



Route 28X Bus Enhancements Project

TIGER: Transportation Investment Generating Economic Recovery

Discretionary Grant Application
Governor of Massachusetts, Deval Patrick
Secretary of Transportation, James A. Aloisi, Jr.



EOT
MASSACHUSETTS
EXECUTIVE OFFICE
OF TRANSPORTATION

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Confidential Business Information

This application does not contain any confidential business information.

Grant Sources and Uses of Project Funds

TIGER funds requested: \$147.0M
Total project costs: \$173.1M

Sources and uses of all project funds: All TIGER funds will support construction (enhanced bus stops, bus stations, signage and pavement markings, traffic signal priority controllers and intersection signals, station passenger information screens, and station fare-vending equipment), MBTA project administration, and professional services for engineering design and construction management. All non-TIGER ARRA funds will support the procurement of 25 diesel-electric hybrid, 60-foot articulated buses, including engineering services, MBTA project administration, and any other associated work.

Percent of total project costs paid for with TIGER funds:
84.9 percent

Percent of total project costs paid for with non-TIGER ARRA funds: 15.1 percent

Project Summary

The Route 28X Bus Enhancements project will dramatically improve the public transit service provided in New England's most heavily used bus corridor, encourage private investment in an area of Boston hit particularly hard by the economic recession, and provide jobs through numerous opportunities for small and disadvantaged businesses to participate in the project construction.

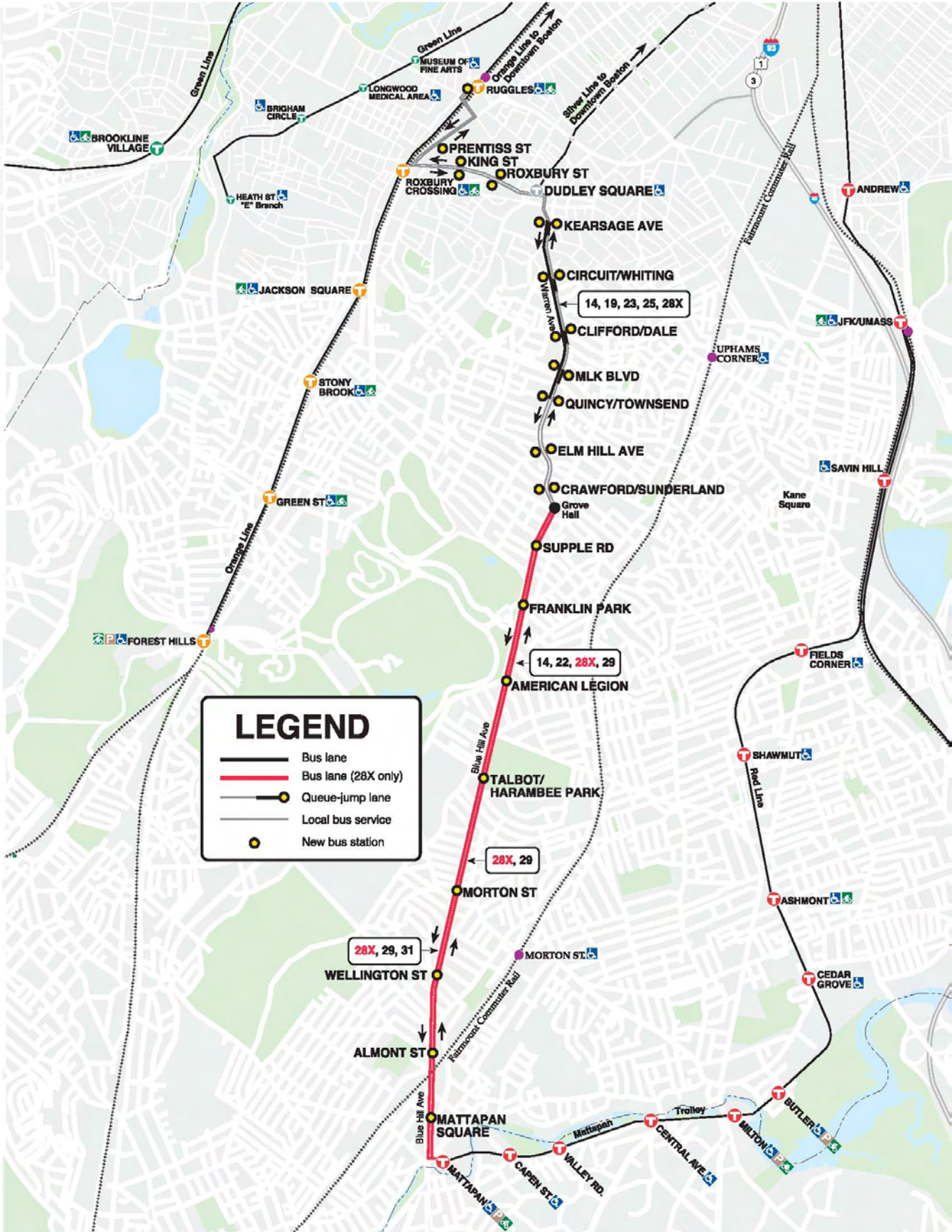
The Route 28X transportation corridor is characterized by a high percentage of transit users, many of whom are dependent on public transportation as their only travel option. The corridor serves environmental justice neighborhoods with high population densities, significant percentages of minority populations, young average ages, and low per-capita income levels. Housing prices, jobs, and the private investment creating those jobs have declined dramatically due to the economic recession.

The Executive Office of Transportation (EOT), the Massachusetts Bay Transportation Authority (MBTA), and the City of Boston (the City) envision that the Route 28X project will address a demonstrated demand for better public transit service while, through the significant capital investment in the corridor, providing jobs and promoting economic development.

The MBTA currently operates Route 28 bus service from Ruggles Station to Mattapan Station via Dudley Square and Grove Hall. Route 28 has the fifth-highest ridership of all bus routes in the MBTA system (more than 12,000 daily riders), and the portion of the route along Warren Street between Dudley Square and Grove Hall is the most heavily used bus corridor in the New England region.

Although Route 28 is heavily used, it suffers from a number of issues that impact its performance and reliability and the comfort of its riders. Typical travel speeds are below the MBTA's average of 10.4 mph; in some sections of the corridor, speeds are as low as 5 to 7 mph. While the scheduled travel time for Route 28 buses ranges from 40 to 50 minutes during peak travel times, in practice riders experience a much broader range of travel times that can reach an hour or even 70 minutes. Fewer than 10 percent of outbound trips in the afternoon arrive on time, and fewer than 50 percent of all trips depart on time in the afternoon and early evening. Finally, all bus seats are generally occu-

Project Map





Grove Hall Commercial District

pied on the busiest segments of Route 28 for a majority of the service day, and Route 28 is over-capacity for roughly four hours per day in each direction.

Travel speed, schedule adherence, and passenger loads on Route 28 are influenced by a number of factors, including traffic congestion in the corridor, the high number of stops served along the route (many within one-tenth of a mile of each other), and the time it takes for passengers to pay their fare when boarding.

The essential feature of the new service is dedicated bus lanes, which remove buses from general-traffic lanes and the unanticipated delays that can occur in them. Combined with traffic signal improvements that grant priority to buses in the dedicated lanes and reduce the delay caused by red lights, this will permit buses to operate at a higher speed and with greater reliability in travel times. Travel speed and reliability will also be improved by two other means: consolidating some existing stops, thus reducing the number of times a bus may be required to stop; and creating a system enabling passengers to pay their fares before boarding, thus reducing the length of the dwell time for buses per stop. Finally, new stations, with amenities including heaters and fare-prepayment machines, and 60-foot clean-running buses will provide a much more comfortable trip experience for Route 28X riders.

Three types of dedicated bus lanes will be used in this project. On Blue Hill Avenue, sufficient space exists to construct a median busway with two dedicated bus lanes (one in each direction) exclusively for Route 28X, while local bus service will continue to run along the curb. On Warren Street, a dedicated bus lane would serve all bus routes – including Route 28X – in the outbound direction, while a system of queue jumps would operate in the inbound direction (also serving

all routes). Queue jumps permit buses to move to the front of a queue of vehicles at a stoplight, and then receive a dedicated green light in advance of the general traffic signal to allow the bus to “jump” the queue. The map on page 3 shows the planned locations of the types of dedicated bus lanes in the corridor.

Using federal stimulus dollars, this initiative will radically transform existing bus service, helping to spur economic development and improving the rider experience for neighborhoods traditionally underserved by rapid transit. Importantly, this initiative responds directly to public requests for better bus service – service that runs more quickly, more often, more reliably, and on the most heavily used routes. This project has the potential to serve, when completed, as a national model for upgrading bus service in densely developed urban neighborhoods.

Application Organization

The organization of this TIGER application follows that outlined in the Federal Register Notice (Docket No. OST-2009-0115). The headings and subject matter of sections correspond to the selection criteria defined in the Federal Register Notice and follow the same order.

Supplementary information about the Route 28X project that cannot be presented within this application's page limit may be found at www.mass.gov/eot/28X.

Narrative

Long-Term Outcomes

State of Good Repair

Efforts to Maintain a State of Good Repair

Maintaining transit infrastructure in a state of good repair is a priority for the MBTA. In its current Capital Investment Program, the MBTA targets \$470 million toward state-of-good-repair projects for assets such as revenue vehicles, power systems, track, right-of-way,

stations, bridges and tunnels, and communications systems, and for system accessibility. In recent years, the capital budget dedicated to state-of-good-repair initiatives has expanded from 70 percent of capital programming to more than 95 percent. This investment in state-of-good-repair initiatives will prevent future capital projects from contributing to the existing backlog in state-of-good-repair infrastructure needs.

The MBTA's state-of-good-repair investment strategy prioritizes core infrastructure, with a particular focus on improving bus system performance. Earlier this decade, after a period of deferral in new bus purchases, the MBTA operated a bus fleet in which the average vehicle age exceeded 13 years. Today, the MBTA has a policy in effect to ensure that the average age of the MBTA bus fleet never exceeds 7.5 years and is implementing a program of regular bus procurements. In addition to prioritizing maintenance, the MBTA has been implementing a program of improvements to its bus network. In its Key Routes initiative, the MBTA has dedicated manpower and made customer service improvements to its 15 most patronized bus routes, which together carry 41 percent of the MBTA bus network ridership.

The Route 28X project builds on the Key Routes program by introducing bus rapid transit (BRT) elements into the region's highest-ridership bus corridor. The project will also replace signal equipment at 36 intersections along the project corridor. Equipment at many of these locations is 25 to 50 years old. Replacement of this equipment, which is necessary as part of the project's transit signal priority (TSP) systems, will contribute substantially to restoring the state-of-good-repair status of key transportation infrastructure within the corridor.

Project Aim

Route 28 is one of the most heavily traveled routes in the MBTA bus system. Routes 14, 19, 22, 23, 25, 29, and 31 also serve portions of the Route 28 corridor. This corridor serves and links the key urban commercial districts of Dudley and Mattapan Squares. It connects to the rail rapid transit system at Ruggles and Mattapan Stations, as well as to many other bus routes serving those stations, Dudley Station, and points throughout the corridor. Given its importance, service problems on Route 28 reverberate through connections to other parts of the MBTA system, preventing riders from getting to their jobs on time and discouraging use of public transportation. Fewer riders on public transportation results in greater vehicle traffic, more congestion, and limits on economic growth in those areas. The Route 28X project will attract more travelers in the corridor to public transportation through highly visible improvements such as dedicated lanes, traffic signal priority, articulated buses, and new stations.



Route 28 on Blue Hill Avenue

Existing Route 28 service faces consistent problems with schedule adherence, as actual run times oscillate throughout the day, and with headways as low as 8 minutes in the peak time periods, poor reliability often results in bus bunching. Poor schedule adherence undoubtedly contributes to issues with passenger crowding; however, during peak times of the day, passenger loads sometimes exceed 140 percent of the seated capacity, indicating that buses would be crowded (given the current frequencies) even if they ran on schedule. Dedicated bus lanes proposed for Blue Hill Avenue and Warren Street will remove buses from general-traffic lanes and the unanticipated delays that can occur in them. Service reliability will improve as buses no longer bunch, resulting in reduced passenger crowding.

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Buses currently operate at erratic speeds throughout the corridor, depending on location, direction, and time of day. For instance, Route 28 buses experience a midday outbound average speed from Dudley Station to Grove Hall of 5.8 mph, while the PM peak average speed in the reverse direction is 11.4 mph. One factor affecting average speed is the distance between stops. The average distance between stops in the outbound direction from Dudley Station to Grove Hall is the shortest in the corridor. Frequent stops to allow one or only a few passengers on or off the bus can dramatically reduce average speed. Along Route 28, there are several minor stops with excessively low amounts of daily weekday passenger activity. Under the Route 28X project, the average distance between stops would increase on Warren Street from approximately 0.12 miles to 0.20 miles for all routes. On Blue Hill Avenue, the average stop spacing would increase from approximately 0.13 miles to 0.34 miles for only Route 28X. The stop spacing would remain the same for all other routes serving Blue Hill Avenue.

The methods by which passengers pay their fares impact the bus dwell time at each stop. The quickest payment method is the CharlieCard, the MBTA's smart card, which can store value for a single trip or a pass and can be tapped on a smart card reader that is part of every bus farebox. However, approximately one-fifth of all trips taken on Route 28 are made using cash onboard, a fare payment method that dramatically slows boarding, and another one-fifth of trips are made using a CharlieTicket (a magnetic-stripe paper ticket that requires a few more seconds than a CharlieCard to interact with a bus farebox). In addition to slow boarding times, the combination of these circumstances with significant crowding usually means that many passengers are not interacting with the farebox. Thus revenue is reduced and ridership data are skewed. The Route 28X project would permit passengers to pay their fare before boarding the bus, allowing all doors to be opened at once for boarding and alighting and reducing average station dwell time as fewer passengers are required to interact with the farebox at the front door bus entrance.

Finally, existing stops are generally characterized by a lack of amenities. Less than a quarter of all stops and less than a fifth of those with heavy boardings currently have a shelter. While existing shelters are generally kept in good condition, they do not afford a comfortable level of protection from cold weather. The Route 28X project will construct accessible stations with

enclosed, heated waiting areas. Navigating snow or ice that is piled on the curb in the winter months presents a potential hazard to bus riders that may discourage some from riding bus routes. Dedicated bus lanes are easier to plow than curbside stops, as snowplows can maintain a straight path over an entire bus lane without having to navigate to and from the curb to avoid parked vehicles. Existing bus stops are often too small to permit buses easy access to the curb. This lack of space or other obstructions, such as snow or illegally parked vehicles, force buses to pull into stops at an angle, blocking traffic and often requiring passengers to step into the street when boarding or alighting from the bus. This presents particular difficulties for elderly passengers and those with disabilities. Under the Route 28X project, all bus stations will have sufficient space. In addition, the MBTA and the City will work to ensure that bus lanes are kept free of snow and other obstacles. Thus bus operators will be able to pull buses directly up to the raised curb and give passengers easy and safe access and egress.

Capitalization

Capital cost estimates are being developed through an intensive, neighborhood-based planning and project development process. EOT, the MBTA, and the City are engaged as partners in the capital planning for the Route 28X project. Using ARRA Phase 1 funding, the MBTA procurement is underway for the diesel-electric hybrid, 60-foot articulated buses that will immediately increase the capacity of Route 28. TIGER funding will provide for the remaining capital cost of Route 28X infrastructure improvements.



Entry to Grove Hall Commercial District



Mattapan Commercial District

The MBTA maintains a state-of-good-repair database of its assets. Route 28X busway elements, vehicles, stations, and fare collection equipment will be included within this ongoing maintenance and state-of-good-repair programming. The City will continue to own the right-of-way and maintain the general-traffic lanes, intersections, traffic signals, streetscape improvements, and pedestrian amenities.

Sustainable Operational Revenue

The MBTA is the fifth-largest transit agency in the country and operates in one of the nation's most transit-friendly regions. Boston has a track record of supporting transit and maintaining and reliably operating the oldest transit infrastructure in the U.S. Operating cost benefits are anticipated from the Route 28X capital investment due to improved on-time reliability, faster boarding with in-station fare payment, and use of energy-efficient, high-capacity vehicles.

The Route 28X project is an investment not only in transportation infrastructure, but in the community itself.

Economic Competitiveness

Worker Movement Improvements

As bus service throughout the corridor improves, so too should the competitiveness of Route 28X and other bus routes compared to private-vehicle travel when workers are deciding how to travel to and from their places of employment.

Commuting travel patterns were modeled by the Boston Region Metropolitan Planning Organization (MPO). According to the regional travel-demand

model, downtown Boston represents the top destination for peak period home-based work trips from the area surrounding Blue Hill Avenue, and the second-largest destination from the area surrounding Warren Street. A significant portion of corridor residents in each of these two areas also travel to Allston, Brighton, or Brookline for work. Notably, many fewer work trips stay within the corridor, though areas of Roxbury, Dorchester, and Mattapan outside of the corridor do make up significant percentages of the modeled work destinations.

When the travel-demand model was used to assign trips to modes, the predominance of work trips and of the destinations mentioned above held true for trips made by transit. A passenger survey conducted on Route 28 confirms that the majority of origin-destination pairings of riders is between home and work.

Most workers residing in the corridor will be able to use Route 28X to access their commute destinations with one transfer. Improving the reliability of Route 28X will not only benefit those currently using Route

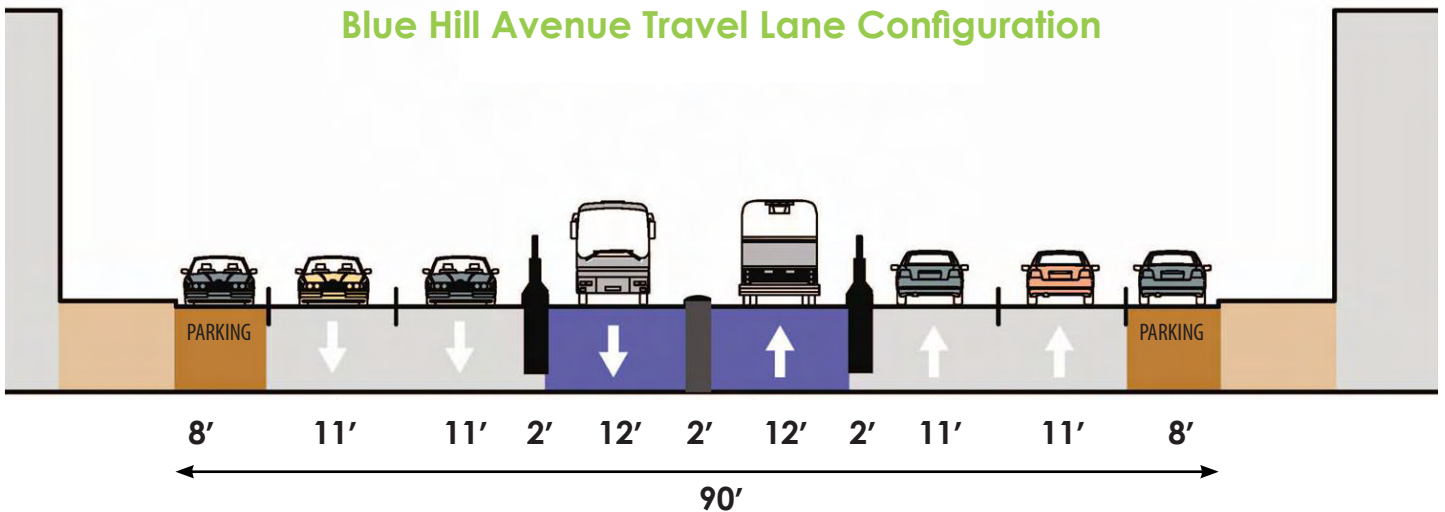
28, but could also attract single-occupant-vehicle (SOV) drivers and riders from other bus routes. Traffic congestion in the corridor is particularly serious in commercial areas such as Mattapan and Dudley Squares, Morton Street, and Grove Hall. The Route 28X project, by diverting some SOV trips to public transpor-

tation and improving signal timings and intersection performance throughout the corridor, should reduce congestion in those key commercial districts.

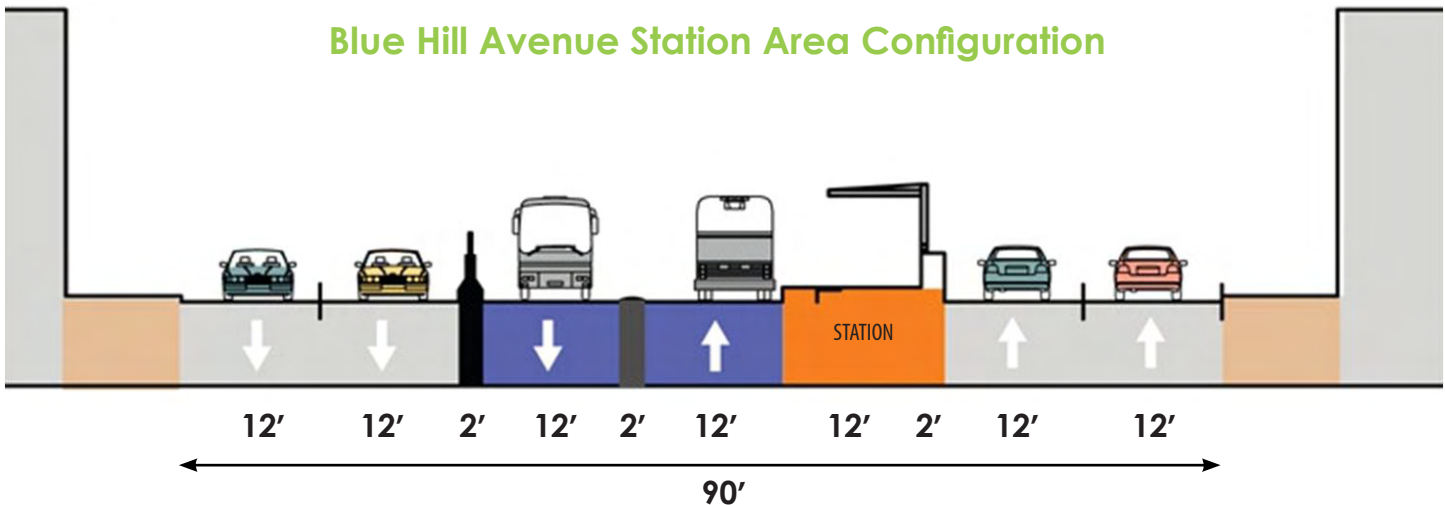
Growth of Private-Sector Productions

The project makes a number of improvements that will provide expanded opportunities for private-sector economic investment. The increased speed and reliability of transit service and the construction of high-profile 28X stations along the route will draw more riders into the corridor, thereby increasing visibility for local businesses. Aesthetic improvements made to the streetscape and pedestrian realm will complement the efforts of businesses to attract foot traffic. Delays in employees' getting to work will also be reduced as bus crowding is eliminated and schedule adherence

Blue Hill Avenue Travel Lane Configuration



Blue Hill Avenue Station Area Configuration



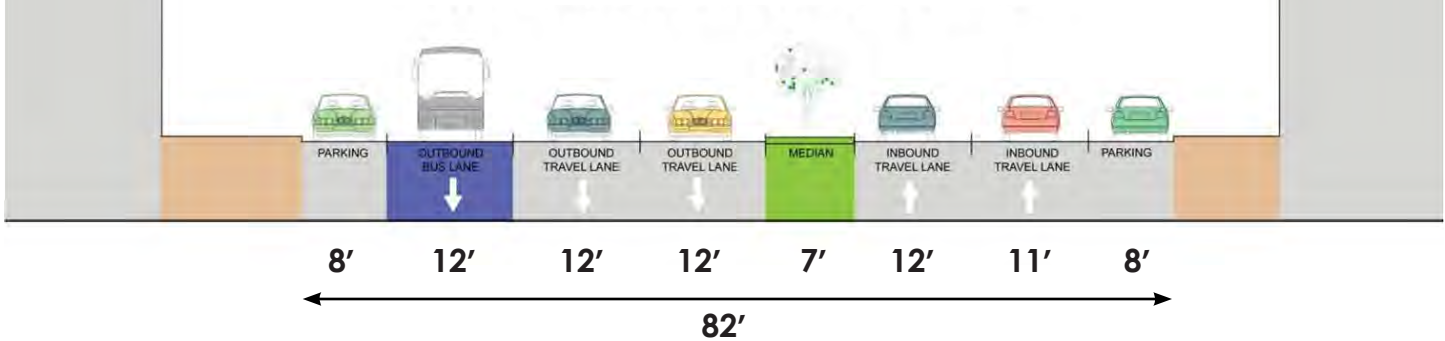
is improved. These benefits are particularly significant in an area lacking sufficient economic development. As much of the Route 28X corridor lies within an Economically Distressed Area and an Empowerment Zone, encouraging private-sector economic development is particularly important.

One opportunity for increased private-sector investment in the corridor may be found in the numerous vacant or underutilized parcels near Route 28X station sites along Blue Hill Avenue. A number of these parcels are in strategic locations along the corridor and are positioned to become much more attractive for redevelopment after the implementation of the Route 28X project. The project will also improve accessibility to 22 development projects, totaling 4.4 million square feet, currently at various stages of construction,

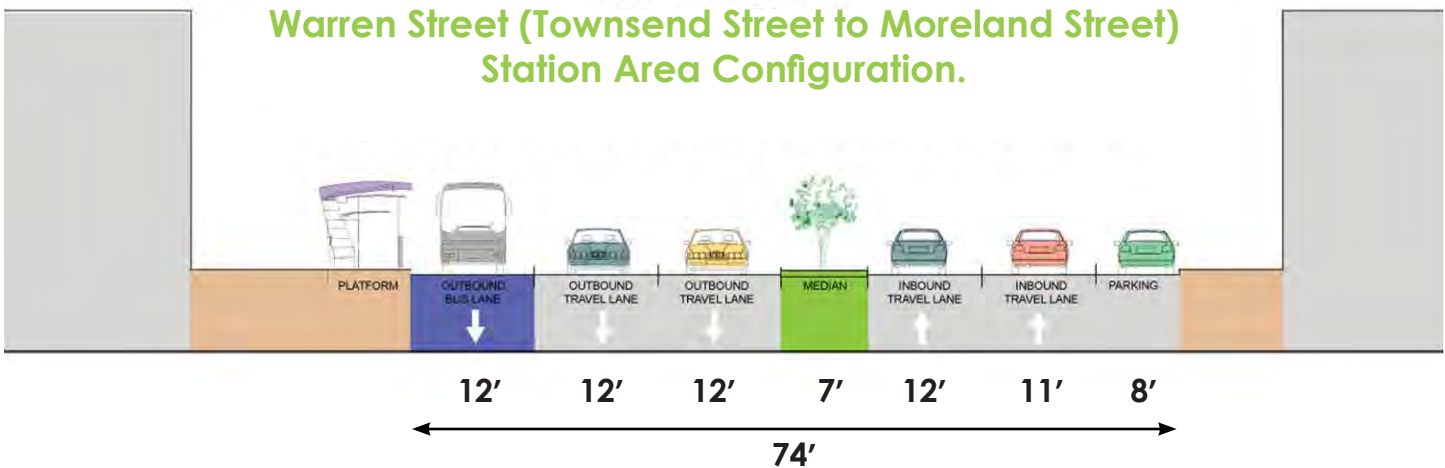
approval, or review by the City. These projects are valued at a \$1.1 billion development cost, lie within one-half mile of and throughout the Route 28X corridor, and represent 1.4 million and 3.0 million square feet of commercial and residential development space, respectively.

In light of the well-developed market for public transportation services that already exists in the corridor, the City has been actively encouraging transit-supportive development as a way to enhance commercial districts along Blue Hill Avenue and in Roxbury. The City's 2006 Mattapan Economic Development Action Plan calls for "enhancing the existing Mattapan Neighborhood Zoning ordinance to provide incentives for higher density, transit-oriented development" as well as "integrating planned MBTA

Warren Street (Townsend Street to Moreland Street) Travel Lane Configuration



Warren Street (Townsend Street to Moreland Street) Station Area Configuration.



station improvements into surrounding commercial areas." The promotion of transit-oriented development was also identified as one of the goals of the City's 2004 Roxbury Strategic Master Plan. This 2004 plan, which specifically recommended BRT service along the Route 28 corridor to encourage smart growth, proposed the development of land use plans, for areas within a quarter mile of transit stations, which limit the number of parking spaces and encourage the use of transit and other green modes of travel.

The national recession has negatively affected the economy of the metropolitan Boston area. While the city as a whole has generally weathered recent housing price drops, the Route 28X corridor was severely affected by the sub-prime lending crisis. Corridor housing sale prices have fallen significantly over the

past year. According to a foreclosure-focused report of the Federal Reserve Bank of Boston using March 2009 data, median home sale prices in two of the zip codes along Warren Street and Blue Hill Avenue declined by \$132,000 and \$182,000, respectively, representing the two largest decreases in the state. Commercial rents in the corridor are also depressed. Many tenants east of Warren Street hold U.S. HUD Section 8 vouchers, while rents to the west are slightly higher, though they typically qualify for tax credit housing at the 60 percent area median income level. The same mix of voucher holders and tax credit housing generally characterizes Blue Hill Avenue; however, the number of rental properties decreases in relation to for-sale single-family properties further south toward Mattapan.

These statistics reflect the need for redevelopment and economic investment in the corridor. Recent and successful examples of private investment include the Grove Hall Mecca Mall, Mattapan Square Gateway improvements, and the residential development at Harvard Gardens. The boost provided by the Route 28X project will contribute to attracting additional investment to the corridor.

Livability

User Mobility

The Route 28X project will improve mobility for many different types of travelers and trips throughout the corridor. Riders looking for the quickest mode of travel between Mattapan and Dudley or Ruggles Stations, or to major destinations in between, will be able to take advantage of the consolidated stops, dedicated bus lanes, and traffic signal priority on Route 28X. Local trips will still be served by local bus routes, from which some riders will likely be diverted to Route 28X, thus expediting boarding times on these local routes.

Bicycle racks located on the sidewalks adjacent to each Route 28X station will allow bicyclists to easily park their bicycles. A bicycle rack will also be installed on the front of all Route 28X buses, as well as all local buses.

Many users of the corridor access it on foot. The pedestrian environment on Blue Hill Avenue and Warren Street will be improved to facilitate access to Route 28X stations. Crosswalks will be highly distinct, and curb bulb-outs will be added to reduce the distance between the sidewalk and the median. Accessibility for persons with disabilities will be improved through station, crosswalk, and sidewalk designs consistent with recommendations of the Americans with Disabilities Act. In addition, bus boarding will be facilitated by allowing buses to pull up directly to the station area and providing for level boarding. Sidewalk space will also be made more comfortable for pedestrians through sidewalk improvements, tree plantings, and public art. One percent of the total project budget

will go towards hiring local artists to design and realize an artistic vision for Blue Hill Avenue and Warren Street.

Transportation Choices

The project will improve the speed and reliability with which Route 28X passengers can connect to local bus routes or the rapid transit system for travel to other neighborhoods of the city. Route 28X will provide connections to downtown Boston via the Silver Line out of Dudley Station and via the Orange Line at Ruggles Station. Riders destined for the Longwood Medical Area will be able to take a shuttle or walk from Ruggles Station. Route 28X riders will be able to transfer to Routes CT2, 47, or 66 at Dudley Station to travel to Allston, Brighton, or Brookline. Other bus routes out of

Dudley and Mattapan Stations, as well as the Mattapan High-Speed Line trolley service, provide connections to points throughout Roxbury, Dorchester, and Mattapan. Finally, Route 28X will have a station near the proposed Fairmount Line commuter rail station at Blue Hill Avenue.

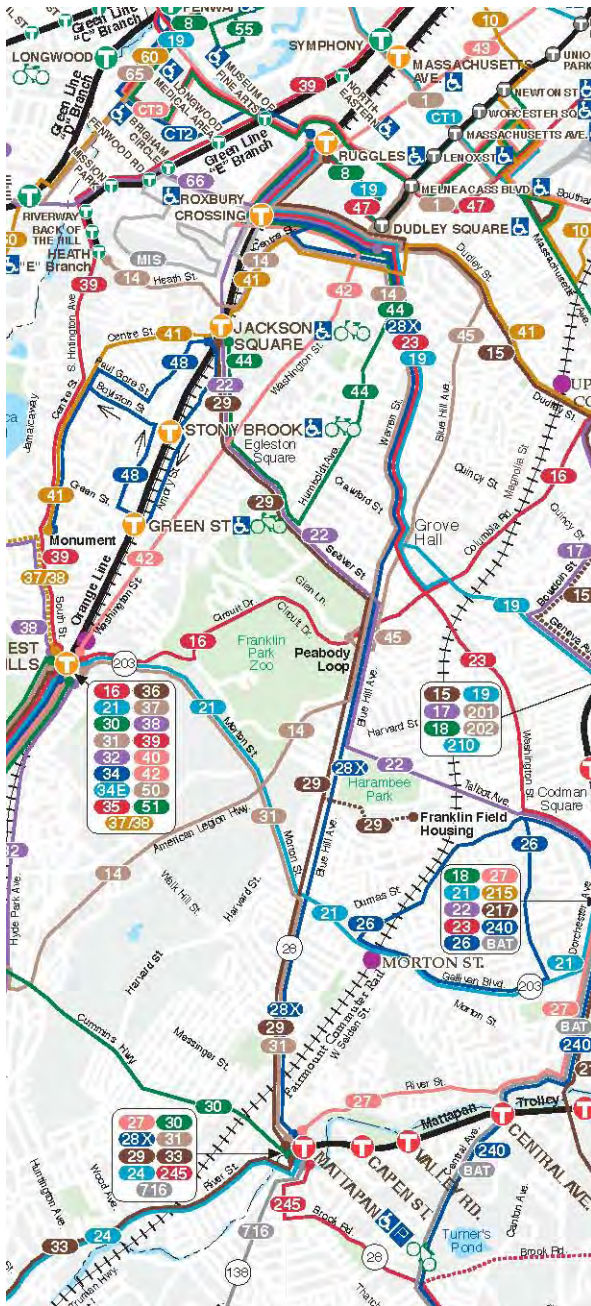
The Route 28X project will also assist in reducing pas-

senger crowding on buses and traffic congestion on Blue Hill Avenue and Warren Street. Articulated buses with a much greater seated capacity will serve Route 28X, and as some riders on other bus routes switch to Route 28X to take advantage of quicker trips to the rapid transit system, crowding on these routes should also be reduced. Placing Route 28X in a median busway on Blue Hill Avenue, and all routes in a curbside bus lane and queue jumps on Warren Street, will remove these buses from general-traffic lanes and thus eliminate congestion from buses in these lanes.

Accessibility and Transport Services

The Route 28X corridor, as evidenced by various summaries of 2000 demographics of census tracts, exhibits many of the characteristics traditionally associated with high rates of urban transit usage. The corridor is characterized by high population densities, a number of environmental justice neighborhoods, a large number of residents under the age of 18, significant percentages of households with a primary

The public benefits of the Route 28X project will be felt most directly by bus riders, but will extend into the community to improve economic competitiveness, livability, and sustainability.



Route 28X Connections

language other than English and with foreign-born members, and high percentages of the population without access to a private vehicle. In addition, almost one-fourth of the corridor's population was listed as living at or below the poverty level.

One of the most important markets for transit is the so-called "transit-dependent" population. These residents, who have no access to any private means of motorized transportation, must often rely on public transportation to access jobs, school, shopping, and other destinations. A survey of Route 28 passengers found low rates of driver's licenses and vehicle

availability. The combination of this with relatively high reported rates of transit usage both during the week and on weekends indicates that Route 28, and MBTA service more generally, provide the sole means of transportation for many riders. The passenger survey also confirmed that the corridor demographics generally characterize Route 28 riders as well.

The Route 28X project will also improve accessibility at stops for senior citizens and persons with disabilities. Boarding and alighting will be made easier by raising station platforms to the same level as bus floors. (Note: exclusively low-floor buses are currently used on Route 28 and other routes in the corridor.) Curb extensions will decrease the distance needed to cross the street to the median, and curb cuts on sidewalks and the median will improve accessibility.

Planning Process

The Route 28X project is consistent with the land-use planning goals of local, regional, and state agencies. Both the City's Mattapan Economic Development Action Plan and Roxbury Strategic Master Plan specifically identified the Route 28X project as a component of a recommended strategy for implementing the desired land use outcomes envisioned by those plans. Additionally, Access Boston, Boston's citywide transportation plan, pursues a "transit first" policy which calls for coordination between the City's Transportation Department and the Boston Redevelopment Authority to encourage transit-oriented development that supports high levels of transit use. The MBTA also recognizes the link between land use and transit planning in its Program for Mass Transportation (PMT), a financially unconstrained, long-range capital planning document. At the statewide level, EOT's you-Move Massachusetts planning effort is built on several themes that reflect this link, including the goals of an environmentally sustainable transportation system and the shared use of transportation infrastructure between private vehicles and public transit, particularly in urban areas.

Each of these planning efforts included significant community and stakeholder involvement. Multiple public meetings were held over several years in support of both the Mattapan Economic Development Action Plan and the Roxbury Strategic Master Plan. The MBTA's PMT planning process used a variety of communication tools to involve the public, including a PMT website, a newsletter, and a listserve, which in-



Route 28X Project Outreach

cluded over 1,700 email addresses. EOT's participant-driven youMove Massachusetts statewide strategic planning effort featured extensive public outreach, including 10 workshops in the fall of 2008 with more than 300 participants, and more than 1,000 comments on site-specific mobility gaps and challenges submitted through an innovative interactive map feature on the plan's website.

The most important example of a planning process that coordinated land-use and transportation decisions and encouraged community participation is the one that has led to the submittal of this TIGER application for the Route 28X project. The need to coordinate project design with existing and desired corridor land use has been a major topic of discussion at all nine public meetings held in preparation for this application between May 30 and September 2, 2009. A number of additional outreach efforts were made to ensure that land use considerations were a primary focus of transportation decisions on the project. These included 17 small-group meetings with 16 key stakeholder groups (such as community boards of trade and community development corporations) and major property owners (large houses of worship, community health centers, shopping malls, etc.), canvassing commercial districts to engage directly with small-business owners representing over 75 businesses, and meetings with the Boston Redevelopment Authority to discuss vacant and underutilized parcels in station areas. In addition to these targeted meetings, the public outreach component of planning for the Route 28X project has included direct outreach to riders (at transit stations and bus stops, with 5,000 information flyers being distributed to passengers on Route 28 and other impacted routes), the creation of a project-specific website that announces future public meetings and contains all public information presented about

the project, information tables set up at strategic locations (Dudley, Mattapan, and Ruggles Stations and bus stops at Grove Hall and Franklin Park) and at events within the corridor, and appearances by EOT officials on local media outlets.

Several key outcomes in project design can be credited to the level of public involvement and the coordination of land-use and transportation planning in this corridor. These include proposed station locations that maximize the potential for transit ridership and economic development, station designs that elevate both the visibility of the station area and the quality of the travel experience for transit riders, identification of vacant parcels where off-street parking can be sited in commercial districts experiencing on-street parking loss as a result of locating a station, preservation of left-turn lanes, and strategic enhancements to the pedestrian realm at key activity nodes along the corridor.

In addition to the input received through these outreach efforts, the planning for the Route 28X project has been significantly informed by a Project Advisory Group (PAG) and the state senators and representatives representing the corridor. The PAG consists of 13 stakeholders representing commercial, residential, or other interests in the corridor. The group met five times in the seven weeks preceding the TIGER application deadline and will continue to play an active role in project design and job creation issues as this work continues. The elected officials in the corridor have been instrumental in pushing for changes that have both responded to community concerns and improved the project. They have committed to continuing these efforts in the months ahead to ensure that the project's final design maximizes benefits for all users of Warren Street and Blue Hill Avenue.

Sustainability

Reductions in CO₂ and Fuel Consumption

The Route 28X project is expected to reduce the route's greenhouse gas emissions and fuel consumption. These reductions are achieved by purchasing new diesel-electric hybrid, 60-foot articulated buses. The fuel economy of the new hybrid buses is anticipated to be 20 percent better than that of their diesel articulated counterparts. This will likely translate into a reduction of 665,400 pounds, or 17 percent, of CO₂ annually. The diesel fuel savings are estimated at 23,800 gallons annually.

Private automobile emissions are also expected to decrease as some trips are diverted to public transportation. Compared to the 2030 no-build scenario (no Route 28X project improvements), the build scenario results in a reduction in automobile emissions of between 1.1 percent and 1.7 percent.

Clean Energy Sources

The Route 28X project plans to make maximum use of solar energy resources in providing power at the transit stations. It is anticipated that photovoltaic technology will be incorporated in station roofs to provide electrical power for lighting and auxiliary equipment.

Movement of People by Mode

Currently, the corridor between Mattapan and Dudley Stations is primarily served by eight bus routes: Routes 14, 19, 22, 23, 25, 28, 29, and 31. Together they serve approximately 6.4 million boardings annually and account for about 7 percent of total MBTA bus ridership. Three of these routes – the 22, 23, and 28 – are among the top-20 bus routes in the MBTA system in terms of ridership. These three routes also account for 75 percent of the demand in this corridor, or 8.8 million boardings annually.

The Boston Region MPO, using its regional travel-demand model, has forecast future ridership. In the 2030 no-build scenario, bus boardings in the corridor are expected to increase to 14.3 million annual boardings, a 22 percent increase over 2008. This growth exceeds that of the rest of the MBTA bus system, which is expected to experience only a 14 percent increase during this time period. In 2030, Route 28's share of corridor ridership increases to 30.0 percent from 28.9 percent. Of all the routes serving the corridor, Routes 23 and 28 are expected to experience the greatest absolute growth in boardings between 2008 and 2030, with each gaining almost 1.0 million annual boardings.

In the build scenario, the corridor experiences an additional 8.4 percent increase in annual bus boardings compared to the no-build scenario, going to 15.5 million instead of 14.3 million. Route 28, now the new Route 28X, has the greatest gain in boardings, due to the infrastructure improvements, increasing by 1.0 million, followed by Route 23, which increases by 0.2 million, and Routes 14, 19, and 25, which collectively increase by 0.2 million. Three routes experience ridership declines: Routes 22, 29, and 31. Collectively these

three routes lose approximately 0.3 million annual boardings, with Route 29 losing 0.2 million of the total. Since all three of these routes overlap some portion of the Route 28X service that includes the exclusive busway, riders from these routes are likely being siphoned off to Route 28X due to time savings on their trip. In 2030, Route 28X's share of corridor ridership will have increased to 35.0 percent.

Of the 1.2 million additional annual bus boardings occurring in the corridor under the build scenario compared to the no-build, 36 percent are new to the transit system: 0.1 million new bus boardings are diverted from the walk/bike mode and 0.3 million boardings from the auto mode, resulting in less auto traffic on the roads. The remaining new boardings are estimated to switch from other bus routes feeding Mattapan Station, Grove Hall, or Dudley Station, resulting in small reductions in transfers to certain stations on the Orange Line, the Mattapan High-Speed Line, and the Ashmont Branch of the Red Line.

The users of Route 28X and other routes in the corridor are forecast to experience substantial time savings owing to the improved travel times on the routes. These benefits can be quantified using the Federal Transit Administration (FTA) SUMMIT program and compared against the no-build scenario. This program estimated that the Route 28X project would produce 0.37 million hours of annual user benefits, or an average savings of 4.1 minutes per estimated rider on Route 28X.



Route 28 Serving Grove Hall

Air Quality

This project improves the air quality in the corridor by upgrading the technology powering the buses serving Route 28X and by reducing vehicle miles of travel (VMT) due to auto diversions associated with the bus travel time improvements to the corridor. The reduction in annual auto trips of 0.3 million results in a decrease in annual VMT of 1.4 million in the region for 2030. This translates into a reduction of 1,000 in average daily auto person trips in the corridor.

The biggest improvement is in nitrogen oxide (NOx) and results from both the improved hybrid buses and auto diversions. The second-largest reduction is in carbon monoxide (CO). Hydrocarbons (HC) and particulate matter 10 microns in size (PM10) experience slightly smaller reductions.

Appropriate steps will be taken to minimize any localized air quality impacts that may occur during construction. Short-term air quality impacts from fugitive dust may be expected during early phases of construction, particularly during the reconstruction of the roadway and subsequent repaving. Plans for controlling fugitive dust include mechanical street sweeping operations, wetting portions of the site during windy conditions, and removing debris from the site in covered trucks.

Safety

Compared to several other MBTA bus routes that serve portions of the Route 28 corridor, Route 28 had a higher number of accidents and injuries over the most recent 19 months. There was one homicide on Route 28 in 2008. By removing Route 28 from general traffic for most of the route, the potential for motor vehicle conflicts with buses will be reduced. In addition, pedestrians will only need to cross one-half of the street to access the median busway on Blue Hill Avenue. Better lighting at Route 28X stations, compared to the current bus stops, should act as a deterrent to crime.

Benefit-Cost Analysis

This section will discuss the key sources and magnitude of benefits and costs associated with the Route 28X project improvements. There are five primary direct benefits associated with the Route 28X project:

- The first benefit is the value of the travel time savings being generated by new and existing transit users. As people utilize the faster service, they have more time they can use for other purposes. Travel time is monetized at \$12 an hour.
- The second direct benefit results from people's switching from the auto to the transit mode and reducing their VMT, which translates into savings on maintenance and insurance for these people. This is monetized using a 19-cents-per-mile factor.
- The third direct benefit is new fare revenue from the new transit riders.
- The fourth and fifth benefits are due to operational efficiencies for, respectively, Route 28X buses and the buses on other routes in the corridor. Although revenue miles are the same as before the enhancements, buses are operating faster, there are fewer buses needed, and on Route 28X the fuel economy is better.

This translates into the annual cost savings shown below.

Direct Benefits	Annual* Expected Benefits in 2009 dollars
Travel Time Savings for Transit Users	\$4,414,300
Reduction in Vehicle Operating Cost	\$258,200
New Fare Revenue from Diverted Auto and Walk Trips	\$1,203,700
Operational and Maintenance Efficiencies to Rte 28X	\$1,606,400
Operational and Maintenance Efficiencies to Other Buses	\$715,500
Total Direct Benefits	\$8,198,100
<i>*Averaged for the period 2010–2030</i>	

There are also three important indirect benefits from the Route 28X project:

- Health benefits are associated with the air quality improvements that this project experiences. Many studies quantify the health impacts of various pollutants and air toxins, and the two most commonly cited are NO_x and PM₁₀, which the Route 28X project will reduce. A 2002 report from the Danish Environmental Research Program entitled, "Valuation of External Costs of Air Pollution," provides monetary values for kilograms of pollutants. When converted to U.S. dollars, an annual savings of \$226,400 was estimated for NO_x, \$44 for CO, \$250 for HC, and \$22 for PM₁₀, for a total estimated savings of \$226,716. When this was adjusted to reflect current dollars, the figure rose to \$271,400.
- This project serves several environmental justice neighborhoods that have many transit-dependent residents who make heavy use of the corridor for commuting, shopping, and recreational trip-making. The improved travel times allow these residents to access more job options in less time. Two of the biggest destination markets for these users are the Ruggles and Longwood areas, which are expected to experience significant increases in development over the next 20 years. This indirect benefit is important to mention but is difficult to quantify.
- This service could make the area more attractive, leading to an economic renewal similar to the development that occurred in the Washington Street corridor after the introduction of Silver Line Phase 1 service. A September 2005 FTA/USDOT report entitled, "Boston Silver Line Washington Street Bus Rapid Transit (BRT) Demonstration Project Evaluation," states that there was approximately \$1.2 billion in new real estate investment in the area immediately adjacent to the new Silver Line service between 1997 and 2005. The report notes that the streetscape has been transformed and that developers cited the Silver Line as a reason for their investment. This investment, based on the characteristics of the corridor and discounted for the distance from downtown Boston, was estimated to be slightly more than \$500 million, or \$25 million annually. As the Route 28X corridor connects to the Silver Line, a similar level of increased economic activity is expected.
- As the economic opportunities increase and more people want to live in the area, property values are likely to increase, resulting in more tax revenue for the City. Both residential and commercial property values have been observed to increase next to BRT facilities. A study of parcels near Bogota, Colombia's BRT system demonstrated that property prices increased by between 6.8 percent and 9.3 percent following the introduction of service. In the areas served by Route 28X, the value of residential and commercial properties in 2009 dollars is expected to increase by \$555.0 million and \$26.6 million, respectively.
- The project will improve safety by minimizing bus interaction with local street traffic. The lessened interaction will reduce the potential for traffic accidents, help lower insurance premiums, and decrease damage from property losses. Roughly 6 accidents



Bus Stop on Blue Hill Avenue

involving buses are reported along Blue Hill Avenue every year. An exclusive right-of-way would reduce this number. Using the average insurance claim of \$3,500 and multiplying it by 5 fewer accidents, a conservative savings of \$17,400 is expected, assuming the absence of significant personal injuries.

These indirect benefits are estimated to result in the annual cost savings shown below.

Indirect Benefits	Annual* Expected Benefits in 2009 dollars
Health Benefits Due to Air Quality Improvements	\$271,400
Improved Access to Jobs	n/a
Increased Economic Activity	\$25,000,000
Property Value Increases	\$29,000,000
Safety Improvements	\$17,400
Total Indirect Benefits	\$54,288,800
<i>*Averaged for the period 2010–2030</i>	

There are two primary sources of costs associated with this project:

- The most significant cost is the infrastructure investment, including construction impacts, the elimination of some on-street parking adjacent to stations on Blue Hill Avenue, and the capital costs associated with procuring the diesel-electric hybrid, 60-foot articulated buses. The total project cost is \$173.1 million dollars, but the annual cost over 20 years is \$8.66 million.
- The other cost impact, associated with the roadway reconfigurations along Blue Hill Avenue and Warren Street, is the minor losses in capacity resulting in some additional congestion. The analysis showed that the majority of delay (87,500 annual vehicle hours of travel) will occur on the northern part of Blue Hill Avenue, where the average speed will decline by five percent. When monetized at \$12 per hour, this cost is valued at roughly \$1 million per year.

These annual cost estimates are shown below.

Costs	Annual* Expected Benefits in 2009 dollars
Infrastructure Investment, Parking Reduction, and Capital Costs for New Hybrid Buses	\$8,660,000
Traffic Impacts Due to Lane Reconfiguration	\$1,050,000
Total Direct and Indirect Costs	\$9,710,000
<i>*Averaged for the period 2010–2030</i>	

In conclusion, this examination of the benefits and costs of the Route 28X project shows that the direct benefits and costs are of the same order of magnitude, but that the most significant benefits come from indirect sources and are related to increases in economic activity and property values. The net annual estimated value of the Route 28X project is \$52.8 million.

Job Creation and Economic Stimulus

Jobs

Low-Income Workers

The Route 28X corridor runs through several of Boston's low-income neighborhoods, and the entire corridor is characterized by a high proportion of minority residents. The Boston Region MPO, using its regional travel-demand model, has forecast future increases in job accessibility. The Route 28X project is estimated to increase by 5.4 percent the number of jobs low-income and minority workers can access within a 40-minute commute.

For all projects, EOT has established minimum goals for minority participation in the workforce on the construction contracts it oversees. The current minimum goal is for 15.3 percent of the workforce to be made up of minorities and 6.9 percent of the workforce to be women. The MBTA has traditionally set its own goals for minority workforce participation and will coordinate with EOT on setting goals for this project.

EOT and the MBTA recognize that job creation is one of the primary goals of ARRA. The predominantly low-income and minority population of the Route 28X corridor has historically not benefited fully from local construction projects. The goals referenced above are tailored to remediate the current impact or effects of past discrimination. In order to meet the goals of ARRA and the community, EOT and the MBTA will also use the procurement process to strongly encourage good-faith efforts to provide opportunities for low-income and minority workers, and will emphasize how important this goal is during pre-bid meetings with prospective contractors. Where successful bidders are unable or unwilling to exercise full efforts to achieve the stated goals, EOT and the MBTA will use their resources to identify potential hiring opportunities.

Small and Disadvantaged Businesses

The MBTA sets goals for disadvantaged business enterprises (DBEs) to participate in all of its construction projects. These goals vary based on project type and other considerations. Given the nature of the procurement for the Route 28X project, in which there appear to be various and substantial subcontractable scopes, a reasonably high DBE goal may be attainable, requiring the general contractor to subcontract out a significant portion of its work.

EOT and the MBTA will work and collaborate closely with minority and other small businesses to ensure that these businesses benefit from this project. In addition to setting a DBE goal to be accomplished by any vendor wishing to be a responsive bidder, EOT and the MBTA will conduct outreach to minority businesses. EOT and the MBTA will work with the State Office of Minority and Women Business Assistance (SOMWBA), the Massachusetts Minority Contractors Association, and minority trade associations, and provide general information that would be useful for prime and subcontracting partnerships. On other projects located in Boston, the MBTA has provided pre-bid networking opportunities for local contractors to meet prime contractors that typically bid on MBTA contracts. Similar networking events will be a component of this project.

EOT has a substantial contract with the Massachusetts Alliance for Small Contractors (MassAlliance) to provide information and outreach services to small, minority-owned, and woman-owned businesses, including companies not yet certified by SOMWBA,

about contracting and bidding for public works, public building, and transportation construction projects. In addition, MassAlliance provides a business development program to deliver technical assistance services to small, woman-owned, and minority-owned businesses; these services can include assistance that will lead these businesses to become SOMWBA-certified and eligible to bid and work on the proposed Route 28X project.

Both EOT and the MBTA also have longstanding relationships with the key trade associations of significance for minority and women contractors, including the Massachusetts Minority Contractors Association, the Women's Transportation Seminar, the Greater New England Minority Supplier Development Council, and the Center for Women and Enterprise. These relationships can be leveraged to ensure that ample information is shared across eligible businesses regarding the project and that appropriate businesses are identified and referred to consider bidding on the project as prime or sub-contractors. These organizations could be leveraged to help establish collaborations that will assist in the project's meeting its overall goals.



Route 28 at Dudley Station

Use of Community-Based Organizations

As part of the MBTA's and EOT's efforts to complement contractors' good-faith efforts at connecting disadvantaged workers with job opportunities related to this project, outreach and coordination with a variety of community-based institutions will be undertaken. A good model for this effort is an ongoing MBTA project to build a new commuter rail station in the Four Corners section of the city. This neighborhood, which is about a half-mile from Blue Hill Avenue, shares many demographic characteristics with the Route 28X corridor. The MBTA has established a partnership with the Four Corners Action Coalition, a community-based organization, to help connect disadvantaged workers with employment opportunities.

Support of Good Labor Practices

The MBTA includes a certification (Massachusetts General Laws Ch. 39S—Certification of Work in Harmony and OSHA Training) as part of the bidding documents that each bidder must sign to be deemed responsive. This certification shows that the contractor is capable of providing labor that can work with other elements of labor and that all workers are OSHA-trained. Also, the MBTA ensures that federal and state EEO (Equal Employment Opportunity) and anti-discrimination policies are included in all construction contracts. Additionally, prior to contract award, the MBTA's Labor Relations department contacts the low bidder to "emphasize the work in harmony commitment." This phrase is used to ensure that contractors working on MBTA property cannot allow service or production of any kind to be disrupted by any issue arising on the job site with respect to labor or union issues, under penalty of suspension of work until any dispute or problem is resolved. Labor Relations also inquires about any previous work that the contractor may have performed with the MBTA and if there were any labor issues present.

EOT and the MBTA have active roles in monitoring contract compliance to ensure adherence both to the established contractual agreement and to applicable state and federal laws on prevailing wages, apprenticeship requirements, and DBE goals, and on on-the-job-training requirements when appropriate.

Finally, EOT is also working with the state legislators (from both the project corridor and beyond) active in labor issues to explore opportunities to connect low-income and minority workers with labor unions.

Civil Rights and Equal Opportunities

The MBTA is the recipient of over \$200 million annually in FTA funds and adheres to all anti-discrimination requirements attached to that funding. Adherence to these requirements is reviewed annually by independent auditors, and only minimal deficiencies have been found regarding compliance. The MBTA employs a diverse workforce and does not discriminate based on race, gender, or sexual orientation. Roughly one quarter of MBTA employees in Bus Operations are women (23.9 percent), and close to half are minorities (47.1 percent).

Schedule

Project Schedule

A graphical summary of the project schedule is provided below. As can be seen in the graphic, pre-construction activities for the Route 28X project have been underway for almost a year, and the project has advanced from planning and pre-design activities into preliminary design. Preliminary design work will be effectively complete as of the filing of this TIGER application. Consultant teams for final design were interviewed, and a final design team was selected. The project schedule calls for the final design work to commence in November 2009 and be completed in

Project Schedule



February 2010. Construction of the project will begin immediately thereafter and is to be completed by February 2012, per the requirements of the TIGER program.

Expenditure Schedule

A summary table of construction and vehicle procurement costs is provided below. Design and construction activities are scheduled to take place steadily from October 2009 through February 2012. Over that period, project expenditures are expected to average \$5.0 million per month, with peak mid-construction expenditures of approximately \$5.8 million per month between April 2010 and January 2012.

Summary of Project Implementation Costs

Roadway Reconstruction	\$64.1 million
Stations	\$34.4 million
Streetscape/Lighting	\$5.8 million
Traffic Signals	\$14.8 million
Trees and Planting	\$9.6 million
Design	\$10.0 million
Replacement Parking	\$6.8 million
Art	\$1.5 million
Total	\$147.0 million

Environmental Approvals

EOT and the MBTA have met with FTA/Region One staff to discuss the project and, specifically, the NEPA (National Environmental Policy Act) review required. The project consists of work entirely within an active urban roadway corridor currently used by transit and mixed traffic. While the project passes by several National Register and National Register-eligible properties, as well as certain parkland and other 4F properties, the project will not alter any of these parcels, and the new structures being built (bus stations, fare-vending structures, platforms, etc.) are consistent with the current use of the corridor as an urban thoroughfare. The design of these structures will be prepared to be consistent with and sympathetic to their surroundings. Therefore, EOT and the MBTA anticipate that there will

be No Effect on Section 106 properties. Furthermore, as all of the work will occur within the existing right-of-way, with the exception of some off-street replacement parking in the business districts, and no use of parkland is required, EOT and the MBTA anticipate that the project will have no 4F effects. No other federal permits or approvals are required for the project.

In light of these facts, staff at EOT and the MBTA, along with Region One staff, have concluded that the project should be the subject of a documented Categorical Exclusion (CE), and the parties anticipate that a CE approval can be granted as laid out in Environmental Impact and Related Procedures (23 CFR part 771). Specifically, the parties feel that the project qualifies for a CE under three basic criteria:

- (d)(1) Modernization of a highway by resurfacing, restoration, rehabilitation, reconstruction, adding shoulders, or adding auxiliary lanes (e.g., parking, weaving, turning, climbing).
- (d)(4) Transportation corridor fringe parking facilities.
- (d)(10) Construction of bus transfer facilities (an open area consisting of passenger shelters, boarding areas, kiosks and related street improvements) when located in a commercial area or other high activity center in which there is adequate street capacity for projected bus traffic.

EOT and the MBTA anticipate filing this CE with the FTA this fall so that approval of the CE can occur before the end of the calendar year.

The project will be subject to state environmental review. Staff at EOT and the MBTA have met with the state environmental regulators to discuss the project and anticipate that a state review document can be prepared, reviewed, and finalized before the end of 2009.

Legislative Approvals

This project will be implemented by the MBTA with TIGER funds and without financial support from the Commonwealth of Massachusetts. Therefore, no legislative approvals are required for the implementation of the Route 28X project. However, EOT has involved

state legislators from the Route 28X corridor in the planning process, and the project's final design will also be informed by this partnership.

State and Local Planning Approvals

On September 10, 2009, the Boston Region MPO voted to endorse EOT's pursuit of TIGER funds for the Route 28X project. Both the MBTA's Program for Mass Transportation and the City's Access Boston transportation plan recommended BRT improvements along the Route 28 corridor. The City's Transportation Department, Public Works Department, Redevelopment Authority, Police Department, and Fire Department have all been involved in the planning of the Route 28X project.

Feasibility

Technical Feasibility

Preliminary design has involved detailed examination of existing conditions and proposed improvements along the project corridor, including existing and proposed cross sections, vehicular movements, and station locations and layouts. Preliminary design activities for the project have proven that the project is technically feasible and can be implemented within the constraints of the existing urban corridor. Reports and analyses completed as part of conceptual engineering work are included as supplementary information to this application.

Financial Feasibility

Project planning and design activities are currently budgeted and funded. Project implementation costs – \$147.0 million, as indicated above – would be provided by the TIGER grant. The project will be implemented by the MBTA, one of the nation's largest and longest-tenured public transportation agencies. The MBTA capital construction budget over the past three

years has ranged between \$510 million and \$517 million per year. The MBTA therefore has an appropriate level of organizational structure and knowledge to monitor and disburse the requested TIGER grant funds.

Innovation

Technology

The MBTA and the City make use of several innovative technologies to improve operations. The MBTA, through its operational control center, uses Radio Frequency Identification (RFID) tags on its buses to run an automatic vehicle location (AVL) system that monitors bus location every 60 seconds. Operations control center staff use computer-aided dispatch, or CAD-AVL, to show bus location in relation to scheduled timepoints, as well as AVL displays for buses superimposed on the street network. These tools allow staff to instruct operators to run a bus express or perform a short-turn in the event that a bus falls behind schedule. GPS technology is also used onboard buses to announce upcoming stops.



Warren Street Station Rendering

The MBTA uses an automatic fare-collection (AFC) system to collect and process sales and transaction data. As has been explained, riders can load passes and stored value onto a smart card, called a CharlieCard. CharlieCard customers can then tap their card on a smart card reader installed on all faregates, fare-boxes, and validators to pay their fare. This system has dramatically improved the MBTA's ability to understand and better plan for customers' trip and fare payment characteristics.

Intelligent transportation systems (ITS) are used by the Boston Transportation Department for signal coordina-

tion on Blue Hill Avenue and elsewhere. ITS technology is also used to request traffic signal priority (TSP) and provide “next bus” announcements for Silver Line Washington Street buses. The City, in cooperation with the MBTA, is looking to expand the TSP program. This expansion would make use of software to allow for center-to-center activation of transit priority. Physical connections between MBTA and City hardware would not be necessary, and TSP could be implemented more quickly and at a lower cost.

Operations

The Route 28X project is anticipated to deliver three distinct types of operational benefits: travel time savings for customers; a reduction in the fraction of trips running late; and more consistent headways between buses. In peak periods in the peak direction, passengers traveling the entire route are estimated to save 9-10 minutes versus the present service. For these trips and shorter ones in the peak hour and peak direction, time savings of about 24 percent are projected. Off-peak time savings are forecast to range from 15 to 25 percent, depending on direction and time of day. The reduction in the occurrence of late operation will allow customers to plan on a later departure time if they need to arrive by a specific time; this ability to improve schedule reliability will also reduce the MBTA's per-mile bus operating costs. More consistent intervals between buses will reduce both customer average waiting times and instances of some buses being overcrowded while others are lightly loaded.

Strategies

TIGER funding is the catalyst for a unique state-city partnership directing multiple community resources toward a common aim in improving the effectiveness and efficiency of transit operations in the Roxbury-Dorchester-Mattapan corridor. A corridor development approach focused on public transportation recognizes that economic growth demands greater efficiency and environmental sustainability in how people and goods are moved. Getting more people out of single-occupancy vehicles and into transit vehicles reduces congestion, improves air quality, and creates opportunities for transit-oriented development. Therefore, it is imperative that the service offered by public transportation be reliable, convenient, attractive, safe, and affordable.

Partnership

Jurisdictional and Stakeholder

Non-Federal Funds

The City has investigated potential opportunities to purchase vacant land for off-street parking in commercial districts experiencing on-street parking loss.

Regional Jurisdictional Collaboration

The Route 28X project has involved the collaboration of several different types of non-federal entities. The City has been heavily involved, through its Transportation Department, in efforts to develop the preliminary engineering design. The City's Redevelopment Authority, corridor Police Department districts, and the Boston Fire Department have also been involved in the planning for the Route 28X project and support its implementation. The Boston Region MPO prepared the initial conceptual analysis of the corridor and has continued to support EOT and the MBTA through the preparation of this application and involvement in the project's preliminary engineering design and public outreach.

EOT, the MBTA, and the City will continue to coordinate their efforts throughout the planning process and into the operational stage of the project. The provision of sufficient police presence to ensure the safety of bus riders at stations, enforcement of the dedicated bus lane on Warren Street, and snow plowing of the Blue Hill Avenue busway are all examples of coordination necessary to ensure the project's success. This continued coordination, for which the Commonwealth will make itself responsible, will demonstrate the Commonwealth's level of commitment to economic development in Roxbury, Dorchester, and Mattapan.

Disciplinary Integration

The planning for the Route 28X project has been the product of significant collaboration among a broad range of stakeholders. In addition to the state, regional, and city government departments referenced elsewhere, a number of private and non-profit organizations support this project, both for its transportation benefits for transit passengers in the corridor and for its potential to help achieve their own

institutional goals. Among the parties who have participated in the project are:

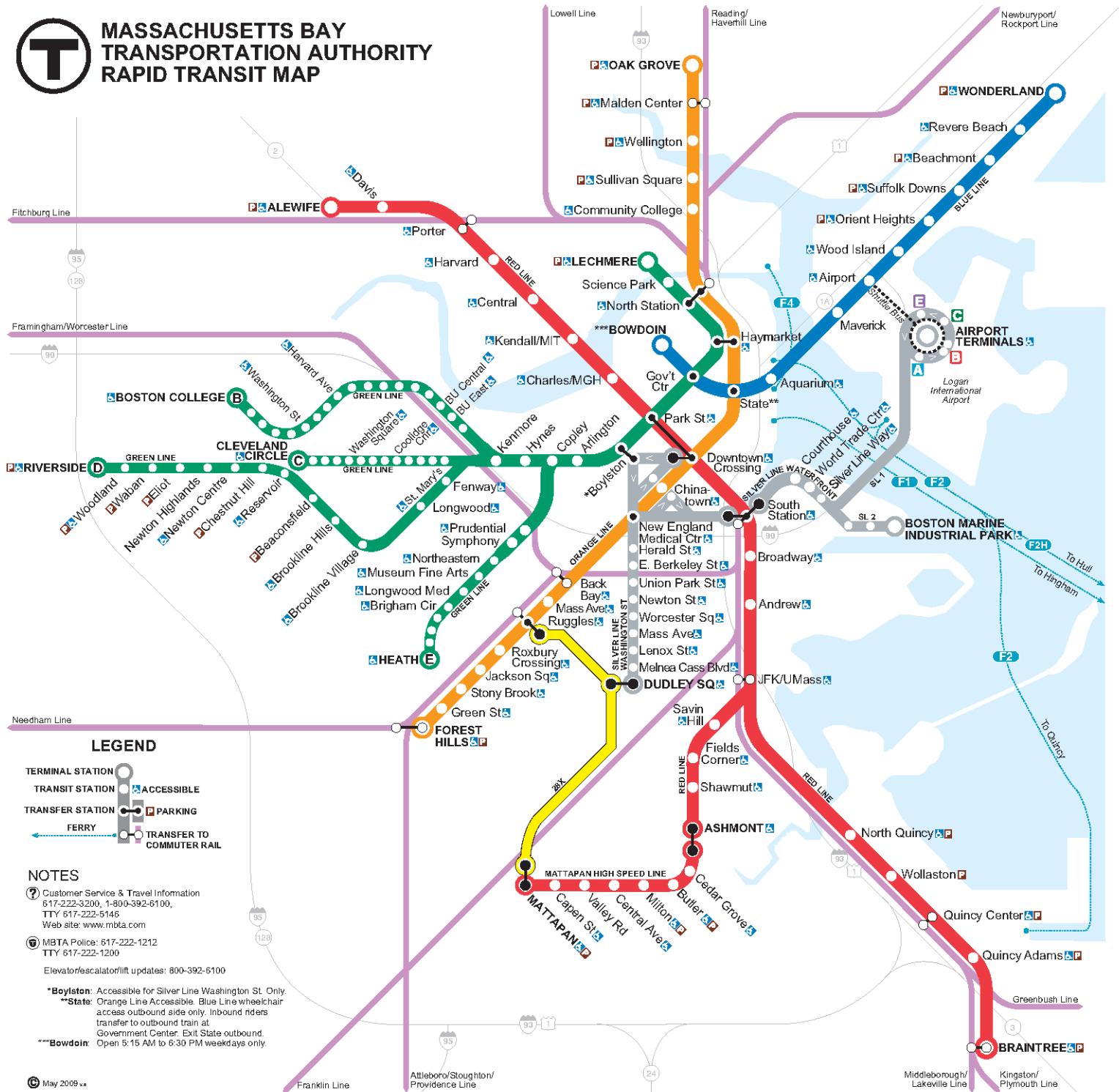
- **Medical Academic and Scientific Community Organization, Inc. (MASCO)** – A non-profit organization involved in the planning of the Longwood Medical and Academic Area
- **Mattapan Community Development Corporation** – A non-profit, community-based corporation dedicated to improving the social and economic conditions of all people who live or work in Mattapan
- **Mattapan Board of Trade** – A small-business association dedicated to the stabilization and development of the business and residential community in Mattapan
- **Morton Street Village Board of Commerce** – An organization of local business owners and residents working to improve the area around the intersection of Morton Street and Blue Hill Avenue
- **MASSPIRG** – An advocacy group that delivers results-oriented, public-interest activism to protect consumers; encourage a fair, sustainable economy; and foster responsive, democratic government
- **Project RIGHT** – A non-profit organization that trains and supports emerging leadership by providing an inclusive network for resident organizations to engage in community-building efforts within Grove Hall
- **Grove Hall Neighborhood Development Corporation** – A non-profit, community-based corporation dedicated to improving the social and economic conditions of all people who live or work in Grove Hall
- **MBTA Riders Union** – A committee of Alternatives for Community and Environment (ACE) that organizes public transit riders to build a unified voice and movement for better public transportation in Greater Boston
- **Washington Street Corridor Coalition** – A coalition of 30 groups from Chinatown, the South End, Roxbury, and Jamaica Plain dedicated to improving the social and economic conditions of all people who live or work in the Washington Street corridor



Blue Hill Avenue Busway and Station Rendering



MASSACHUSETTS BAY TRANSPORTATION AUTHORITY RAPID TRANSIT MAP



EOT
EXECUTIVE OFFICE
OF TRANSPORTATION

Route 28X Enhancements