension would be safer for neighborhood residents when compared to the existing condition. They claim that although only a handful of trains pass along the tracks each day, this still poses a risk for people, especially children. The Red Line extension construction would temporarily pose barrier to this cross-track movement, but after a handful of years, people would be able to safely cross tracks via the linear park without the risk of conflict.

This chapter of the report also provided greater detail on the various costs associated with this extension section, enumerating the price of different construction elements and various contingencies.

Table 4.4: Alewife to Arlington Center cost detail

Note: Dollar-to-dollar comparisons between detailed cost tables and general costs (table 4.1) do not perfectly align due to increased line-item detail and omission of section-wide factors in this section.

Item	Cost 1975	Cost 2025
Alignment		
Transit Structure	$ 28,433,000	$ 125,987,603
Utility Relocation	$ 775,000	$ 3,434,052
ROW acquisition	$ 50,000	$ 221,552
Professional Services	$ 146,500	$ 649,147
Field Inspection	$ 902,500	$ 3,999,009
Force Account	$ 584,000	$ 2,587,724
Project Admin	$ 1,812,000	$ 8,029,034
Subtotal	$ 32,703,000	$ 144,908,120.6
Station		
Station Structure	$ 11,448,000	$ 50,726,483
ROW acquisition	$ 1,000,000	$ 4,431,034
Professional Services	$ 572,500	$ 2,536,767
Field Inspection	$ 354,000	$ 1,568,586
Force Account	$ 172,000	$ 762,138
Project Admin	$ 782,500	$ 3,467,284
Contingencies	$ 1,145,000	$ 5,073,534
Subtotal	$ 15,474,000	$ 68,565,828
Segment Total	$ 48,177,000	$ 213,473,948

Source: EIS VII

It is notable that this section of the Red Line extension has the cheapest cost-per-foot of any alignment along the whole project. This minimal cost was due to the aforementioned cut-and-cover construction method, as well as the physical characteristic of the right-of-way. The slope along this section this very flat, reducing the need for terrain grading. More importantly, there is only major one at-grade street crossing along this entire section at Lake Street. These factors worked to minimize the project costs of this alignment.

Arlington Center Station

The station complex at Arlington Center would exist below the intersection of Massachusetts Avenue and Mystic Street. The study authors state that the station would require the taking of eight properties to allow space for the right-of-way, entrances, exists, ventilation, and other access points. The station would have three portals: a west entrance at 635 Massachusetts Avenue, a north entrance at 483 Massachusetts Avenue, and an east entrance at the corner of Massachusetts Avenue and Swan Place. As illustrated in figures 4.6, 4.7, and 4.8, the station complex would have a relatively light footprint in Arlington Center. A skylight would accompany the three entrances, but no large structures such as a parking garage or a headhouse were present in the final designs. This is a departure from earlier MBTA proposals. In previous station area designs, project planners proposed a 500-space parking structure and bus depot in the Russel Common municipal parking lot, behind Arlington Catholic High School. This proposal was met with fierce opposition from church and community leaders, and was scrapped from final designs. This opposition movement and its impacts are further described in chapters five and six.

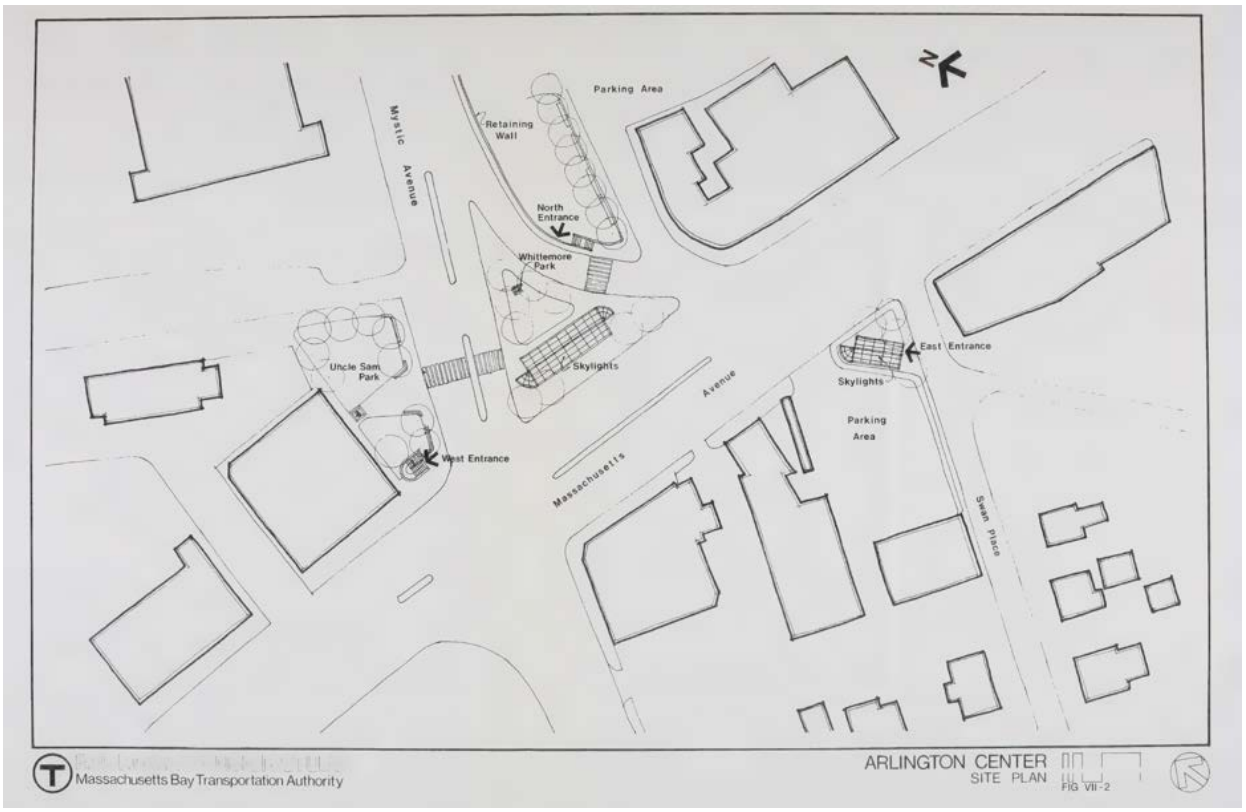


Figure 4.6: Arlington Center station site plan. *Source: EIS VII*

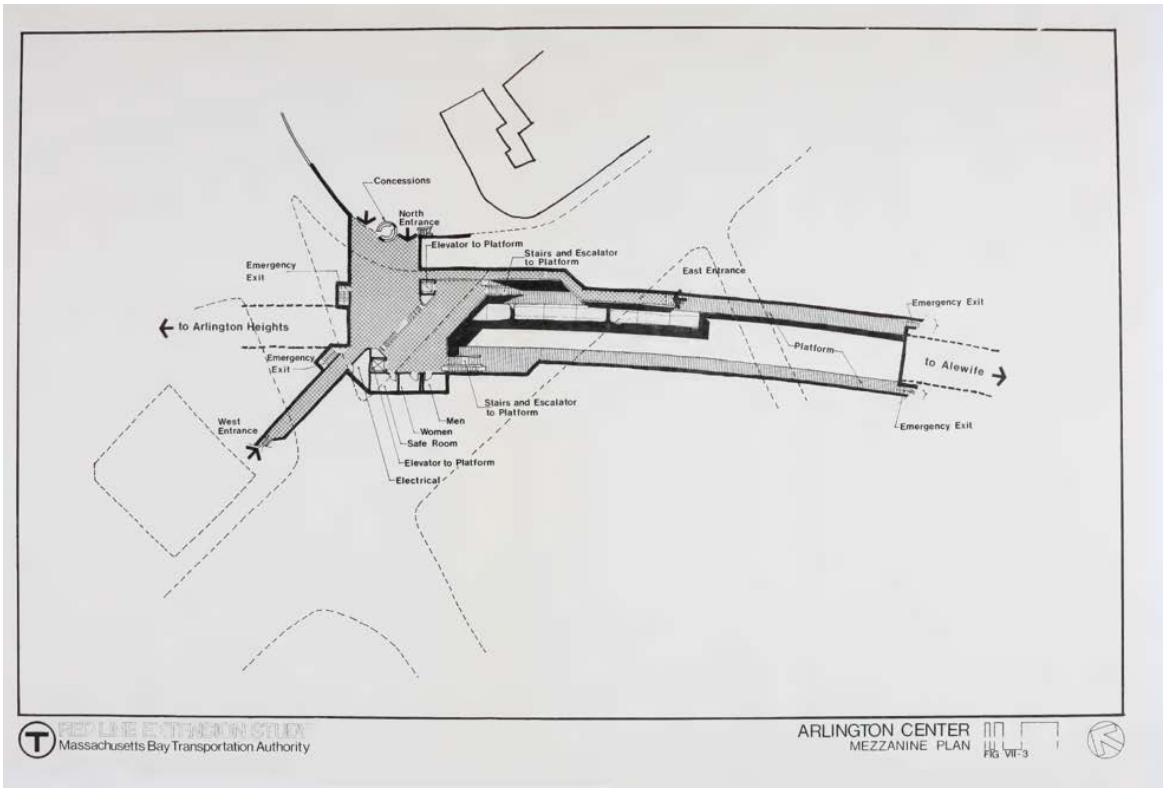


Figure 4.7: Arlington Center station mezzanine plan. *Source: EIS VII*

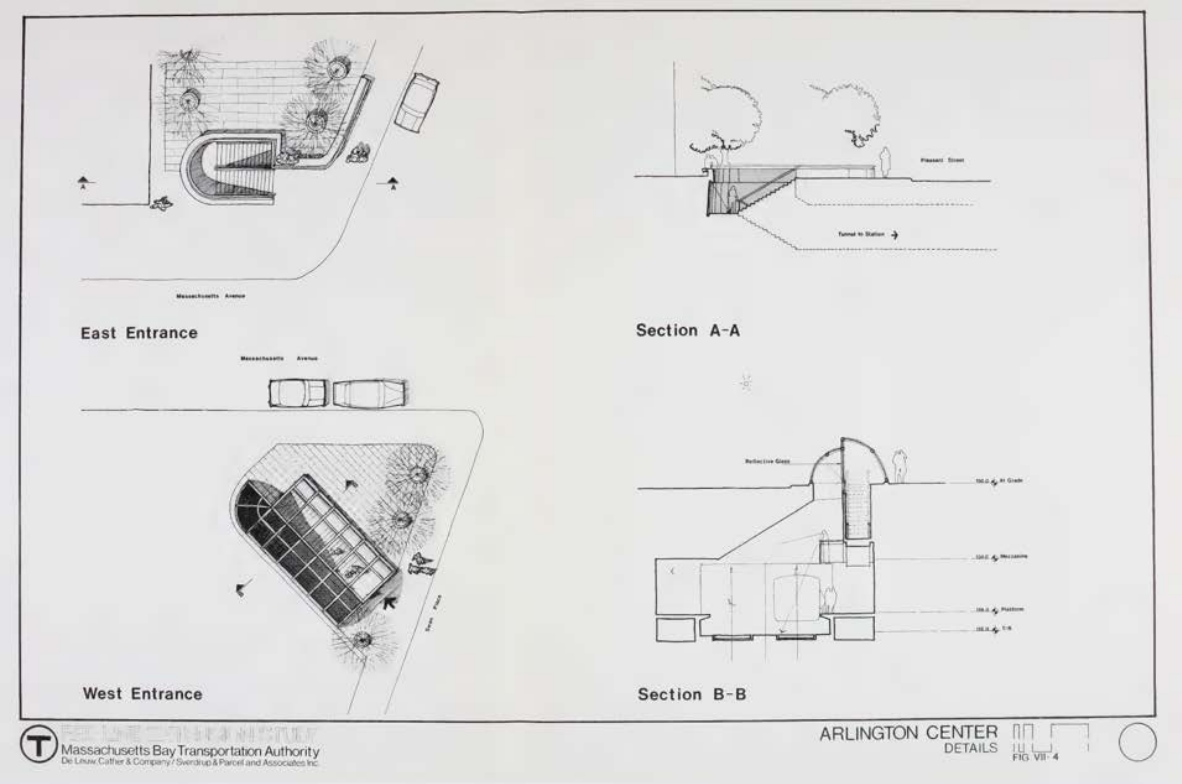


Figure 4.8: Arlington Center station entrances. *Source: EIS VII*

As illustrated in figures 4.6 and 4.8 above, the majority of the Arlington Center station would be underground. The entrance portals would be dispersed and non-obtrusive, and no headhouse structure would be constructed. This below-grade and minimalistic station design was meant to minimize any potential adverse impact on the aesthetics and character of Arlington Center, placating the demands of residents.

The EIS provides summary statistics on the station area, stating that there are approximately 1,700 individuals within a quarter mile of the station, and 5,500 people within a half mile. The study authors claim that Arlington Center is particularly suited for Red Line service as residents of East Arlington are more likely to have employment in Cambridge or Boston than residents in other parts of the town. They further state that this station would boast

5,430 daily boardings, with 1,884 of those riders walking to the station, 1,532 taking a bus connection to the station, and 2,014 riders being dropped off by private automobile. These 5,430 riders would enjoy an estimated 18-minute commute to Park Street, according to reported estimates shown previously in table 4.3.

The study signals concern over this significant estimate of drop-off riders. Previous station designs included facilities to handle this increased traffic volume, but as discussed, these were omitted from the final station plans. The authors say that further study will be needed to handle this projected influx of drop off traffic. Furthermore, they discuss that street reconfiguration may be required and that the town may need to develop its municipal lot into a parking garage in the future.

In addition to benefits for commuters and public transportation users, the study authors espouse that Arlington Center station would be a boon to the commercial district. They cite another study, which claims that if the Red Line were operational, 175,000 square feet of retail and 230,000 square feet of office space would become developable in the area, dramatically increasing the commercial base of the town.

Arlington Center to Arlington Heights

Track Alignment

The final section of the Red Line extension studied in the 1977 EIS was between Arlington Center and Arlington Heights. As illustrated in figure 4.9, this section of track alignment would travel approximately 2.4-miles, following the ROW of the Lexington Branch of the Commuter Rail System, and terminate at a station in Arlington Heights about a quarter mile west from the intersection of Park Avenue and Massachusetts Avenue. This section of ROW inherits similar issues to those outlined previous section, as commuter and freight rail service

would both cease. Along this section however, there was a greater concentration of freight-reliant businesses, including a wholesale lumber company which relied on freight service for 80% of its businesses, as well as Arlington Coal & Lumber which relied on weekly freight deliveries. The report concludes that when interviewed, a majority of these fright-reliant businesses stated that they would be able to switch to truck deliveries if necessary.

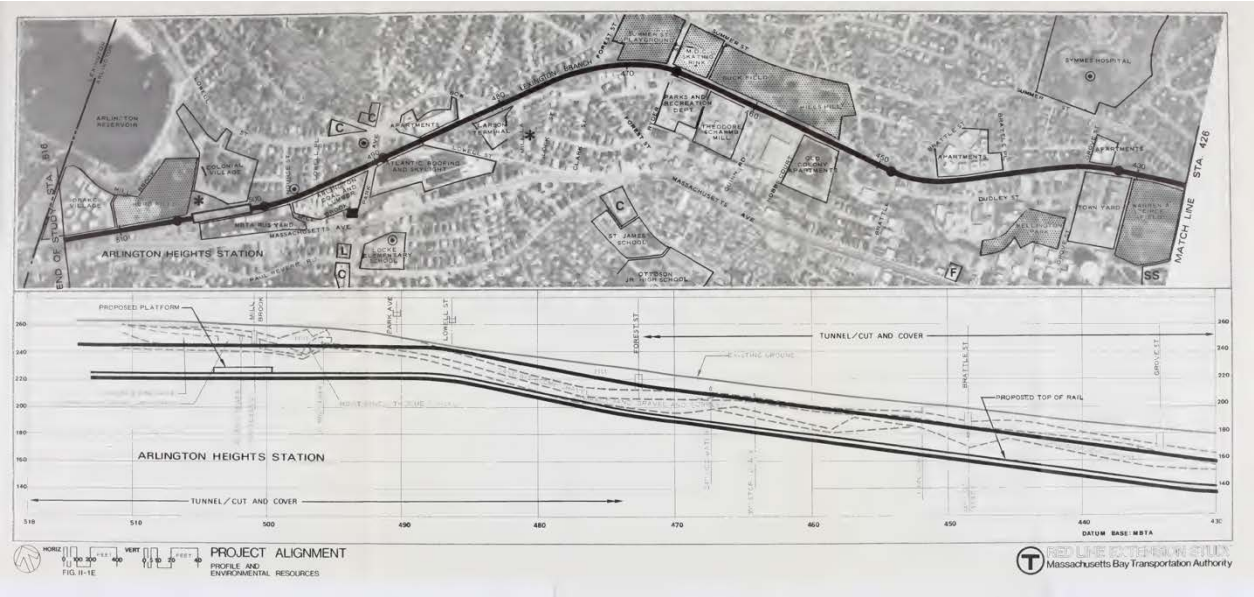


Figure 4.9: Arlington Center to Arlington Heights Track Alignment. *Source: EIS VII*

The track alignment would be constructed using the same method used for the Alewife to Arlington Center section. The existing at-grade tracks were to be removed, and a depressed trench would be dug. However, unlike the previous section of track, previous drafts of this study assert that this section of track would not be tunneled and covered. Red Line trains traveling here would be uncovered in the depressed alignment, similar to what can be found along the Green Line extension through Somerville today. This design was originally entertained as this section of track was over twice as long as the previous section, and traveled through less densely populated areas of town with fewer direct abutters. These circumstances lent themselves well to a

depressed alignment which would have been far more cost effective than a cut and cover tunnel approach. However, this draft proposal was met with community pushback, which is enumerated in a later chapter. In this final EIS, the MBTA confirmed that a cut and cover tunnel method was to be used along this section of track to appease these concerns and eliminate pedestrian conflicts. They study authors stated, “the at-grade alternative would have a major negative impact on pedestrian circulation and neighborhood cohesion all along this segment of the Red Line Extension.”

This section track alignment had additional complications that were not pronounced in previous sections of the project. The proposed ROW ran parallel to Mill Brook along much of its 2.4-mile length. This brook presented significant hydrologic challenges to project engineers, as it would have to be crossed in multiple places, including at the Arlington Heights station. The study further mentions that much of the ROW sits within the 100-year flood plain of Mill Brook, adding the need for detailed hydrologic engineering.

More so, this section of ROW had seven significant road crossings and would require the demolition and reconstruction of numerous bridges that crossed the existing tracks. These two physical characteristics, combined with the appeasing decision to use cut and cover tunneling resulted in a disproportionally high cost-per-foot of track for this segment. As previously shown in table 4.2, this section cost-per-foot of track is $47,833 (in 2025 dollars), which is 59% more expensive compared to section between the Alewife to Arlington Center, which uses the same construction method but only had one significant road crossing and no significant hydrological issues. Table 4.5 below illustrates the increases costs of this section due to the aforementioned factors.

Table 4.5: Arlington Center to Arlington Heights Cost Detail

Item	Cost 1975	Cost 2025
Alignment		
Transit Structure	$ 84,402,000	$ 373,900,860
Utility Relocation	$ 1,007,000	$ 4,461,010
Raising and Repaving of Streets	$ 394,000	$ 1,745,420
Removal of Bridges	$ 568,000	$ 2,516,240
ROW acquisition	$ 700,000	$ 3,101,000
Professional Services	$ 4,318,500	$ 19,130,955
Field Inspection	$ 2,669,000	$ 11,823,670
Force Account	$ 1,295,500	$ 5,739,065
Project Admin	$ 5,362,000	$ 23,753,660
Contingencies	$ 8,637,000	$ 38,261,910
Subtotal	$ 109,353,000	$ 484,433,790
Station		
Station Structure	$ 19,000,000	$ 84,170,000
Parking Garage	$ 4,320,000	$ 19,137,600
ROW	$ 50,000	$ 221,500
Professional Services	$ 1,166,000	$ 5,165,380
Field Inspection	$ 720,500	$ 3,191,815
Force Account	$ 350,000	$ 1,550,500
Project Admin	$ 1,444,500	$ 6,399,135
Contingencies	$ 2,332,000	$ 10,330,760
Subtotal	$ 29,383,000	$ 130,166,690
Total	$ 138,736,000	$ 614,600,480

Source: EIS VII

Note: Dollar-to-dollar comparisons between detailed cost tables and general costs (table 4.1) do not perfectly align due to increased line-item detail and omission of section-wide factors in this section.

Arlington Heights Station

The sixth and final station outlined in the Red Line extension EIS is the Arlington Heights station, which would be sited on MBTA property near the intersection of Park Avenue and Massachusetts Avenue (approximately at 1395 Massachusetts Avenue). The station platform itself would be constructed underground with its accompanying parking garage being constructed above. This parking garage would have capacity for 350 vehicles, which the report states would be the minimum amount necessary given that this station would be the terminal station for the

extension. This proposed parking garage added about $4.3 million (approximately $19 million in 2025 dollars) to the cost of the station complex, making this terminal far more costly than the Arlington Center station.

Throughout this section of the study, doubt is cast on the validity of Arlington Heights being the terminal station, even by study authors. Feedback from Arlington residents and town organizations, which is enumerated in following sections, make it clear that the community did not view Arlington Heights as an appropriate terminus. When discussing the physical and commercial landscape of the Arlington Heights station area, the report authors seme to corroborate this, stating, “The area was not suited to become a focus of regional importance and, residents believe that it should never attain that status.”

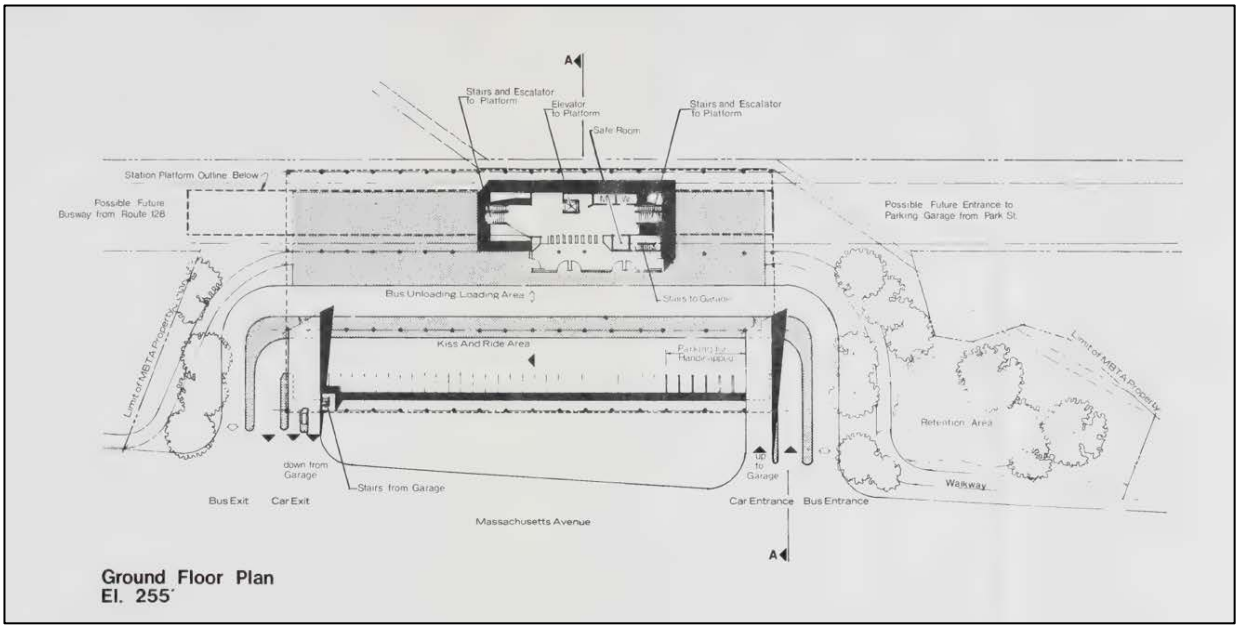


Figure 4.10: Arlington Heights station plan view. *Source: EIS VII*

In this section, the EIS authors discuss that a terminal further west along Route 128 would likely be more appropriate, and that this possibility is being studied in a concurrent report. Nevertheless, the study authors make it clear that given the amount of appropriated federal funds, temporarily terminating the station in Arlington Heights would be necessary.

Making the case that this station location would appropriate, the study cites that it would service about 3,500 daily riders. Of these 3,500 daily riders, 1,250 would arrive via connecting bus, 1,360 would be dropped off, and 650 would walk from their homes to the stations. Over 1,700 people lived within a quarter mile of the station, and 5,900 lived within a half mile. As illustrated in table 4.3, these riders would enjoy a 22-minute commute to downtown Boston. This is a drastic improvement from the reported 40-minute average public transit commute time on existing transit, and is a modest improvement from the average 26-minute commute via auto.

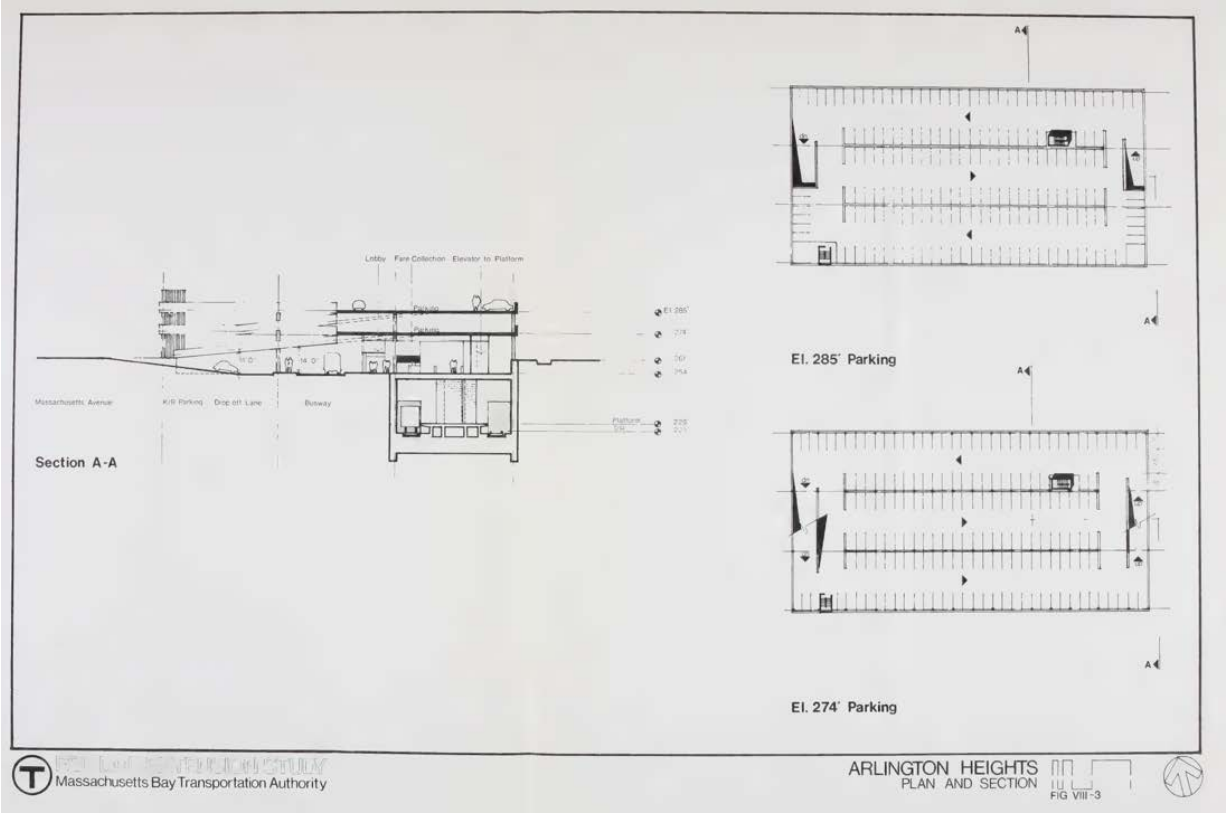


Figure 4.11: Arlington Heights station plan and section view of parking garage. *Source: EIS VII*

The report authors reiterate their concerns regarding the physical environment of this station. They state that relatively small 3-story parking garage, as shown in figures 4.10 and 4.11, would likely not be adequate to satisfy commuter parking demand, and that increased traffic

resulting from the large amount of drop offs may necessitate road widening and intersection reconfiguration.

Alternatives Explored

At the end of each segment section in the EIS, the authors discussed possible design alternatives. For both sections, the study examines the costs and benefits reconstructing the existing railroad tracks on top of the covered red line tracks. This alternative would remove the possibility of a linear park, and would increase the cost of the overall project. However, this alternative was explored as a contingency. At the time of the study's release, the project had yet to gain Congressional approval regarding the retirement of freight service along the existing tracks. Although limited through the town, freight service was nonetheless regulated under the Interstate Commerce Clause, which requires federal approval for any disruption for the free flowing of trade across state lines. If the project did not clear this regulatory hurdle, then this alternative would allow for Red Line construction to move forward, as freight service would ultimately be restored along the ROW.

The second alternative, which was more seriously discussed, was to instead construct a light rail system along the Arlington sections of the Red Line extension. This light rail system would operate similarly to the Green Line, and would run at-grade along the Lexington Branch ROW, and would include intermediate stations at Lake Street and Brattle Street. The main advantages of the light rail alternative would be these intermediate stations, a shorter construction timeline, and its general cost savings potential.

As illustrated in table 4.6 below, this light rail system through Arlington was estimated to cost about $40 million (approximately $175 million in 2025 dollars). This significant cost

savings can be attributed the minimal amount of tunneling and grading required. The construction of an at-grade light rail would involve the replacement of about 3.5 miles of railroad track, the installation of electrical wires, and basic station platform construction. This construction would take approximately 24 months, significantly shorter than the 36 months required for cut-and-cover construction. The study authors state that at peak hours, light rail trains would run at four-minute headways and move about 7,400 riders a day to Alewife.

Although this alternative would be significantly less expensive, the EIS authors argue that it would benefit the population of Arlington far less than a complete Red Line extension. Arlington residents hoping to travel to downtown Boston would have to make a connection at Alewife station, increasing travel times and reducing efficiency of the whole system, thus diminishing the overall utility of this sizeable transportation investment. More so, the study makes it clear that Arlington residents have opposed any proposal that maintains an at-grade alignment through the town., making this alternative politically challenging to implement.

Table 4.6: Light Rail Alternative detailed cost

Item	Cost 1975	Cost 2025
Light Rail Line		
Structures	$ 5,137,600	$ 31,339,360
Trackwork	$ 2,350,500	$ 14,338,050
Electrification	$ 4,656,000	$ 28,401,600
Signaling	$ 640,400	$ 3,906,440
Decking and Repaving	$ 4,300	$ 26,230
New Bridges	$ 1,910,000	$ 11,651,000
Fencing	$ 554,000	$ 3,379,400
Remove RR Track	$ 244,000	$ 1,488,400
Other Costs	$ 3,883,700	$ 23,690,570
Subtotal	$ 19,380,500	$ 118,221,050
Allowance for LRV Maintenance Facility		
Maintenance Shop	$ 3,000,000	$ 18,300,000
Yard Trackwork	$ 615,000	$ 3,751,500
Electrification	$ 767,500	$ 4,681,750
Other costs	$ 1,095,600	$ 6,683,160
Subtotal	$ 5,478,100	$ 33,416,410
Intermediate Stations		
Lake Street	$ 150,000	$ 915,000
Brattle Street	$ 150,000	$ 915,000
Other costs	$ 75,000	$ 457,500
Subtotal	$ 375,000	$ 2,287,500
Railroad Improvements through Arlington Center		
New RR Track	$ 181,500	$ 1,107,150
Signaling	$ 89,000	$ 542,900
Switches	$ 26,400	$ 161,040
Crossings	$ 9,700	$ 59,170
Fencing	$ 37,000	$ 225,700
Other	$ 86,100	$ 525,210
Subtotal	$ 429,700	$ 2,621,170
Arlington Center Station		
Station	$ 5,860,000	$ 35,746,000
Garage	$ 1,840,000	$ 11,224,000
Other	$ 1,925,000	$ 11,742,500
Subtotal	$ 9,625,000	$ 58,712,500
Arlington Heights Station		
Station	$ 1,655,000	$ 10,095,500
Garage	$ 1,840,000	$ 11,224,000
Other	$ 874,000	$ 5,331,400
Subtotal	$ 4,369,000	$ 26,650,900
Grand Total	**$ 39,657,300**	**$ 175,681,839**

Source: EIS VII

Minuteman Area Transit Study

Study Summary

The following section discusses details from the Minuteman Area Transportation Plan (MATS), which was released on February 24th, 1977. This draft was sponsored by the USDOT and prepared on behalf of the MBTA to explore multi-modal public transportation alternatives for the Northwest Corridor of the Boston metropolitan area. The MBTA was motivated to commission this report in part to better understand how future Red Line service would perform beyond Arlington Heights in towns such as Lexington, Burlington, and Bedford. Notably, draft findings from this report were released less than two weeks prior to the pivotal town of Arlington referendum on March 5th, 1977. More so, it is unclear if this draft version was widely available for public consumption, as the report clearly states that these are preliminary findings, and that more detail on selected alternatives would be released in a second phase of study. More so, while the 1977 EIS is publicly available online through resources such as the Internet Archive and Boston Public Library, the same cannot be said about this document. The 1977 MATS was far more difficult to track down, and was only available for review in-person at the Cambridge Historical Commission office.

Despite its contemporary obscurity, this report is significant to understanding the full context of the Arlington Red Line extension. Many opponents of the project frequently cited this report in their letters of concern to the MBTA. Opponents stated that the extension proposal outlined in the EIS report should not be seriously considered until this report was released. As opposition was focused largely against Arlington Heights being a terminus for the Red Line, they believed this report would provide the insight and findings necessary for the MBTA to locate the terminus elsewhere.

This report studied seven alternatives for bus rapid transit, and ten alternatives for rail service beyond Arlington Heights. The first five rail alternatives pertain the most to the Red Line extension as they explore station locations and track alignments using existing Red Line technology and an assumption that the entire ROW is grade-separated. The second set of five rail alternatives examine the feasibility of using other transportation technologies such as improved commuter rail service, or new light rail service along the existing at-grade ROW. This section will explore in detail the first five alternatives examined in this study. Illustrated in figure 4.12, these explored varying alignments and station locations in East Lexington, Lexington Center, Hartwell Avenue (Route 128 near Lexington), and at the Burlington Mall.

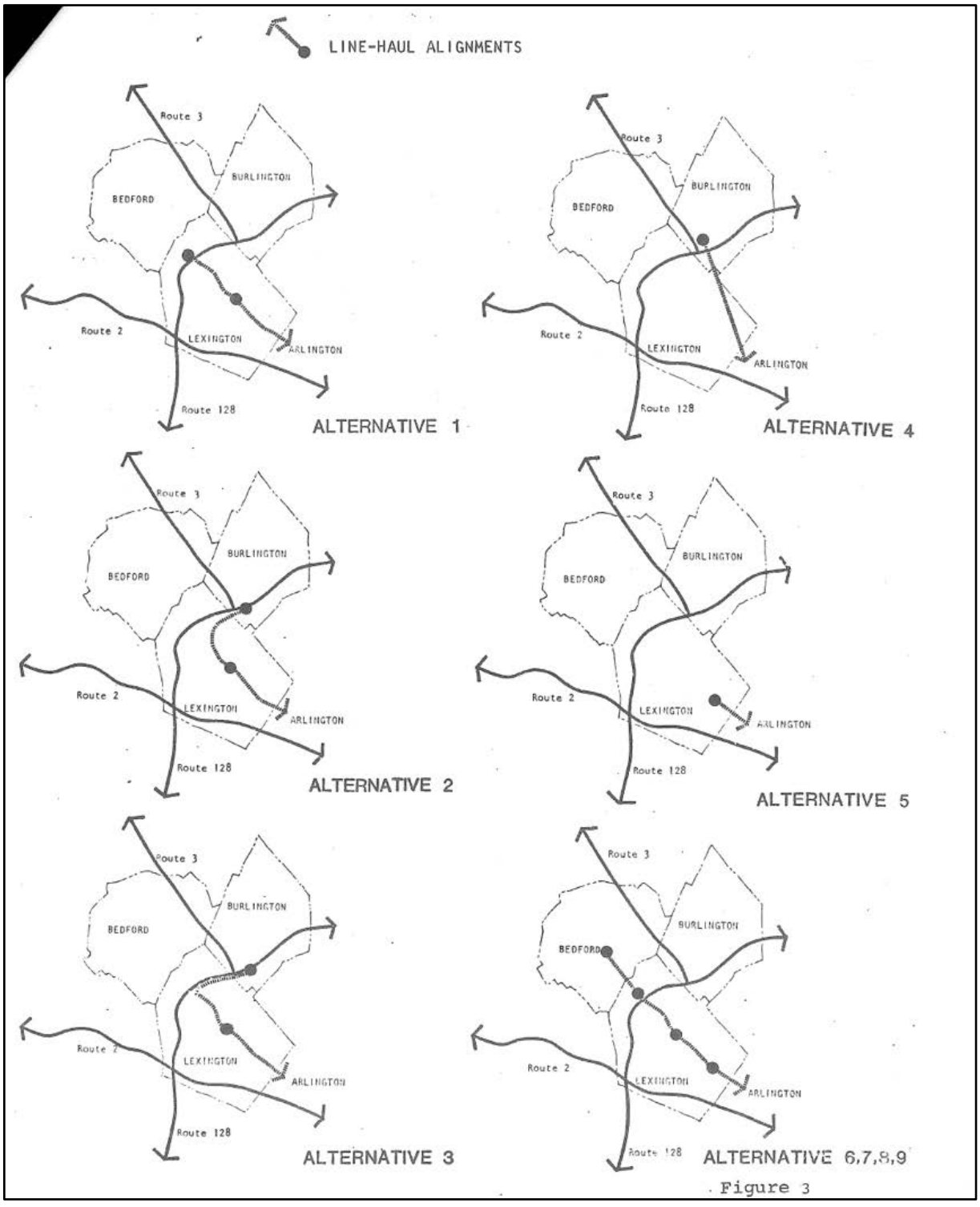


Figure 4.12: Line haul (rapid transit) alternatives studied in the MATS. *Source: MATS*

It is clear from the outset of this study that the authors had doubts regarding the validity of expanding rapid transit beyond Arlington Heights. They state that while Arlington Center and Arlington Heights have the population densities necessary to support rapid transit, the same cannot be said looking further north and west. Beyond Arlington Heights, the population density declines rapidly through Lexington, Burlington, and Bedford. More so, the report states that travel demand to Cambridge and Boston among these communities is quite low, as many residents in this area are employed elsewhere in the region, which is shown in figure 4.13.

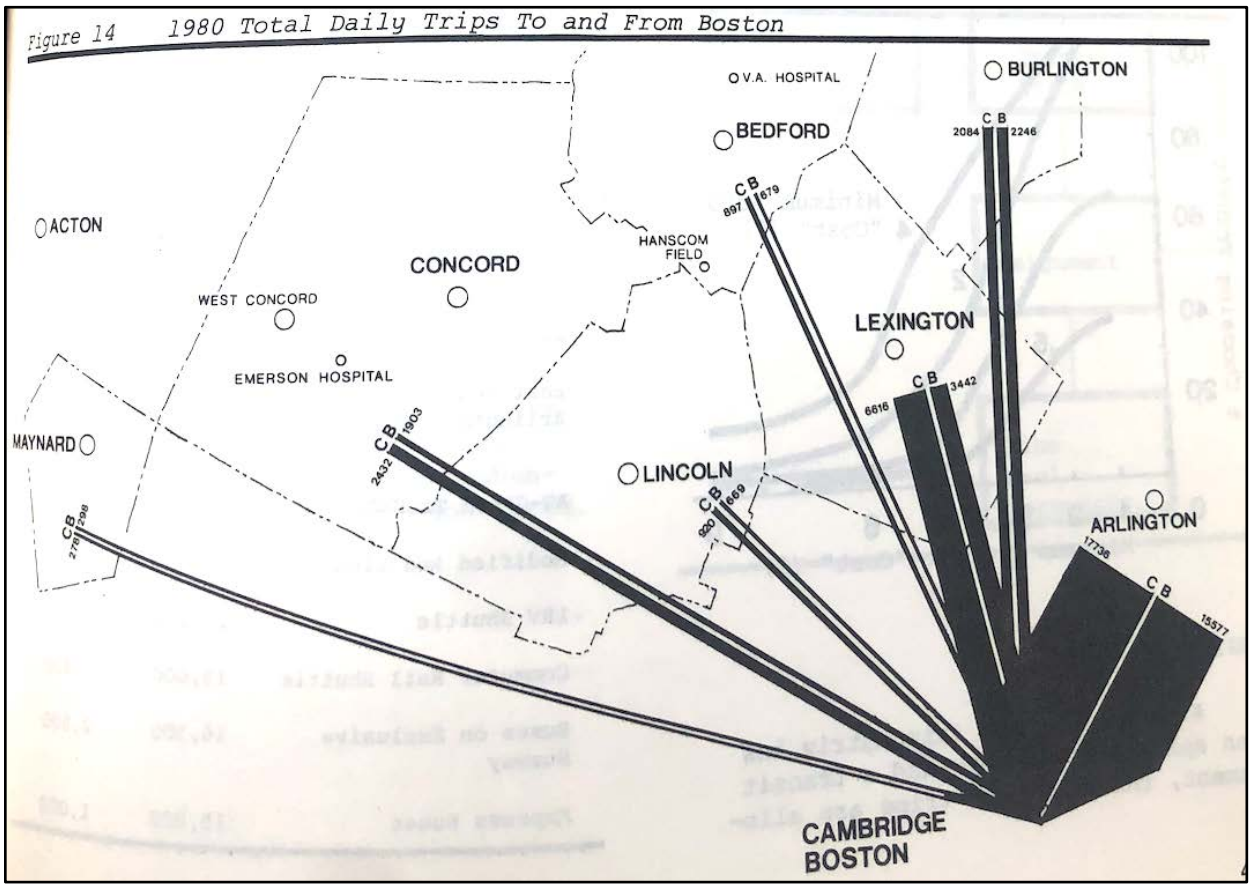


Figure 4.13: Travel demand to Boston and Cambridge from study area towns. *Source: MATS*

Further diminishing the case for rapid transportation beyond Arlington Heights are the land use considerations of the larger region. The report states that in the 20 years prior to this

report, these towns saw a huge increase in commercial and residential development. However, much of this new residential development is zoned as single-family on large minimum lot sizes, which is not conducive to supporting rapid transit. Additionally, the remaining land in these towns are either not developable, or has been placed under conservation restrictions. The study authors argue that without significant zoning reform, which is unlikely, the benefits of expanded rapid transit would not be fully realized in these communities.

The study does discuss arguments in favor of constructing rapid transportation beyond Arlington Heights. The authors argue that the new station areas have great potential for attracting many new riders to the system, especially the proposed terminal stations along Route 128. A Route 128 station would draw thousands of riders beyond the immediate towns, as this station would be proximal to Route 2, Route 3, and Interstate 93. A significant additional benefit to transportation expansion would be its alleviating effects on the impacts of Arlington stations by offering more convenient boarding locations for regional commuters. This benefit directly addresses some of the community concerns and challenges associated with locating the Red Line terminus in Arlington Heights.

Table 4.14 below summarizes the five Red Line alternative alignments and terminal locations beyond Arlington Heights. For each of these five alternatives, the MATS estimates costs using a partially depressed and a fully depressed alignment. A partially depressed alignment would result in a cheaper alternative, as Red Line trains would run below-grade in an uncovered trench along the existing ROW. A fully depressed alternative would require decking along the entire ROW, resulting in significant cost increases but with added benefit of a fully grade-separated alignment. Across these five alternatives, there is wide variation in projected ridership and cost totals. However, a pattern emerges; larger capital investments would constitute higher

ridership. Alternative two highlights that a Red Line extension that would terminate at the Burlington Mall would attract the largest amount of daily riders, with 5,900 being added to the system but at a cost of $172 million to $204 million ($761 million to $903 million in 2025 dollars), depending on the vertical alignment. Alternative five, which concerns a terminal station in East Lexington less than a mile west from Arlington Heights, offers the smallest increase in daily riders, with only an additional 1,000 at a cost of $18 million to $27 million ($79 million to $119 million in 2025 dollars).

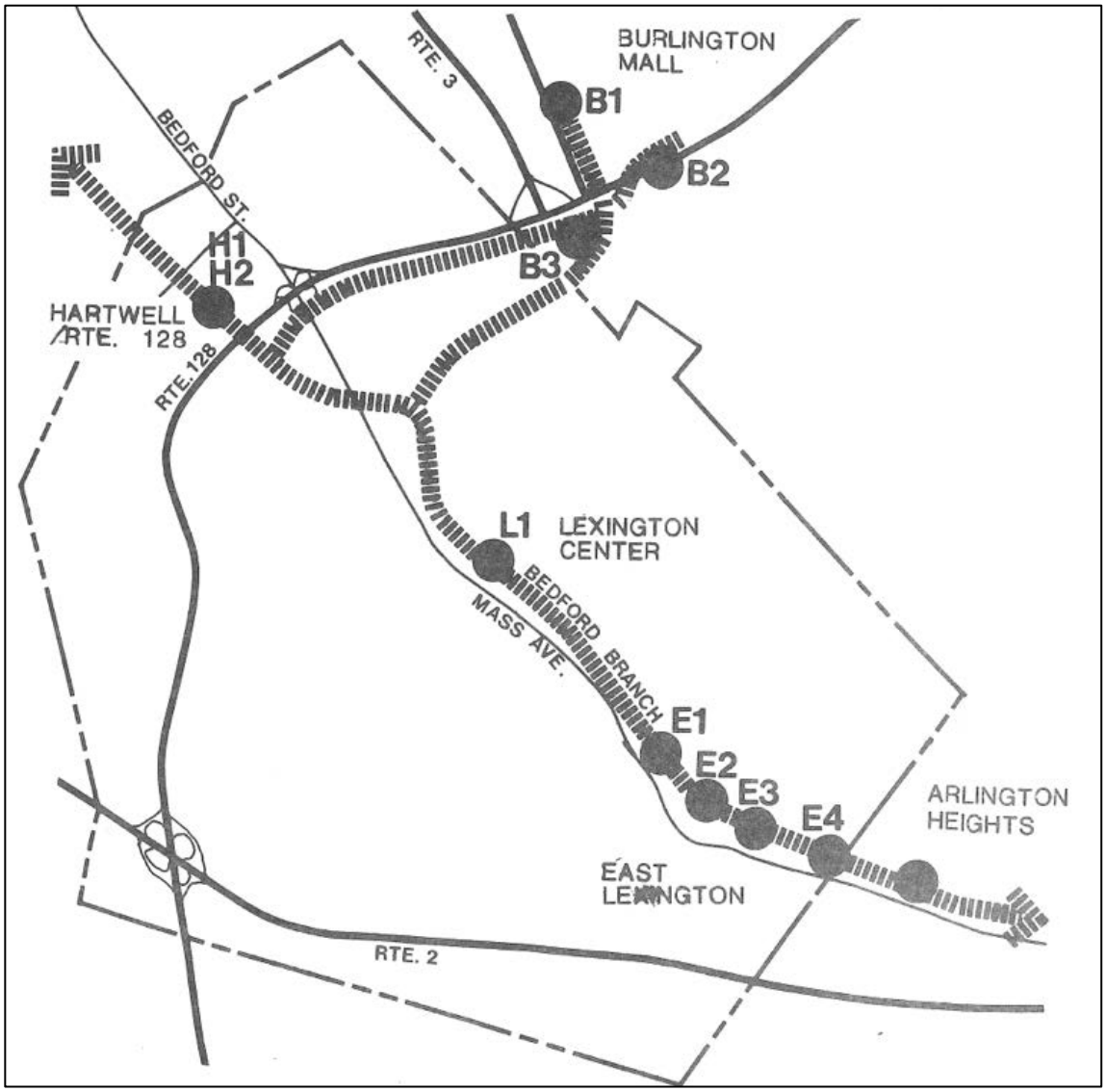


Figure 4.14: Alternative alignments and stations. *Source: MATS*

Table 4.7: Cost and ridership projections of figure 4.12 alternatives.

Alignment and Terminal	Vertical Alignment	Annual Reduction of Auto Usage (Miles x 10^6)	Trip Time Savings to the Urban Core (Minutes)	Daily Riders Beyond Arlington Heights	1975 Cost	2025 Cost
1. Route 128 via Bedford Branch	Partially Depressed	22.1	17	5,500	$ 89,000,000	$ 394,270,000
	Fully Depressed	22.1	17	5,500	$ 147,000,000	$ 651,210,000
2. Burlington Mall via Bedford Branch and new ROW	Partially Depressed	18.9	15	5,900	$ 172,000,000	$ 761,960,000
	Fully Depressed	18.9	15	5,900	$ 204,000,000	$ 903,720,000
3. Burlington Mall via Bedford Branch and Route 128	Partially Depressed	17.9	13	5,600	$ 136,000,000	$ 602,480,000
	Fully Depressed	17.9	13	5,600	$ 175,000,000	$ 775,250,000
4. Burlington Mall via Lowell Street	Fully Depressed	10.1	18	2,700	$164,000,000	$726,520,000
5. Arlington Heights East Lexington	Partially Depressed	6.9	14	1,000	$ 18,000,000	$ 79,740,000
	Fully Depressed	6.9	14	1,000	$ 27,000,000	$ 119,610,000

Source: MATS

Of the five alignments outlined in table 4.7, four were recommended for future study, and explored further in the document. Alignment four, which would have required a cut-and-cover tunnel alignment along the Lowell Street ROW was deemed far too expensive for the meager 2,700 additional riders it offered. This alternative would have skipped Lexington Center, and only offered one additional station beyond Arlington Heights at the Burlington Mall.

Figure 4.14 shows the alignments and station locations that the authors of the MATS selected to more thoroughly study in the remainder of the document. Table 4.8 below provides greater detail to these station locations, reporting on details of the estimated daily boardings and physical characteristics of these station location alternatives.

Table 4.8: Station Location Alternatives Detailed Information

Alternative	Parking Structure	Parking Supply	1980 Daily Boardings	Walk-ons	Park and Ride	Drop-offs
Burlington Mall - B1	4-Level Garage	1,560	2,700	620	1,560	520
Burlington Mall - B2	7-Level Garage	1,560	2,700	620	1,560	520
Burlington Mall - B3	3-Level Garage	1,560	2,700	620	1,560	520
Route 128/Hartwell Ave - H1	3-Level Garage	1,450	2,500	595	1,450	455
Route 128/Hartwell Ave - H2	Surface Lot	1,450	2,500	595	1,450	455
East Lexington - E1	Surface Lot	300-500	1,700	550	860	290
East Lexington - E2	Surface Lot	300-500	1,700	550	860	290
East Lexington - E3	2-Level Garage	150-180	1,700	550	860	290
East Lexington - E4	Surface Lot	360-460	1,700	550	860	290
Lexington Center - L1	4-Level Garage	520	3,000	2,060	750	190

Source: MATS

East Lexington Stations

As discussed, the least expensive alternative outlined in the MATS report is a terminus in East Lexington. Figure 4.15 provides greater detail on the location and physical characteristics of these locations. All of these potential stations would be located along the existing Lexington/Bedford Branch ROW. The report illustrates how these station locations would cause significant changes to the character of East Lexington.

The plan view illustrations of these stations highlight their outsized impact, mainly caused by the construction of parking facilities to store 300 to 500 vehicles. However, as these stations are sited in largely residential areas, the authors of the MATS state that the majority of new riders would walk to the station. Site E1 was identified to offer the greatest utility to the extended Red Line as both a possible intermediate station, or a terminal station. Site E1 would be located the furthest distanced from the proposed Arlington Heights station, thus not overlapping the service area. Nonetheless, the report makes it evident that these East Lexington alternatives were studied in large part to placate Arlington resident opposition to having a terminal station in the town. Planners of the Red Line extension project may have believed that by moving the terminal station to East Lexington, they would face less overall political opposition from Arlington.

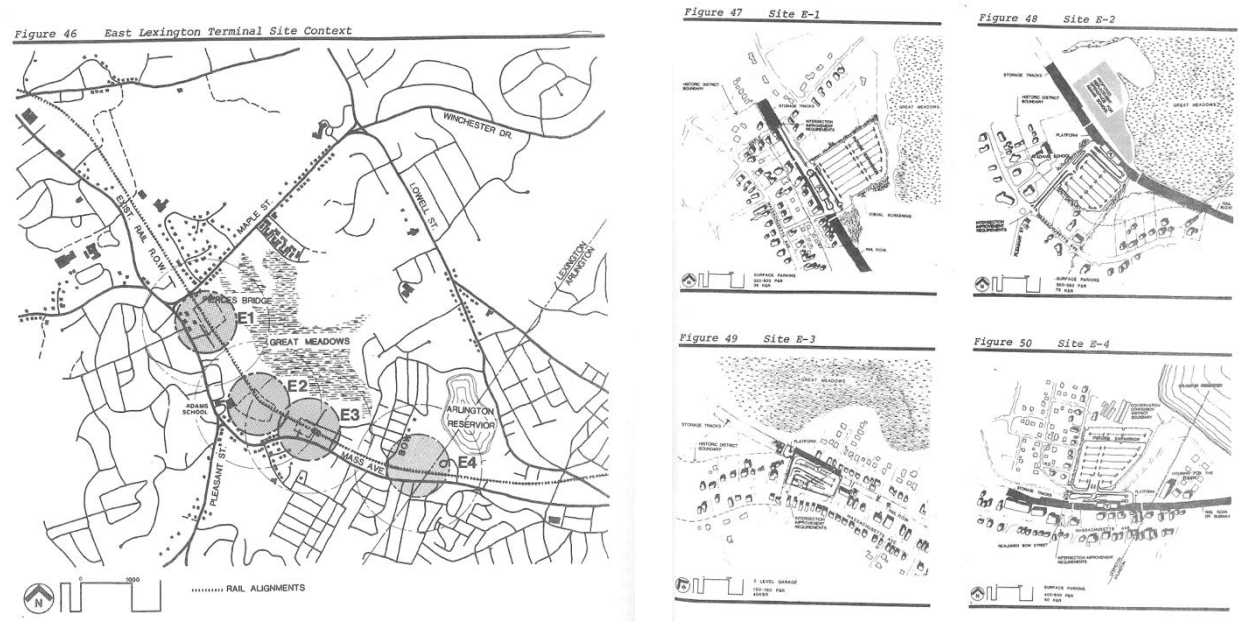


Figure 4.15: East Lexington station location alternatives**.** *Source: MATS*

Lexington Center Station

The Lexington Center, denoted as L1 on figure 4.14, was studied principally as an intermediate station along a longer Route 128 extension alignment. This station would be located along the same ROW as the East Lexington and Arlington sections of the Red Line extension. The MATS authors state that this station site benefits from being in the center of a relatively dense, residential environment. Due to this population density, the report estimates that of the 3,000 daily boardings, over 2,000 of these would derive from walk-ons from the surrounding neighborhood - a similar figure to Arlington Center. Greater detail of the station complex, which would require the tacking of one commercial surface parking lot, is shown in figure 4.16. A four-level parking structure with 2-levels below ground would be constructed. The report makes a clear statement that this station should be as unobtrusive as possible as to not disrupt the historic

nature of the town. Due to this consideration, the amount of parking supply would likely not meet demand for this station.

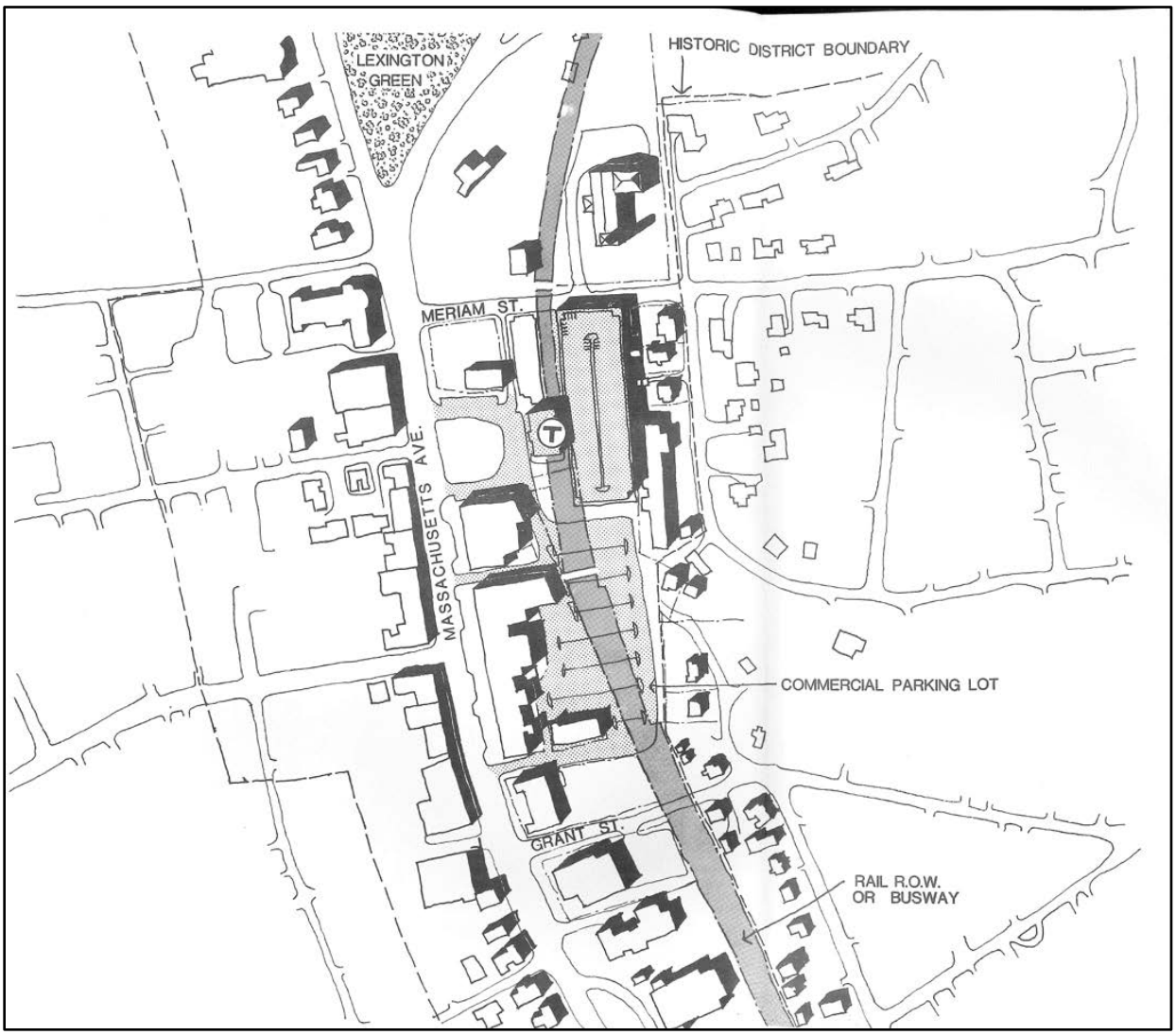


Figure 4.16: Lexington Center station complex. *Source: MATS*

Route 128/Hartwell Ave Station

The comprehensive vision for the Red Line extension, as discussed in the EIS and prior planning studies have always included an ultimate terminus along Route 128. A terminal along this major transportation corridor would alleviate the towns of Arlington, Lexington, and Cambridge from increased vehicle traffic, while also providing far easier access to commuters

within the greater Boston region. More so, a Route 128 site would permit the construction of large parking facility that would be able to supply thousands of spaces, a drastic improvement compared to the meager facilities that would be permissible at an East Lexington or Arlington Heights terminus. The MATS provides the first comprehensive view at the possible locations and physical structure of this important terminal station.

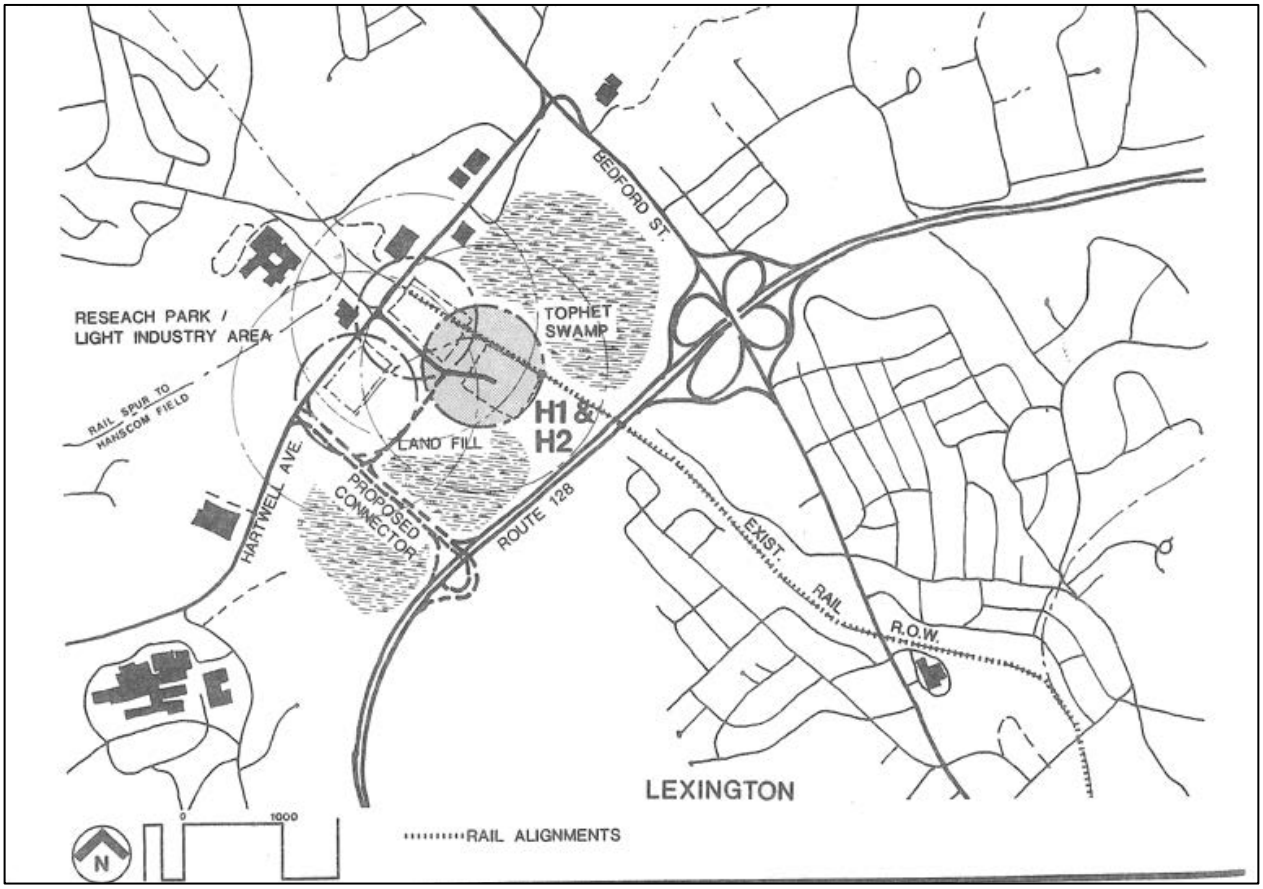


Figure 4.17: Hartwell Ave/Route 128 terminal locus map. *Source: MATS*

One alternative for a Route 128 terminal station the report discusses is along Hartwell Ave in Lexington, as shown as H1 and H2 in figure 4.12. This station would be located along the same railroad ROW that the previous sections of Red Line alignment would run along, which continued northwest across Route 128. Located on the site of Lexington's landfill, there would

be little need for the aesthetic considerations required in Lexington Center or other previous locations. The study authors remark that the entire area of the station is already zoned commercial or light industrial, thus minimizing any adverse impacts on surrounding uses. Furthermore, they state that this location would "provide an excellent opportunity for directly capturing Route 128 traffic as well as indirectly attracting both Route 2 and Route 3 inbound motorists." It is evident from this language, as well as the ridership estimates that study authors had far greater confidence in this station location being a viable terminus than East Lexington or Arlington Heights.

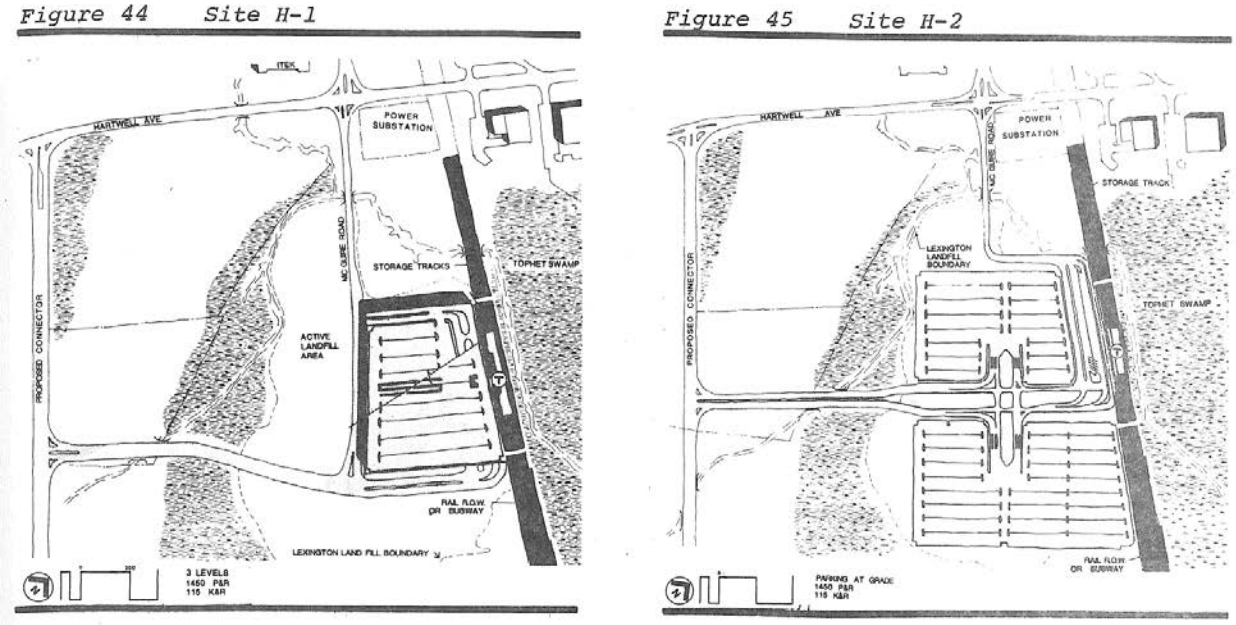


Figure 4.18: Site illustrations for sites H1 and H2. *Source: MATS*

This station would attract about 2,500 daily riders, nearly all of whom would reach the station via automobile. As shown in figure 4.18, to support this, the station would boast a parking facility that would supply 1,450 spaces, either in the form of a large surface lot or a parking garage. In order to construct this large station complex, the Lexington landfill would have to appropriately graded, resulting in a large amount of excess material. The report authors proport that this fill material could be used to infill the adjacent wetland to help level the site. This

practice would never be feasible today given Massachusetts's strict wetland regulations, which diminishes the contemporary feasibility of this terminal alternative in its proposed condition.

Route 128/Burlington Mall

The fourth and final set of station location alternatives discussed in the MATS report are located in and around the Burlington Mall, as illustrated below in figure 4.19. Unlike previously discussed stations, these stations would necessitate the creation of an entirely new ROW. As

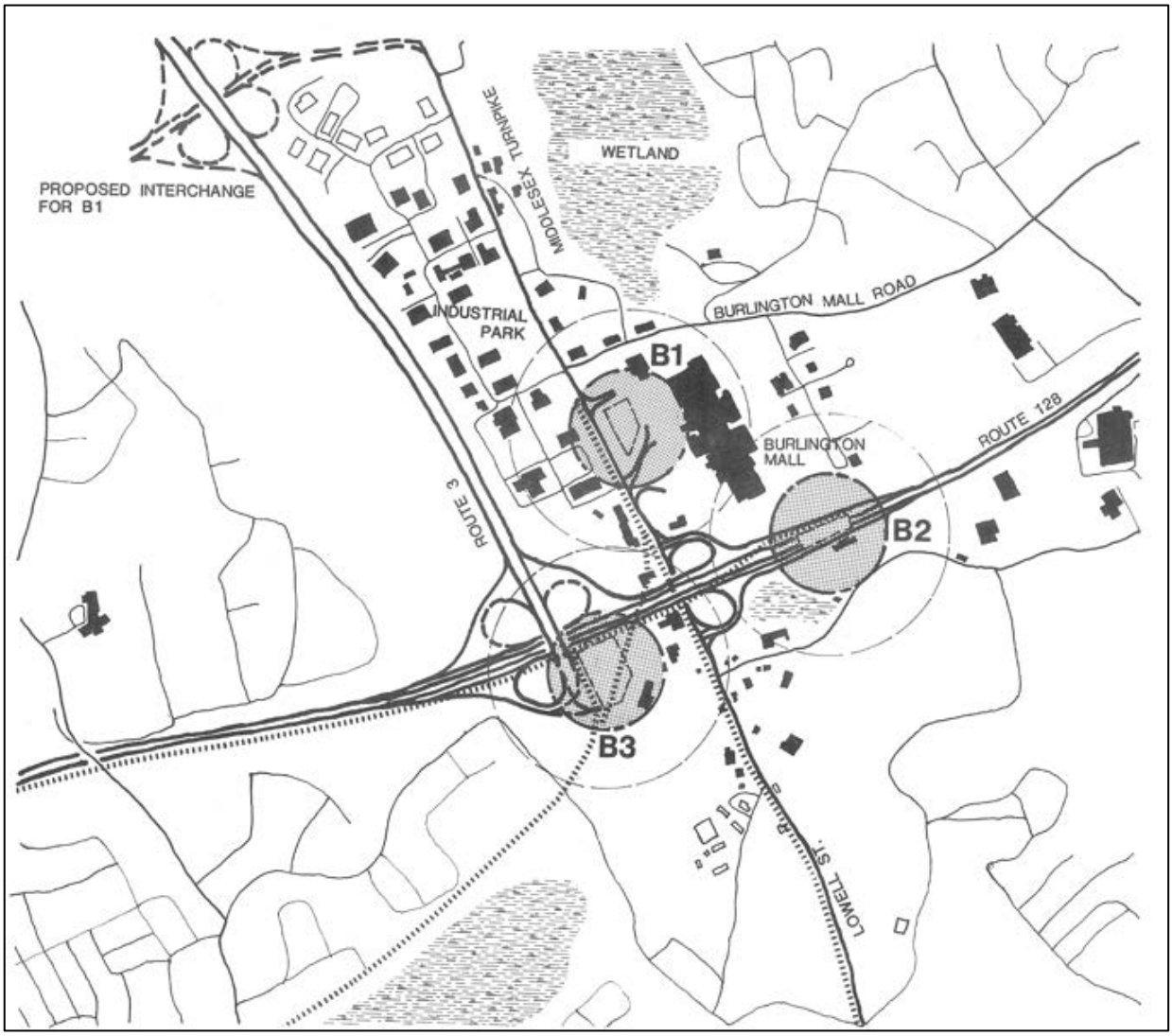


Figure 4.19: Burlington Mall Station Location Locus. *Source: MATS*

outlined as alternatives two and three in table 4.7, this could be done through deep bore tunneling north from Lexington Center, or by following the existing state-owned ROW along Route 128. Regardless of the ROW method, a terminal at one of these locations would be extremely fortuitus for the Red Line extension. A Burlington Mall station would inherit the same commuter benefits expressed in the Hartwell Avenue section, as it is extremely proximal to Route 3, Route 2, and Route 128. However, study authors argue that this location may be better suited than the Hartwell Ave location due to the plethora of shopping and retail amenities offered by the mall, as well as its close proximity to nearby industrial parks and a local hospital.

The authors suggest that due to this favorable commercial landscape, the Route 128/Burlington Mall station has potential to become a regional destination for outbound trips along the extended Red Line, broadening its utility beyond a car commuter catch basin. Site B1, outlined in figure 4.20 below, would provide the greatest access to these commercial amenities for public transportation riders not reliant on an automobile. Sites B2 and B3 shown in figures 4.21 and 4.22, would offer greater utility to those reaching the station via automobile, as they would be constructed either in top of, or adjacent to a major highway. Direct on and off ramp access to these highways would be provided in these two station designs, adding further ease to those driving to this terminal station.

The report estimates that this station locations would attract about 2,700 daily boardings. Due to the limited residential density surrounding these sites, only about 600 of these riders would reach the station by walking. To satiate the large parking and drop-off demand a 1,560-space parking garage would be constructed.

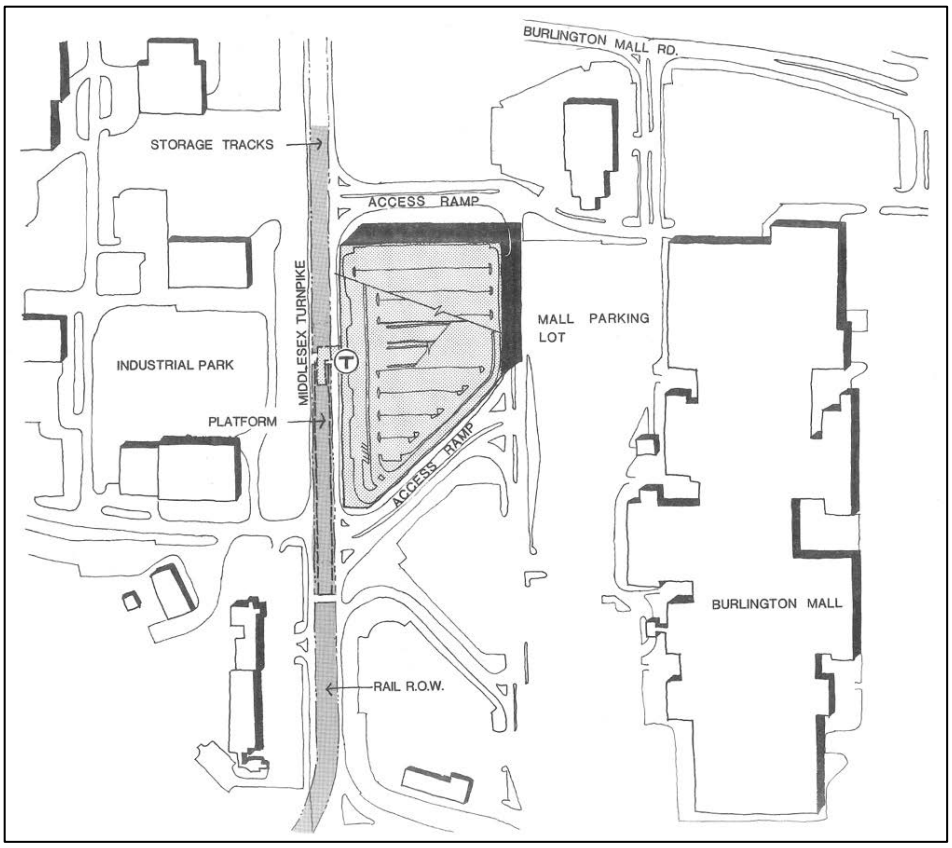


Figure 4.20: Site B1 plan. *Source: MATS*

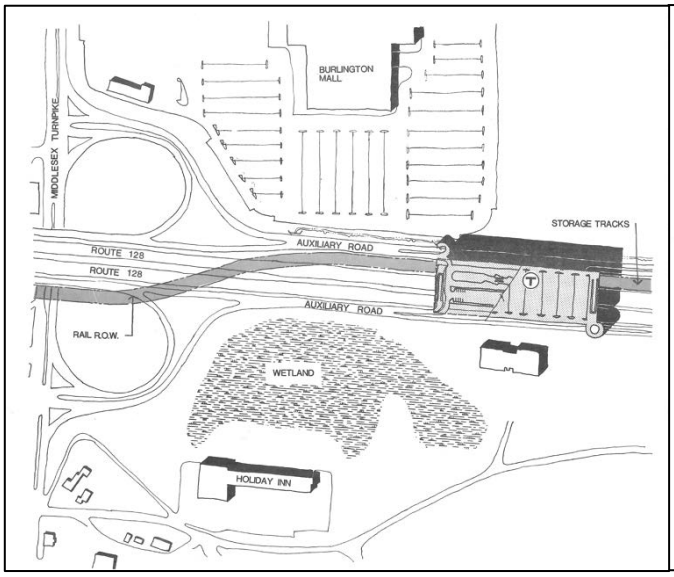


Figure 4.21. Site B2 plan. *Source: MATS*

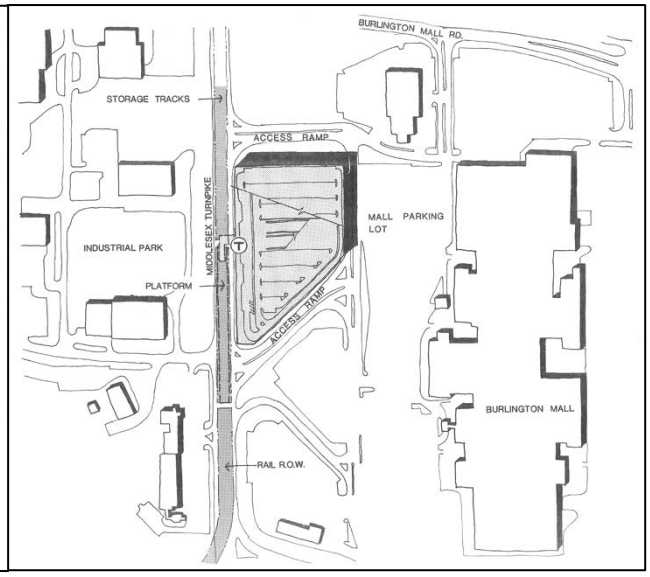


Figure 4.22: Site B2 plan**.** *Source: MATS*

The authors conclude this study section buy discussing how these three station alternatives located at the Burlington Mall offer the greatest benefit as a terminal location for the Red Line extension. A station located here would allow for immense benefit for regional commuters, outbound shoppers, and alleviate Arlington resident concerns regarding a terminal station in their town boarders.

The report estimates that to realize this immense benefit, the MBTA would have to secure an additional $136 million to 175 million ($602 million to $775 million in 2025 dollars) depending on the construction approach. Assuming the more politically attenable fully depressed alignment, this would bring the total cost of the Red Line extension from Harvard Square to Burlington to $793 million ($3.5 billion in 2025 dollars), representing a 22% increase to the total project cost outlined in the EIS.

Letters of Concern, Comment, and Position

The 1977 Environmental Impact Statement and the Minuteman Area Transit Study both represent comprehensive planning visions for a Red Line extension, rich in technical documentation, articulation of project challenges, cost estimations, and illustrative plans and schematics. These reports demonstrate the technical feasibility and the clear economic and time-saving benefits of making this sizeable public transportation investment.

If one were to read this documentation alone, it would be difficult to imagine why this project was never built past Alewife. Letters penned by concerned Arlington residents and organizations alongside excerpts from period reporting help illuminate a more complex narrative. These sources uncover the vocal reservations some residents and community leaders held regarding the project while also illustrating the fragility and tepidness of the statements of support written by project proponents.

The first set of documents that help contextualize the Red Line extension project are included in volume three of the EIS. These documents consist of official letters of concern, comment, and position on project designs outlined prior study drafts. In the final EIS, the study authors meticulously combed through these letters and attached line-by-line responses to how these concerns were addressed in the final design of the project. In this section, I will summarize and illuminate the concerns and positions found in letters from the Arlington Board of Selectmen, the Arlington Redevelopment Board, three Arlington community advisory groups, the St. Agnes Task Force, and everyday Arlington residents.

Arlington Board of Selectmen

The Board of Selectmen, contemporarily known as the Select Board, is a body of five elected Arlington residents who administer the town's budget, recommend policy to town meeting, appoint the Town Manager, and "have the general direction and management of the property and affairs of the Town" (Town of Arlington 2023). While lacking statutory authority to permit or halt construction of the Red Line extension, the Board's stance would have had significant influence on the opinions of the residents and state representatives of the town who could in turn exert power over the MBTA and other state agencies.

The EIS documents the evolution of the Arlington Board of Selectmen's position on the Red Line extension throughout the 1970's. In 1972, while the planners of the extension were focused on securing essential support from Cambridge and Somerville, the Board of Selectmen stated, "the Board is only interested in the extension all the way to Route 128 and nothing else is acceptable." The following year, the Board clarified this statement, indicating support for the project but with significant stipulations, stating, "[the Board] unanimously support the Red Line Extension from Harvard Square in Cambridge through the Town of Arlington via the right-of-way [Lexington-Bedford Branch of the MBTA system] to Route 128." Furthermore, they stated that this alignment must be underground throughout the entire town. Most importantly was their statement, "if the Red Line cannot be implemented as a single package project, the Board does not support any extension of the line beyond Harvard Square in Cambridge."

This stipulation would characterize the Board Selectmen's stance on the project the throughout the remainder of the decade. In their response to this concern, the authors of the EIS make it clear that the Federal Grant Application that was submitted for this project was for an extension that would terminate at Arlington Heights. This signaled that federal funds were not

available for an extension to Route 128 at that time, and created a discrepancy between the reality of the funding and the demands of the Board of Selectmen.

As the study of the project progressed into 1976, a terminal at Alewife was an increasingly realistic outcome, due in part to the Selectmen's inflexibility to accept a terminus in the town, but also in result of federal funding limitations. An Alewife terminal was viewed as an unacceptable alternative on behalf of town officials as they believed it would increase traffic congestion through the town, while not providing any direct mass transportation benefits.

In order to avoid this unacceptable scenario, the Board released an updated official statement in March of 1976. In this statement, they reiterated their unanimous support for the Red Line extension from Harvard Square, and ultimately through the town. They softened their opposition to a temporary terminus in Arlington, saying, "this position includes a firm commitment to any funding and construction strategy through Arlington Center as the first phase." They added, "the Board realizes the complexities of an undertaking of this magnitude, and, therefore, recognizes the necessity of adopting a program of phased implementation." This statement illustrates that the Board had a realization that the Red Line extension, with the goal to reach Route 128, would have to be constructed in phases, and that the first phase would ultimately conclude in Arlington.

However, this statement of support concluded with a condition. The Board of Selectmen stated that any decision regarding the Arlington Height station would have to wait until the results of the MATS were released. They signaled that detailed study between Arlington Heights and Route 128 was lacking, and that future extension was the "only viable solution" to the region's transportation needs.

This aforementioned statement implied that in recognizing the need of planning and construction phasing, the Board supported a temporarily terminal in Arlington Center. In the months following that statement, it became evident that the residents of Arlington were unsettled by the Board's opinion. Due to this pressure, in May of 1976, the Board included an addendum to their previous statement, saying, "we will not support a terminus, permanent or temporary, at Arlington Center. Nor will the Board support any above-ground parking garage and/or bus terminal at Russell Common." This addendum effectively walked back the Board's support expressed only two months prior, likely leading to confusion and uncertainty among project planners.

In October of 1976, the Board of Selectmen released another statement, reasserting their opposition to the project outlined in the EIS. They stated, "the official position [of the Board] is that we oppose the extension of the Red Line until those responsible for mass transportation produce the necessary plans and funding to accomplish our goals, namely, that the Red Line Extension in Arlington will be of an underground configuration throughout the Town, that there will be no terminus in Arlington, either temporary or permanent, and that it will ultimately extend to Route 128." This statement removed any indication that the Selectmen supported the Red Line extension in its planned state.

These letters of concern between 1972 and late 1976 illustrate the wavering position of the Board of Selectmen. Their support for the project was conditional on unrealistic demands which were ultimately not met.

However, the project planners did demonstrate flexibility on conditions they could largely control. As previously discussed, the final EIS report shows that Arlington track alignments would be totally underground, constructed via cut-and-cover tunnel, while earlier drafts support

an at-grade alignment. This represents a clear concession to the demands of the Selectmen, as an at-grade alignment would have been far less expensive. Despite this significant design change, project planners, state agencies, and congressional delegation were not able to "produce the necessary plans and funding" for the Selectmen's ultimate goal of seamless, single-phase construction to Route 128, thus failing to win consistent support from Arlington's most powerful and influential elected body.

Arlington Redevelopment Board

The second set of documents of concern contained in the EIS report come from the Arlington Redevelopment Board. The Redevelopment Board consists of five elected members and is concerned with the physical growth and development of Arlington. The Redevelopment Board influences the physical character of the town through its ability to adopt and implement the town's Master Plan. The Board also reserves the authority to grant special permits to projects that do not conform to the town's zoning bylaws. Placing this authority within the context of the Red Line extension, the Redevelopment Board held influence regarding the project's physical implementation, particularly station locations and designs. This contrasts the nature of the Board of Selectmen's influence, which was largely political. Nonetheless, both the Redevelopment Board and Board of Selectmen represented elected town bodies whose statements on the project likely influenced town attitudes.

The Redevelopment Board's positional letter begins with a statement acknowledging the complexities of the Red Line extension project. They state, "it is clear that the MBTA expansion program, the federal funds currently available, and federal transportation policy will not permit the construction of the Red Line from Harvard Square to Route 128 as one project. The Arlington

Redevelopment Board recognizes this condition." Despite this recognition, the Board continues, discussing how the Town of Arlington will accept "nothing less than a formal state plan and time schedule that will ensure the ultimate extension of this line to Route 128."

Their letter continues with a clear statement that the Board would not accept Alewife as a terminus either. They outline how an Alewife terminus would drastically increase traffic along Route 2, which runs through much of Arlington. In this paragraph, they make a plea to the Urban Mass Transportation Authority (UMTA), the federal agency reviewing the EIS. They assert, "if Alewife becomes a recommended terminus, the Town of Arlington urges UMTA to reject the EIS and the Capital Grant Application when filed. Otherwise, Arlington would suffer all of the disadvantages of increased through traffic and none of the benefits of rapid transit." This sentiment is understandable, yet through their opposition to the EIS vision, they are making this unacceptable situation an increasingly likely reality for the town.

They continue, expressing their disapproval for Arlington Center to be an interim terminus. This position is in line with what the Selectmen expressed in October of 1976. Further corroborating with the Board of Selectmen, the Redevelopment Board mentions how study on station impacts and future extension are lacking, how any construction of an Arlington Heights station must await results MATS or a similar effort.

As their letter continues, the Redevelopment Board appears to signal tepid support for stations within Arlington, as they proport, "Until such time as the Red Line can be extended to Route 128, an Arlington Center station and a station at Arlington Heights/East Lexington should provide the major mitigating measures to reduce the impact of an Alewife terminus." This statement indicates that the Redevelopment Board accepts that the Red Line will temporarily terminate within Arlington. They continue by outlining further concerns regarding these

temporary terminal stations, discussing how bus and traffic circulation, environmental impacts and construction practices need to be studied further.

As chiefly interested in physical development, the Board dedicates part of its statement on the land use pressures resulting from the project. They state that a major fear the community has regarding the station locations is the "citification" of Arlington. The Board aims to placate this concern as it states, "[the Board] looks forward to, and, in fact, has planned for this eventuality for the last six years," regarding the extension proposal. They continue, describing how Arlington has strong and stringent zoning regulations, and that "the town government, and not outside influences such as the Red Line, will decide the future of Arlington." They conclude this section by stating how the Board can help capture the immense retail and commercial potential brought on from the project to enhance Arlington Center.

Despite this acknowledgment that the town has sole authority to guide future development resulting from Red Line station construction, the Redevelopment Board concludes its letter of position with decisively stating that UMTA should withhold final approval and the Capital Grant for the Red Line extension "until such time as that draft statement can be revised by the MBTA so that it is consistent with the official position of the Town of Arlington adopted by the Board of Selectmen in October of 1976." Here, Redevelopment Board is referring to the Selectmen's position that they are opposed to the project unless the MBTA can promise complete underground construction, no terminus in Arlington Center or Arlington Heights, and the ultimate extension to Route 128.

Although consistent in their opposition, both the Redevelopment Board and the Board of Selectmen imbue mixed signals throughout their positions. In their comments included in the EIS, both authoritative town boards support a hypothetical vision of the Red Line extension, one

that is built in full, from Harvard Square to Route 128. Both boards recognize the immense potential benefits of improved mass transportation through the town, but impose impossible conditions the project's implementation.

Arlington League of Women Voters

The following section of the EIS report contains comment letters from non-governmental groups and organizations. These groups express more specific concerns about varying aspects of the project, as opposed to more the comprehensive comments expressed by the Redevelopment Board and Board of Selectmen. The first letter in this section was sent from the Arlington League of Women Voters. The League's concerns lie specifically with the project's air pollution impacts, resulting from increased bus and vehicle traffic driving through the town to reach the new stations. The League also takes issue with the potential wetland impacts the project would have on the Alewife area, as well as Mill Brook, which runs parallel along much of the Arlington section alignment. In their letter, the League admits it has not thoroughly studied the EIS, but strongly urges the study authors and UMTA officials to seriously consider the concerns brought forward by other community organizations and committees.

St. Agnes Task Force

The Archdiocese of Boston, specifically the St. Agnes parish, plays a significant role in shaping the outcome of the Red Line extension. Both the St. Agnes Catholic Church and Arlington Catholic High School are located in Arlington Center. In the 1970's, the St. Agnes parish was the second largest in the Archdiocese of Boston. In their letter, they boast over 12,000

regular parish members - about 4,000 families - in Arlington. The town at this time had a population of about 55,000, signifying that the parish could claim representation over 20% of the town's population. In their letter, the archdiocese and parish claim that the Arlington Center Advisory Group established by the Board of Selectmen during previous phases of the Red Line extension planning was unrepresentative of the town and their community. They argue that this appointed group was comprised largely by local businessmen, who had a more favorable view towards the project as they are chiefly interested in its positive impacts on economic development. Parish members felt excluded from this planning process, thus forming their own St. Agnes Parish Task Force. Led by Monsignor John Linnehan, the group represented a powerful coalition of faith and community leaders, as well as the interests of thousands of parish members in the town.

In their comment letter documented in the EIS, the St. Agnes Task Force takes a strong oppositional position to the project, exhibiting familiar reservations. The Task Force, much like the aforementioned detractors, oppose any terminal being located in Arlington. Like the Redevelopment Board, they state that their official position on the Red Line extension is in line with the Board of Selectmen's October 1976 statement.

However, being a community group rather than an authoritative elected board, the Task Force is able to employ more vibrant language when describing their reservations, adding insight into the emotional sentiment of project opposition. They state the origins of their motivation arose in April of 1976, saying, "it became clear to us that the Red Line would have irreversible consequences on the Town and that the termination of the Red Line anywhere in Arlington would have serious undesirable consequences for the quality of life in Arlington. Thus, our initial interest in protecting church, educational, youth recreation and elderly activities in Arlington

Center broadened to a general concern for the quality of life in Arlington." The letter continues, stating, "the Task Force remains deeply concerned over the undesirable social consequences of the Red Line in Arlington."

These statements represent a strong emotional rejection to the Red Line extension plans outlined in the EIS. This latter statement signifies that the Task Force is opposed to the Red Line regardless of termination within the town. This is significant, as previous project critique is almost exclusively limited the issue of a potential terminal, not the consequences of having rapid transportation in the town itself. The Task Force letter illuminates deeper reservations that everyday Arlington's residents had regarding the inevitable transformative impacts the Red Line extension would have on the town.

Red Line Summer Study

The Red Line Summer Study Group represents another vocal citizen's coalition. In their letter contained in the EIS, they discuss how they formed in the early summer of 1976, "in response to growing citizen concerns over the proposed Red Line extension project." Their reasoning for opposition to the Red Line extension differs slightly from the previous examples. They argue that the project should be split into two distinct phases, with the first being the Harvard Square to Davis Square extension. They believe that there is a significant disparity in the depth and detail of study between the Cambridge and Somerville, and the Arlington sections of the extension. Their particular reservations lie with the following sections and issues Alewife to Lake Street; Spy Pond to Arlington Center; garages and open trench; historical areas, Arlington Heights area; traffic problems and ridership. The Summer Study Group believes that

these aforementioned topics received far greater study in the Cambridge and Somerville sections of the project.

Further in their letter, the Group provides more detail regarding their particular reservations. Similarly to the St. Agnes Task Force, the Summer Study Group's language is more explicit, vivid, and emotional. When discussing the impacts the Red Line stations would have on traffic and parking in the town, they write, "The Red Line extension as presently proposed demands too high a price from Arlington for supposed regional considerations. The people to be primarily benefited will be not the citizens of Arlington who already have a reasonable mass transit system, but the commuters from the wealthier suburbs who already use our Town for a highway and would [referring to Route 2], if the Red Line is extended, use it for a parking lot." This comment sheds light on the reservation expressed by the Redevelopment Board, which had argued that an Alewife station would only increase traffic carried by Route 2 through the town.

The Summer Study Group exhibit significant reservations regarding the development pressures that may ensue from the Red Line extension. They write, "the population density of Arlington is greater than that of the City of Boston. Certainly, we have done more than our share to provide suburban housing convenient to the core city without the stimulus of even greater accessibility -- such greater accessibility would have profoundly negative impacts on the natural and historical environment of the Town." They add, "Speculation is already rife in areas near proposed station locations. Proposals have been heard to desecrate the last large undeveloped tract owned by the Town (the Great Meadows in Lexington) for a subway terminus. Phrases and words like "have done more than our share" and "desecrate" illuminate the group's passionate disproval toward the project.

Arlington Heights Advisory Group

The Arlington Heights Advisory Group represents another community group, but with a more granular focus on project's impacts on the Arlington Heights neighborhood. In their letter, the Advisory Group details their disproval to the proposed terminal at Arlington Heights. Like other organizations, they argue that the Arlington Heights station and findings from the MATS are intertwined. The Advisory Group remarks that this report was released on January 17th, 1977, and that comments on the EIS statement were due shortly after. The letter heading indicates that they sent their letter barely a week later, on January 25th. This implies that concerned Arlington parties had only a handful of days to read and interpret the relevant and notable findings discussed in the MATS if they wanted to incorporate those findings in their official statements to the UMTA reviewers and EIS authors.

Beyond their timeline reservation, the Advisory Group had numerous concerns regarding the impacts the station would have on the traffic congestion and overall character of their neighborhood. In elevating these concerns, they cite direct language written by the EIS draft authors, quoting, "Arlington Heights is located in a very narrow portion of the Mill Brook Valley; residences line the hills to the north and south. Only a limited amount of level land was available for commercial and industrial development. The area was not suited to become a focus of regional importance." By quoting direct language from the report, the Arlington Heights Advisory Group was aiming to illuminate the disparity between the physical and social characteristics of the neighborhood and the EIS plans to terminate the Red Line extension in Arlington Heights.

East Arlington Residents Association

As their name suggests, the East Arlington Residents Association represented the interests that neighborhood. However, unlike in Arlington Heights, there was no proposed station in the neighborhood. The Association's concerns lay largely with the environmental impacts resulting from the track alignment construction through their dense neighborhood. In their letter, they cite examples of negative construction impacts from previous projects in the neighborhood. They fear that the EIS is inadequate in its discission of construction safety measures. The Association is concerned that East Arlington residents, particularly children, may be exposed adverse effects resulting from tunnel construction, increased freight rail moving excavated soil, and increased truck traffic.

Individual Arlington Residents

The EIS report concludes this section on public comment with a collection of letters sent by individual Arlington residents. Although lacking the representative and authoritative nature of these previously discussed organizations, their comments are useful in exemplifying the views, concerns, and language employed by Arlington residents opposed to the project.

One letter corroborates with the concerns regarding ensuing development pressures expressed from the Arlington Summer Study Group, as the commentor states, "Arlington already has the seventh highest population density of any community in the Commonwealth and can ill afford to absorb either more development or more automotive traffic if any reasonable quality of life is to be preserved for its 55,000 residents."

In a following letter, another commentor reiterates this sentiment with more colorful language, saying, "if the present plan is approved, the continuation of speculation, developer

greed, street widenings and traffic will very likely destroy the last vestiges of our old New England town centre." Unlike comments from the Board of Selectmen, Redevelopment Board, or more formal citizen groups, these statements are not rooted in technicalities; they instead illustrate the deep reservations vocal Arlington residents had regarding perceived impacts from the Red Line extension.

Town Discourse in the Arlington Advocate

The Arlington Advocate was a weekly newspaper that reported on local town news from 1871 through 2022. Local reporting throughout the 1970s provides an invaluable window into the conversations, discussions, meetings Arlington residents were having regarding the Red Line extension. An extensive search through these digitized newspapers highlighted actors, events, and statements that influenced the outcome of the Red Line extension project, and adds greater context and clarity to the reasons why the Red Line extension was never constructed in Arlington.

As discussed in the introduction chapter, two major events define the story of the Red Line extension in Arlington. The first event was State Representative John Cusack's successful legislation that blocked MBTA construction within 75 yards of Arlington Catholic High School, located in Arlington Center. This act was signed into law in October of 1976. The second significant event was the municipal referendum, which asked Arlington voters on March 5th, 1977, to indicate their support or opposition for Red Line extension scenarios.

Arlington Advocate editions from April 1st and April 8th, 1976 provide fantastic insight into the events that may influenced Representative Cusack to sponsor legislation for the MBTA ban. The edition from March 3rd 1977 illuminates the lively discussion town officials were having regarding the upcoming referendum vote on March 5th, while the edition on March 10th, 1977, gives insight into the consequences of this pivotal vote.

Local and State Officials Make the Case: April 1st, 1976

In an article titled “Officials Support Red Line Extension”, we find the varying perspectives a set of significant individuals had regarding the Red Line extension. The article describes the happenings of a public meeting held regarding the project the prior week, with a reported attendance of 300 residents. Lieutenant Governor Tip O’Neill, who would become one of the most impactful Democratic legislators of the last century, came out in support of the project, saying, “the Red Line coming to Arlington is one of the best, one of the most important things that has happened to the Northwest Corridor of Greater Boston for many, many years.” The article states that O’Neill was representing not only himself, but also the opinion of Governor Dukakis. O’Neill appeals to Arlington residents, saying how he as a Cambridge resident also had apprehensions about the project, but now that he better understands the project’s details and value, he endorsed it “enthusiastically.”

Following the Lieutenant Governor was the state’s Commissioner of Public Works, John Carol. He told the audience that the Red Line extension would significantly improve local highway congestion, which was currently “overcrowding roads” and “is too much to bear.” The Commissioner stated that the federal government has given the MBTA the green light for its other recent transportation projects, implying that the state should capitalize on this favorable environment and begin construction as soon as possible.

State Senator John Bullock of Arlington spoke next. He was the first individual to iterate the common position held by elected officials and Arlington town boards which was that he favored the project, but emphasized that it must ultimately end at Route 128. Bullock’s support is largely along economic development lines. He states that Arlington only utilized 5% of its land for commercial purposes, and that the extension would encourage more development. He cited a

recent study by the Arlington Citizen's Involvement Committee that endorsed the Red Line extension. He also claimed that an internal Arlington resident poll showed majority support for the project. These two findings were reasons for his endorsement.

Attendees of this meeting also heard from the Chairman of the Board of Selectmen Margaret Spengler. She reiterated the Board's official position and stated that the Board unanimously supported the proposal seeing that it terminated at Route 128. She said that the Board is very concerned that the project would end in Arlington, and that they would not accept any scenario where the terminal is located in Arlington Center or Arlington Heights. This position is consistent with what was illustrated in the Board's official statements contained in the EIS.

State Representative John Cusack was the first to speak in direct opposition to the project in its entirety. His opposition can be ascribed to his disbelief that the project would ultimately reach Route 128, saying how two years prior at a similar meeting, "we were all assured that this thing was going to 128." Findings from the MATS, which showed alternatives for expansion to Route 128, may have placated this concern, but this was not released until the following year. Cusack continues, contradicting Public Works Commissioner John Carol as he claimed that a station in Arlington Center would add vehicle congestion in the area, not decrease it. Furthermore, he implied that this station would have an impact on the amount of vandalism in local neighborhoods. Cusack also takes issue with the way project finances have been discussed. The MBTA had argued that that this project would be free of charge to its benefactors as it is entirely federally and state funded. Cusack acknowledged that while that may be true, he claimed "whether it's federal or state money that's used, it's still OUR money." This statement signals

that Cusack thought that despite the national significance of the project, the local views of Arlington are still relevant, as ultimately, the town is paying for it through their tax dollars.

He goes on to cast doubt on the favorable poll and Citizens Involvement Committee endorsement cited by Senator Bullock. Cusack said that he had surveyed his own constituents the prior year, and found that a majority voted against the Red Line extension if it were to terminate in the town. He concluded his statement by highlighting his main hesitancy for the project, which was how the alignment would run parallel major recreational fields and facilities in the town, implying that the construction would cause widespread disruption and safety concerns. Notably, the article states that Cusack received the only applause that night, despite powerful political company like O'Neill.

Following Cusack, William Cleary, the vice president of the AFL-CIO came to the podium in support of the project, but only if it extended to Route 128. Cleary spoke of the 30% unemployment rate among construction workers, and how the project would provide much needed jobs for his constituents. Heather Cannon, President of the Arlington League of Women Voters stated that her organization supports the proposal if it ends at Route 128.

The next examples of vocal opposition to the project came from Dr. Peter Braun of the Mystic River Watershed Association, who had significant reservations on the proposed Alewife station's impacts on the surrounding sensitive wetlands and brook. On this matter, he stated that research done "is seriously, perhaps fatally, incomplete." He continued, saying that although the organization supported the Red Line extension in its entirety (to Route 128), that "undesirable transformation of the town's character should the Red Line stop in Arlington Center for any reason."

The next notable individual to speak at this meeting was Director of Planning and Community Development Alan McClennen, who favored the project on the grounds that "the plans for extension are consistent with our plans to upgrade Arlington Center." McClennen cited the support of the 12-person Arlington Center Advisory Group, which had spent the prior months carefully reviewing problem areas that have since been resolved in subsequent plan drafts.

A representative from the Redevelopment Board, Joseph Tulimieri, states that the Board unanimously supported the MBTA proposal. In this, he does not stipulate that the extension must ultimately terminate at Route 128. This is a differing position from the Selectmen, who stipulated that they supported the project insofar that it did not terminate in Arlington. The Board's position in this meeting notable, as this public statement differed from the comments they sent to the EIS authors and UMTA reviewers.

A Spirted Meeting on the Fate of Arlington Center: April 8th, 1976

In the following week's edition of the Arlington Advocate we are given detailed look into another significant public meeting regarding the Red Line extension. However, unlike the prior week, this meeting was not organized by town officials, but instead by faith leaders, and provides greater insight into the reasons to why so many Arlington residents ultimately opposed the project.

The article tells of how on Monday April 3rd, 1976, more than 1,200 people crammed into the Arlington Catholic High School auditorium for a special meeting called by Monsignor John Linnehan of St. Agnes' parish. This meeting was held to chiefly discuss the impacts imposed by the proposed five-story parking garage, which according to draft project plans,

would be located adjacent to the Catholic High School and St. Agnes' Church in Arlington Center.

Monsignor Linnehan opened up the meeting by proclaiming that "the proposed extension of the Red Line to from Harvard Square to Arlington enter imposes upon St. Agnes Church and related education and youth facilities a plan who's economic, personal safety, and environmental consequences have not been adequately presented nor understood by those most vitally affected." In this statement, it is clear that Linnehan believes that the proposed Red Line extension would have an outsized negative impact on the 2,000 students who attend the high school, and the 12,000 parishioners who regularly attend mass.

The reporters shed light on how well attended this meeting was, stating how the crowd, which was standing room only, "consisted of parents of students, parishioners, local officials, and others concerned with the current MBTA plans." At this meeting, Monsignor Linnehan directly called out town Planning Director Alan McClennen for not adequately including faith leaders and parish goers in the Arlington Center Advisory Group as well as for not sending periodic reports on the progress of the project to him. Linnehan mentioned that McClennen had since apologized for this oversight in a formal letter of apology.

As the meeting continued, Linnehan stated that the safety implications of construction such a large project adjacent to parish facilities have been overlooked. He espoused that years of intense excavation and construction would cause problematic and disruptive noise and pollution impacts and would inhibit educational and religious endeavors. He concluded his opening remarks by saying that "St. Agnes' is not opposed to progress", but that serious safety concerns have been overlooked.

The article reported that the remainder of the meeting was dedicated to a question-and-answer format between parishioners and invited MBTA officials, as well as state and local representatives. Comments from parishioners were spirited. One person inquired about why these safety concerns had not been thoroughly studied. Joe Mullaney, a project planner from the MBTA, responded, saying that safety measures would be adequately reviewed once initial Capital Grant funding was secured. This reply did little to placate this concern, and "the audience responded in a negative manner, responding that these safety concerns should have been considered long before the MBTA proposed placing a garage next to a church and school." Another parishioner stated that "he had never heard of a school being built next to a high-rise garage and that it's equally ridiculous to be building a garage next to a school." The article reported that this statement was met with a strong applause.

Representative John Cusack, a familiar project foe, also spoke during this lively meeting. He commented how three years of blasting, digging, and construction would significantly impact ACHS's ability to teach students. He added that during this construction, there would be "tremendous backup of illegal parking in all local neighborhoods." Continuing, Cusack stated that two presidential elections would take place before the construction of Arlington Center began and said, "different presidents think differently", casting further doubt on the MBTA's ability to ultimately conclude the extension at Route 128. Regarding a potential Arlington Center terminal, he claims "if funding the extension beyond Arlington Center is put off, Arlington Center would become a disgrace if it were the end of the line."

The meeting became more emotional and spirited as the evening progressed. This sentiment was encapsulated by longtime parishioner Vincent Fulmer's comments. Speaking directly to MBTA project planners, Fulmer said, "how could you, or anybody, dare to blemish the

center of our town with such a garage? How could you people of supposed intellect want to glossy over the economic and education questions here in the name of progress?" Receiving applause, Fulmer continued, saying how he is not a scaremonger, but a realist, and that Arlington does intend to be an isolationist community, but "has tried very, very hard to leave behind some of those things that exists at the end of the line" (referring to the current terminal at Harvard). He detailed some of these end of line things, saying how crime, bars, and "large groups of roaming youths" are not far behind when the subway comes.

Alan McClennen, Planning Director, was in attendance, and attempted to respond to Fulmer's comment, saying that nobody was attempting to blemish Arlington Center, and that the project had received endorsement from a number of official and unofficial organizations in Arlington, such as the Redevelopment Board, Board of Selectmen, and League of Women Voters. As he began to cite these organizations, the audience booed each. McClennen was then asked who sat on the Arlington Center Advisory Group. According to the reporters, "McClennen's responses [were] not well received by the audience." The audience apparently felt like the Advisory Group was unrepresentative of Arlington Center residents, and that it consisted of "top-heavy" individuals such as local businessman. It is evident that this realization encouraged the formation of the St. Agnes Task Force later that year, which provided detailed critique of the project in the final EIS.

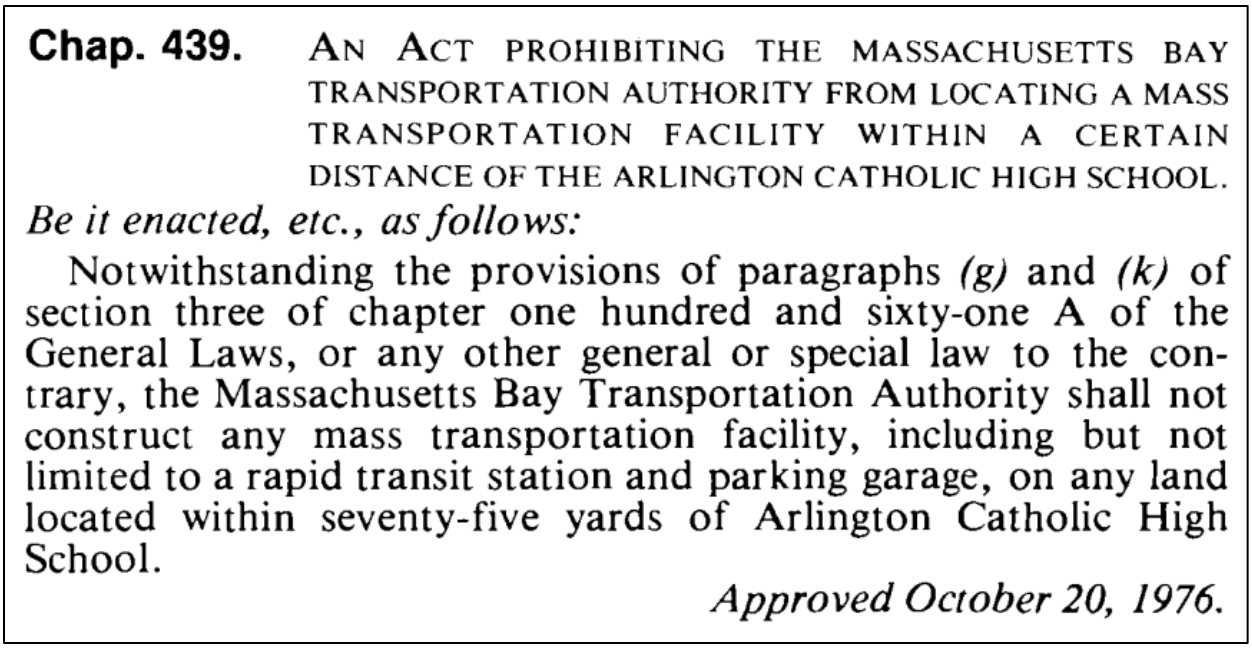
Another notable event occurred during this meeting. State Representative Eleanor Campobasso stood to declare that her position on the had extension changed. Formerly a project supporter, she claimed that the points raised thus far had made her "see things differently now." She commented that in light of the extension, "Arlington will become a mini-Boston" and that

she “opposed to all phases of this project if it doesn’t go to Lexington completely and I oppose this Arlington Center station altogether.”

The final commentor the article discusses is Charles Bowser, a 45-year-old parishioner. He stated how like many of his fellow Arlington residents, he had never been interested in the Red Line extension project, but was now forced to become involved because of the garage proposal. He continued, saying that “if killing this garage means killing the Red Line, then I’m all for it.” He adds salience to the importance of this tension between the parish and the project plans, saying that the church is “probably the most important institution in a town regardless of denomination”, and he, like most people in the parish, consider the church more important to them than anything other than family.

Following hours of spirited and emotional discourse, Monsignor Linnehan concluded the meeting with closing remarks by adding further significance to the role of St. Agnes’ parish, stating that when new families move to Arlington, they will consider its schools, churches, and social life. He says to the crowd, “Arlington should not be concerned with the benefits that neighbors from other communities will receive from the Red Line,” implying that residents should ignore the potential regional benefits that the MBTA planners and state officials so often espouse. He continues, saying “there are ways to destroy a town by cutting it’s very lifeline”, implying that one of these ways would be to allow the construction of the Arlington Center station and garage. He adds, “let no one, no one, take away our school and church so that it dies on the vine.”

This meeting illustrated the immense power that Monsignor Linnehan had over the public sentiment towards the project and its ultimate trajectory. Statements expressed in this meeting



Chap. 439. AN ACT PROHIBITING THE MASSACHUSETTS BAY TRANSPORTATION AUTHORITY FROM LOCATING A MASS TRANSPORTATION FACILITY WITHIN A CERTAIN DISTANCE OF THE ARLINGTON CATHOLIC HIGH SCHOOL.

Be it enacted, etc., as follows:

Notwithstanding the provisions of paragraphs *(g)* and *(k)* of section three of chapter one hundred and sixty-one A of the General Laws, or any other general or special law to the contrary, the Massachusetts Bay Transportation Authority shall not construct any mass transportation facility, including but not limited to a rapid transit station and parking garage, on any land located within seventy-five yards of Arlington Catholic High School.

Approved October 20, 1976.

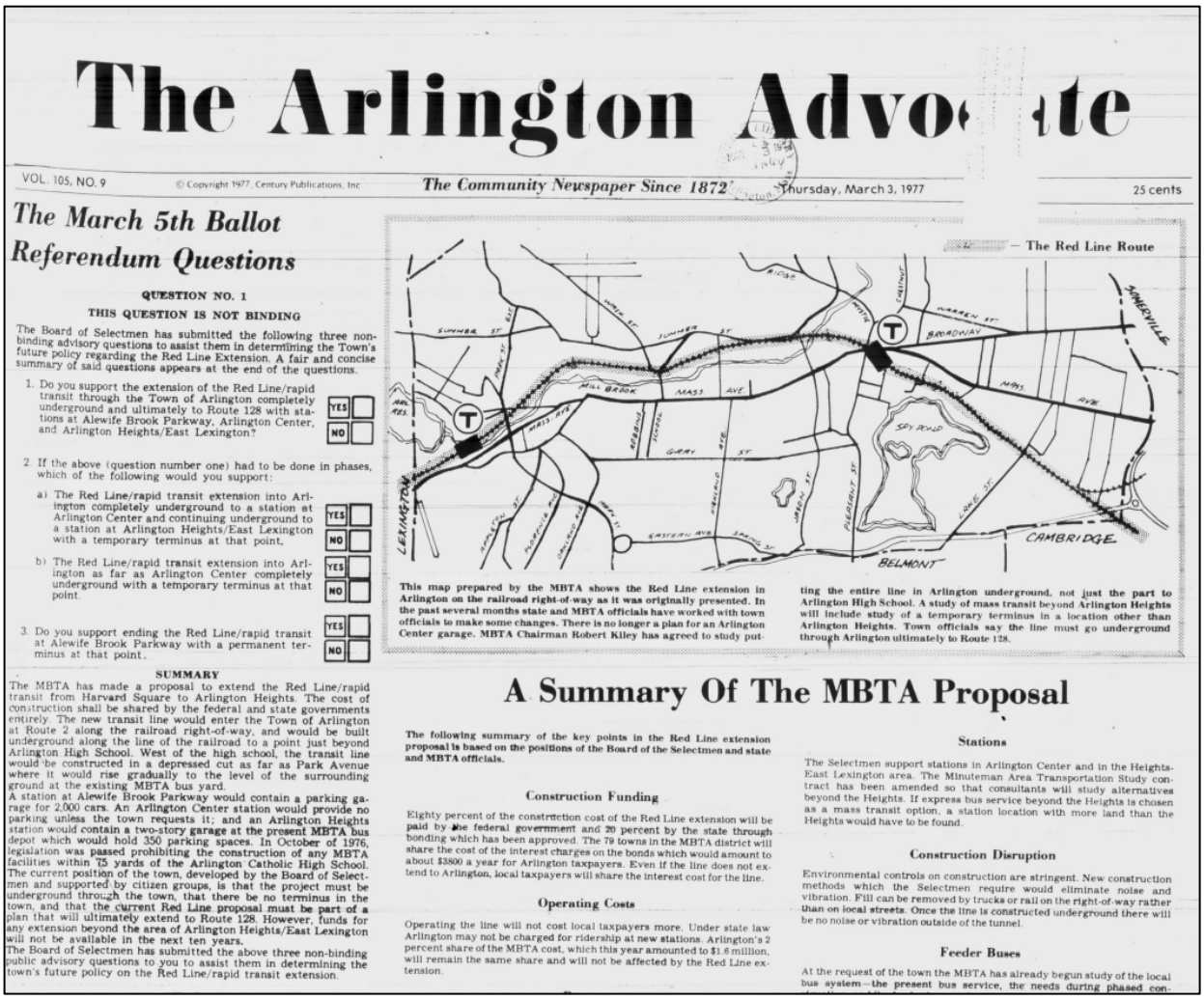
Figure 4.23: The Act which prohibited MBTA construction in Arlington Center. *Source: Commonwealth of Massachusetts*

likely motivated Representative Cusack to the draft state legislation that would prohibit MBTA construction within 75 yards of Arlington Catholic High School. It is clear in the final station designs that project planners were restricted by Chapter 439, as final plans did not include any parking facilities in Arlington Center, and the station's physical layout was designed to be as minimal as possible. This significant project change can be ascribed to the pressure exerted by Linnehan and his parishioners.

Setup of the Referendum: March 3rd, 1977

The articles from the prior year illustrated the varying positions official town boards, task forces, informal organizations, and everyday Arlington residents had regarding the Red Line extension. In an effort to gain clarity on the various positions regarding this contentious issue, in November of 1976, Board of Selectmen member Ann Powers advocated for a nonbinding public opinion advisory referendum on the Red Line extension be issued. This referendum was eventually included on the spring town election ballot of the following year, which asked Arlington residents to indicate whether or not they supported various scenarios of a Red Line extension. The questions as listed on the ballot read:

1. *Do you support the extension of the Red Line/rapid transit through the Town of Arlington completely underground and ultimately to Route 128 with stations at Alewife Brook Parkway, Arlington Center, and Arlington Heights/East Lexington?*
2. *If the above (question number one) has to be done in phases, which of the following would you support:*
    a. *The Red Line/rapid transit extension into Arlington completely underground to a station at Arlington Center and continuing underground to a station at Arlington Heights/East Lexington with a temporary terminus at that point*
    b. *The Red Line/rapid transit extension into Arlington as far as Arlington Center completely underground with a temporary terminus at that point*
3. *Do you support ending the Red Line/rapid transit at Alewife Brook Parkway with a permanent terminus at that point*



The Arlington Advocate

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The March 5th Ballot Referendum Questions

QUESTION NO. 1

THIS QUESTION IS NOT BINDING

The Board of Selectmen has submitted the following three non-binding advisory questions to assist them in determining the Town's future policy regarding the Red Line Extension. A fair and concise summary of said questions appears at the end of the questions.

1. Do you support the extension of the Red Line/rapid transit through the Town of Arlington completely underground and ultimately to Route 128 with stations at Alewife Brook Parkway, Arlington Center, and Arlington Heights/East Lexington? YES NO

2. If the above (question number one) had to be done in phases, which of the following would you support:

   a) The Red Line/rapid transit extension into Arlington completely underground to a station at Arlington Center and continuing underground to a station at Arlington Heights/East Lexington with a temporary terminus at that point. YES NO

   b) The Red Line/rapid transit extension into Arlington as far as Arlington Center completely underground with a temporary terminus at that point. YES NO

3. Do you support ending the Red Line/rapid transit at Alewife Brook Parkway with a permanent terminus at that point. YES NO

SUMMARY

The MBTA has made a proposal to extend the Red Line/rapid transit from Harvard Square to Arlington Heights. The cost of construction shall be shared by the federal and state governments entirely. The new transit line would enter the Town of Arlington at Route 2 along the railroad right-of-way, and would be built underground along the line of the railroad to a point just beyond Arlington High School. West of the high school, the transit line would be constructed in a depressed cut as far as Park Avenue where it would rise gradually to the level of the surrounding ground at the existing MBTA bus yard.
A station at Alewife Brook Parkway would contain a parking garage for 2,000 cars. An Arlington Center station would provide no parking unless the town requests it; and an Arlington Heights station would contain a two-story garage at the present MBTA bus depot which would hold 350 parking spaces. In October of 1976, legislation was passed prohibiting the construction of any MBTA facilities within 75 yards of the Arlington Catholic High School. The current position of the town, developed by the Board of Selectmen and supported by citizen groups, is that the project must be underground through the town, that there be no terminus in the town, and that the current Red Line proposal must be part of a plan that will ultimately extend to Route 128. However, funds for any extension beyond the area of Arlington Heights/East Lexington will not be available in the next ten years.
The Board of Selectmen has submitted the above three non-binding public advisory questions to you to assist them in determining the town's future policy on the Red Line/rapid transit extension.

This map prepared by the MBTA shows the Red Line extension in Arlington on the railroad right-of-way as it was originally presented. In the past several months state and MBTA officials have worked with town officials to make some changes. There is no longer a plan for an Arlington Center garage. MBTA Chairman Robert Kiley has agreed to study putting the entire line in Arlington underground, not just the part to Arlington High School. A study of mass transit beyond Arlington Heights will include study of a temporary terminus in a location other than Arlington Heights. Town officials say the line must go underground through Arlington ultimately to Route 128.

A Summary Of The MBTA Proposal

The following summary of the key points in the Red Line extension proposal is based on the positions of the Board of the Selectmen and state and MBTA officials.

Construction Funding

Eighty percent of the construction cost of the Red Line extension will be paid by the federal government and 20 percent by the state through bonding which has been approved. The 79 towns in the MBTA district will share the cost of the interest charges on the bonds which would amount to about $3800 a year for Arlington taxpayers. Even if the line does not extend to Arlington, local taxpayers will share the interest cost for the line.

Operating Costs

Operating the line will not cost local taxpayers more. Under state law Arlington may not be charged for ridership at new stations. Arlington's 2 percent share of the MBTA cost, which this year amounted to $1.6 million, will remain the same share and will not be affected by the Red Line extension.

Stations

The Selectmen support stations in Arlington Center and in the Heights-East Lexington area. The Minuteman Area Transportation Study contract has been amended so that consultants will study alternatives beyond the Heights. If express bus service beyond the Heights is chosen as a mass transit option, a station location with more land than the Heights would have to be found.

Construction Disruption

Environmental controls on construction are stringent. New construction methods which the Selectmen require would eliminate noise and vibration. Fill can be removed by trucks or rail on the right-of-way rather than on local streets. Once the line is constructed underground there will be no noise or vibration outside of the tunnel.

Feeder Buses

At the request of the town the MBTA has already begun study of the local bus system—the present bus service, the needs during phased con-

Figure 4.24: The front page of the Arlington Advocate two days prior to the pivotal referendum. *Source: Arlington Advocate*

As expected, there was much discussion regarding this referendum in the weeks leading up to the March 5th, 1977 election. The Arlington Advocate's Thursday March 3rd edition dedicated much of its paper to the referendum, giving ample space to the matter. As seen in figure 4.12, that week's paper began with a sample referendum ballot, as well as a front-page summary of the Red Line extension, showing a map of the project extent, and detailing funding sources, traffic and parking impacts, station plans, and more.

On page nine, the Arlington Redevelopment Board reiterates its public position that it supported the Red Line extension plans as outlined in the EIS. The Board attempted to placate

concerns that had been raised by other residents and organizations. For example, they described how the MBTA planned to minimize issues such as noise and traffic with novel technologies. They also aimed to ease concerns that Arlington would be "citified", as stating how the Board had written tight zoning regulations to maintain lower scale buildings despite development pressures. They continued, espousing the obvious transportation benefits of the project, saying how "Arlington will be 15 minutes away from Boston, yet removed from many of the problems and the congestion of the Boston urban core." They concluded by saying that the only cost the town would incur is three years of construction disruption, reiterating that the significant financial cost of the project were completely covered by state and federal sources.

On the following page, the Board of Selectmen outlined their familiar conditional support. They stated that they are in support of the project only if it is fully underground, does not end anywhere in Arlington, and must be part of a long-range transportation plan to extend to Route 128. This is yet another example of the Selectboard supporting a vision of the project that does not exist. They continued by stating similar time saving and economic development benefits that the Redevelopment Board brought up. Later in their column, the Board cited a recent opinion survey which found that 62% of residents supported the construction of Red Line extension underground, through the town, all the way to Route 128. 26% of the town did not support the extension whatsoever, and 12% were undecided.

The Arlington Heights Task Force also submitted their position, reiterating their stance that was expressed in their comment letter in the EIS. Here, they emphasized that Arlington Heights should not be the final stop as presently planned. They argued that the physical constrains of the neighborhood would not be able to handle the increased traffic induced from the station. They claimed that Arlington Heights was chosen entirely because of its convenient

location along the right-of-way, and not because of its high level of suitability for a station location as seen in the Porter Square, Davis Square sections of the project.

On a dedicated page, the Advocate editors invited parties from both sides of the issue to comment on their positions. On the pro side contained a column from Robert Kiley, the Chairman of the MBTA. Kiley aimed to reason with logic, espousing the immense transportation benefits the project offered. He stated that the project would result in 9,000 fewer cars driving on Arlington streets each day, and a travel time between 12 and 20 minutes to downtown Boston. He then continued by comparing the Arlington situation to Quincy, which had seen its Red Line extension open in 1971. In Quincy, he said, thousands of more people use the Red Line to commute than to drive to Boston. More so, shopping and business in the town had been revitalized, with over $100 million added in valuation since the station opened. He further added that the population of Quincy has not drastically grown, and there had not been a "rupture of character."

On the right side of the page, Monsignor Linnehan writes the opposition case, asserting his position in a far less quantitative manner. He argued that residents should vote no to all questions presented on the ballot. He continued, saying that the St. Agnes Task Force "is not opposed to the concept of sound transportation planning, but we cannot allow the MBTA to compromise the quality of life at an unbearable cost to taxpayers and destruction of our community values." In this statement, Linnehan implies that a terminal station would be the driving cause for this purported destruction. He then said, "stations designed for local access are acceptable. A terminus us not." Linnehan concluded his statement by saying, "we are prepared to use every proper means to prevent the MBTA from terminating the Red Line in Arlington Center," implying that the church may employ demonstrations, protests, and litigation against the

proposed Red Line extension. From this, it is clear that the concessions made regarding the parking garage were not enough to placate deeper concerns Monsignor Linnehan and parishioners had regarding the project.

Further on in the March 3rd newspaper, an article reported on the positions held by candidates for the Board of Selectmen. Arthur Saul, an incumbent Selectman, repeated that the Selectboard supported the extension, espousing how it would bring "modern, fast service and improve aesthetics as it does away with the railroad tracks which cut the town and adds a linear park over the line." Later on in this interview, Saul is asked his individual position on the extension. Here, Saul said that he would not support a terminal in Arlington. He then claimed that state officials and the MBTA all have the goal of ultimately extending the Red Line to Route 128, and recognized that this must be done in phases. He mentioned that a new study (Minuteman Area Transit Study) was investigating the suitability for an East Lexington terminus, right over the town line. He then goes on to discuss Alewife as a possible terminus, and emphasized that the town must thoroughly study the implications of this possibly. These conflicting statements only add confusion to the position of town authorities had regarding the project.

His opponent, Michele Abruzzese, was of a differing, yet more consistent opinion. When asked about the Red Line extension, Abruzzese said it was the most serious issue facing the town. He said that his answer to the referenda questions would be "no", and further claimed that the town was misinforming people on the cost. He stated that Arlington would have to pay 10% of the line's construction cost. The reporters mention that later in this event, Saul called out this claim as being blatantly false.

Aftermath of the Referendum: March 10th, 1977

The Arlington Advocate edition released the following week gives insight into the outcome and the implications of the referendum vote. 13,785 Arlington voters turned out for the March 5th election, representing about 43% of the total registered voters in the town. This was the third-highest turnout within the last 20 years – a remarkable number for a municipal election, signifying the importance of the Red Line issue.

Arlington Residents delivered a resounding "no" on all four questions posed on the ballot, making it clear that public opinion was thoroughly against the project. The voting results as reported in the Advocate are illustrated in table 4.9 below:

Table 4.9: Voting results from the Red Line extension referendum

Questions	Yes Votes	No Votes	Yes %	No %
Question 1: *Do you support the extension of the Red Line/rapid transit through the Town of Arlington completely underground and ultimately to Route 128 with stations at Alewife Brook Parkway, Arlington Center, and Arlington Heights/East Lexington?*	5,143	8,206	39%	61%
If the above (question number one) has to be done in phases, which of the following would you support:				
Question 2a: *The Red Line/rapid transit extension into Arlington completely underground to a station at Arlington Center and continuing underground to a station at Arlington Heights/East Lexington with a temporary terminus at that point*	4,657	7,578	38%	62%
Question 2b: *The Red Line/rapid transit extension into Arlington as far as Arlington Center completely underground with a temporary terminus at that point*	1,064	9,708	10%	90%
Question 3: *Do you support ending the Red Line/rapid transit at Alewife Brook Parkway with a permanent terminus at that point*	2,195	9,841	18%	82%

Source: Arlington Advocate

On the front page of this newspaper, an article discussed how this vote may have been tainted by misinformation. The article reports that mailers sent by Selectman candidate Michele Abruzzese purport that, "Mr. Kiley, the MBTA Chairman, quite definitely stated that 'Arlington would pay 10 percent of the 20 percent of the total cost.' That would raise our tax base by

slightly over $6 – that's per thousand – and multiplied by what your property is assessed at can only hurt your pocketbook. And that is not political misinformation – it's fact."

Abruzzese seemed to have a pattern of spreading this narrative, as in the prior week's candidate press event, he had espoused similar misinformation. The article discussed how this claim was patently false, and that the mailer had sparked a legal investigation as it may have broken Massachusetts campaign laws. Responding to this potential violation, the Board of Selectmen formally requested an investigation into the issue by the District Attorney's office. The town Police Director and Town Council were also involved in the developing matter. The Town Council was concerned that this mailer may have "adversely affected the true expression of the people."

Despite the potential influence of misinformation on the outcome of the referendum, the Board of Selectmen debated if they should adapt their formal position on the Red Line extension to the outcome of the vote. Selectman Ann Powers spearheaded this initiative, arguing that the Board's official position should be completely aligned with the expressed opinion of Arlington residents. Other Board members were less inclined, as they cited that the referendum questions were ambiguous.

Selectman Robert Murray mentioned that the Board had previously deleted a question asking if voters supported a question on "no extension whatsoever." He argued that without that question, it is difficult to discern whether the "no" votes were against any expansion, or just against individual project elements. Murray continued, saying how other voters "may have been confused on the Selectmen's position" and that the Selectmen "had been saying yes too loud and no not loud enough," referencing their official statement.

The Board of Selectmen ultimately decided that their current position was sufficiently aligned with the outcome of the referendum vote, but that they would consider revisions in subsequent meetings. The Board then made a motion to send the results of the vote to Governor Dukakis, Transpiration Secretary Salvucci, MBTA Chairman Kiley, and the Urban Mass Transportation Administration.

Chapter 5: Findings

The detailed examination of both the Red Line extension's Environment Impact Statement, as well as the complementary Minuteman Area Transit Study provide a thorough understanding of the costs, complexities, and considerations project planners were contending with when planning transportation expansion beyond Alewife. This project understanding is contextualized through the plethora of stances, comments, and positions espoused by various town boards, elected officials, informal organizations, and everyday Arlington residents. From this thorough case study, a compelling set of factors emerge which help explain why the Red Line extension was ultimately unsuccessful in Arlington. These factors include an insufficient supplementary study, inadequate stakeholder engagement, inconsistent and confusing positions of support, and clear oppositional messaging.

Insufficient Supplementary Study

The first factor that may have driven opposition to the Red Line extension was the lack of study on transportation expansion beyond Arlington Heights. The opposition's most commonly cited concern was the apparent lack of information regarding the ultimate extension to Route 128. The Board of Selectmen's official position at the time of the referendum, which was shared by many other stakeholders, stated, "we oppose the extension of the Red Line until those responsible for mass transportation produce the necessary plans and funding to accomplish our goals … that it will ultimately extend to Route 128."

Sponsored by the MBTA, the Minuteman Area Transit Study (MATS) did provide much needed clarity on possible transportation expansion to Route 128. However, this study was not

nearly as authoritative as the EIS. The MATS was released as a draft of a phase one study. The Red Line extension alternatives the MATS explores are detailed and informative, but did not include the same kind of detailed summaries of environmental impacts, construction methods, and other key considerations as found in the EIS. Furthermore, the MATS authors make a clear statement that the physical and demographic landscape beyond Arlington Heights did not make a strong case for rapid transportation investment. This statement, combined with the lack of detailed impact summaries, likely precluded the MATS from qualifying as one of "the necessary plans and funding" that would ensure that the Red Line would extend to Route 128.

The MATS was released in January of 1977. Official statements from the Board of Selectmen as early as 1972 indicate that there were concerns regarding the ultimate Route 128 extension well before this release date. This suggests that for years, officials and residents were feeling uncomfortable supporting the Red Line extension proposal, as there was a lack of sufficient supplemental planning that illustrated the ultimate extension. The MBTA allowed for least five years to pass would providing complementary planning. This significant amount of time likely allowed for concerns, apprehensions, and resentment to build towards the extension project as well as the MBTA. As previously discussed, once the MATS was ultimately released, concerned groups and individuals only had a matter of days to read, interpret, and comment on the EIS.

It is likely that the letters of concern received by the EIS authors and UMTA officials were not informed by the findings detailed in MATS. Although the MATS did not make a resounding case for rapid transit expansion beyond Arlington, the study nonetheless provided descriptions of possible alignments, stations locations, and detailed illustrations. If this study had been released even a year before, this planning document may have been sufficient to dampen

opposition to the project by placating demands for a study showing post-Arlington, Route 128 terminal.

Inadequate Engagement

Community engagement in the transportation planning field looked far different in the 1970's as it does today. In the appendix of the third volume of the EIS, the study authors detail the "Community Liaison Programs" they employed to gather local input on the extension project. The authors describe how two citizen's advisory groups were formed, one for each of the station locations in the town. The members of these groups were appointed by the Board of Selectmen, and consisted of "owners of businesses in Arlington Center and Arlington Heights, reflecting the concern for alternatives which would be favorable to maintenance of healthy commercial activity in the Town." These groups met monthly, typically in the afternoon, and were closed to the public.

The closed door, top-down nature of these advisory groups undoubtedly contributed to the ultimate rejection of the Red Line extension through Arlington. It is evident that residents did not feel like these groups represented them. Comments made during the April 3rd, 1976 meeting held at the Arlington Catholic High School illustrate this frustrating sentiment. Parishioners expressed serious concerns regarding the composition of these groups, voicing their displeasure with how they consisted solely of appointed individuals, a majority of whom owned businesses in the station areas. These groups represented the interests of people who would benefit the most from the Red Line extension, and who likely cared less about project impacts and particularities regarding noise, traffic, and safety.

In their description of these citizen's advisory groups, the EIS authors describe how "a special public meeting was held to provide an opportunity for citizens to comment on the project as it affected Arlington." Furthermore, they discuss how "the Consultant's staff was available for presentations and briefings at the request of affected individuals and citizens' groups." These comments imply that general public meetings were the exception, not the norm, throughout the Red Line extension planning process. Ordinary residents and non-official organizations would have to petition the project planners for a chance to provide input. This frustrating reality led to the formation of the St. Agnes Task Force, who aimed to represent the concerns and opinions of Arlington residents who were not included in the formal task force groups set up by the Selectmen.

If a different approach to public participation was taken, the outcome of the Red Line extension referendum may have been different. As discussed, some of the most expressive and effective opposition came in result of the Arlington Catholic High School meeting regarding the Arlington Center station complex. In its draft designs for the extension, the MBTA had proposed a six-story parking and bus depot structure to be built on the Russel Common municipal lot, located between the high school and St. Agnes' Church. This station complex proposal was certainty circulated among the appointed members of the Arlington Center Advisory Group prior to its public release in a draft version of the EIS. As a commerce-minded group, it is likely that these members believed that the benefits of having ample station parking outweighed any potential drawbacks. If one were expecting an increase in commercial development in the Center following the extension construction, converting a municipal surface lot into a high-capacity parking facility would be a no-brainer.

The decision to propose this large station complex without thorough community feedback from non-appointed members would prove disastrous. Arlington residents, particularly the 12,000 who were members of the St. Agnes parish, clearly felt blindsided, ignored, and offended by the Arlington Center station plans. During the April 3rd meeting regarding this issue, any mention of the MBTA, the municipal planning staff, and the advisory boards were met with resounding boos from the 1,200 attendees. The events that transpired that evening aided the formation of the St. Agnes Task Force, who expressed some of the staunchest oppositional comments to the EIS authors, UMTA reviewers, and to the Arlington public. The effectiveness of this opposition was amplified by the Task Force's leader, Monsignor John Linnehan. As the spiritual leader of 20% of the town's population, including 6,000 families, his outsized community presence carried great weight in the realm of public opinion.

State Representative John Cusack's successful legislation to block MBTA construction within 75 yards of the high school can also draw its origins from this pivotal meeting, as well as feelings of distrust resulting from the top-down engagement practices employed by the MBTA. It is inevitable that parishioners, residents, and representatives such as Cusack would have still had concerns over the Arlington Center station area even if they were more thoroughly included in planning initiatives and outreach. However, if the Selectmen appointed a group more representative of Arlington interests, or if the MBTA made general public input the norm, not the exception, concerns regarding the station could have been discussed and addressed in earlier stages of the process, and the situation that unfolded in the spring of 1976 and its ensuing consequences may have been avoided.

Inconsistent and Confusing Positions of Support

The Red Line extension in Arlington seldom received public statements of outright support. Powerful state figures such as Lt. Governor Tip O'Neill, Public Works Commissioners John Carol, and MBTA Chairman Robert Kiley voiced uniform support of the final extension proposal. However, these individuals had little personal connection with the town, and it is evident that their statements made little impact on the hearts and minds of Arlington residents. Aside from a handful of short letter-to-the-editor columns from individual proponents, no significant Arlington individual took up the mantle of boosting the project.

The Arlington Redevelopment Board was the most authoritative town entity to publicly vocalize outright support for the extension. As discussed, in the March 3rd, 1977 edition of the Arlington Advocate, the paper editors published a full-page statement from the Redevelopment Board, where they stated that they "fully support the Red Line rapid transit expansion into Arlington." In a public meeting in the year prior, a Board representative stated the same position, voicing formal support for the proposed extension.

Their statement of clear support contrasted the position held by the Board of Selectmen. As described in chapter four, the Selectmen's official position on the projected varied between 1972 and 1977, but typically aligning on conditional support. The Selectmen made it clear that they would not accept the Red Line extension terminating within the borders of Arlington. Their support was entirely contingent on the extension being built in a singular phase to Route 128. The Selectmen effectively supported a vision of the alternatives explored in the 1977 MATS, which has the Red Line terminal being located in Lexington or Burlington, along Route 128.

Evidently, the MATS was insufficient to satisfy the Board's demands, as they ultimately published their position of withheld support the Arlington Advocate edition three days before the

pivotal referendum, stating “the Board supports the extension of Harvard Square to Route 128 provided….that it does not end anywhere in Arlington and that it is part of a long range transportation plan to ultimately extend rapid transit to Route 128.”

This single-phase extension was not realistic and was not entertained in the EIS, which remained the authoritative planning document for the extension. In fixating on imposing the unrealistic condition that the extension must never, even temporarily, terminate in Arlington, the Board threw their support behind a project that did not exist, thus degrading the salience and clarity of their position.

The only time when the positions of the Board of Selectmen and Redevelopment Board were aligned was in March of 1976. During this brief period, the Selectmen released a position that recognized the complexities of the extension project, acknowledging that a phased approach may be needed, and that they had a “firm commitment to any funding and construction strategy through Arlington Center as the first phase.” However, this position was quickly rescinded and replaced. If the positions of the Board of Selectmen and Redevelopment Board were consistently aligned throughout the mid 1970’s, it may have swayed greater support towards the extension project among Arlington Residents. It is likely that undecided residents, especially in an era of higher institutional trust, put a great deal of stock into the statements of authoritative and representative town boards (Pew Research Center 2024). Ultimately, instead of a consistent message, residents were left wondering how to interpret the two board’s differing opinions.

Additionally, while the Redevelopment Board was clearer in its remarks, it is uncertain of how much influence the Board had on its own. The Redevelopment Board was more concerned with the economic development, zoning, and other physical improvements of the town. The Board of Selectmen on the other hand was an elected body which held significant sway over the

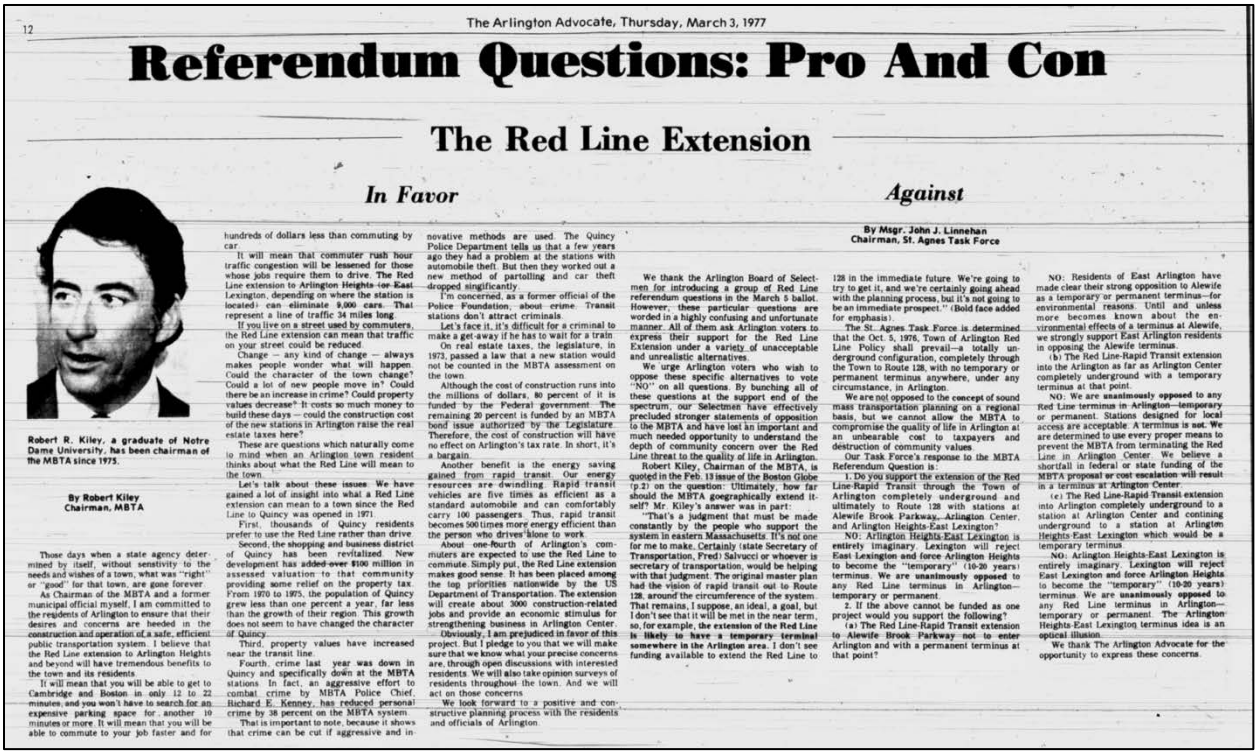
town's political agenda, as well as the town's state representatives. The Selectmen's position was unclear, addressing a hypothetical project, rather than the project at hand. By not directly taking a stance, the Board of Selectmen squandered its ultimate potential in dictating the fate of the Red Line extension, effectively abdicating its authoritative position and leaving a vacuum of influence to be filled by a more clear, organized, and vocal opposition.

Clear Oppositional Message

In stark contrast to the tepid support the Red Line extension received, the oppositional argument to the project was far more consistent and directed, and residents who opposed the extension could look to visible public figures who helped direct and vocalize their opinions. Monsignor Linnehan is the most notable of these figures. As the leader of the large Catholic constituency in Arlington, Linnehan took an active role in organizing his constituents and defining the narrative around the extension project. His impact is illustrated by his ability to draw over 1,200 people to an evening meeting to protest the project's impact on the town center. Amassing a crowd of that size on a weekday night illustrates not only the deep concerns parishioners had, but also Linnehan's ability to organize. Further illuminating the power Linnehan wiled was how he was able to muster a formal apology from project planners for excluding his constituents from prior planning discussions.

Another example of the opposition's effectiveness was the formation of the St. Agnes Task Force, which provided a direct outlet for residents who felt left out of the formal planning process to organize their concerns. This task force was organized within months, and was able to inject itself into the late-stage review process for the extension. As the referendum approached in the spring of 1977, it became evident that the Task Force had become a prominent organization

in the town, and that they were effective at articulating resident opposition. In the edition of the Arlington Advocate printed days before the referendum, Monsignor Linnehan and the St. Agnes Task Force were the group responsible to fill the "Against" side of the paper.



12 The Arlington Advocate, Thursday, March 3, 1977

Referendum Questions: Pro And Con

The Red Line Extension

In Favor

Robert R. Kiley, a graduate of Notre Dame University, has been chairman of the MBTA since 1975.

By Robert Kiley
Chairman, MBTA

Those days when a state agency determined by itself, without senstivity to the needs and wishes of a town, what was "right" or "good" for that town, are gone forever.

As Chairman of the MBTA and a former municipal official myself, I am committed to the residents of Arlington to ensure that their desires and concerns are heeded in the construction and operation of a safe, efficient public transportation system. I believe that the Red Line extension to Arlington Heights and beyond will have tremendous benefits to the town and its residents.

It will mean that you will be able to get to Cambridge and Boston in only 12 to 22 minutes, and you won't have to search for an expensive parking space for another 10 minutes or more. It will mean that you will be able to commute to your job faster and for hundreds of dollars less than commuting by car.

It will mean that commuter rush hour traffic congestion will be lessened for those whose jobs require them to drive. The Red Line extension to Arlington Heights (or East Lexington, depending on where the station is located) can eliminate 9,000 cars. That represent a line of traffic 34 miles long.

If you live on a street used by commuters, the Red Line extension can mean that traffic on your street could be reduced.

Change — any kind of change — always makes people wonder what will happen. Could the character of the town change? Could a lot of new people move in? Could there be an increase in crime? Could property values decrease? It costs so much money to build these days — could the construction cost of the new stations in Arlington raise the real estate taxes here?

These are questions which naturally come to mind when an Arlington town resident thinks about what the Red Line will mean to the town.

Let's talk about these issues. We have gained a lot of insight into what a Red Line extension can mean to a town since the Red Line to Quincy was opened in 1971.

First, thousands of Quincy residents prefer to use the Red Line rather than drive.

Second, the shopping and business district of Quincy has been revitalized. New development has added over $100 million in assessed valuation to that community providing some relief on the property tax. From 1970 to 1975, the population of Quincy grew less than one percent a year, far less than the growth of their region. This growth does not seem to have changed the character of Quincy.

Third, property values have increased near the transit line.

Fourth, crime last year was down in Quincy and specifically down at the MBTA stations. In fact, an aggressive effort to combat crime by MBTA Police Chief Richard E. Kenney, has reduced personal crime by 38 percent on the MBTA system.

That is important to note, because it shows that crime can be cut if aggressive and innovative methods are used. The Quincy Police Department tells us that a few years ago they had a problem at the stations with automobile theft. But then they worked out a new method of partolling and car theft dropped significantly.

I'm concerned, as a former official of the Police Foundation, about crime. Transit stations don't attract criminals.

Let's face it, it's difficult for a criminal to make a get-away if he has to wait for a train.

On real estate taxes, the legislature, in 1973, passed a law that a new station would not be counted in the MBTA assessment on the town.

Although the cost of construction runs into the millions of dollars, 80 percent of it is funded by the Federal government. The remaining 20 percent is funded by an MBTA bond issue authorized by the Legislature. Therefore, the cost of construction will have no effect on Arlington's tax rate. In short, it's a bargain.

Another benefit is the energy saving gained from rapid transit. Our energy resources are dwindling. Rapid transit vehicles are five times as efficient as a standard automobile and can comfortably carry 100 passengers. Thus, rapid transit becomes 500 times more energy efficient than the person who drives alone to work.

About one-fourth of Arlington's commuters are expected to use the Red Line to commute. Simply put, the Red Line extension makes good sense. It has been placed among the top priorities nationwide by the US Department of Transportation. The extension will create about 3000 construction-related jobs and provide an economic stimulus for strengthening business in Arlington Center.

Obviously, I am prejudiced in favor of this project. But I pledge to you that we will make sure that we know what your precise concerns are, through open discussions with interested residents. We will also take opinion surveys of residents throughout the town. And we will act on those concerns.

We look forward to a positive and constructive planning process with the residents and officials of Arlington.

Against

By Msgr. John J. Linnehan
Chairman, St. Agnes Task Force

We thank the Arlington Board of Selectmen for introducing a group of Red Line referendum questions in the March 5 ballot. However, these particular questions are worded in a highly confusing and unfortunate manner. All of them ask Arlington voters to express their support for the Red Line Extension under a variety of unacceptable and unrealistic alternatives.

We urge Arlington voters who wish to oppose these specific alternatives to vote "NO" on all questions. By bunching all of these questions at the support end of the spectrum, our Selectmen have effectively precluded stronger statements of opposition to the MBTA and have lost an important and much needed opportunity to understand the depth of community concern over the Red Line threat to the quality of life in Arlington.

Robert Kiley, Chairman of the MBTA, is quoted in the Feb. 13 issue of the Boston Globe (p.2) on the question: Ultimately, how far should the MBTA geographically extend itself? Mr. Kiley's answer was in part:

"That's a judgment that must be made constantly by the people who support the system in eastern Massachusetts. It's not one for me to make. Certainly (state Secretary of Transportation, Fred) Salvucci or whoever is secretary of transportation, would be helping with that judgment. The original master plan had the vision of rapid transit out to Route 128, around the circumference of the system. That remains, I suppose, an ideal, a goal, but I don't see that it will be met in the near term, so, for example, the extension of the Red Line is likely to have a temporary terminal somewhere in the Arlington area. I don't see funding available to extend the Red Line to 128 in the immediate future. We're going to try to get it, and we're certainly going ahead with the planning process, but it's not going to be an immediate prospect." (Bold face added for emphasis).

The St. Agnes Task Force is determined that the Oct. 5, 1976, Town of Arlington Red Line Policy shall prevail—a totally underground configuration, completely through the Town to Route 128, with no temporary or permanent terminus anywhere, under any circumstance, in Arlington.

We are not opposed to the concept of sound mass transportation planning on a regional basis, but we cannot allow the MBTA to compromise the quality of life in Arlington at an unbearable cost to taxpayers and destruction of community values.

Our Task Force's response to the MBTA Referendum Question is:

1. Do you support the extension of the Red Line-Rapid Transit through the Town of Arlington completely underground and ultimately to Route 128 with stations at Alewife Brook Parkway, Arlington Center, and Arlington Heights-East Lexington?

NO: Arlington Heights-East Lexington is entirely imaginary. Lexington will reject East Lexington and force Arlington Heights to become the "temporary" (10-20 years) terminus. We are unanimously opposed to any Red Line terminus in Arlington—temporary or permanent.

2. If the above cannot be funded as one project would you support the following?

(a) The Red Line-Rapid Transit extension to Alewife Brook Parkway not to enter Arlington and with a permanent terminus at that point?

NO: Residents of East Arlington have made clear their strong opposition to Alewife as a temporary or permanent terminus—for environmental reasons. Until and unless more becomes known about the environmental effects of a terminus at Alewife, we strongly support East Arlington residents in opposing the Alewife terminus.

(b) The Red Line-Rapid Transit extension into the Arlington as far as Arlington Center completely underground with a temporary terminus at that point.

NO: We are unanimously opposed to any Red Line terminus in Arlington—temporary or permanent. Stations designed for local access are acceptable. A terminus is not. We are determined to use every proper means to prevent the MBTA from terminating the Red Line in Arlington Center. We believe a shortfall in federal or state funding of the MBTA proposal or cost escalation will result in a terminus at Arlington Center.

(c) The Red Line-Rapid Transit extension into Arlington completely underground to a station at Arlington Center and contining underground to a station at Arlington Heights-East Lexington which would be a temporary terminus.

NO: Arlington Heights-East Lexington is entirely imaginary. Lexington will reject East Lexington and force Arlington Heights to become the "temporary" (10-20 years) terminus. We are unanimously opposed to any Red Line terminus in Arlington—temporary or permanent. The Arlington Heights-East Lexington terminus idea is an optical illusion.

We thank The Arlington Advocate for the opportunity to express these concerns.

Figure 5.1: Page 12 of the Arlington Advocate, two days before the referendum. *Source: Arlington Advocate*

Their argument was clear and intelligible. In their statement in the March 3rd edition, Task Force's statement addressed each referendum question, listing specific reasons to vote against. This contrasts the left side of the page, where the MBTA Chairman Rober Kiley lists a medley of facts and figures that although are quantitatively compelling, do little to appease the specific concerns held by Arlington residents, and do not address specific questions posed by the referendum. Two days after these statements were printed, thousands of Arlington residents went to the polls. It was likely the concise and direct messages espoused by the spiritual authority of the town that voters resonated with, rather than the statistical ramblings of a state official.

Vote Map Breakdown

Publicly available sources like the Arlington Advocate and Boston Globe archives report on the outcome of the pivotal referendum vote, however, in their articles the vote tallies are summarized to a town-wide average, omitting information that could be provided by precinct-level results. To obtain precinct-level election data, a Freedom of Information Act request was submitted to the Arlington Town Clerk. This data was then digitized, and mapped onto historical Arlington precinct boundaries. These precinct boundaries were sourced from a December 1970 edition of the Arlington Advocate, and then georeferenced and digitized as custom feature polygons in ArcGIS. A table of the precinct level referendum results is available in appendix A. These granular election results illuminate the geographic distribution of Red Line extension attitudes in the town, and illustrate more nuanced trends.

Question 1

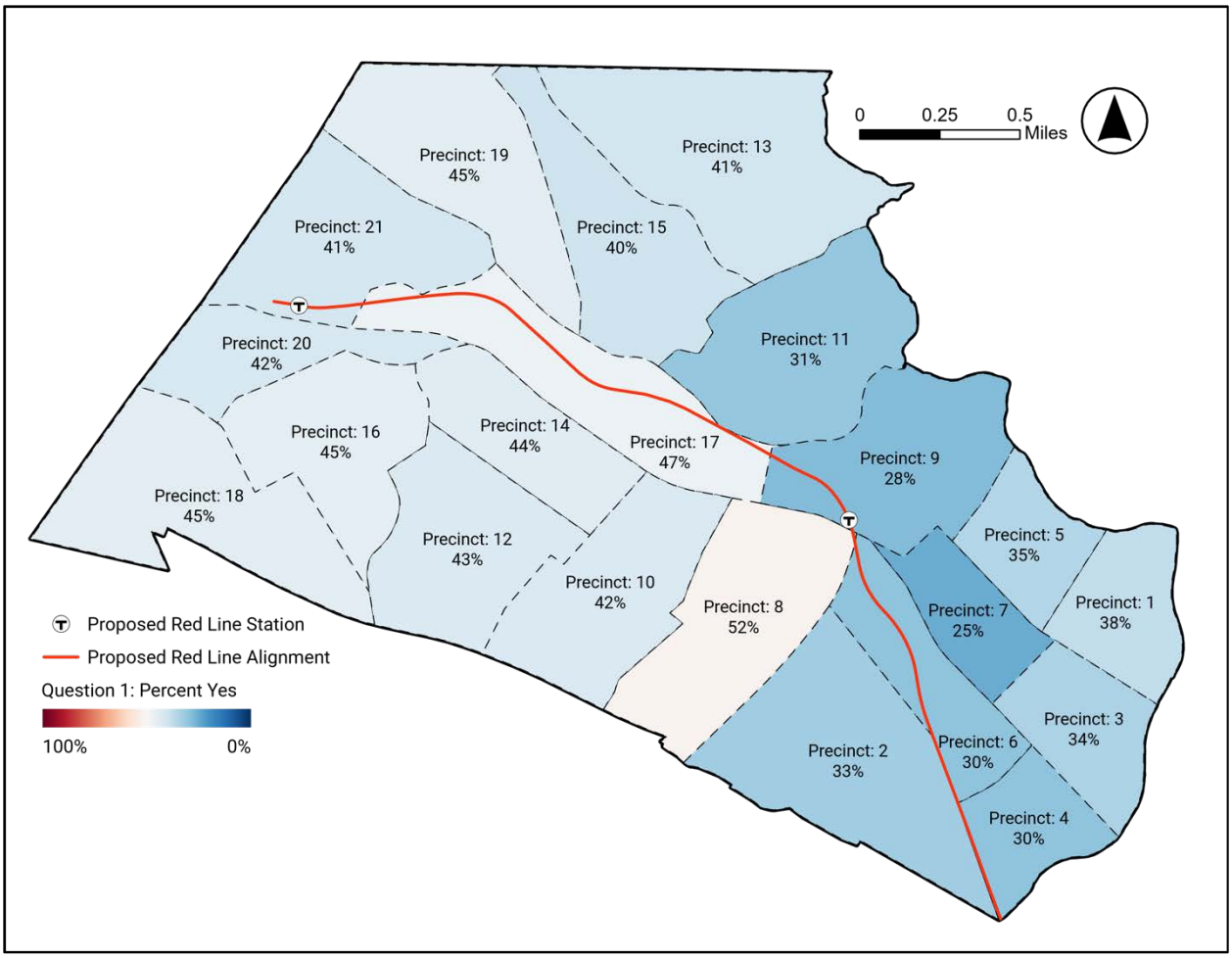


Figure 5.2: Referendum question 1 results by precinct. *Source: Arlington Town Clerk*

Question: Do you support the extension of the Red Line/rapid transit through the Town of Arlington completely underground and ultimately to Route 128 with stations at Alewife Brook Parkway, Arlington Center, and Arlington Heights/East Lexington?

Figure 5.2 shows a map of the referendum results for question one. This question was the most general question posed on the ballot, gauging voter support on a Red Line extension scenario that closely aligned with what is outlined in the 1977 EIS. As illustrated in table 4.9, this scenario garnered the highest overall support of all the questions posed in the referendum, with 39% of the town voting "Yes." However, this attitude was not uniform across the town. Precincts

in East Arlington indicated a high level of opposition to this question. Although this neighborhood was generally the most suitable for mass transportation, being denser and more walkable than other parts of town, its residents exhibited the greatest amount of opposition to the project. It is notable that these precincts are most proximal to the St. Agnes' Church and Arlington Catholic High School, which are located to the northeast of the proposed Arlington Center station. This scenario makes it clear that the St. Agnes Task Force and Monsignor Linnehan were especially effective at convincing those who lived in the same neighborhood as the church to oppose the project.

The vote distribution in Arlington Heights is also quite illuminating, as it shows that residents in this part of town were generally less opposed to the project than their East Arlington counterparts. Despite it being a less suitable area for mass transportation, having many hills and a smaller commercial district, those in Arlington Heights were more receptive to having a station in their neighborhood. More so, as outlined in the EIS, this station would have been the terminal for the Red Line, which according to Arlington Heights Advisory Group, the Board of Selectmen, and other oppositional groups, was a highly undesirable scenario due to the 350-space parking garage, and influx of traffic in the psychically constrained neighborhood. This map suggests a discrepancy between those official concerns and the voters in the neighborhood, as residents were about 10% – 20% more favorable towards the Red Line extension than their East Arlington counterparts, despite the clear reality that this would mean a terminal station would be built in in Arlington Heights.

This higher-than-average approval of the project could be attributed to the greater transportation benefits the neighborhood would've received from the project. East Arlington was served by MBTA buses such as the 87, 77, and 80 while Arlington Heights only direct eastbound

connection was through the 77 (General Drafting Company 1977). Opponents of the extension had stated that Arlington already had extensive MBTA service, and did not need rapid transit, but they were likely only referencing to East Arlington. Table 4.3 supports this, as the EIS authors found that Arlington Heights Red Line commuters would enjoy a 22-minute trip to Park Street, a dramatic improvement from the 39-minute trip on existing buses, thus saving Arlington Heights residents 17 minutes. Meanwhile, the Red Line extension would save Arlington Center commuters about 11 minutes – a notable savings amounts but significantly less than their Arlington Heights counterparts.

Question 2a

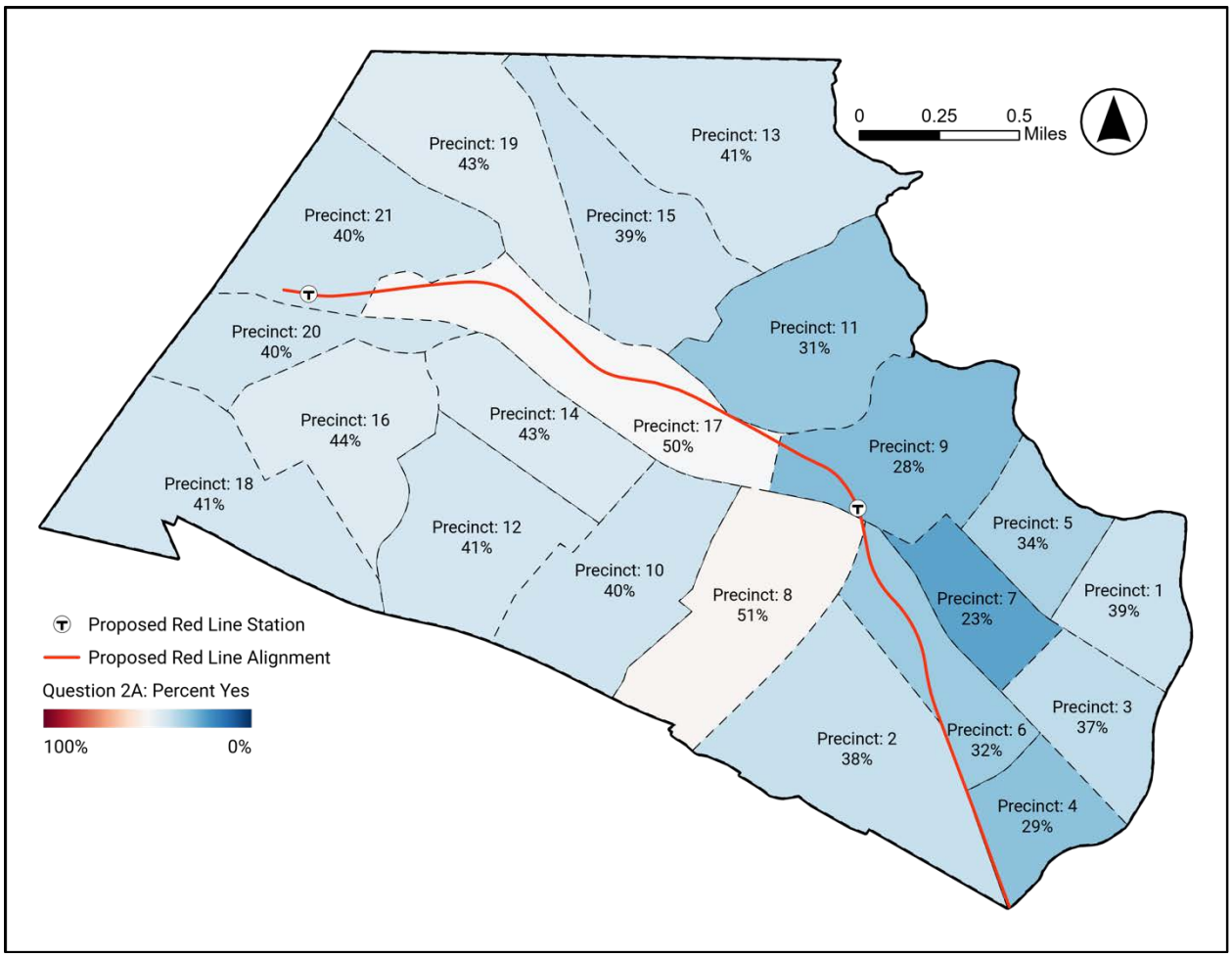


Figure 5.3: Referendum question 2a results by precinct. *Source: Arlington Town Clerk*

Question: If the above (question number one) has to be done in phases, which of the following would you support; The Red Line/rapid transit extension into Arlington completely underground to a station at Arlington Center and continuing underground to a station at ***Arlington Heights/East Lexington with a temporary terminus at that point***

As illustrated in figure 5.3, the results from question 2a are nearly identical to what is seen in question one. East Arlington is more opposed to the concept of an Arlington Heights terminal, while Arlington Heights is still opposed, but to a lesser degree. This similar voting result can be attributed to the equivalency of the question asked, and the reality of the EIS. The extension proposal, as outlined in the EIS has the Red Line terminating in Arlington Heights, which is what is essentially asked in question one as well as in question 2a. The only difference

here is that question 2a definitively stipulated that the Red Line extension would have to terminate in the town, while question one simply illuded to that. Nonetheless, both questions were polling residents on effectively the same scenario, explaining the similar results.

Question 2b

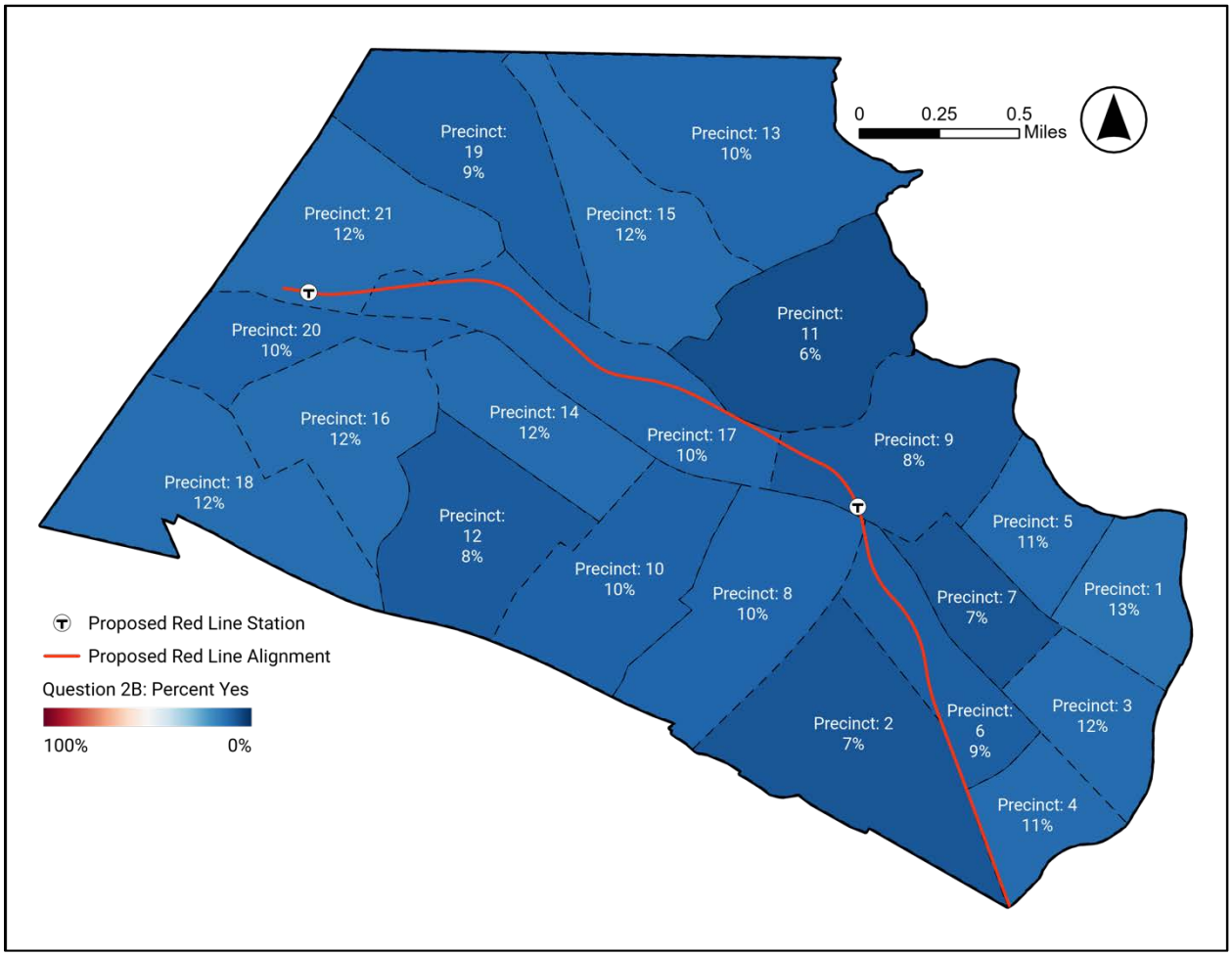


Figure 5.4: Referendum question 2b results by precinct. *Source: Arlington Town Clerk*

Question: If the above (question number one) has to be done in phases, which of the following would you support; The Red Line/rapid transit extension into Arlington as far as ***Arlington Center completely underground with a temporary terminus at that point***

The precinct-level voting results from question 2b yield little additional information from the town-wide election results; they show that Arlington his unanimously opposed to a terminus in Arlington Center. With 90% of voters rejecting this scenario, it is clear that the sentiment expressed in the April 3rd Arlington Catholic High School meeting was shared among residents in

all corners of the town. It additionally illustrates the St. Agnes Task Force's effectiveness at articulating their concerns and ability to transcribe them to non-adjacent residents. Above all else, this result shows that Arlington residents did not believe the Center was an appropriate location for a terminus, likely fearing the physical imposition that a terminal station would have on the character of the area. Best said by parishioner Vincent Fulmer, the town had "tried very, very hard to leave behind some of those things that exists at the end of the line" and was not ready to embrace the "gangs of roaming youths" that may find refuge in their beloved town center.

Question 3

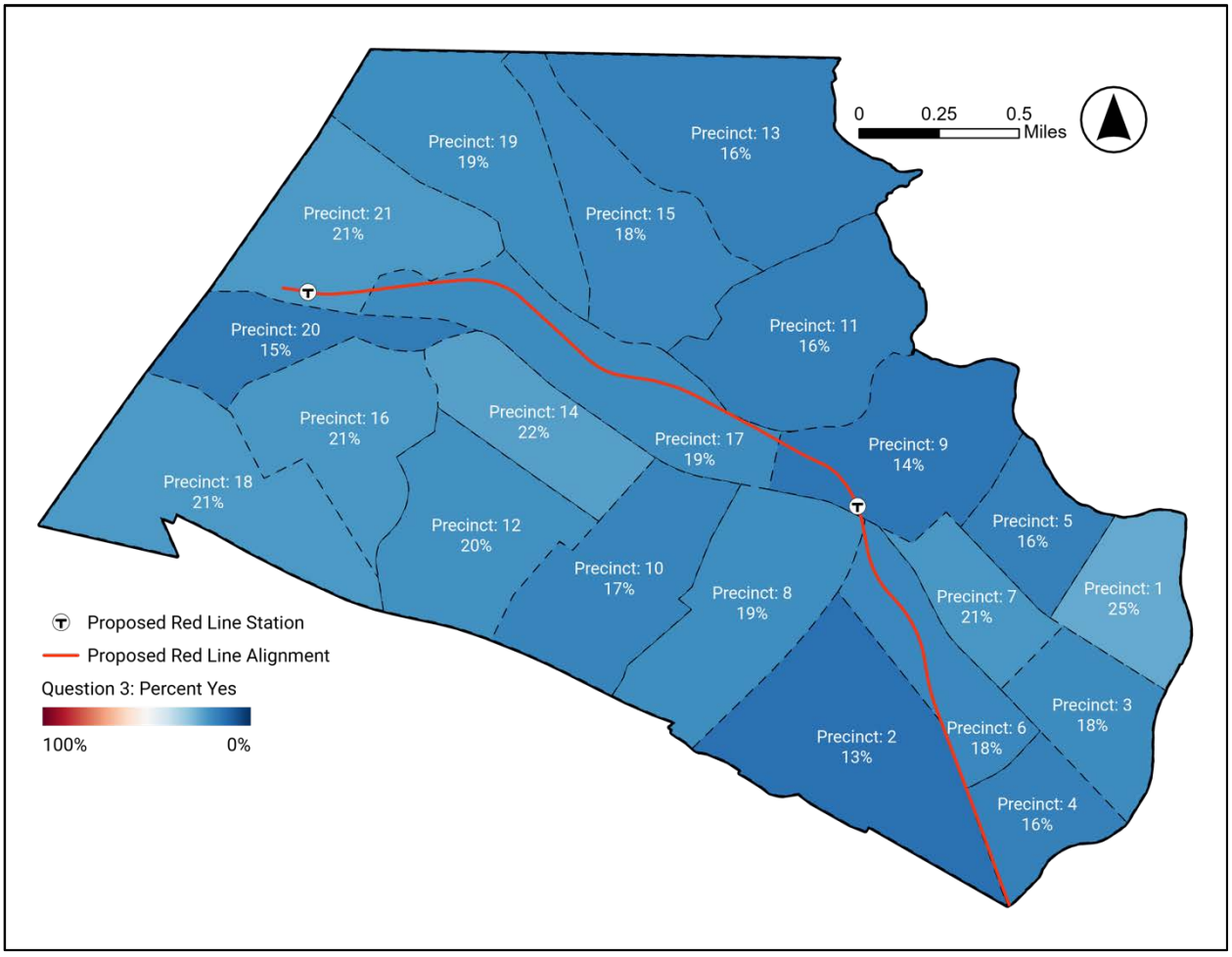


Figure 5.5: Referendum question 3 results by precinct. *Source: Arlington Town Clerk*

Question: Do you support ending the Red Line/rapid transit at **Alewife Brook Parkway with a permanent terminus at that point**

As illustrated in figure 5.5 above, with little geographic nuance, Arlington residents overwhelmingly opposed the scenario which proposed the Red Line terminating at Alewife, outside the town's borders. This result confirms the sentiment expressed by the Redevelopment Board, which feared that an Alewife terminal would deprive Arlington of any of the benefits of mass transit, while increasing the traffic burden through the town. One could argue that residents on the southern side of Arlington, which is most proximal to Route 2 and subsequently the new

Alewife Station, were generally less opposed to this alternative. This could be because they would be within a short driving distance of the terminal, allowing them to still enjoy some of the transportation benefits without needing to have the terminal located in the town.

Referendum Consequences

The March 5th, 1977, referendum and legislative opposition from Representative Cusack undoubtedly had an impact on the final outcome of the Red Line extension. Reporting from the Boston Globe helps illustrate the extent of this impact by contextualizing these events and describing the trajectory of the project through a more general perspective. The same day the Arlington Advocate released its edition on the outcome of the referendum, the Boston Globe reports on MBTA Chairman Kiley's response to the vote. Despite the town's resounding rejection, Kiley states, "there is still time to work things out" (Jordan 1977). Kiley does acknowledge the local importance of the referendum, emphasizing the election's significant turnout. He signals that the Authority is amenable to project changes, saying "we're not in the business of ramming some particular design down anyone's throat." Kiley continues, telling how the Arlington section was already designated to be worked on in a secondary phase of the extension, and that "there is work going ahead on Phase 1 to Alewife." He concludes his statement by saying how work in Arlington would not begin for three years, and that "there's plenty of time to review decisions and make changes that are needed." Kiley's comments immediately following the referendum indicate that although he respects the outcome, he doesn't believe that it will ultimately stop the extension from ultimately coming through Arlington.

In October of 1977, U.S. Transportation Secretary Brock Adams announced that the MBTA would receive $111 million in capital grants from the federal government (Patterson

1977). Reporting indicates that a significant part of this sum would go towards the Red Line extension, specifically, the Harvard Square station complex, which was planned to start construction the following year. The next month, UMTA approved the construction permit for the deep bore tunnel that would connect Porter Square and Davis Square, and ultimately Alewife (Murphy 1978). This approval, combined with the influx of federal grants, allowed for the extension to break ground in early 1978.

However, as construction was beginning in Cambridge, the ultimate extension of the Red Line beyond Alewife to Route 128 was uncertain. A Route 128 terminal remained the ultimate goal of the MBTA, but it is apparent that this desire came up against the realities of available funding. Reporting in December of 1978 tells that the MBTA faced pushback when they announced that the project would terminate at "Alewife parkway instead of going out to Arlington Heights as originally planned" (Pillsbury 1978). According to the MBTA, "there were not enough funds for the longer route."

As discussed in chapter four, the Red Line extension from Alewife to Arlington Heights would cost about $240 million (approximately $1 billion in 2025 dollars), which represented 38% of the estimated total project cost. This represents a very significant additional cost for only an additional two stations, both of which would have significantly fewer daily riders than compared to the other stations. The most cost-effective way to bring rapid transit to Arlington would be to extend the Red Line to Arlington Center. Including project wide items detailed in table 4.3, the Alewife to Arlington Center section of the project would cost about $68 million (approximately $304 million in 2025 dollars). The longer and more complicated alignment to Arlington Heights would cost $170 million (approximately $304 million in 2025 dollars). If Arlington residents and representatives continued to demand for rapid transit access instead of

rejecting it, the far cheaper extension to Arlington Center may have been feasible for the MBTA to accomplish.

Evidently, this was not the case. The referendum results from question 2b clearly illustrate unanimous townwide disapproval of an Arlington Center terminal, making MBTA officials and the state's congressional delegation unlikely to use their limited funds and political capital to push for this extension.

Additionally, the "128 or bust" approach taken by the Board of Selectmen and other project proponents in Arlington become increasingly unrealistic given the limited funding landscape in the late 1970's. As discussed in the MATS, the most realistic and impactful Red Line extension scenario to Route 128 is detailed in alterative three, which has the Red Line continuing northwest from Arlington heights with a station in Lexington Center, and then following Route 128 to a terminal at the Burlington Mall. Table 4.7 reports that this alternative would cost $175 million, in $775 million in 2025 dollars.

Table 5.1: Cost to Ridership comparison of extension sections.

Section	Riders	1975 Cost	2025 Cost	Percent of Total Cost	Percent of Total Riders
Harvard - Alewife Section	33,600	$ 383,524,000	$ 1,699,408,068	48%	71%
Alewife - Arlington Heights Section	8,200	$ 239,023,000	$ 1,059,119,155	30%	17%
Arlington Heights - Burlington/Route 128 Section*	5,700	$ 175,000,000	$ 775,250,000	22%	12%
Total	**47,500**	**$ 797,547,000**	**$ 3,533,777,222**	100%	100%

*Source: 1977 EIS, 1977 MATS**

When looking at the relationship between these section costs and projected ridership, it is easy to discern why the MBTA was unwilling and unable to extend the Red Line to Route 128 in a single phase. Using estimates combined from the EIS and the MATS studies, the total cost of

extending the Red Line from Harvard to Route 128 in Burlington would cost an estimated $797 million in 1977, well over $3.5 billion in 2025. The price of the Harvard to Alewife section was projected to be about 48% of the total project cost, but generate over 70% of the total daily riders. The Arlington section, which included two stops in the town, would represent 30% of the total cost of the project, but only serve 17% of the total daily riders. The Arlington Heights to Burlington/Route 128 section represented 22% of the total extension cost, but only attract 12% of the total daily riders.

With limited federal funds, it makes perfect sense that the MBTA would prioritize funding of the Harvard to Alewife section of the project. Extending the Red Line beyond Alewife would cost double the amount, and only serve only a fraction of the daily riders of the earlier section. While the extension beyond Alewife had transformative potential for the MBTA to serve the wider Middlesex Country region, it was evident that securing the necessary funding would take years of local, state, and federal efforts. The state's congressional delegation, as well as the MBTA, may have been reluctant to fight aggressively to secure funding for transportation expansion in a community that so clearly opposed it.

Chapter 6: Contemporary Context for Expansion

Renewed efforts to increase public transportation service in Arlington through state legislation, municipal initiatives, and grassroots advocacy necessitate reexamining the feasibility of extending Red Line service to the town. In this chapter, I explain the determinants of this renewed interest in public transportation through findings from a demographic analysis and from the literature review. I then apply learnings regarding the nature of federal funding as well as the implications of a recent resolution to adjust Arlington's MBTA assessment. Then, I discuss the role of advocacy, uniform messaging, and comprehensive planning in securing transportation investments. I conclude this chapter by exploring findings from a spatial analysis which examined the suitability and projected ridership of Arlington, Lexington, and Burlington station locations.

Demographic and Attitudinal Shifts

The demographic profile of Arlington, as with much of the Boston metropolitan region, has changed dramatically since 1977. As shown in figure 6.1, according to the 1970 U.S. Decennial Census, Arlington was a nearly racially homogenous town, with 99% of its population being white in 1970. Only 0.3% of the town was Black, and 0.8% was another race. In 2025, Arlington is significantly more diverse, with nearly one quarter of the town being nonwhite.

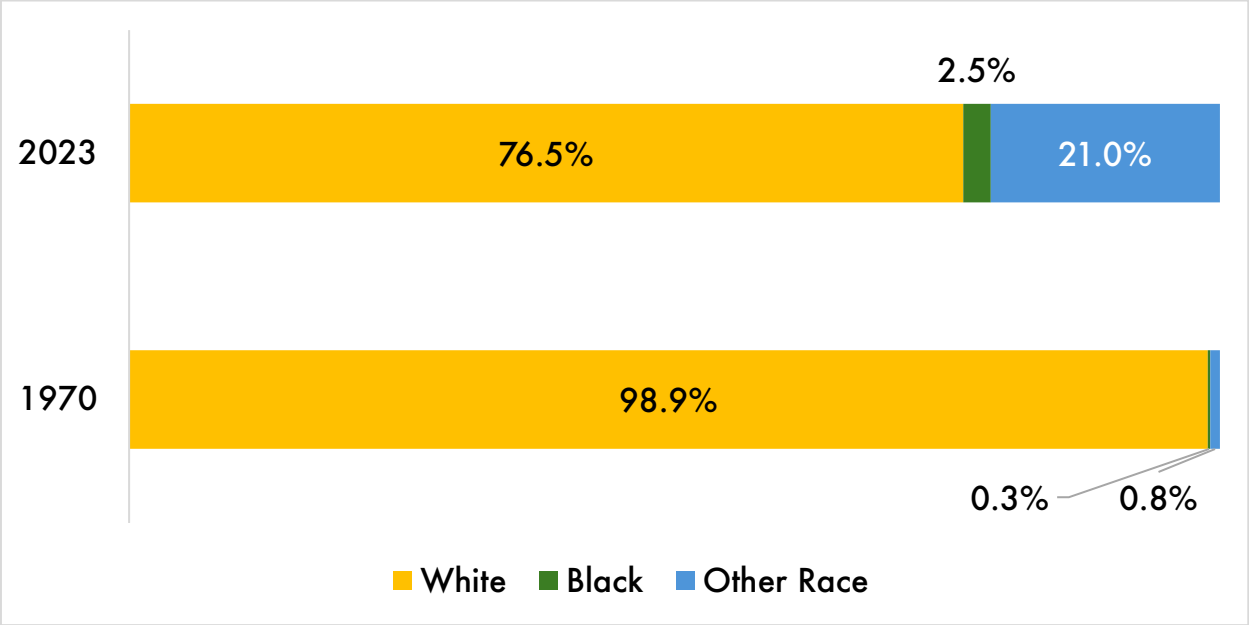


Figure 6.1: Percent race comparison, 1970 to 2023. *Source: U.S. Census Bureau*

The age distribution of Arlington residents has also changed dramatically over the past 50 years. In 1970, Arlington was decidedly a more family-oriented town. Over 30% of the town's population was under the age of 18. This demographic composition may partially explain the particular salience of the Arlington Catholic High School meeting, well as concerns from East Arlington residents about youth access to recreational facilities. Voters in Arlington may have been particularly sensitive to Red Line extension impacts that would have affected children, as this was a greater focus among community members.

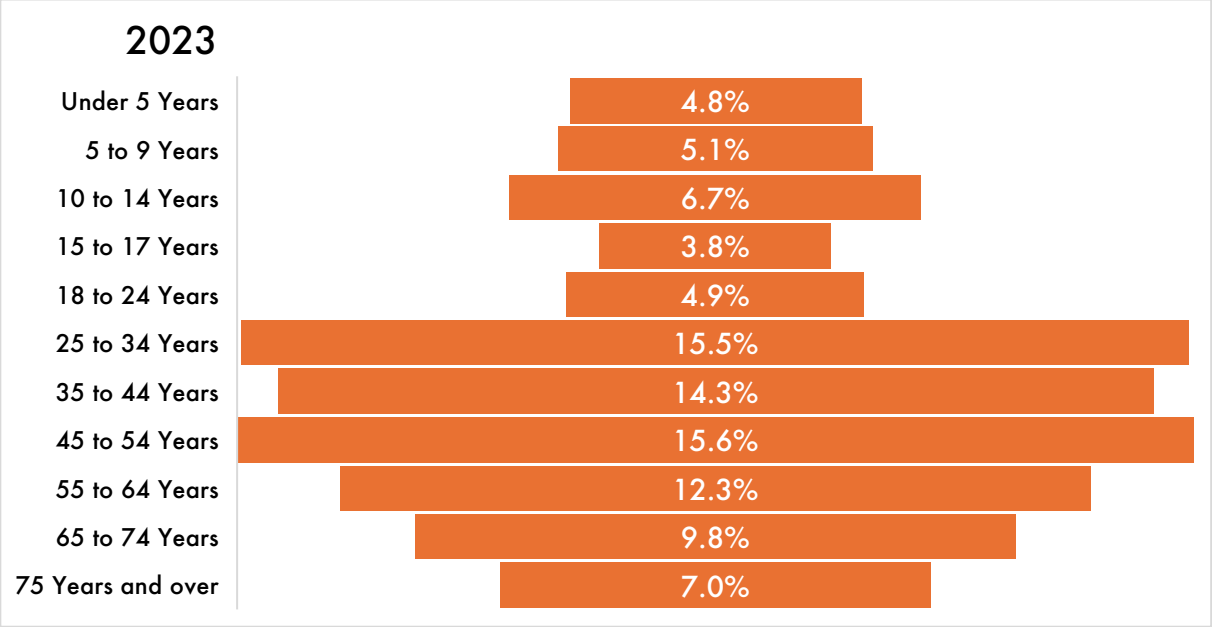


Figure 6.2: Population pyramid of Arlington in 1970. *Source: U.S. Census Bureau*

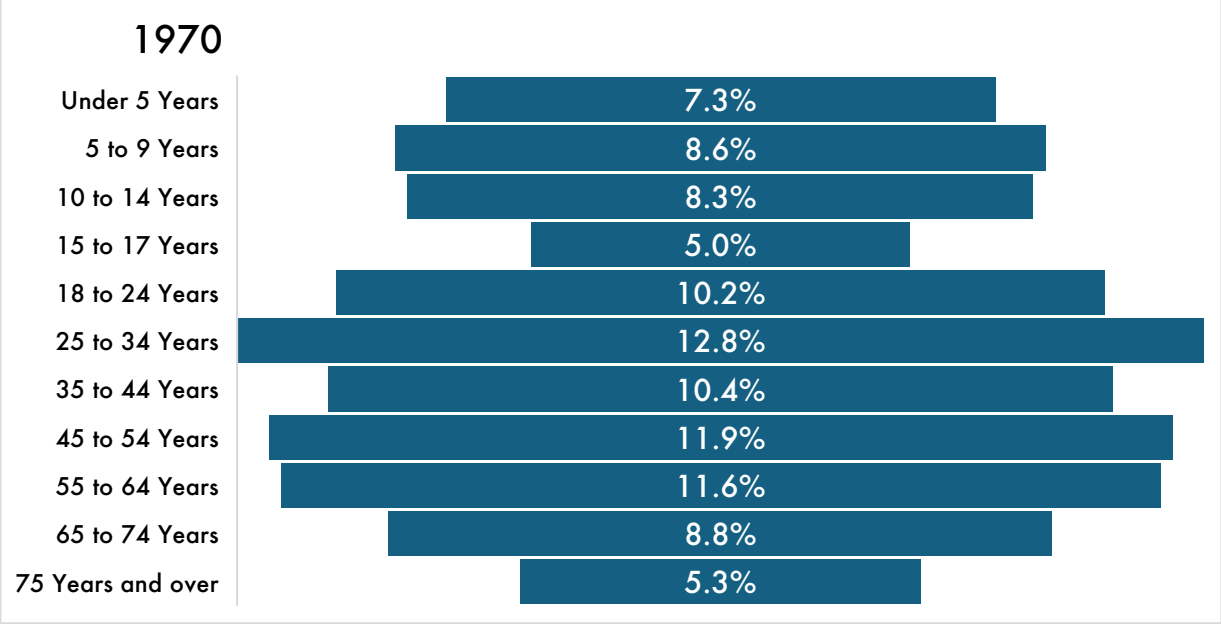


Figure 6.3: Population pyramid of Arlington in 2023. *Source: U.S. Census Bureau*

The most recent estimates from the U.S. Census Bureau show a significant deviation from 1970 demographics. In 2023, people under the age of 18 made up 20% of the town's population - a far smaller percentage than in 1970. Figure 6.3 further illustrates that the most prevalent generation in Arlington today are millennials, who consist of 25 – 45-year-olds.

Figure 6.4 shows a comparison of the primary mode of transportation Arlington residents use to get to work between 1970 and 2023. In 1970, it is clear that the auto transport reigned supreme, with 71% of Arlington residents primarily using their personal vehicles to commute. Public transportation still played an important role, with 22% of Arlington residents using the MBTA system to travel to work. This trend is supported by findings from the literature review in chapter three, which suggested that by the mid-20th century, Americans were increasingly reliant on their personal automobiles to commute rather than public transportation. In fact, 1975 saw the fewest amount of public transportation riders in the nation's history (Kwinty 1991).

Statistics from 2023 illuminate a far different transportation landscape. Today, less than half of Arlington residents primarily commute using their personal vehicles. However, less residents use public transportation, as only 13% typically use the MBTA system to commute.

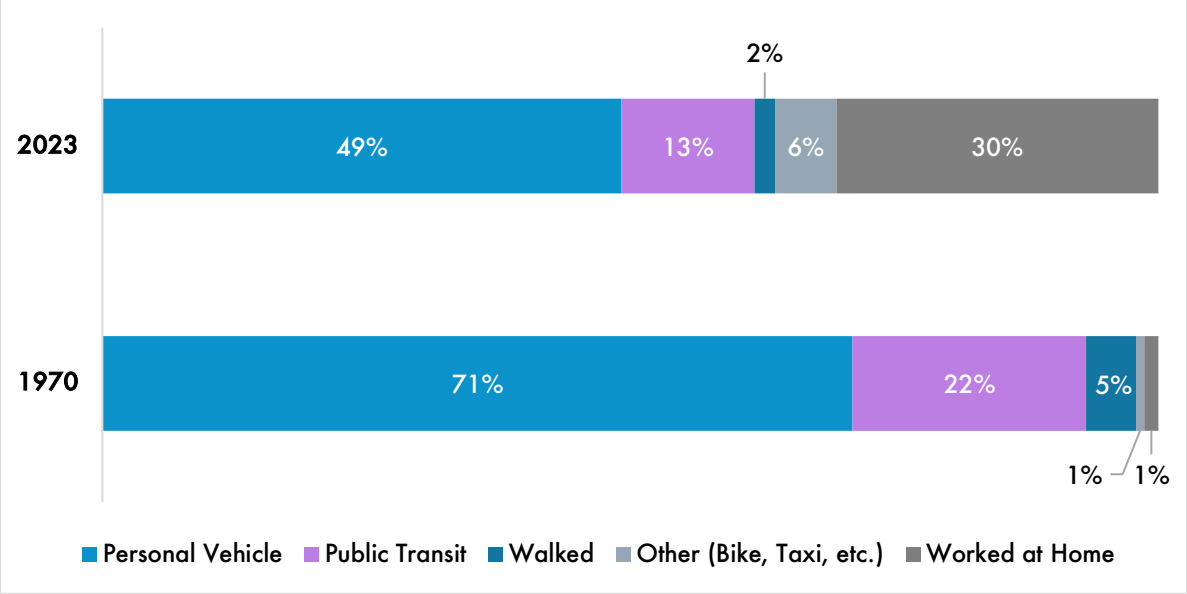


Figure 6.4: Means of Transportation to Work Comparison. *Source: U.S. Census Bureau*

More residents than ever are choosing to cycle to work, with cycling representing about 5% of the "other" category. Notably, 30% of Arlington residents primarily work from home. A

large part of the vehicle and public transit mode share decreases can be attributed to this post-COVID phenomenon.

Table 6.1: Number Vehicles Available Among Arlington Households

Vehicles Available	Percent
No Vehicle Available	10%
1 Vehicle Available	48%
2 Vehicles Available	34%
3 Vehicles Available	7%
4 Vehicles Available	2%
5 or More Vehicles Available	0%

Source: U.S. Census Bureau

Figure 6.4 suggests that in 2023, Arlington residents are far more diverse in their transportation habits. Driving makes up a plurality, but not a majority of how most residents get to work. Additionally, table 6.1 shows that Arlington residents are most likely to own only one vehicle, which is less than the national average of two vehicles (U.S. Census Bureau 2023). More so, 10% of residents don't own any vehicle whatsoever, signaling that a significant portion of the town is living car-free.

These findings on modern mode share are further contextualized by the literature review section on millennial transportation habits and attitudes. Contemporary studies suggest that the millennial generation, who make up a large proportion of Arlington residents, are much more likely to take public transportation on a weekly basis, walk and bike to destinations, and to own fewer vehicles than compared to older generations. Although Arlington millennial residents may not be taking public transportation for daily commutes, they are far more likely to use it to reach other destinations. This demographic group also reportedly wants their public officials to invest more in non-auto forms of transportation.

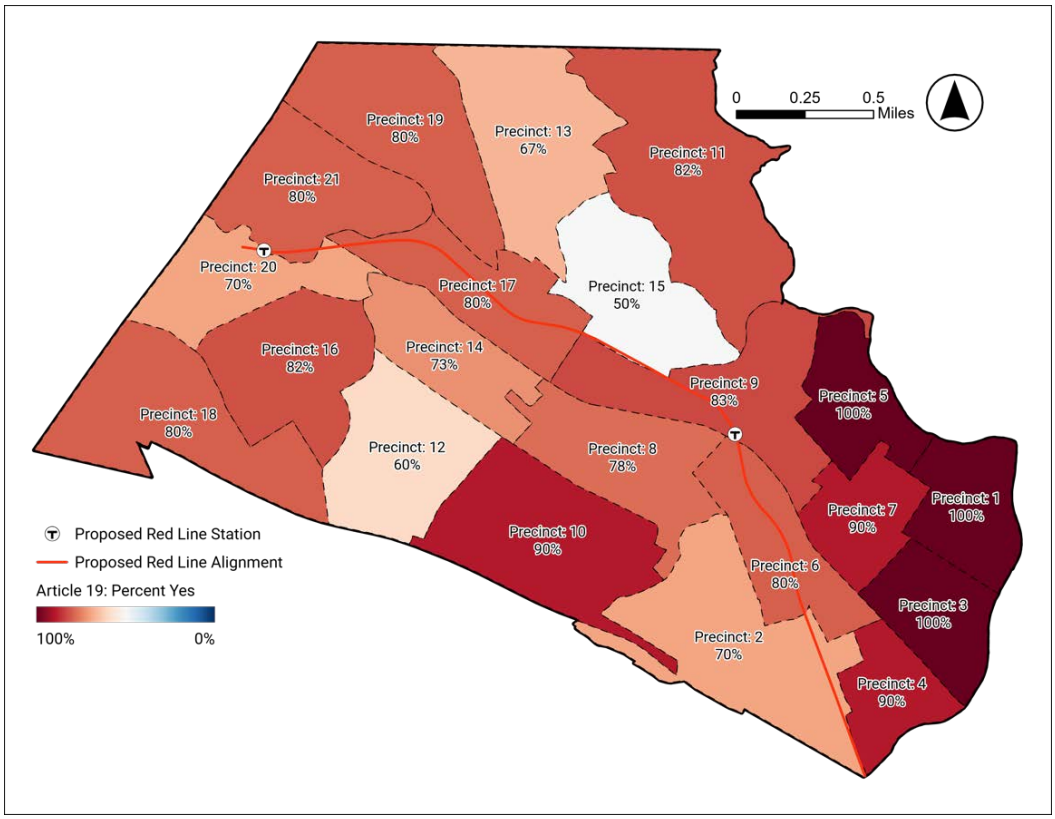


Figure 6.5: 2023 article 19 results by precinct. *Source: Arlington Town Clerk*

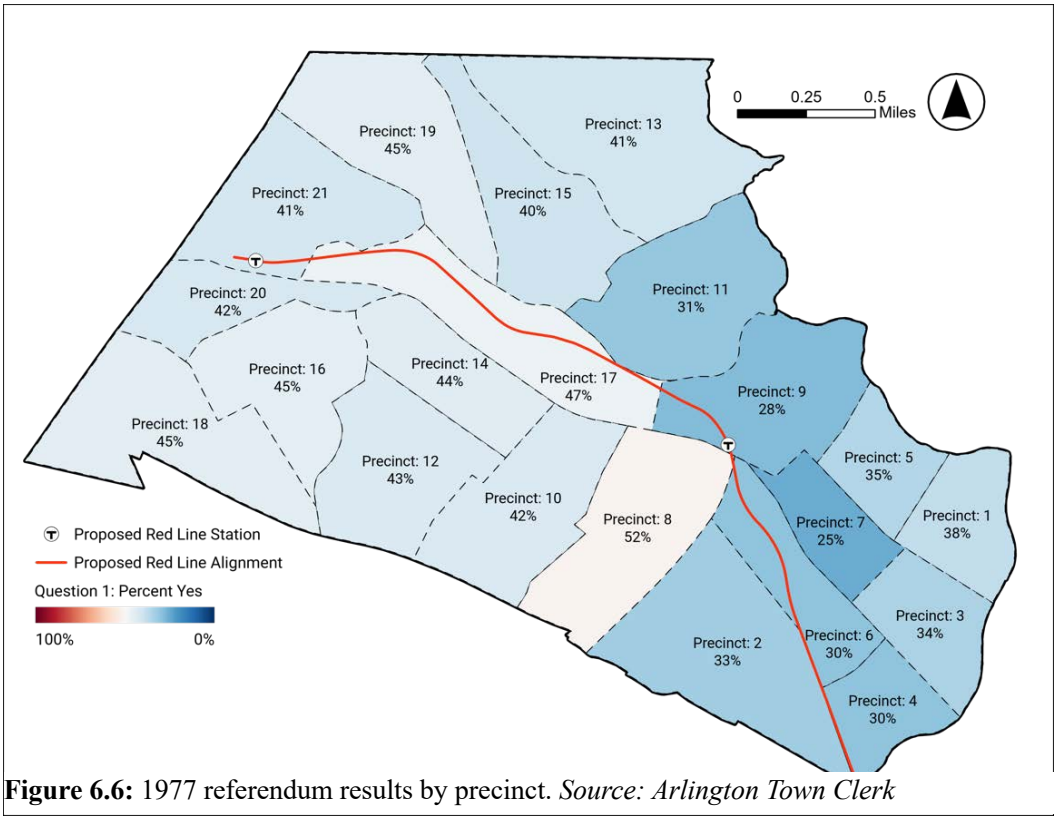


Figure 6.6: 1977 referendum results by precinct. *Source: Arlington Town Clerk*

The demographic change in Arlington helps explain the rise of pro-transit organizations in the town such as Extend the Red Line and Equitable Arlington. It also sheds light on the outcome of a recent Town Meeting vote which showed that the town is far more favorable to public transportation than it once was. Voted on during the 2023 annual Town Meeting, article 19 was effectively a referendum on the whether or not Town Meeting Members wanted to uphold Representative Cusack's 1976 ban on MBTA construction in Arlington Center. The text of the article was "to see if the Town will vote to authorize and request the Select Board to file Home Rule Legislation or other Special Legislation to repeal Chapter 439 of the Acts of 1976 'An Act Prohibiting the Massachusetts Bay Transportation Authority for locating a mass transportation facility within a certain distance of the Arlington Catholic High School,' or take any action related thereto." With 80% of Town Meeting Members voting in favor of removing the prohibition, this sent a clear message that Arlington was aiming to move past its oppositional past and clear the way for future MBTA investment.

Some parts of Arlington have seen a more sizeable shift in demographics and attitudes than others. This phenomenon is best illustrated through comparing the results of the article 19 vote, and the 1977 referendum at a precinct level. Figures 6.5 and 6.6 above show this dramatic swing. As discussed, East Arlington, and particularly those precincts most proximal to Arlington Center, were most opposed to the Red Line extension in 1977, and were likely proponents of the 1976 MBTA ban. Those same precincts in East Arlington voted nearly unanimously in 2023 to rescind the MBTA prohibition, signaling a drastic change in attitude.

It is important to note that these two votes are not entirety equivalent. Article 19 was voted on by Town Meeting Members, a group of about 200 members who are elected by

residents in their precinct to represent their interests. More so, as illustrated by the maps below, precinct boundaries have slightly changed. However, the votes of the Town Meeting Members remain sufficiently representative of the interests of their precincts, which allows their vote to be comparable to the referendum. Additionally, the precinct boundaries have not changed dramatically, which allows for a reasonable geographic comparison.

These two votes represent the best comparison on the change in attitude among Arlington residents, as article 19 directly addressed a consequence of the past opposition against the Red Line extension. With 80% of the town as a whole, and nearly 100% of East Arlington voting to rescind the oppositional efforts that residents 50 years ago fought so hard to enact clearly signals that Arlington today is advocating for a future with greater public transit possibilities.

This change in attitude is supported through findings from interviews with Arlington elected officials. Town Meeting Member J.P Lewicke described how many of the residents he represents in East Arlington spent their 20's living in places that were walkable and transit-friendly environments, such as Cambridge, Somerville, Boston, or another urban setting. He mentioned how Arlington's comparatively attractive home prices and general proximity to those urban places drew many to the community. These individuals still widely share the same favorable attitudes towards transportation and other urban amenities, and want their representatives to vote in accordance with those attitudes.

Representative Sean Garballey, who aside from representing Arlington at the State House, also grew up in the town the early 1980s. Rep. Garballey discussed how the population of Arlington today includes many young professionals and families, many of whom commute to work to Boston every day. He said that many are fed up with the inadequate transportation options, including the general lack of buses, and especially the recently canceled 79 bus to

Alewife. The complains he has heard as a Representative, and the demographic shift he has witnessed as a resident add further context the results of the article 19 vote and census demographics.

Funding Landscape

Federal Uncertainty

Findings from the literature review section on federal funding indicate that the Red Line extension was being planned during a favorable era of federal support. In the prior decade, the Urban Mass Transportation Administration was established, and in those years following, Congress took an increasing interest in allocating federal funds to both construct and operate public transportation. Figure 3.2 helps illustrate this funding context. As planning for the Red Line extension began in the early 1970s, federal funding was consistently increased year after year. By the end of the decade, the federal government was allocating nearly $20 billion a year nationally for mass transportation.

This comparably high federal investment was aided by the increased flexibility of the Federal Highway Act. In 1973, highway funds disbursed to the states were permitted to be used for non-highway forms of infrastructure. This was particularly salient in Boston, as this coincided with Governor Sargent's moratorium on new highway construction inside Route 128 in 1970. This favorable situation meant that nearly all federal highway funds coming into the Boston metropolitan region were permitted to be used for mass transportation projects. This may explain why the MBTA was able to embark on significant expansion projects during this era,

such as the Red Line extension to Quincy (1971) and then Braintree (1981), as well as the Orange Line expansion along the Southwest Corridor (1987).

On paper, a contemporary transportation expansion would enjoy a similar funding landscape to what was seen in the 1970s. As figure 3.2 illustrates, public transportation funding declined and then plateaued between 1980 and 2020. However, following emergency COVID-19 funding, federal contributions temporarily exceeded 1970 levels, exceeding $30 billion for a short time. Since then, the most significant, semi-permanent increase in federal funding has come from the Infrastructure Investment and Jobs Act of 2021 (IIJA). This legislation brings federal funding to a consistent $18 billion – an equivalent amount to what was seen in the 1970s.

This finding suggests that a contemporary Red Line expansion is comparably feasible when looking strictly at dollars available. Project planners drafting the extension's 1977 EIS were dealing with similar funding appropriations to what we see today.

However, what has changed are federal priorities, state priorities, and state contributions. As discussed in the literature review, the current administration imbues a great deal of uncertainty on the future possibility off IIJA funding to be used for public transportation. More so, IIJA funds are set to expire in 2026, and given the priorities espoused by the Republican-controlled Congress, it is uncertain if the comparatively high-level of funding for public transportation will be extended into the future.

MBTA Local Assessments

State contributions are increasingly important on the overall funding of public transportation. Unlike federal funding, which has ebbed and flowed depending on political agenda, state contributions have increase steadily since the mid-20th century. State contributions cover nearly all operating costs, as well as minor capital improvements. This is remarkably

evident for the MBTA, which of its total annual operating revenue of $2.65 billion, $2.15 billion comes from state subsidies (MBTA 2023).

Although the vast majority of this amount comes from state-level sources such as the sales tax and direct appropriations, a significant sum of $188 million is derived from local assessments. MBTA local assessments are fees paid by the 176 cities and towns in the MBTA's district in exchange for transportation services (ibid.). In Arlington, there has been an acute discussion surrounding their particular assessment, which in 2024, was approximately $3.4 million (Mohl 2024). During the 2024 Town Meeting, members voted in favor of Article 66, which was an effort to engage in discussions with the MBTA about improving service, due in part to a sentiment that Arlington was paying more than its fair share for insufficient MBTA service.

In an effort to lower the town's fee, State Senator Cindy Friedman, who represents Arlington, has recently petitioned for legislation to change Arlington's assessment rate (Friedman 2024). This legislation has sparked discussion among transit advocates in the town, as there is uncertainty on how the fee relates to MBTA service. More so, there is a sentiment that if the town were to reduce its local contribution, the MBTA would in turn be less favorable to eventually extending rapid transit service to Arlington in the future.

The fee amount that each city and town pays is determined by statuary language written in Chapter 161A of the Massachusetts General Law – the chapter which enacts the MBTA. This legislation defines the formula of the fee structure as well as the category of each municipality (MA Gen L ch 161a 2023). The local assessment sum, which was $188 million in 2024, is increased each year to account for inflation, but by no more than 2.5% (MA Gen L ch 161a § 9 2023). The total local assessment is split among each of the 176 municipalities, with each paying

an amount as determined a formula. To determine this payment, each municipality's share of the total population of the MBTA district is calculated using the most recent census estimates (ibid.). This percentage is then multiplied by a weight. This weight is set by the explicit group a city or town is defined in through the statutory language. These groups roughly align with the amount of service a municipality receives, but is not explicitly defined as such (ibid.). The groups and their associated weights as defined are "Boston, 18; Brookline and Cambridge, 12; the 14 cities and towns excluding Boston, Brookline and Cambridge, 9; the 51 cities and towns, 3; other served communities, 1" (ibid.). As Boston represents the largest percentage of population within the MBTA district and also has been assigned the largest weight, the city pays 45% of the total $188 annual local assessment. Other cities and towns with smaller populations and smaller weights pay a smaller amount of the total.

Senator Friedman's legislation, if adopted, would simply change the weighting group Arlington is assigned to. Currently, Arlington is included in the "14 cities and towns" group, which has a weight of nine. Friedman's bill would redefine the group Arlington is in, placing the town in the "51 cities and towns" group instead, thus lowering its weight to three (ibid.). With this lower weight, Arlington would contribute far less to the annual local assessment.

It is not likely that Arlington would be disadvantaged for future transportation expansion despite a local lower assessment rate. Following the completion of the Green Line extension, neither Somerville nor Medford was required to pay more for their improved service. They remained in the same category as Arlington sits today, along with Belmont, Chelsea, Everett, Malden, Milton, Newton, Revere, and Watertown. It is evident from the Green Line extension that there is only a weak relationship between the level of MBTA service and these categories. Following the extension, one could argue that Somerville, now with Red, Orange, and Green

Line stations, receives even better MBTA service than Brookline, which is assessed at a higher rate with a weight of 12 (ibid.).

Further illuminating this incongruity is the recent expansion of commuter rail service to New Bedford and Fall River. Prior to the expansion, these cities were not even included in the MBTA district, thus contributing nothing to the annual local assessment. More so, state law permits cities and towns within the MBTA district to deduct local assessment payments made to other transit authorities. New Bedford and Fall River have historically been a part of the South Coast Regional Transit Authority, with both paying the Authority a substantial local assessment fee. As this local assessment fee is larger than the MBTA's fee, these cities will not pay any share of the annual $188 million local assessment sum, despite having benefited from extensive transportation expansion (Mohl 2024).

It is evident that the manner of which the MBTA collects local assessments is quantitatively unsound, and has come under criticism. The groups that set the payment amounts only loosely align with the level of service the municipality receives. In the case of the South Coast Rail extension, the MBTA still embarked on a lengthy and expensive project regardless of New Bedford and Fall River's status of being within the district, let alone considering the amount of a potential future local assessment. If the MBTA were considering a contemporary Red Line extension, Arlington's place in a lower assessment group would likely have little impact on ultimate decision and project outcome.

Advocacy and Engagement

Effective organizing and activism on the local and state level is paramount to the ultimate success of a contemporary Red Line extension. The most recent example of transportation

expansion in the MBTA rapid transit system is the Green Line extension through Somerville and Medford. Brad Rawson, currently the Director of Mobility for the City of Somerville, started working for the city in 2007 and was instrumental in ensuring the completion of the extension. In our interview, he discussed how one of the most important factors to this success was the clarity of vision the community had for the project, and how that vision was then focused through the lens of local government. He emphasized that united and unilateral vocal support espoused by community organizations and elected officials was essential. Any significant detraction from a segment of the city could have doomed the project. This clarity of vision was best articulated in Somerville's 2030 comprehensive plan, which enshrined the extension as a key component of achieving its goals (City of Somerville 2011).

It is evident from interviews with Arlington residents that there is a solid foundation to build this movement upon. One Arlington resident and activist discussed how there is a strong ethos of community engagement and volunteerism in the town, and claimed that "Arlington ran on volunteers." One example of this is Arlington Town Day, which is an annual event which attracts thousands of residents to celebrate the town and to get engaged. Town Day in 2024 hosted over 200 booths, representing local business, civic organizations, non-profits, and more (YourArlington 2024).

This spirit of civic engagement is embodied by J.P. Lewicke, a Town Meeting Member and founding member of the organizations Extend the Red Line. He cited that his primary reasons for getting involved in local politics were largely pro-housing related. As a new Town Meeting Member, Lewicke received instruction from Arlington Civic Academy, an organization that offers formal training and mentorship to newly elected Arlington representatives. Through this organization, Lewicke became acquainted with other individuals who shared not only a pro-

housing sentiment, but also a desire to advocate for transportation improvements that could support the kinds of housing density they were advocating for. He cited this as the "nucleus" for the Extend the Red Line organization, which now has been meeting monthly for over a year. This organization is advocating for general transportation improvements in the town including improved bus service, as well as the extension of the Red Line. The organization's ultimate goal is to have the Red Line extension be included in the MBTA's long-range planning, and to have a grassroots group of activists be ready to engage with the wider Arlington community if and when the MBTA begins a formal feasibility study.

The organization was instrumental in helping overturn former Representative Cusack's 1976 MBTA construction ban in Arlington Center. Paul Schlichtman, who is a member of the organization, as well as School Committee Chair, sponsored article 19 in the April 2023 Town Meeting. This successful local petition made its way to Representative Garballey's office, who has been an effective and vocal proponent of transportation expansion in Arlington. In July of 2023, a joint bill drafted by him and State Senator Cindy Friedman was referred to committee, and was eventually enacted and signed into law in late 2024. Speaking with Garballey, he mentioned how despite being a largely symbolic measure, removing the ban shows the MBTA that Arlington is serious about investing in public transportation, and that the community wants to see more of it come to Arlington.

The Extend the Red Line organization benefits from other supportive activist groups in Arlington. Equitable Arlington is primarily a pro-housing organization, and was instrumental in helping Arlington reform its zoning bylaws to ensure the town was compliant with the MBTA Communities Act. Other notable organizations which may support transportation expansion

include Envision Arlington, the Arlington Bicycle Advisory Committee, Everywhere Arlington Livable Streets, and the Broadway Neighbors Coalition.

These organizations, together with vocal Town Meeting Members and supportive state elected officials can form the foundation for an effective advocacy coalition. It is evident that Arlington has the potential have the "clarity of vision" needed to ensure the succusses of a contemporary expansion.

Spatial Analysis

Suitability Comparison

As described in the methods section in chapter two, a plethora of spatial analysis methods were used to evaluate the suitability of the Red Line extension in a contemporary context. These methods produced a general suitability assessment of the station locations studied in the 1977 EIS and MATS documents, as well as provided estimates on their potential ridership.

Figure 6.7 below shows the general suitability for rapid transit stations in the Boston metropolitan area. This suitability measure is composed of five factors: population density, employment density, renter population, vehicle ownership, and walkability. As discussed in the methods chapter, these factors were assessed for each census block group within a half mile of rapid transit stop or a key bus route in the MBTA system. Using a statistical method called dimension reduction, these five factors were combined into a single index. This index is representative of how suitable an area is to support rapid transit.

Areas closer to the core of Boston are unsurprisingly the most suitable, as they support a high population density, are highly walkable, have many employment opportunities, are home to

many renters, and have very few people who own more than one car - all of which are indicative of a higher propensity to ride public transportation. Areas less suitable for public transportation include parts of Brookline, Newton, Milton, and Belmont, as they exhibit the inverse of the qualities listed previously.

Figure 6.7 clearly illustrates that the Arlington stations explored in the 1977 EIS, highlighted in red, are suitable for rapid transportation today. Arlington Center station and its immediate surroundings are most suitable to support rapid transit, while that Arlington Heights is less so. This was the case in 1977, and remains true today. An Arlington Center station would be most comparable to other Red Line stations such North Quincy, Ashmont, and Wollaston as well as the Orange Line terminal stations, Oak Grove and Forest Hills. Arlington Center's increased suitability likely benefits from the area's high population density, low car ownership, and high population of renters, especially among neighborhoods to the east.

A station in Arlington Heights would be comparably suitable to the Braintree Red Line station, and more suitable than nearly all of the Green Line stops through Newton.

Figure 6.7 also shows the suitability of the station alternatives explored in the complementary MATS, highlighted in purple. Each station's label corresponds with the labeling scheme used in the study, as outlined in chapter four. It is evident that the East Lexington station alternatives are generally unsuitable for rapid transit. This confirms that the study authors of that document included these stations largely to placate Arlington opposition regarding a terminal location within the town, and not because the stations were suitable locations.

The Lexington Center station fares slightly better, but the results from this analysis do not make a strong case for locating a rapid transit station in that location. A station in this location would be about as suitable as Green Line stations along the D branch through Newton. The most

comparable existing station would be Newton Center, which is a comparably dense village-center style downtown.

The Hartwell Ave station along Route 128 has the same suitability score as Lexington Center. Despite having no residential land use nearby, this suitability measure could be attributed to a higher number of jobs available within the immediate vicinity. The same can be said regarding the Burlington stations proximal to the mall and Route 128. Of the four station alternatives outlined in the MATS, location B1 would be the most suitable. This station would be located in an existing surface parking lot adjacent to the Burlington Mall. Its location on the north side of Route 128 likely explains this station's slightly higher suitability score, as it would have a more walkable station area and is more proximal to employment centers in the vicinity.

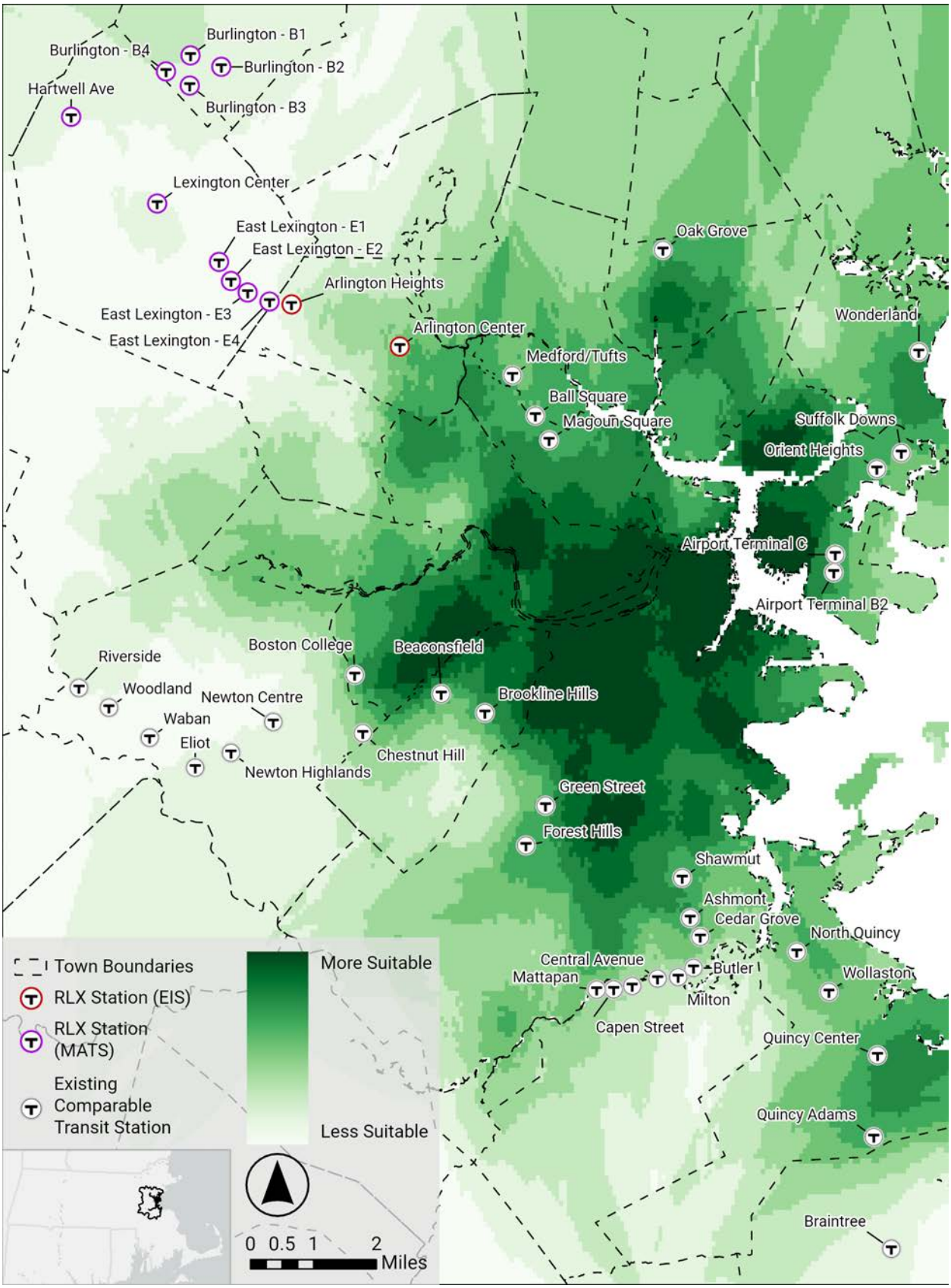


Figure 6.7: Suitability of existing and proposed rapid transit station locations. *Source: Dowling 2025*

Ridership Estimation

Ridership estimates were calculated to further assess the contemporary suitability of the EIS and MATS station proposals. As described in the methods chapter, to do this I created a linear model using ridership from the existing stations outlined in figure 6.7 as dependent variable, and used the suitability index as the explanatory variable. This linear model provided me with a formula which estimated the daily boardings of a given station location based on its suitability. To add context to these ridership estimates, I also calculated the total number of working-age individuals (16 years old or older) that lived within a 15-minute walk to the station. This figure helps contextualize the ridership estimates as it shows the percentage of commuters who may use the extended Red Line on a daily basis. As illustrated in table 6.2, I calculated these estimates for the Arlington Center, Arlington Heights, Lexington Center, and Burlington – Route 128 station locations.

Unsurprisingly, Arlington Center would boast the most estimated daily riders, with 2,337. Arlington Heights would have about 1,200 daily boardings, followed by Lexington Center with about 1,000, and the terminal station in Burlington would have 1,354. These estimates are lower than those provided by project planners in the 1977 EIS, which estimated that Arlington Center would have 5,400 daily boardings, and Arlington Heights would have 2,800. However, it is notable that the estimates in the EIS were largely bullish on the number of daily riders. For example, the EIS projected that Porter Square would have 6,200 daily boardings, Davis Square would have 8,100, and Alewife would have 8,200. In 2023, Porter Square had 5,106, Davis Square had 5,516, and Alewife had 5,873.

Table 6.2: Ridership Estimates for Red Line Extension Station Locations

Station	Estimated Daily Boardings	Working-Age Population of Station Area (>16)	Percentage of Workers Using Transit
Arlington Center	2,337	7,145	33%
Arlington Heights	1,184	5,322	22%
Lexington Center	998	1,175	85%
Burlington - Route 128	1,354	0	NA

Source: Dowling 2025, MBTA, U.S. Census Bureau

The percentage of station area workers using transit statistics offers some additional context to these potential stations. However, it is important to note that this measure is less telling of a concrete percentage, but more of a general indication of the potential utility the Red Line extension would offer to the residents within the immediate vicinity of the station. The station area is shown in a thin black line in figure 6.8 below.

In Arlington Center, the model estimates that one-third of people within the vicinity of the station would use the extension to travel to work. This indicates the pronounced utility rapid transit would bring to the residents of Arlington Center.

Looking at Arlington Heights, about a quarter of people commuting to work within station area would use the Red Line. This slightly lower percentage could be attributed to the employment patterns of this part of Arlington. Further study would be needed to confirm this, but it is possible that less people in Arlington Heights are employed in Cambridge or Boston than compared to their Arlington Center neighbors. This indicates that an Arlington Heights station would be of slightly less utility to its immediate residents than compared to Arlington Center.

In Lexington Center, the model estimates that 85% of workers within a 15-minute walk of the station would use it to commute each day. This extremely high proportion could be indicating that this station would be highly utilized by residents within walking distance, as

many would rely on it to commute to destinations in Cambridge and Boston. The station's comparatively smaller daily boarding estimation of 998 indicates that although the station would be highly utilized by Lexington residents within walking distance, its utility in more distant areas of Lexington may diminish.

As discussed, the Burlington Mall – Route 128 station does not have any population within walking distance. As this station is designed to be a terminal which would capture drivers from around the region, this estimate as well as the model findings are not as applicable. The following section addresses this.

Figure 6.8 below provides a detailed illustration of these stations, their 15-minute walk service areas, and the most realistic alignment of the Red Line extension beyond Arlington, as studied in the MATS.

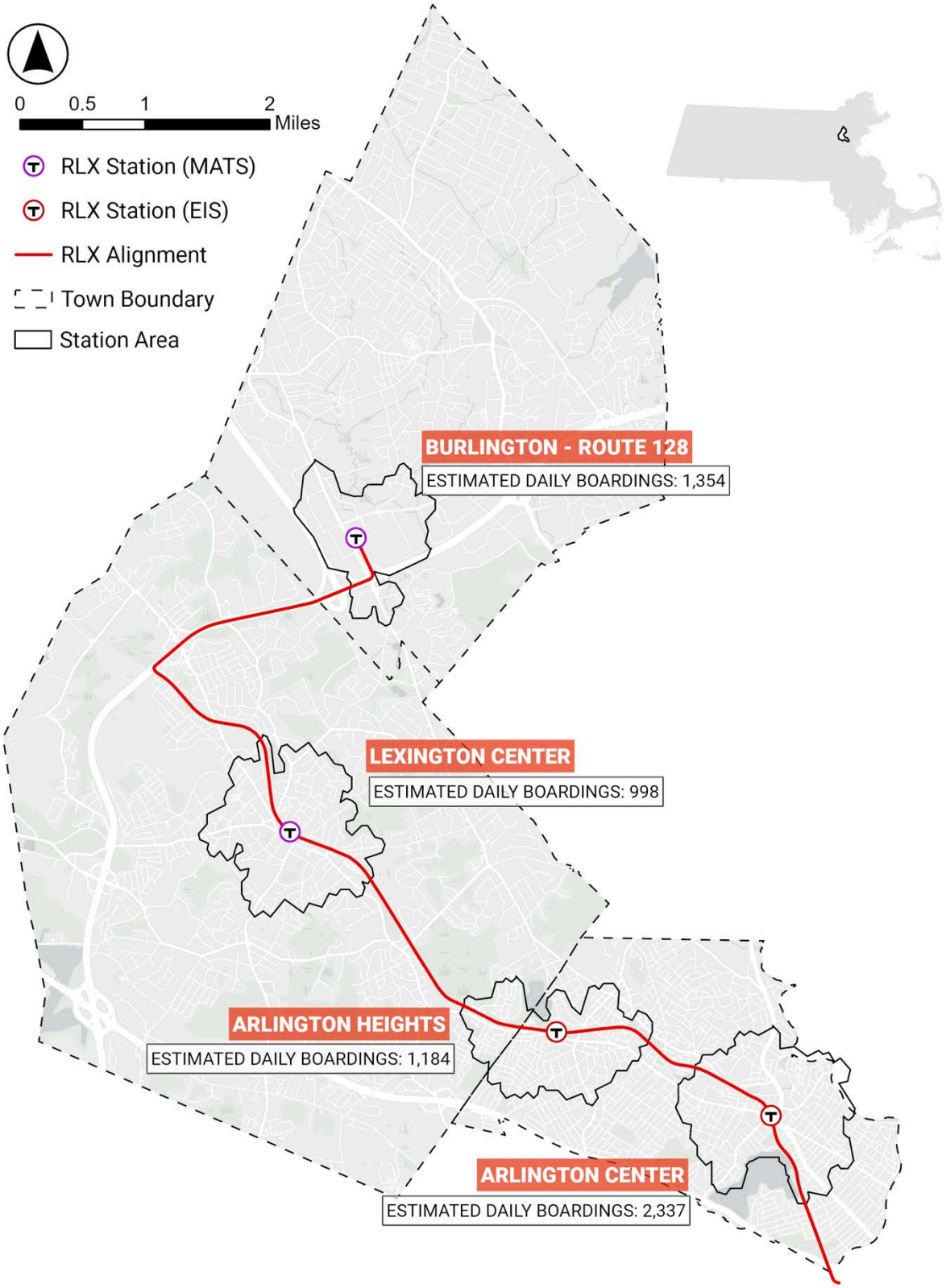


Figure 6.8: Ridership estimates and station areas of the Red Line extension. *Source: Dowling 2025*

Terminal Station Considerations

As discussed, the Burlington – Route 128 station would be fundamentally different from other Red Line extension stations. This makes the findings of both the suitability analysis and ridership model less useful for gauging its contemporary salience. To address this, I calculated the station's driving service area, defined as the distance one could reach the station within 15-minutes at 8:30 am on a weekday. These parameters give a realistic approximation of this terminal's service area. As illustrated below in figure 6.9, this service area is vast, encompassing a large part of Middlesex County. In total, 16 cities and towns would have areas within a 15-minute drive of the station. This includes the entirety of Burlington and Woburn, and significant portions of Bedford, Reading, Billerica, Winchester, and Lincoln. Over 95,000 working-age individuals reside in this station's large service area. If only a fraction of them opted to drive to this new Red Line terminal instead of making the trip into Boston, it would have a transformative impact on the entire region's transportation landscape.

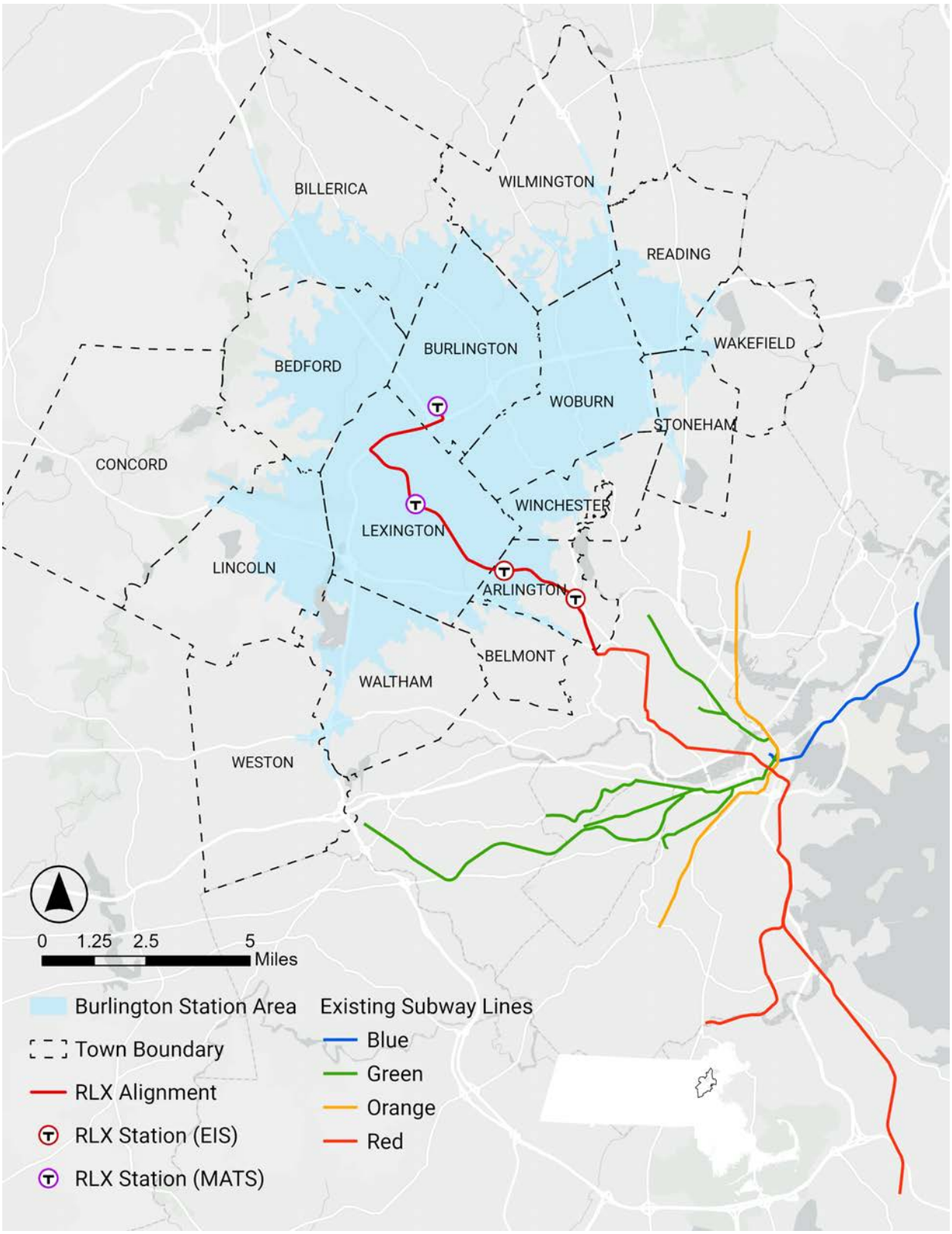


Figure 6.9: Regional context for Red Line extension and illustration of Burlington terminal service area.
Source: Dowling 2025

Limitations and Areas for Further Study

As discussed, the model used to estimate suitability and ridership was largely focused on an urban-center style station context. This limited this method's applicability to evaluating the suitability and estimating ridership of the terminal station location. Further study would include building a model specifically focused on the terminal context. This would require further research on the factors which make for effective terminal locations and using those factors to create a new suitability measure and linear model.

The existing ridership model was also limited by the data used for the dependent variable. Ridership data was available from the fall of 2023. It is widely understood that the MBTA has struggled to regain ridership levels it enjoyed prior to the COVID-19 pandemic. If data from 2019 was used, ridership estimates for the Red Line extension stations would likely be higher than what is reported in table 6.2. However, using pre-pandemic data would reduce the contemporary relevance of the analysis.

It is also notable that both Arlington and Lexington were early adopters of the MBTA Communities Act. Both communities have new zoning districts that allow for far more density than what currently exists. Future study could include using these new zoning districts to conduct a build-out analysis, which would illuminate future population densities in Arlington and Lexington. These results would likely make the three stations in these towns more suitable to support rapid transit, thus increasing their projected ridership.

Additional avenues of research could include more interviews with Arlington residents and community leaders. These additional interviews could identify more organizations that would be favorable towards a Red Line extension, and provide insight into how Arlington could build a successful coalition, similar to what occurred in Somerville. It could also be useful to

interview individuals from organizations who may have reservations about rapid transit expansion, which could highlight areas of potential future opposition.

Contemporary Conclusions

The case for a contemporary extension of the Red Line through Arlington remains strong. As illustrated above, both Arlington Center and Arlington Heights exhibit favorable land use and demographic factors that make them suitable to support rapid transportation. This suitability is compounded by strong support vocalized through local advocacy and the outcomes of recent Town Meeting votes, as well as the overturning of the 1976 MBTA ban legislation. It is clear that if the MBTA were to seriously revisit Red Line expansion in the town, Arlington would likely have a far different response than they did in 1977.

Without the strong presence of Monsignor Linnehan and the St. Agnes task force, it is unlikely that opposition in Arlington would be able to organize nearly as effectively. More so, it is evident that a plethora of local organizations could coalesce and organize support around the transformative impacts that transportation expansion would bring.

Other than Linnehan, the most formidable and effective opponent of the project was Representative John Cusack. Cusack's position is now filled by Representative Sean Garballey, who has not only overturned his predecessor's efforts to stop the project, but has also petitioned the state to begin a formal feasibility study of bringing Red Line service to Arlington.

Despite this favorable political environment on the local level, uncertainties remain regarding funding and federal support. As discussed, the increased federal support for public transportation enabled by IIJA has an uncertain future, making the long-range planning necessary

for an extension project quite difficult. More so, the MBTA's current chief priority is building back to a state of good repair, thus diminishing the importance of expansion.

There are also uncertainties regarding the physical construction of the potential project. The EIS recommended that the Red Line alignment be located along the ROW of what is now the Minuteman Bikeway. This ROW has been railbanked, meaning that it would be permissible to reconstruct a track alignment along it in the future. However, the Bikeway has become a central feature of Arlington and Lexington, providing transportation and recreation for thousands of residents. In accordance with the EIS, a contemporary expansion would likely require the temporary closure of this popular trail, likely causing opposition. Alternative alignments could be studied along Massachusetts Avenue, but as this would cause massive traffic and business disruptions, that alternative may be even more politically challenging.

Despite these challenges, it is evident that Arlington residents are beginning to lay down the groundwork for a future Red Line expansion. While the previous generation of residents and local officials were at best apprehensive, and at worst hostile towards the idea of transportation expansion, the town in 2025 is clearly taking a different approach. If the Red Line is to expand beyond Alewife, it is paramount that this current generation of Arlington residents continue to organize, engage with their neighbors and elected officials, and demand improved transportation services. This essential groundwork could allow for future Red Line expansion through Arlington to become a top priority for the MBTA, especially once the Authority is in a position to begin making meaningful capital investments and a more favorable federal funding landscape presents itself.

The failure to expand Red Line service to Arlington in the 1970's shows that having ample fiscal and political support on the federal and state level does not guarantee success. The

story of how Arlington residents of the past were able to organize so effectively that they blocked a segment of a federally backed project from coming through their town illustrates the power that this community has in shaping its future. If Arlington today can harness a similar level of engagement and advocacy and use it constructively, it is not impossible to imagine a future where Red Line trains someday travel northwest, beyond Alewife.

Appendix

Appendix A: Precinct-level vote results from March 5th 1977 referendum.

Precinct	Question 1 YES	Question 1 NO	Question 1 BLANKS	Question 2a YES	Question 2a NO	Question 2a BLANKS	Question 2b YES	Question 2b NO	Question 2b BLANKS	Question 3 YES	Question 3 NO	Question 3 BLANKS
1	166	275	13	151	239	64	46	302	106	98	302	54
2	197	406	14	215	344	58	37	468	112	71	479	67
3	189	363	31	186	313	-	52	395	220	93	410	80
4	155	361	22	142	342	54	51	397	90	77	398	63
5	193	355	13	170	329	62	51	401	109	80	408	73
6	194	455	24	187	402	84	47	485	141	104	485	84
7	165	489	19	141	466	66	41	520	112	129	483	61
8	398	370	17	363	347	-	62	547	251	133	561	91
9	227	571	37	215	544	76	54	632	149	102	637	96
10	326	444	23	283	429	-	63	588	223	121	582	90
11	256	577	20	248	547	-	44	671	196	126	663	64
12	352	471	21	307	442	95	56	606	182	150	611	83
13	248	363	6	230	334	53	51	441	125	89	453	75
14	258	328	31	223	299	95	53	402	162	118	407	92
15	262	400	23	236	365	84	64	466	155	105	481	99
16	265	320	15	227	294	79	53	397	150	104	397	99
17	205	230	18	198	202	53	32	281	140	70	307	76
18	307	378	21	248	358	100	60	449	197	126	468	112
19	277	343	27	244	317	86	42	421	184	101	435	111
20	227	316	17	200	300	60	42	379	139	73	410	77
21	276	391	34	243	365	93	63	460	178	125	464	112
TOTAL	5,143	8,206	446	4,657	7,578	1,262	1,064	9,708	3,321	2,195	9,841	1,759

Source: Arlington Town Clerk

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