City of Boston
Transportation

July 12, 2022

Dear community members,

The Boston Transportation Department is excited to share our successful RAISE Grant application for the Blue Hill Avenue Multimodal Corridor Project. We want to start by thanking our community partners for their support and their contribution to visioning the kind of place Blue Hill Avenue can and should be for all those who use it. This project will only succeed by centering the voices of those who work, live, play, and travel along the corridor. We greatly appreciate those community members who have contributed their voices thus far to the future vision for Blue Hill Avenue.

The $15 million the City received from the federal RAISE Grant program provides the funding the City and MBTA need to continue working with the community to validate the center-running bus lane design and make decisions about how the rest of the street and sidewalks will be built. The street design concept contained within this application represents the City's interpretation of community feedback on the corridor at the time of this application, including almost 600 survey responses and 1,000 community voices across 129 additional engagement opportunities. These preliminary designs were necessary to estimate a total cost for the project. The City is committed to continuing with community conversations that will help us iterate on this design to best meet the needs of corridor users and achieve our City-wide goals. The end design will be founded in our principles of enhancing safety, improving conditions for older adults and people with disabilities, encouraging modal shift to sustainable travel options, improving the public realm, addressing parking and traffic flow concerns, facilitating long-term stewardship, and promoting environmental resilience.

The City has partnered with community-based engagement consultants Grayscale Collaborative and Powerful Pathways to create a block-by-block engagement strategy for Blue Hill Avenue that will help bring us to a final design for the corridor. This partnership and strategy is founded on the principles of: reflecting a proactive commitment to racial equity; designing with and by the communities that Blue Hill Avenue serves, reflecting those communities' diversity and culture, and honoring their past history as well as their ambitions for their future; engaging directly with users of all travel modes; and creating opportunities for paid involvement of community members.

This partnership recognizes that transportation planning and design must integrate with housing, environmental and small business needs both to align with citywide aspirations and with local needs. To reflect that reality, we are committed to an interdepartmental approach to designing Blue Hill Avenue. Our holistic and interdepartmental project approach will seek, where possible, to prevent displacement, reduce heat island effects, contribute to a thriving small business community, and support local artists. We will work closely with the corresponding City departments to coordinate these efforts.

Our team looks forward to working with you all as part of this engagement process. To learn more about the project and sign up for our newsletter, visit *boston.gov/blue-hill-avenue*.

Sincerely,

Jascha Franklin-Hodge
Chief of Streets

Field Name	Response	Instructions
Project Name	Blue Hill Avenue Multimodal Corridor Project	Enter a **concise,** descriptive **title** for the project. This should be the same title used in the Grants.gov SF-424 submission and the application narrative.
Project Description	The Blue Hill Avenue Multimodal Corridor Project is a transit priority project that stretches 3.1 miles along one of Boston's most important streets. The project repurposes Blue Hill Avenue's existing wide, concrete median island into a pair of exclusive, center-running bus lanes and redesigns Mattapan Square (the southern terminus) to better accommodate bus movements in and out of the Mattapan Red Line light rail station. The project will also include improved pedestrian refuges, protected	Describe the project in plain English terms, using **no more than 100 words**. For example, "The project will replace the existing bridge over the W river on Interstate-X between the cities of Y and Z" or "the RAISE Grant will fund construction activities for streetcar service from location X to location Y." Please **do not** describe the project's benefits, background, or alignment with the selection criteria in this description field.
Urban/Rural	Urban	Identify whether the project is **located in a rural or urban area**, using the drop-down menu. For RAISE 2021, a project is designated as urban if it is located within (or on the boundary of) a Census-designated urbanized area that had a population greater than 200,000 in the 2010 Census. If a project is located outside a Census-designated urbanized area with a population greater than 200,000, it is designated as a rural project.
Urbanized Area	Boston, MA--NH--RI	If you have identified the project as "urban," please select the **associated 2010 Census-designated urbanized area (UA)** from the drop-down. If you identified the project as "rural" but it is located in an UA with a population under 200,000, please select the UA from the drop-down. If you have identified the project as "rural" and it is located outside an urbanized area, please select "Not located in an urbanized area" from the drop-down.
Capital or Planning	Capital	Identify the project as **capital** or **planning**. The "**capital**" designation is for projects that requesting funding for the construction of surface transportation capital infastructure. The "**planning**" designation is for projects that are requesting funding primarily for planning, preparation, or design of eligible surface transportation capital projects.
Amount Requested	$25,000,000	Enter the **total amount of RAISE funds requested** for this project in this application. [*For **capital** projects, the minimum urban entry is $5,000,000 and the minimum rural entry is $1,000,000. For **planning** projects, the minimum entry is $1. The maximum entry for both types is $25,000,000*].
Project Location County	MA - Suffolk County	**Identify the county** where the project is located in using the drop-down. If the project is located in more than one county, please identify the county in which the majority of the project is located.
Additional Project Counties	NA	**Identify additional counities seperated by a comma**. For instance, if the project additionaly runs through Middlesex County and Suffolk County, please enter 'Middlesex County, Suffolk County' in the cell.

Project Location Census Tract	924	Identify the census tract number of the project. Please visit USDOT's RAISE webpage to review a full list of census tracts by state and county or refer to the Census Bureau's TIGER Web map to identifiy. For example, if the most central tract is Census Tract 93.30, please enter '93.30' into the cell. Do not be concerned if the last zero is missing from your response (e.g., 93.30 may display as 93.3). If the project is located in more than one census tract please identify the census tract in which the majority of the project is located.
Other Project Census Tracts	820, 821, 901, 902, 1001, 1002, 1011.01, 1011.02	**Identify other census tracts in which the project is located, seperated by a comma**. For example, if the project is located in Census Tract 93.31, Census Tract 93.32, and Census Tract 94.03, please enter '93.31, 93.32, 94.03' into the cell.
Project Located in an Area of Persistent Poverty?	Yes - it is located in a census tract that meets the definition	Identify if the project is located in an area of persistent poverty based on the critieria outlined in the NOFO. The list of counties and census tracts that meet this definition can be found on USDOT's RAISE webpage.
Project Location Zip Code	02124	**Identify the 5-digit zip code of the project location.** If the project is located in more than one zip codes, please identify the zip code in which the majority of the project is located.
Project Type	Transit - Bus Rapid Transit	Identify the **Primary** and **Secondary project type** combination that **most closely aligns with your project** from the choices in the drop-down menu. See the "Project Types" tab in this file for further information and project type definitions.
Prior BUILD/TIGER Funds Awarded to Project?	No	Identify **whether the project has previously received BUILD/TIGER funding**, and if so, whether that funding was through a planning or capital grant, using the drop-down menu.
Prior BUILD/TIGER Application?	Yes - FY20	Identifiy **whether this project has previously been submitted for BUILD/TIGER funding** and, if it is has, please identifiy the **most recent competition** it was submitted to for consideration.
USDOT FY21 Discretionary Application?	No	**Please identifiy if this project has been submitted to other USDOT FY21 discretionary grant programs** in addition to RAISE. If it has been submitted to multiple programs (in addition to RAISE), please select 'Multiple' from the drop-down.
Total Project Cost	$39,500,000	Enter the **total cost of the project**. This should equal the sum of Total Federal Funding and Total Non-Federal Funding. *This value may not be less than the amount requested.*
Total Federal Funding	$25,000,000	Enter the **amount of funds committed to the project from ALL Federal sources including the proposed RAISE amount**. *This value may not be less than the amount requested.* For **RAISE projects designated as urban**, Federal funding cannot exceed 80% of total project cost unless the project is a planning project located in an area of persistent poverty as defined in the RAISE NOFO.

Total Non-Federal Funding	$14,500,000	Enter the **amount of funds committed to the project from non-Federal sources**. For **RAISE projects designated as urban**, the total non-Federal funding amount must be greater than or equal to 20% of the project cost unless the project is a planning project located in an area of persistent poverty as defined in the RAISE NOFO.
Tribal Government?	No	Select "Yes" from the drop-down menu if the applicant is a **Federally recognized tribal government**.
Tribal Benefits?	N/A	**If the applicant is not a Federally recognized tribal government**, is the project located on tribal land? And if not, does it have direct tribal benefits? Answer using the drop-down menu.
Private Corporation Involvement	No	Does this project **involve (a) private entity(ies) that will receive a direct and predictable financial benefit** if the project is selected for award? This includes, but it not limited to, private owners of infrastructure facilities being improved and private freight shippers or carriers directly benefitting from completion of the proposed project.
Private Corporation Name(s)	NA	**If this project directly involves or benefits a specific private corporation**, please list the corporation(s) separated by a comma.
TIFIA/RRIF?	No	Is the project currently, or does this project anticipate applying for Transportation Infrastructure Finance and Innovation Act **(TIFIA)** or Railroad Rehabilitation & Improvement Financing **(RRIF) loans**?
Department Financing Program?	No	If your application is unsuccessful, would you like to be contacted about the **Department's financing program**?

2021 RAISE GRANT APPLICATION

BLUE HILL AVENUE MULTIMODAL CORRIDOR

RAISE Funding Request
$25M

Total Project Cost
$39.5M

Local Matching Funds
$6.2M Massachusetts Bay Transportation Authority
$8.3M City of Boston
$14.5M Total Match

MAYOR KIM JANEY
CITY OF BOSTON
1 City Hall Square, Suite 500
Boston, MA 02201-2013
(617) 635-4500
mayor@boston.gov

$1 ANY SIZE
31 MATTAPAN STA
El Regreso
MARKET
617-238-7636
ENVIOS DE DINERO
EBT, WIC
LOTTERY
ROXBURY CENTER
THE ROXBURY SUNFLOWER PROJECT

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1. Project Information Sheet
2. Narrative—Blue Hill Avenue Multimodal Corridor Project RAISE Grant Application
3. Benefit-Cost Analysis Report
4. Benefit-Cost Analysis Modeling Spreadsheets
5. Project Cost Estimate
6. Funding Commitment Letters
7. Letters of Support
8. Blue Hill Avenue Multimodal Corridor Concept Plan

1. PROJECT DESCRIPTION

1.1. CONTEXT & SIGNIFICANCE

The City of Boston, in partnership with the Massachusetts Bay Transportation Authority (MBTA), is requesting $25 million in Rebuilding American Infrastructure with Sustainability and Equity (RAISE) funds for the Blue Hill Avenue (BHA) Multimodal Corridor Project. This transit priority project will **improve the quality of life** for corridor users and will be completed in partnership with local residents to **address inequities** and reimagine how the corridor can **function safer**.

This regionally significant corridor, located in Boston, has the highest percentage of persons living in poverty in the Commonwealth of Massachusetts[1]. Blue Hill Avenue is situated midway between two MBTA heavy rail rapid transit lines; intersects the MBTA's Commuter Rail Line; and connects the commercial nodes of Grove Hall in the north, Mattapan Square to the south, and residential and commercial uses in between. This corridor serves **over 900 MBTA buses each day** across six routes. The primary benefits—dramatically improved safety, access, speed, and reliability—will accrue to **20,000+ daily bus riders**. The 42,000 residents living in adjacent census tracts will also benefit—among them, are **high concentrations of environmental justice populations (90.27% non-white persons and 60.98% of area households with annual incomes less than $50,000)**—as illustrated in Section 4.3.

With a policy to create a racial equity framework in approaching resilience, the City of Boston issued RESILIENT BOSTON An Equitable and Connected City to inform government policies, practices, and decision-making and an application of a resilience and racial equity lens in their implementation. Within this document are key goals and targets that have guided the planning for the BHA Multimodal Corridor project:

This project will complete a linkage of high-quality transit service corridors from Boston's southern border in Mattapan to downtown.

- **GOAL 4.1:** Develop a redundant and reliable public transportation network to provide equitable accessibility for all Bostonians.

  TARGETS:

  - Ensure that every home in Boston will be within a ten-minute walk of a rail station or key bus route stop, as well as bike share stations and car share options by 2030.
  - Reduce the transportation cost burden for very low-income individuals to the citywide average for a median household.
  - Reduce Bostonians' average commute to work time by 10%. Decrease average commute times for families of color by 15%.

- **GOAL 4.2:** Prepare for the impacts of climate change and other threats while accelerating sustainable infrastructure, environment, and communities.

  TARGET:

  - Increase the number of resilient and accessible green spaces in underrepresented communities.

The Boston Transportation Department initiated the *Blue Hill Avenue Transportation Action Plan*, which is a product of *Go Boston 2030*[2], the City's comprehensive transportation plan that aims to build efficient transportation networks that create economic opportunity and steps to prepare for climate change and address equity issues.

1 census.gov/data/tables/time-series/dec/census-poverty.html

2 boston.gov/departments/transportation/go-boston-2030

Through an ongoing **robust community engagement strategy**, this **equity-centered redesign** will repurpose the avenue's existing wide concrete median island into a complete multimodal street with center running bus lanes and dedicated bicycle facilities. A revitalized streetscape with several placemaking elements will soften the corridor and make it safer for pedestrians, bicyclists, and motorists alike. On the southern end, the lively neighborhood business district of Mattapan Square is undergoing a parallel, complementary design effort. This collaborative effort between the City of Boston and MBTA is garnering **strong momentum and robust public support**, developed through the Boston Transportation Department's (BTD) *Blue Hill Avenue Transportation Action Plan*. Key benefits of the project are highlighted in Table 1-1.

The significant travel time and reliability benefits afforded by these capital investments will allow far more efficient use of MBTA resources along a high-demand, capacity-constrained route that is traversed by three of the system's 15 busiest routes. As illustrated in the attached Benefits Cost Analysis (BCA) Report and Modeling, the proposed improvements will enable the agency to **operate over 100 additional bus trips each day using the same number of buses and operators, which is projected to further increase ridership by over 2,100 passengers daily**—offering more trips, better frequency and more passengers in the same number of hours.

TABLE 1-1: KEY PROJECT BENEFITS

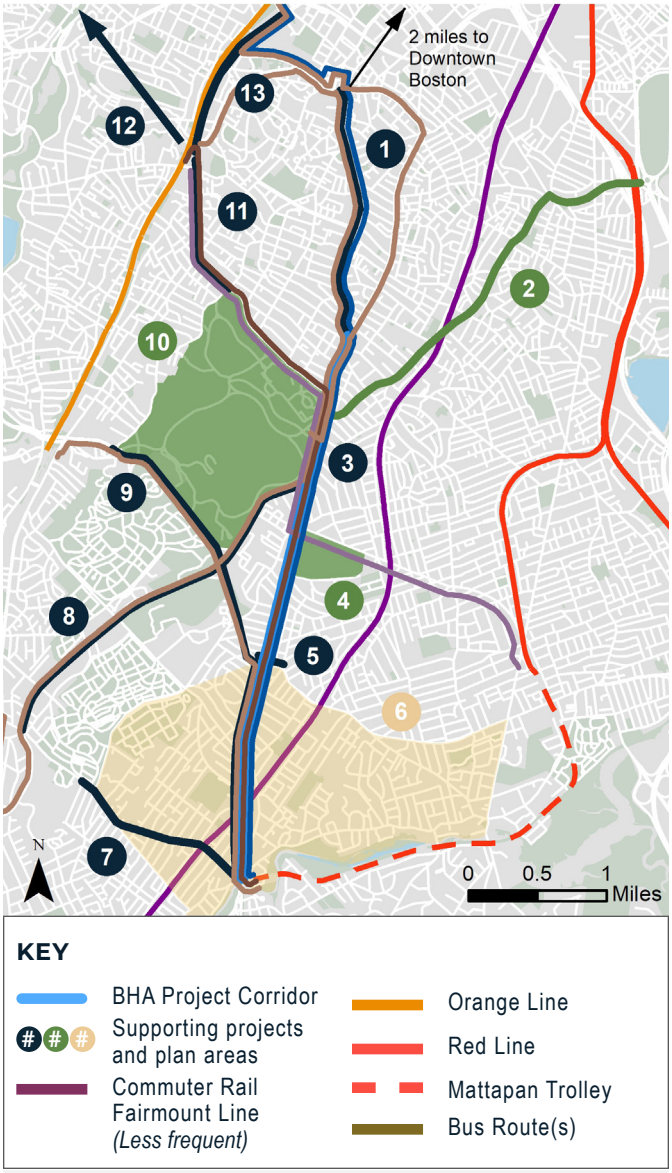
Benefits...	...That deliver...
Travel Time Savings	Dedicated bus lanes will save over **800 daily person hours** of travel time for bus riders
Safety Improvements	The road diet, coupled with better pedestrian refuges, protected bike lanes, and signal changes, will stabilize speeds and **reduce the rate and severity of crashes**
Bus Reliability Improvements	Dedicated bus lanes will **make travel times more dependable**, reducing the need for riders to build extra time into their schedules to accommodate all too frequent delays
Expanded Bus Priority Network	Bus lanes and bus priority will **complement other on-going bus priority projects** on Warren Street and Columbus Avenue, feeding the Orange Line rapid transit and Silver Line BRT
Investment in EJ Communities	This equity-centered project will **enhance quality of life** and increase the utility of bus service along an underinvested corridor with **two Environmental Justice communities**
Promote Economic Development	Improvements will support the long-term vitality of this commercial corridor, leveraging City- led **economic development initiatives and two Opportunity Zones**
Increased Bus Productivity Leading to Better Frequency	Reduced travel times will increase the capacity and productivity of MBTA bus service, enabling the agency to address latent demand in transit-dependent neighborhoods by operating **over 100 additional trips each day using the same resources**
Increased Bus Ridership	Travel time savings, more frequent service and improved reliability are expected to result in **over 2,100 new daily bus riders**, reducing private vehicle use and operating expenses
Emissions Reduction	Increases in bus ridership, coupled with safer and more attractive facilities for walking and biking, will **reduce personal vehicle travel and associated pollutant emissions**
Public Health Benefits	New protected bicycle lanes, increased tree cover and reduced auto-related air and noise impacts will **enhance public health by promoting physical activity along the corridor**
Improve State of Good Repair	Reconstruction and repaving of Blue Hill Avenue will **enhance the state of good repair** along a portion of Massachusetts State Route 28
Enhanced Access to Parks & Recreation	Improved active transportation infrastructure, such as bike lanes, along with new tree plantings will more safely and pleasantly **connect the corridor's two massive parks** to other regional amenities

The **potential for individual riders to save as much as 13 minutes**, on average, during PM peak-period commutes is an important benefit of this project. Beyond these transformative travel time savings, the project will permit **more consistent and predictable travel times**. This improved service reliability will allow bus riders to better gauge the amount of time needed for their bus trip, eliminating the need to add a substantial "cushion" of valuable time to their travel schedules just to arrive at work and other destinations on time.

This is not a standalone project, but rather the critical link in an envisioned bus priority corridor network (Figure 1-1). The **implementation of this project will complete a linkage of high-quality transit service corridors from the city of Boston's southern border in Mattapan to downtown Boston**. At its northern limit, this project will connect to the Warren Street Multimodal Corridor, which is currently in a community planning and design process. That corridor will, in turn, connect at Nubian Square to the MBTA Silver Line Bus Rapid Transit (BRT) service into downtown, which received an extension of its dedicated bus lanes done in summer 2020. The BHA project will complement the Columbus Avenue Bus Priority Corridor scheduled for completion in late summer 2021 and realize a high-quality transit connection to jobs and world-renowned healthcare services at the Longwood Medical Area (LMA), and **address inequities related to reliable, efficient transit service for all Bostonians.**

The potential to reduce travel time for riders is an important project benefit.

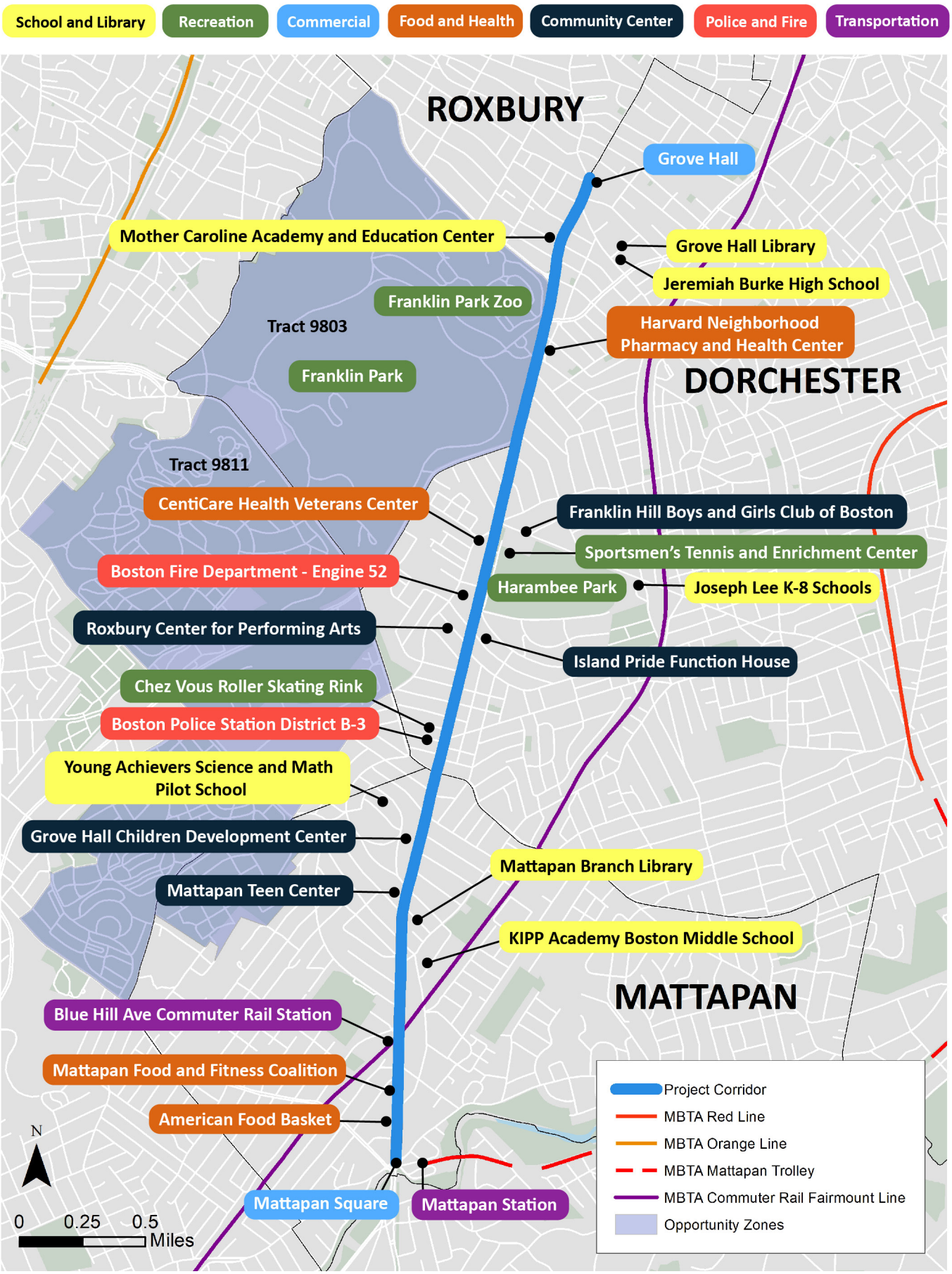
FIGURE 1-1: OTHER LEVERAGED PROJECTS



Planning initiatives and projects supportive of the BHA Multimodal Corridor project include:

1. *Warren Street Bus Priority Corridor*
2. *Columbia Road Greeenway*
3. *Signal Upgrades Along BHA*
4. *Harambee Park Improvements*
5. *Morton Street Safety Project*
6. *PLAN Mattapan*
7. *Cummings Highway Redesign Project*
8. *American Legion Hwy Safety Improvements*
9. *Connection to the Southwest Corridor Greenway*
10. *Franklin Park Master Plan*
11. *Columbus Avenue Bus Priority Corridor*
12. *Mattapan to LMA Rapid Bus*

FIGURE 1-2: PROJECT LOCATION



The BHA Multimodal Corridor project, in conjunction with the ongoing Columbus/ Tremont Multimodal Corridor, fills a critical missing piece in Boston's network to improve the city's transportation, recreation, public health, and equity outcomes. Like many Environmental Justice (EJ) communities, the **BHA corridor has a history of disinvestment and neglect that make new investment initiatives critical, as well as engaging of BHA community's historically underrepresented populations**. Thus, the City is preceding design and construction with a comprehensive neighborhood-focused planning process that is generating **strong momentum and community support for the current project concept**. This has included public meetings, one-on-one meetings with residents and business owners, presentations to business and civic groups, and bi-weekly office hours dedicated to field questions and address concerns related to this project. Additionally, neighborhood/ community representatives are on the project team and in charge of community engagement and outreach through an innovative engagement effort being led by BTD.

Beyond the primary public transit elements, the project will also improve pedestrian access and safety, implement parking-protected bike lanes and signals, repave the roadway and improve state of good repair, bring curb ramps into compliance with the Americans with Disabilities Act (ADA), upgrade street lighting, and provide shade trees and public art along BHA. Together, **these improvements will address substantial safety concerns, provide mobility benefits, and enhance equity for the EJ communities near BHA**, which hold the largest concentration of school-age children in the city, many older families, and the region's highest rate of minority homeownership.

The BHA Multimodal Corridor project **will strengthen a commercial corridor that houses the city's highest proportion of minority-owned business**, two large parks, the Franklin Park Zoo, six schools, six community centers, two grocers, two libraries, three health centers, numerous centers of worship, police and fire stations, the Roxbury Innovation Center, and a celebration space for the city's many Caribbean communities (Figure 1-2). This project will modernize and revitalize a long-neglected transportation asset that ties together transit-dependent neighborhoods with major employment centers including LMA and downtown Boston.

1.2. TRANSPORTATION CHALLENGES

The pedestrian-scale façades of the businesses that line BHA have remained largely unchanged since the commercial corridor first boomed in response to the development of center-running streetcar service in the late 1800s. Rail cars were replaced by curbside-running buses and one additional lane in each direction was added in the mid-1950s. Prior to the pandemic, BHA corridor had the state's busiest bus route (Route 28 with over 12,000 daily boardings), as well as two more of the MBTA's 15 high-ridership routes (Route 22 and 31) and three other MBTA bus routes. When we compare fall 2019 (pre-pandemic) with fall 2020 ridership numbers, Route 28 experienced the lowest decrease in ridership as compared to other MBTA routes, as shown in Table 1-2. From a pandemic low of 3,700 weekday ridership in March 2020, the route has been rebounding steadily. As of June 7, 2021, Route 28 daily boardings are over 7,400; 57% of 2019 ridership levels.

The roadway's functional layout currently provides two to three general purpose lanes in each direction; narrow, unprotected and discontinuous bike lanes; parking (generally on

TABLE 1-2: PANDEMIC RIDERSHIP CHANGE

BUS ROUTES	RIDERSHIP CHANGE
System-wide	-58.3%
Route 14	**-52.8%**
Route 22	-50.4%
Route 28 (BHA)	-45.3%
Route 29	**-59.0%**
Route 31	**-51.4%**
Route 45	**-54.8%**

both sides); with a wide concrete median across the avenue's nearly 100' of total width. Thus, the **facility fails to adequately serve the prominent role that transit continues to play along the corridor**. Although the 20,000+ bus riders constitute a major share of the corridor's peak-period travelers, they must absorb the day-to-day delays and persistent reliability challenges that stem from a transit agency trying to operate over 900 buses per day in mixed traffic. Most of the roadway is lined with often needed on-street parking on both sides. Community outreach for the *Blue Hill Avenue Transportation Action Plan* identified problems with double-parking, while the lack of parking enforcement was further noted as a major obstacle to more efficient operations[3]. Navigating in and out of undersized bus stops that have been squeezed between segments of on-street parking presents yet another challenge for transit buses along BHA.

More than 380 weekday buses terminate at the Mattapan Trolley light rail station (including three of the BHA corridor routes) and are **plagued by the complex configuration of the major five-way intersection in Mattapan Square.** Due to a left turn prohibition preventing buses from directly accessing the station's busway from BHA, and a right-turn only restriction from two other bus corridors (Cummins Highway and River Street), buses must cross the Neponset River, briefly enter the abutting town of Milton, make a U-Turn, and then pass through the intersection again before making a right into Mattapan Station. Figure 1-3 shows this routing into the station along with the proposed solution.

Center-running streetcars were replaced by another lane in each direction and a concrete median in the 1950s. Today's curbside bus operations in mixed traffic produce significant delays and bunching.

In the absence of dedicated lanes to prioritize the 20,000+ bus riders who traverse BHA each day, slow bus speeds and poor travel time reliability will remain the norm. The MBTA has long recognized the operational obstacles along BHA as **significant threats to the performance, productivity, and long-term growth of its overall bus network**. These poor travel conditions, combined with the MBTA's capacity-constrained fleet and maintenance facilities, hinder the agency from satisfying the significant latent demand that continues to persist.[4]

FIGURE 1-3: BUS ROUTING INTO MATTAPAN STATION

3 *City of Boston. Blue Hill Avenue Transportation Action Plan - Public Meeting #1 Presentation. Slide 11 (Survey Findings). September 2019. bit.ly/BHATAP-PublicMtg1*

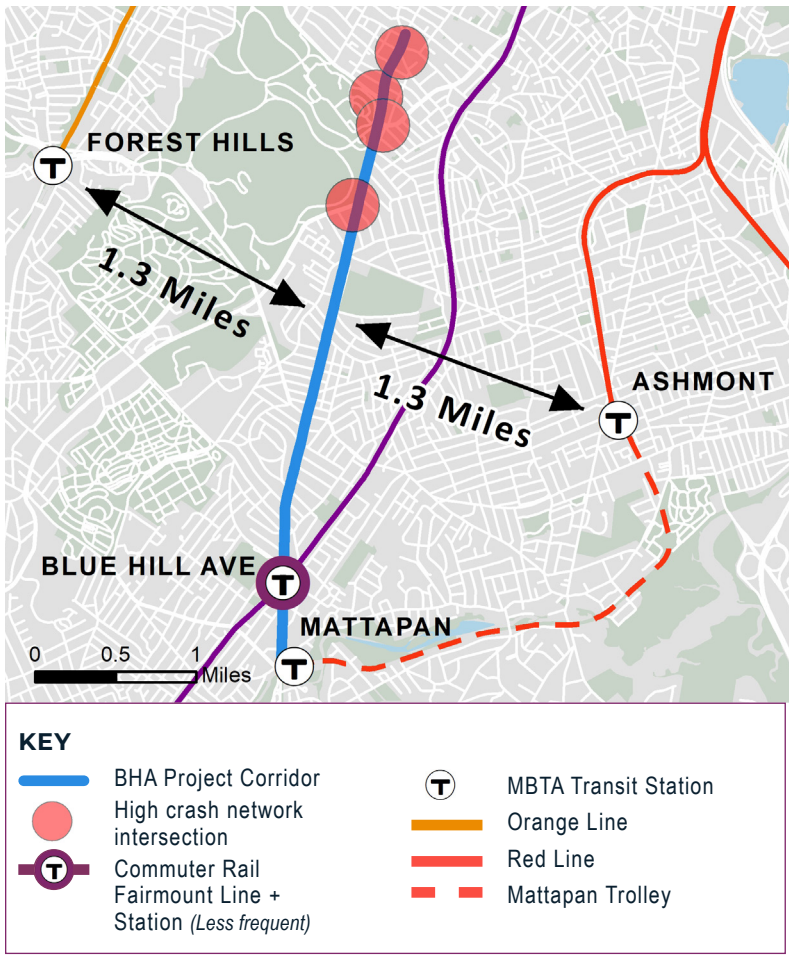
4 *Livable Streets Alliance. 64 Hours: Closing the Bus Equity Gap. September 2019. bit.ly/LSA-64Hours*

The potential to address "severe safety concerns" along this multi-lane urban arterial (which often feels more like a highway) was cited as one of three motivating factors that led the BTD to initiate the *Blue Hill Avenue Transportation Action Plan*.[5] In all forms of public outreach for that study and in the neighborhood-level rezoning effort, *PLAN Mattapan*, the following safety concerns emerged:

- Across all modes of travel, only **18% of survey respondents reported feeling safe** while traveling along BHA;
- 56% of respondents affirmed that cars travel too fast while **43% reported being personally involved in a vehicular crash, or knowing someone who has been**;
- Lack of enforcement regarding double-parking contributes to further safety issues, as other drivers begin to weave around the blockage or perform other risky maneuvers;
- Kids want a safe place to ride their bikes; and
- Parents often drive their children to destinations, which are readily accessible by foot or bus, because they **worry about the safety of their kids** traveling along BHA.

From Wellington Hill Street near the southern end of the project corridor to well beyond its northern terminus at Warren Street, **the BHA corridor stands out as the dominant spine within the city's overall** High Crash Network for Motor Vehicles. Of the numerous crash hotpots located along the BHA corridor, its two intersections at American Legion Highway and Seaver Street are among the city's top eight injury locations for motor vehicles. In the same vicinity, two primary links within the city's High Crash Network for Pedestrians (Columbia Road and Washington Street) intersect the corridor (discussed in further detail in Section 4.1 Safety).

FIGURE 1-4: BHA CORRIDOR IN RELATION TO MBTA TRANSIT LINES

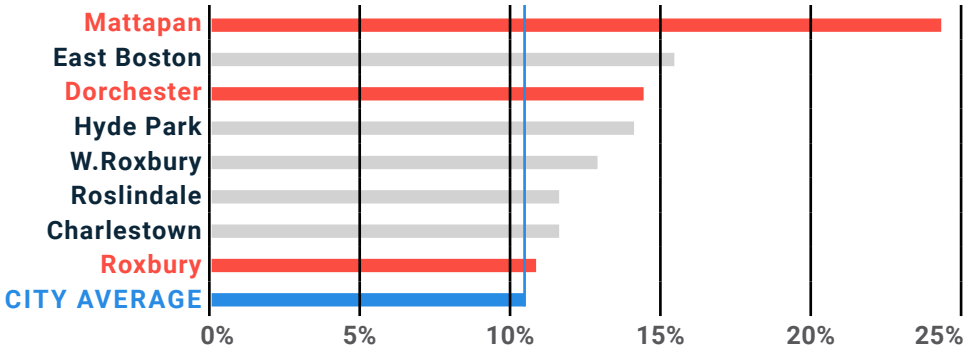


Along the project's full length, as shown in Figure 1-4, BHA lies almost exactly midway between the MBTA's Orange and Red (heavy rail) Rapid Transit Lines located approximately 1.3 miles to the west and east, respectively. **Because of the corridor's dedicated Rapid Transit service is within walking distance, its residents—many of which are very low income and minority—are dependent on bus service to access the high-frequency transit network.** Though headways along the MBTA Commuter Rail's nearby Fairmount Line (which has a station along BHA) have improved over the past decade, long-term capacity constraints preclude this facility from providing rapid-transit-like access to the myriad employment, healthcare, and educational opportunities it serves in downtown Boston and other major employment areas.

5 *City of Boston. Blue Hill Avenue Transportation Action Plan - Public Meeting #1 Presentation. Slide 7 (Project Motivation). September 2019. bit.ly/BHATAP-PublicMtg1*

FIGURE 1-5: GO BOSTON 2030 ANALYSIS OF BOSTON RESIDENT COMMUTE LENGTH

Percent of Boston residents with 60+ minute commutes



Each Blue Hill Avenue community currently endures 60+ minute commute to work

The majority of 60+ minute commutes city-wide are transit riders

Workers living along the BHA corridor face significantly heavier delay burdens when commuting than those from many other areas. As shown in Figure 1-5, while 11% of all Boston residents endure commutes lasting longer than one hour, the project corridor's three areas rank first (Mattapan at 24%), third (Dorchester at 14%), and eighth (Roxbury at 12%) amongst the city's 22 neighborhoods for the proportion of long-haul commuters.[6] In addition, the latter two neighborhoods have been formally designated by the Commonwealth as EJ communities. Since transit users make up a disproportionate share of all long-haul commuters, these figures are indicative of the high proportion of transit-dependent populations within the project area who lack convenient access to high-frequency and, more importantly, reliable transit connections.

As evidenced by the aforementioned 2019 Livable Streets Alliance study[4], there is a real and quantifiable equity gap in the provision of quality service throughout the bus network. This was found to be particularly true for the BHA corridor, delays along which served as one of the primary contributors to the following key finding: **Relative to their white, affluent counterparts, black bus riders spend nearly 64 more hours each year on crowded buses** (i.e., eight double shifts worth of time spent in-between). The study concluded that, despite being more likely to use public transit as their primary mode, persons of color and low-income individuals have worse access to fast, frequent transit service.

Using fine-grained data, including EJScreen,[7] to assess socio-demographics across each MBTA bus route, that analysis developed a metric to determine which bus routes were the most important to underserved riders (defined as persons of color and low-income individuals). **Of the study's 15 Priority Routes for underserved riders, four traverse the BHA corridor** (Routes 14, 22, 28, and 29) while a fifth route intersects the corridor at its northern end (Route 23 at Grove Hall). Finally, the analysis determined that **each of the three corridor neighborhoods is a high-demand, underserved area in desperate need of more and better bus service**.

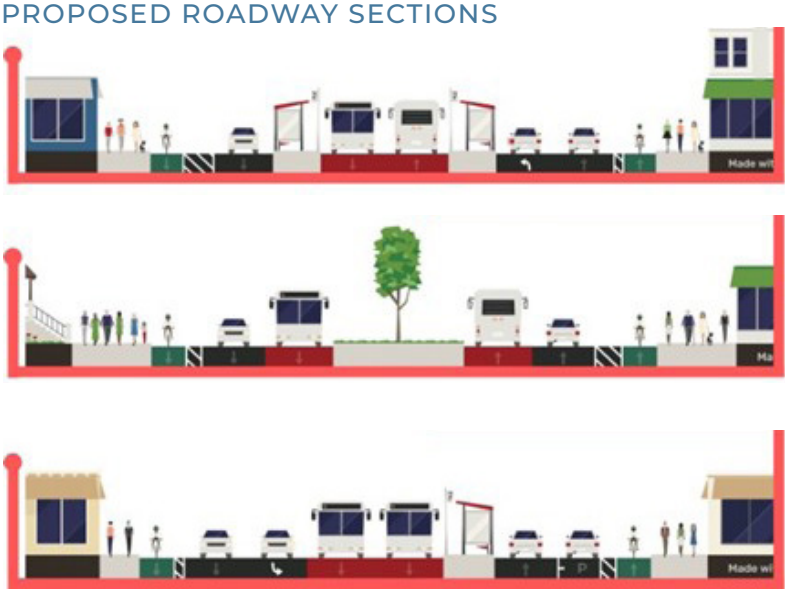
1.3. STATEMENT OF WORK

By **reimagining the layout from sidewalk to sidewalk**, the BHA Multimodal Corridor project will address substantial operational, multimodal safety, and transportation equity challenges that

6 *City of Boston. Blue Hill Avenue Transportation Action Plan - Public Meeting #2 Design Information Boards. Board 1 (Project Context Rooted in Go Boston 2030). March 2020. bit.ly/BHATAP-PubMtg2-Boards*

7 *US Environmental Protection Agency's environmental justice (EJ) mapping and screening tool; based on nationally consistent data, combines environmental and demographic indicators in maps and reports epa.gov/ejscreen.*

FIGURE 1-6: TYPICAL BLUE HILL AVENUE PROPOSED ROADWAY SECTIONS



BHA's current configuration presents. Figure 1-6 illustrates typical proposed roadway sections.

The project's scope is detailed is as follows:

- **Design and permitting—**Completion of the final design and permitting.
- **Center-running dedicated bus lanes—**One lane in each direction, dedicated exclusively to buses, in the center of the roadway, separated from general traffic, and away from interference with parked cars and delivery vehicles.
- **Twelve pairs of fully-accessible median bus stop platforms—**Each with new in-line platforms that feature shelters, real-time bus arrival information and 5G wireless capabilities, connected directly to crosswalks at major signalized intersections. Fully accessible pathways to platforms. The new stops, spaced ¼ mile apart, will replace 19 pairs of closely spaced curbside stops.
- **Parking-protected curbside bike lanes—**Continuous, legible, and dedicated operating space for bicyclists along entire length of corridor in both directions via new Class IV bikeway featuring green paint at conflict points and bike-specific signals to mitigate conflicts at intersections with high right-turn volumes.
- **Repaving of the entire corridor—**Removal of medians, reconstruction of the center of the roadway, and mill and overlay of the outer sections to develop a new central roadway crown and reconfigure drainage structures.
- **Redesign of Mattapan Square—**To facilitate bus movements in and out of Mattapan Station, improve pedestrian and bicycle safety, and enhance landscaping and the vitality of the area's commercial center.
- **Enhanced public realm—**New LED lighting fixtures, new sidewalk trees, landscaping improvements, and public art installations.
- **Sidewalk and accessibility improvements—**Upgrades to substandard curb ramps and enhancements to pedestrian conditions at Mattapan Square by reclaiming excess pavement.
- **Signals and communications—**Modifications to signals to accommodate bus and bike lanes, implementation of Transit Signal Priority (TSP) at key intersections, phasing modifications that reduce multimodal angle-crash conflicts, and planned installation of 5G telecom infrastructure.
- **Retention of one or two general traffic lanes in each direction and all existing left turn lanes—**Maintaining smooth traffic flow while creating a more equitable re-allocation of roadway space and safely separating through traffic, buses, and left-turning vehicles.
- **Retention of more than half of existing parking spaces—**Supporting the commercial vitality of the corridor while balancing the needs of all users, many existing curbside bus stops can be re-allocated to parking and deliveries.

An example of the existing and proposed build condition is shown in Figure 1-7. A set of conceptual plans showing the corridor's proposed configuration and the Mattapan Square Redesign are provided in Attachment 8 and Attachment 9, respectively.

FIGURE 1-7: EXISTING AND PROPOSED BUILD CONDITION—BLUE HILL AVENUE AT WALK HILL STREET

> ***As a 15-year Mattapan resident and budding bicyclist, I am excited about the dedicated bus and bike lanes along the [BHA] corridor. The proposed redesigns and being able to talk to staff working on this project made me see what more Mattapan can have and can be. It's about time that time and attention are dedicated to a neighborhood that would benefit from this redesign tremendously."***
>
> Shavel'le,
> Mattapan Resident

1.4. PROJECT BENEFITS

The reallocation of roadway space will **transform BHA** from a high-speed roadway environment into a more equitable and balanced corridor that:

- **Prioritizes people over motor vehicles** by focusing on the corridor's potential to move high volumes of riders via high- frequency center-running bus service, enabling a steady stream of buses to efficiently serve this regionally significant transit connection;
- **Promotes safety and active transportation** through continuous protected bike lanes, reduced vehicular speeds, and safer pedestrian crossings; and
- **Enhances mobility and equity** for members of underserved EJ Communities.

As detailed in Attachment 3 *Benefit-Cost Analysis (BCA) Report* and summarized in Table 1-3, the project **will generate total benefits of $137.28M over its 20-year lifecycle.** Approximately 80% of these benefits will stem from crash reductions; from 2015 to 2020, 904 injury crashes and three (3) fatal crashes occurred along the corridor, indicating a lack of appropriate infrastructure to ensure the safety of roadway users. Transit travel time savings along BHA represent about 18% of benefits; transit travel time savings at Mattapan Station and emission reductions round out the benefits.

The project will realize the following qualitative benefits:

- **Support the long-term vitality of the commercial corridor**, which lies proximate to two Opportunity Zones, by reducing noise and air quality impacts from vehicle traffic, providing new lighting, and enhancing access;
- **Enable the MBTA to address latent demand** in a transit-dependent area along a corridor that already features high service volumes;
- **Maintain state of good repair for segments of a key State Route**;
- **Increase the appeal and use of active transportation modes**, which improve public health outcomes while minimizing transportation-related environmental impacts; and
- **Provide more direct and safe connections** between the regionally significant parks and recreational trails at each corridor end.

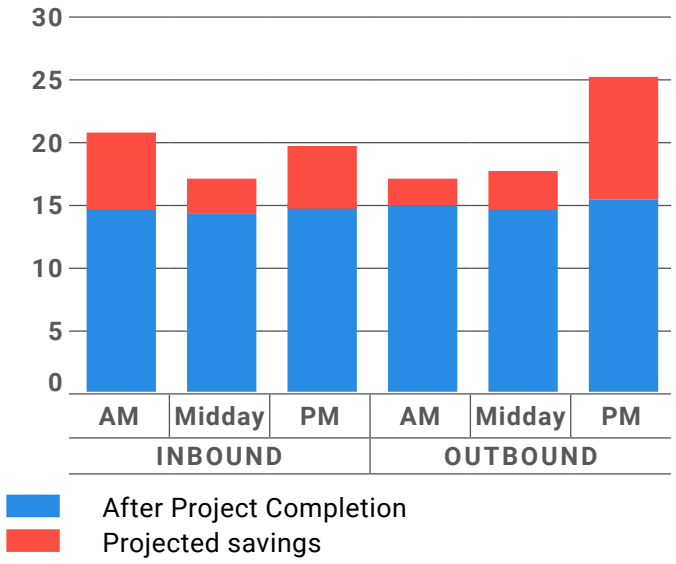
The absence of traffic in the bus lanes and the reduction in the number of stops, combined with the more efficient bus routing through Mattapan Square, is projected to result in **peak hour travel time savings of up to 13 minutes per trip** in the PM Peak, as shown in Figure 1-8. In addition to **saving 800 person-hours each day**, the MBTA can reinvest service back into this high-demand corridor to **operate over 100 additional daily**

TABLE 1-3: SUMMARY OF QUANTITATIVE BENEFITS OVER PROJECT LIFECYCLE

(In units of 2019$, discounted by prescribed 7%, with the exception of emissions reductions at 3%)

Description	Value
Benefit 1: Travel Time Savings (Blue Hill Avenue)	$31,093,734
Benefit 2: Transit Travel Time Savings (Mattapan Station)	$1,613,622
Benefit 3: Emissions Reductions	$229,670
Benefit 4: Crash Reductions	$132,540,903
TOTAL BENEFITS	***$165,477,958***
Previously Incurred Design Costs	$710,032
Capital Costs for Design/Engineering	$3,704,808
Capital Costs for Construction	$23,780,463
Residual Value (calculated)	($0)
TOTAL COSTS	***$28,195,303***
BENEFIT COST RATIO (BCR)	***5.87***
Net Present Value (NPV)	***$137,282,655***

FIGURE 1-8: EXISTING AND PROJECTED CORRIDOR TRAVEL TIMES BY TIME OF DAY



bus trips. The increased frequency of service, travel time savings, and improved reliability of service is expected to **generate over 2,100 new bus riders daily**, increasing mobility and likely reducing personal vehicle travel demand along the corridor.

This multimodal road diet will **enhance safety for all** users. All bus stops will be located at signalized intersections, **allowing bus riders, including seniors and persons with disabilities, to have safe, signalized crossing locations** at the bus platforms. Bus platforms will provide a substantial pedestrian refuge near the middle of the roadway for all pedestrians. The removal of one general traffic lane in each direction at most locations will provide **shorter crossing distances** and, in many cases, preclude the need to cross multiple concurrent lanes of traffic.

Converting the existing bike lanes sandwiched between speeding and parking cars into protected, buffered lanes will be a **transformative improvement in safety for cyclists of all ages and abilities**. Finally, **the road diet will calm traffic** and segregate general-purpose traffic from buses and bicyclists, **enhancing safety for everyone.**

1.5. PROJECT SCHEDULE

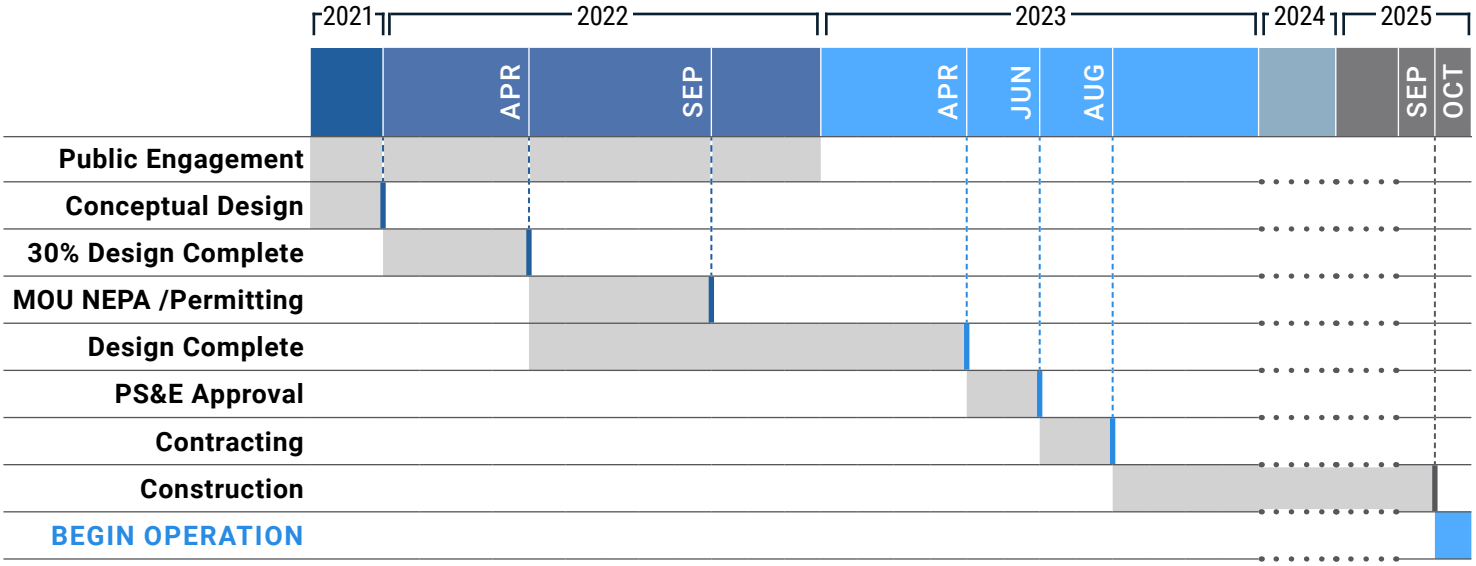
Much of the work to date has been community engagement for the proposed BHA improvements. That work and the resulting community support of the project will pay dividends during design and construction. The Mattapan Square redesign is undergoing a separate but coordinated public engagement process to ensure **all voices in the neighborhood are heard and working towards informed consent on the final redesign**. A photogrammetric survey has also been completed and a new ground survey along the corridor will be underway soon. The conceptual design is expected to be completed by the end of 2021, however, final design is anticipated to be complete in early 2023.

As illustrated in Figure 1-9, the City is realistic in its conservative approach to the project schedule, with final design and permitting beginning in 2022 and taking a little more than a year to complete. Construction will take approximately 24 months, commencing in the fall of 2023 and ending in the fall of 2025. This strategy allows for time buffers and still obligate funds well in advance of the statutory deadline of September 2024.

1.6. RELATED PROJECTS

The proposed improvements along the project corridor would **leverage several other major planning studies and ongoing construction efforts** being implemented by BTD, three (3) other departments within the City of Boston, the MBTA, and the Massachusetts Department of Transportation (MassDOT). As shown in Figure 1-1, each of these projects either runs along or intersects BHA with many extending this project's proposed treatments to provide better long-haul connectivity for transit services or active transportation facilities. Summaries of these related efforts and their relevance is as follows:

FIGURE 1-9: PROJECT SCHEDULE



MBTA & BTD Partnership Projects

- Warren Street Bus Priority Corridor—Construction is underway this year for bus speed, reliability and safety improvements along a key corridor connecting the northern end of the project (Warren Street) to Nubian Square, the commercial and transportation heart of the city's African American community.
- Columbus Avenue Bus Priority Corridor—Construction will be underway this year for dedicated median bus lanes to provide bus speed, reliability and safety improvements along a key avenue just west of the corridor that will serve as a key link between the project corridor and the Orange Line and Longwood Medical Area (LMA).
- **Mattapan to Longwood Medical Area Rapid Bus**—Will provide reliable, high-frequency bus service along BHA, Seaver Street and Columbus Avenue to create a crosstown bus connection between the project corridor and the LMA's world-class medical facilities. This BHA project is a key piece of the City's Go Boston 2030 long-range plan for rapid bus service.

BTD—Long-Range Transportation Plan (Go Boston 2030) Projects

- Extend and Connect Greenways in Boston—Will develop new paths along BHA and other roads to unite Boston's linear parks with the Neponset River Greenway, which runs behind Mattapan Station.
- Columbia Road Greenway—Will create a neighborhood-friendly multimodal corridor to connect BHA/Franklin Park with the bayside Moakley Park.

Boston Planning & Development Agency (BPDA)

- *PLAN Mattapan*—A City planning initiative that seeks to "preserve wisely, enhance equitably, and grow inclusively." Focuses include economic development (jobs and business) and the creation of transit-oriented market-rate and affordable housing growth while preserving the neighborhood's character and unique attributes.

Boston Department of Public Works (DPW)

- Cummins Highway—Complete Streets-oriented redesign featuring speed reductions, more trees, and better bike facilities, connecting Mattapan Square at BHA with Hyde Park and Roslindale Square.

At public meeting #1, design principles developed and later applied to develop community-informed design concepts public meeting #2.

At public meeting #2 (March 2020), community leaders from Roxbury, Dorchester, and Mattapan expressed an overwhelming preference for the center-running bus lane concept.

BTD, DPW & Boston Parks and Recreation Partnership Projects

- Franklin Park Master Plan—$28M ongoing effort aimed at increasing the use of transit and enhancing pedestrian access among visitors, most of whom arrive by car, to this 527-acre park that features a city golf course and one of the metro region's two zoos.

- Harambee Park Improvements—Ongoing, multi-phase renovation of this 45-acre active use facility, including sports facility improvements (cricket pitches, little league, basketball, soccer/lacrosse, football), playground areas and well-lit pathways.

MassDOT

- Signal Upgrades along Blue Hill Avenue—Hardware upgrades at 16 intersections, spanning all but two blocks of the project corridor (Warren Street to Babson Street).
- Morton Street—Safety-focused geometric improvements and replacement of signal equipment at intersection where the most respondents "felt unsafe from traffic".[8]

1.7. PROJECT HISTORY

In 2009, MassDOT developed a proposal, known as the 28X, to create a center-running BRT service along BHA. The proposal raised considerable initial community concerns due to a perceived lack of up-front public process and issues with eliminating median street trees and many bus stops. The plan was ultimately abandoned, and the corridor remained untouched. **Public agencies learned from the unsuccessful 28X proposal** and made a concerted effort to engage the community early on during this new planning process and **appointed three neighborhood/community representatives on the project team charged with community engagement and outreach.**

In mid-2019 the City embarked on a consensus-driven public process to gauge the community's opinions on needed improvements in the corridor, beginning with a digital survey. After reviewing nearly 600 responses regarding how to improve the quality of life for corridor users, as well as the city's current state of transportation-related equity, City planners identified a three-pronged focus on Transportation, Safety, and the Public Realm. At the initial public meeting in September 2019, **City staff engaged the community and identified a set of three (3) Guiding Design Principles** that would be taken as givens in all future design concepts:

8 *City of Boston. Blue Hill Avenue Transportation Action Plan - Public Meeting #1 Community Feedback Survey Results. Page 2. September 2019. bit.ly/BHATAP-CFSurvey*

Brighton Avenue exemplifies a transit priority corridor that the MBTA has been able to deliver quickly and efficiently in coordination with the City as will be done for the BHA Multimodal Corridor.

> *I grew up along Blue Hill Ave. But you don't have to be from here to quickly realize that Blue Hill is an important corridor for many residents, clinics, schools, and businesses. The avenue is vital to our community because it's the primary corridor that connects EJ communities in Boston."*
>
> Emmanuell DeBarros,
> Roxbury Resident

1. **PRESERVE MATURE TREES,**
2. **THOUGH THE SIDEWALK MAY BE WIDENED, IT SHALL NEVER BE NARROWED, AND**
3. **INCORPORATE HIGH QUALITY BIKE FACILITIES.**

City staff developed four design concepts and presented them to the community at the second public meeting in March 2020.[9] After a thorough discussion of the travel time and safety benefits, as well as the trade-offs associated with dedicated space for buses and bikes, **community leaders expressed an overwhelming preference for the center-running bus lane concept** that is the subject of this application. As a result of this planning process, the City elected to postpone a planned 2020 resurfacing of BHA in order to preserve the funds allocated for that project and apply them to the more comprehensive BHA Multimodal Corridor project.

1.8. APPLICANT EXPERIENCE

The Boston Transportation Department was the recipient of a $15.5 million federal TIGER grant for the design and construction of its Connect Historic Boston initiative, a series of pedestrian and bike path improvements in downtown neighborhoods. The project was completed in 2015 on time and within budget. Additionally, the City is working in partnership with MBTA and MassDOT, both of which have significant experience in administering and managing federal funds from USDOT and FHWA. Partner agency MBTA is the largest transit provider in New England and the fifth largest in the country, serving 362 million passengers annually (FY 2019). Specifically the City and the MBTA have been able to deliver joint federally-funded projects quickly and efficiently, as exemplified by two recent successful installations over the past year along Brighton Avenue and North Washington Street.

The City accesses private sector expertise, through **short turn-around General Engineering Contracts**, to develop plans that are then implemented by its Department of Public Works (DPW), who can **rapidly construct the designs at a reduced cost**. As the ultimate controller of the right-of-way in question, the City leads concurrent public outreach efforts during design, which **allow for quick resolution to issues raised by local residents and business owners** that might otherwise derail a project's path toward implementation. The City's emphasis on merchant-oriented outreach, with a focus on door-to-door solicitations, has helped the City and MBTA to understand individual businesses' loading and delivery needs along corridors with high demands for curb space, thereby garnering further public support.

9 *City of Boston. Blue Hill Avenue Transportation Action Plan - Public Meeting #2 Content Booklet. Page 9. March 2020. bit.ly/BHATAP-PubMtg2-CBooklet*

2. PROJECT LOCATION

This Multimodal Corridor project is situated entirely within the Boston, MA-NH-RI Urbanized Area and includes the southernmost 3.1 miles of Boston's BHA (see Figure 1-2). From south to north, the project runs from the MBTA's Mattapan Station, a hub for MBTA bus and Mattapan Trolley service, near the Mattapan Square commercial district, to the Grove Hall commercial district and Warren Street intersection. Along the BHA Corridor there are nine distinct census tracts (CT) and **six of those are Areas of Persistent Poverty** (Figure 2-1) as defined by the US Census Bureau, CTs 820, 821, 902, 924, 1001, and 1011.02.

The corridor passes through three of Boston's largely minority neighborhoods—Mattapan, Dorchester, and Roxbury—and includes many neighborhood commercial districts clustered around major intersections where the median bus stop platforms will be located. As it features the **highest rate of minority-owned businesses**

FIGURE 2-1: AREAS OF PERSISTENT POVERTY

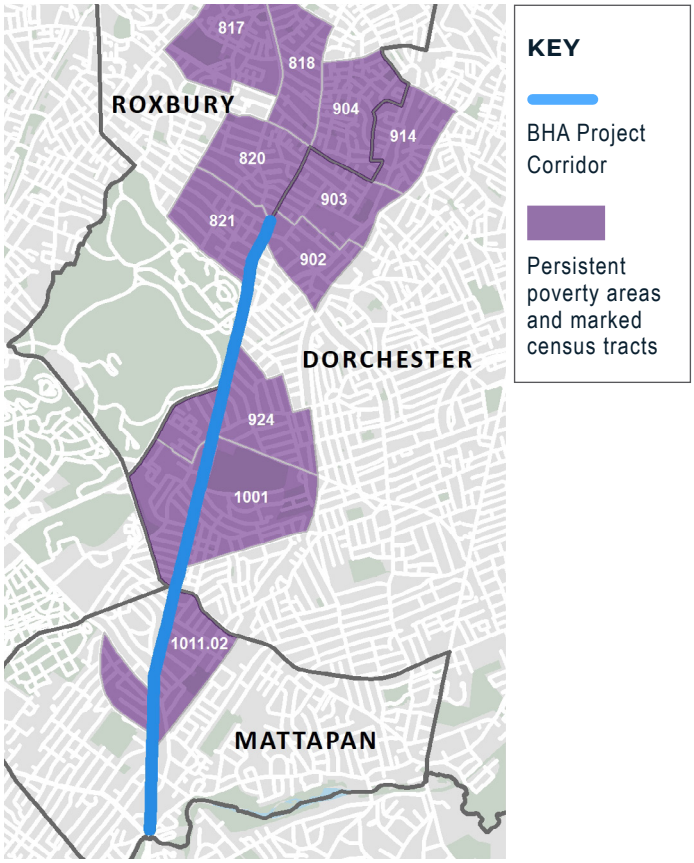
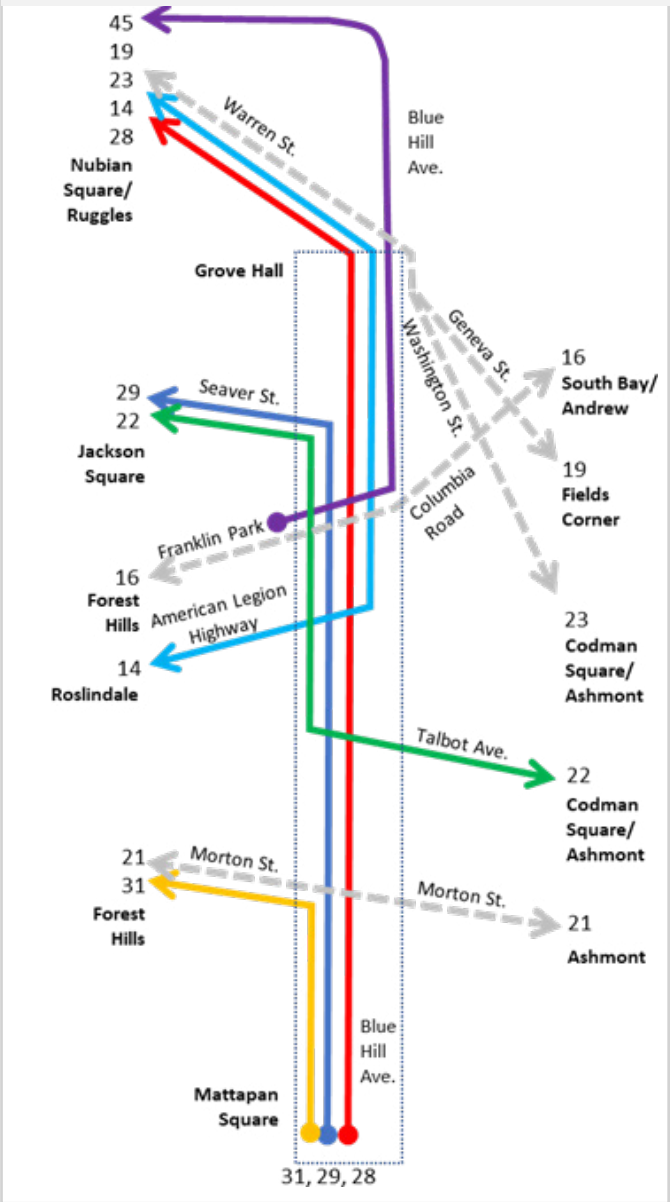


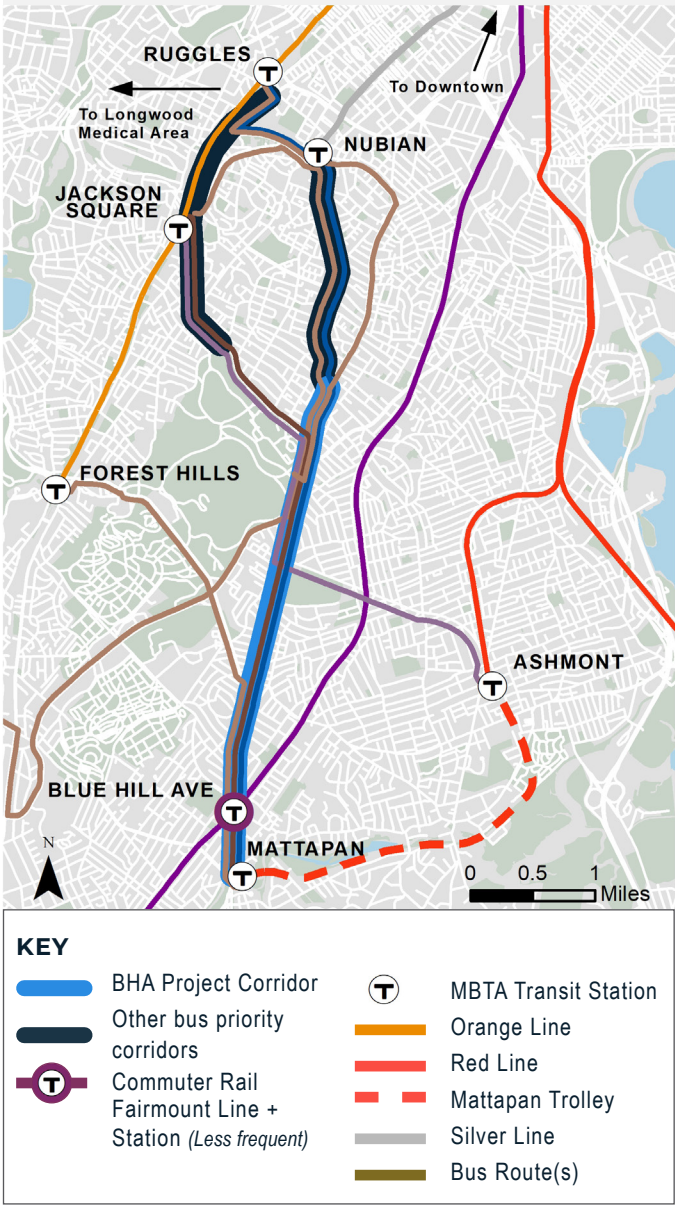
FIGURE 2-2: BHA CORRIDOR BUS ROUTE CONNECTIONS



citywide and connects two African American centers of commerce (Grove Hall and Mattapan Square), BHA has earned its colloquial title as the commercial corridor of Black Boston. As shown in Figure 1-2, there are two Opportunity Zones that lie along or west of the corridor in Suffolk County Tracts 9803 and 9811.

BHA serves as not only the commercial center of a densely populated residential community, but also the **critical transportation spine for a community that is heavily reliant on public transportation**, as it is situated between (but distant from) two of the MBTA's heavy rail rapid transit lines.

FIGURE 2-3: BHA CORRIDOR TRANSIT CONNECTIONS



The BHA corridor is directly served by six bus routes, each operating along all or part of the avenue (see Figures 2-2; 2-3). From Mattapan Station, **Route 28 serves the entire corridor and is one of the MBTA's highest ridership bus routes. An average of over 12,000 daily riders took this route in 2019** according to MBTA ridership data. After reaching the end of the corridor at Grove Hall, the BHA corridor continues along Warren Street, where a separate project is implementing a pair of exclusive bus lanes to provide efficient reliable bus service into Nubian Square. Once complete, this will enable transfer to the Silver Line for BRT connections to downtown.

TABLE 2-1: CHARACTERISTICS OF RIDERS ON BHA ROUTES

Route	Low Income	Minority	No Vehicle
14	N/A	86%	N/A
22 & 29	70%	91%	54%
28	65%	92%	54%
31	58%	93%	45%
45	70%	87%	61%

Over half of riders boarding corridor buses are persons of limited means, including two-thirds who identify as low-income, this project will **positively impact workers and others with limited or no other transportation options** (see Table 2-1). Figure 2-2 shows that several other bus routes use or cross the corridor providing **additional access to Rapid Transit stations and employment districts**, such as Roslindale, Hyde Park, Codman Square, Fields Corner and Uphams Corner. In addition, the Fairmount Commuter Rail Line, with service to downtown Boston, serves Blue Hill Avenue Station near the southern end of the corridor which recently increased service to 20 round trips a day.

As was shown in Figure 1-8, the City's *Go Boston 2030 Action Plan* proposes a ***Mattapan to LMA Rapid Bus* project that would follow BHA** and continue northwest past the Orange Line station at Jackson Square to offer **direct access to the LMA where many corridor residents work.**[10]

Bike riders at the new Harvest River Bridge on the Neponset Greenway in Mattapan

10 *The City's Green Links plan would connect people in every neighborhood to Boston's greenway network. High quality bike lanes on Blue Hill Avenue would connect the Neponset Greenway that runs behind Mattapan Station to paths in Franklin Park, the Southwest Corridor, and the entire Emerald Necklace.*

TABLE 3-1: PROJECT BUDGET SUMMARY BY SOURCE & USE*

Year 2021 Dollars, in Thousands (Rounded to nearest thousand where possible)

Project Element	RAISE Request	Non-Federal (City)	Non-Federal (MBTA)	TOTAL
Design	–	**$100**	**$4,132**	**$4,232**
Construction	**$22,122**	**$449**	–	**$22,571**
Roadway Reconstruction and Repaving	$7,580	–	–	$7,580
Bus Platforms	$7,753	–	–	$7,753
Protected Bike Lanes	$1,076	–	–	$1,076
Other Pavement Markings	$563	–	–	$563
Drainage	$793	–	–	$793
Signals/Communications	$1,175	–	–	$1,175
Street Lighting	$2,300	–	–	$2,300
Sidewalks	$468	–	–	$468
Accessibility Improvements	$414	–	–	$414
Trees & Landscaping	–	$389	–	$389
Public Art	–	$60	–	$60
Project Administration		**$500**	**$2,100**	**$2,600**
Contingency	**$2,878**	**$7,175**	–	**$10,053**
TOTAL*	**$25,000**	**$8,224**	**$6,232**	**$39,456**
SHARE OF PROJECT*	**63%**	**21%**	**16%**	

Excludes 30% design costs incurred prior to grant award

3. GRANT FUNDS, SOURCES, & USES OF PROJECT FUNDS

3.1. PROJECT COSTS

The overall project is estimated to cost $39.5M, including design, construction, and contingency. Construction costs were based on MassDOT average unit costs and quantity assessments derived from the corridor concept designs for most of the largest items. Estimates for smaller items were based on total corridor length. The cost estimates for bus platforms, including shelters and all associated MBTA amenities and security features, were derived from ongoing estimates for the MBTA Columbus Avenue project which uses the same platform design. Costs for lighting and drainage were based on similar projects and the contractor costs associated with those items.

A high-level breakdown of costs by project component is shown in Table 3-1, while a more detailed breakdown is contained in Attachment 5, Project Cost Estimate. The two largest cost components are the reconstruction and repaving of 3.1 miles of roadway and the construction of the 12 pairs of bus platforms. While much of the existing roadway surface can be milled and overlaid with new pavement, full depth reconstruction and regrading of the center of the roadway is required to remove the existing wide concrete medians. Removal of the medians necessitates regrading, changing drainage and upgrading the street lighting with new LED fixtures for the full length of the corridor.

Each of the 24 bus stop platforms (12 pairs) needs to be at least 150 feet long to allow two 60-foot articulated buses to stop simultaneously. Platforms will be concrete with granite curbing and will be raised nine inches above the street to allow near-level boarding. Each platform will include two shelters and real-time bus arrival displays. Platforms will include a barrier to protect waiting passengers from adjacent traffic.

Other project costs include raised bike lanes through Mattapan Square, green paint at strategic locations where the bike lanes intersect traffic, pavement markings to guide general traffic, and traffic signal modifications to provide separate signal heads for buses and bicycles. Substandard curb ramps will be replaced and sidewalk areas in Mattapan Square will be expanded. The City will also install additional sidewalk trees and public art to enhance the public realm along the corridor.

3.2. SOURCES & USES OF FUNDS

The City of Boston has allocated $8.3M in local funds for this project. Of that amount, $5.5M is being reallocated from a planned repaving project of BHA which also included reconstruction of several substandard curb ramps in the corridor. Another $2.5M is being reallocated from a planned project to redesign Mattapan Square that has been incorporated into this project. The $8.0M reallocated from these two projects has now been allocated to this project. For the remaining $300,000 of the $8.3M, the City is providing $240,000 for additional sidewalk street trees and $60,000 for planned public art projects in the corridor. The City of Boston's Office of Budget Management has confirmed that the $8.3M in capital funds identified for this project are available and are not subject to any timing or match restrictions.

The MBTA is allocating $6.2 million in local funds for this project. (Attachment 6 includes both funding commitment letters).

The federal RAISE grant request for this project is $25M. This would cover 63% of the project. The federal grant share is based on all project costs excluding the design activities, much of which are anticipated to be completed prior to grant award. The remaining 37% of costs would come from non-federal sources, more than the required 20%, including the City of Boston (21%) and from the MBTA (16%).

4. SELECTION CRITERIA

4.1. SAFETY

KEY IMPACTS:

- *The road diet will reduce traffic speeds and allow pedestrians and bus riders to more easily cross the street*
- *Over 20 years, the BCA model predicts a reduction of 1,162 crashes as a result of the safety improvements*
- *Replacing unbuffered bike lanes with protected facilities will deliver transformative bicycle safety benefits*

The project will enhance bike and pedestrian experiences on the corridor with emphasis on Vision Zero safety elements, furthering city policy.

Three (3) fatal crashes were recorded along the project corridor between 2015 and 2020.[11] Two of the deaths (one pedestrian, one driver) occurred along a two-block stretch near Mattapan Square and one pedestrian was killed near Franklin Park at American Legion Highway. **Over the six-year period, a non-fatal crash was reported once every 2.5 days (151 annually) across all modes (**Figures 4-1; 4-2**). Vulnerable road users experienced non-fatal collisions once every 11 days**, with an annual average of 26 pedestrian and seven (7) bicyclist crashes. People walking or biking were involved in 22% of non-fatal incidents, including 24% of those along segments and 22% at intersections.

Through the application of multiple FHWA Proven Countermeasures, the **BHA Multimodal Corridor Project will improve safety outcomes, particularly for vulnerable users**. The road diet component will result in a narrower profile for general purpose traffic, thereby reducing total volumes through the corridor and stabilizing speeds. Having a single through general traffic lane at most locations will allow pedestrians and bus riders of all abilities to cross the street and

11 *City of Boston. Vision Zero Crash Records. Accessed April 23, 2020. data.boston.gov/dataset/vision-zero-crash-records.*

FIGURE 4-1: CRASHES AND FATALITIES

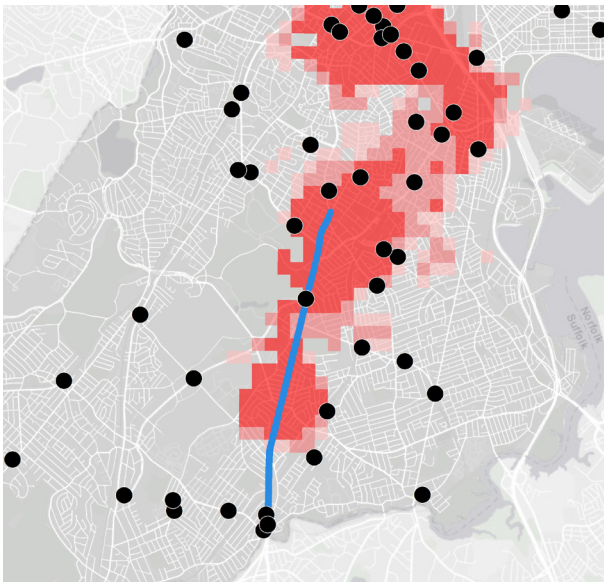
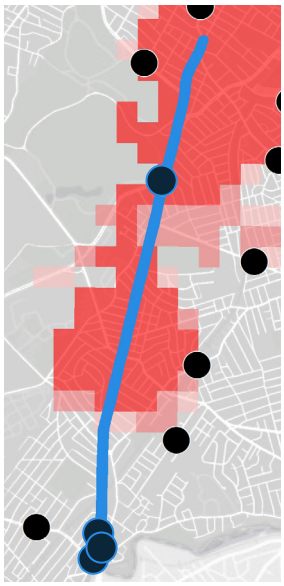


FIGURE 4-2: BHA CORRIDOR FATALITIES



KEY (Figures 4-1; 4-2)

BHA Project Corridor

Crash Fatalities

Crash Data Hot Spot Confidence

90% 95% 99%

4-1: Generated from vision zero data (https://apps.boston.gov/vision zero/) illustrating crash hot spots and fatalities in BHA communities.

4-2: Corridor fatalities between 2015-2020.

Near Franklin Park, a pedestrian was killed where the large, multi-lane corridor intersects with the multi-lane American Legion Highway.

TABLE 4-1: PROJECTED DAILY BHA CORRIDOR RIDERSHIP INCREASES

	MBTA Bus Route						
	14	22	28	29	31	45	Total
Weekday	50	248	936	331	376	197	**2,137**
Saturday	83	64	123	12	59	27	**367**
Sunday	0	52	82	0	58	24	**216**

reach bus stops without having to perilously traverse multiple lanes of concurrent traffic. The installation of 12 pairs of median bus stop platforms will provide additional well-lit points of refuge at many of the corridor's largest and most complex intersections, such as Babson/Walk Hill/Norfolk Street, Morton Street, and Seaver Street.

The BCA, using USDOT February 2021 guidance, estimates that the Road Diet portion of the project along with the **protected bicycle lanes will reduce injury and fatal crashes by 38.4%.**

Additionally, the improved bus operations will reduce travel time for transit users significantly along BHA corridor and through Mattapan Station. The MBTA has estimated increases in daily bus ridership as a result of the improved travel time and reliability from the project as shown in Table 4-1. The weekday, Saturday, and Sunday estimates were expanded to a full year assuming 253 weekdays, 54 Saturdays and Saturday schedule holidays, and 58 Sundays and Sunday schedule holidays, **resulting in total annual ridership increases of 573,092 or 36.21%.**

Additional benefits will be realized by:

- All users through the installation of **new and expanded sidewalk-level lighting fixtures**;
- Motorists via signal phasing modifications intended to **decrease angle-crash conflicts**, as well as the maintenance of dedicated left turn lanes and signals; and

- Residents in BHA neighborhoods through **Emission reductions** due to increased bus ridership as a result of the improved travel time and reliability from the project.

Given that the corridor is notorious for double-parked vehicles, the replacement of unbuffered bike lanes with continuous, legible, and **protected bike facilities will be a transformative safety benefit**. Currently, BHA features standard bike lanes that require cyclists to sandwich themselves between a steady stream of motor vehicles to the left and unpredictable parking behaviors on the right, while also managing an absolute change in elevation of nearly 120'.

By relocating these facilities against the curb and providing an additional buffer to compensate for careless door openers, **bicyclists' comfort and safety will be improved** along this critical active transportation link. Recent literature indicates that municipalities with protected bike facilities experienced, on average, **44% fewer deaths and 50% fewer serious injuries in total** (i.e., across all user groups, not just bicyclists) than cities without such facilities.[12]

4.2. ENVIRONMENTAL SUSTAINABILITY

KEY IMPACTS:

- *Enhancing the speed and appeal of transit service generates mode shift, reducing auto-related air pollution*
- *Preservation of median trees and an increase in tree canopy provides natural air and water quality benefits*
- *Increasing the safety and appeal of biking and walking shifts trips to more efficient, less impactful modes*

Like many cities, Boston is facing the consequences of a changing climate, including extreme temperatures, sea level rise, heavy precipitation, and coastal storms. Blue Hill Ave improvements are being made as a result of the City's *RESILIENT BOSTON An Equitable and Connected City* publication, and it aligns with multiple RAISE criteria—as addressed in the respective sections. For environmental sustainability and climate change specifically, this project aligns with the RESILIENT BOSTON Initiative's target #17: "Advance Resilient Transportation Systems." This target aims to, "*build a more resilient transportation network by improving access in key corridors, adapting transport infrastructure to climate change, and ensuring equitable distribution of resources.*"

By fulfilling some trips that would otherwise be done by personal vehicle, the project will reduce auto based VMT along the corridor by 700,000 miles in its opening year. At the corridor level, the decrease in vehicular traffic will **reduce the release of criteria air pollutants along a road situated within EJ communities**. At the regional level, by increasing the performance of the transit network, this project will reduce transportation-related environmental impacts associated with the city's dynamic and rapidly expanding economy.

The BHA Multimodal Corridor project **seeks to improve environmental sustainability and quality of life** through focused interventions in three major areas: Transportation, Safety, and Public Space. Relative to the final category, 75% of respondents to BTD's initial engagement survey advocated for more trees and greenery to be installed along BHA. By preserving the median's mature trees and planting new sidewalk trees, the project will generate the following environmental and public health benefits:

- **Reducing the urban heat island effect** by decreasing ambient temperatures, thereby improving near- and long- term public health outcomes during extreme heat events;

12 *Marshall, W. & N. Ferenchak. "Why Cities with High Bicycling Rates are Safer for All Road Users." Journal of Transport & Health, Vol. 13 (June 2019).* sciencedirect.com/science/article/pii/S2214140518301488?via%3Dihub

- **Sequestering carbon dioxide** to limit global climate change and reducing ground level carbon dioxide (which affects pedestrians, cyclists, runners, etc.); and
- **Mitigating flood risk zones along corridor**, thereby improving near-term public health outcomes and preserving water quality and infrastructure during extreme storm events.

At a qualitative level, this project will install protected bike lanes, dedicated bike signals, improved pedestrian refuge areas, and new lighting. Since each of these features either makes biking and walking safer or improves the traveling experience, this project will **enhance the appeal of transport modes that exert little to no impact on the natural environment**. Though not quantitatively modeled, providing safer, more attractive walking and biking facilities will replace a share of personal vehicle trips that would otherwise entail greater air and water quality impacts.

The BHA Multimodal Corridor improves...

The development of a more pleasant, inviting, and safe corridor will generate additional foot traffic to support the largely minority-owned local small businesses on the Avenue.

4.3. QUALITY OF LIFE

KEY IMPACTS:

- *Relliability improvements mean that with each trip, riders no longer need to add "cushion" or contingency time to account for unpredictable service, producing valuable daily benefits to productivity and leisure time*
- *Enhances transit access to regional job centers and provides better access to corridor institutions*
- *Better conditions for biking and walking yield positive public health outcomes via increased physical activity*

The central spine of Boston, Blue Hill Avenue is both the historic home of Boston's Black community, but also home to immigrant populations from both the Caribbean and Cape Verde. After decades of disinvestment following the redlining of the neighborhoods of Mattapan, Dorchester, and Roxbury in the 1960s, new investment in the Avenue began in earnest in the early 1990s, with a number of communities organizing Boston Main Streets districts for their underutilized business districts.[13]

The planning for BHA seeks to redress long-term inequities to implement this improvement project with vigorous neighborhood engagement. As mentioned in Section 4.2, BHA improvements are being made as a result of the City's RESILIENT BOSTON *An Equitable and Connected City*,[14] and it aligns with multiple RAISE criteria. For Quality of Life and Racial Equity specifically, it aligns with Vision Statement #4: "*Connected, Adaptive City Vision Statement: Increased connectivity for communities of color while improving critical infrastructure for all Bostonians.*"

13 Blue Hill Avenue Transportation Action Plan Website

14 boston.gov/news/city-releases-resilience-strategy-focused-addressing-racial-equity

Despite overall strong accessibility and mode options, households of color in Boston are much more reliant on transit and experience notably longer transit commutes and less accessibility. Figure 4-3 illustrates this point that neighborhoods along BHA are "High" to "Highest" along a Social Vulnerability index. The City's goal through Vision Statement #4 is to improve transportation access and commute times is crucial to providing equitable opportunities for all residents and fostering a resilient population.

An additional plan that has informed these foundational improvements is *Go Boston 2030*, the City's comprehensive transportation plan that prioritizes making travel predictable on Boston's transit and roadway networks by developing a dense system of interconnected walking, biking, transit, and driving networks.

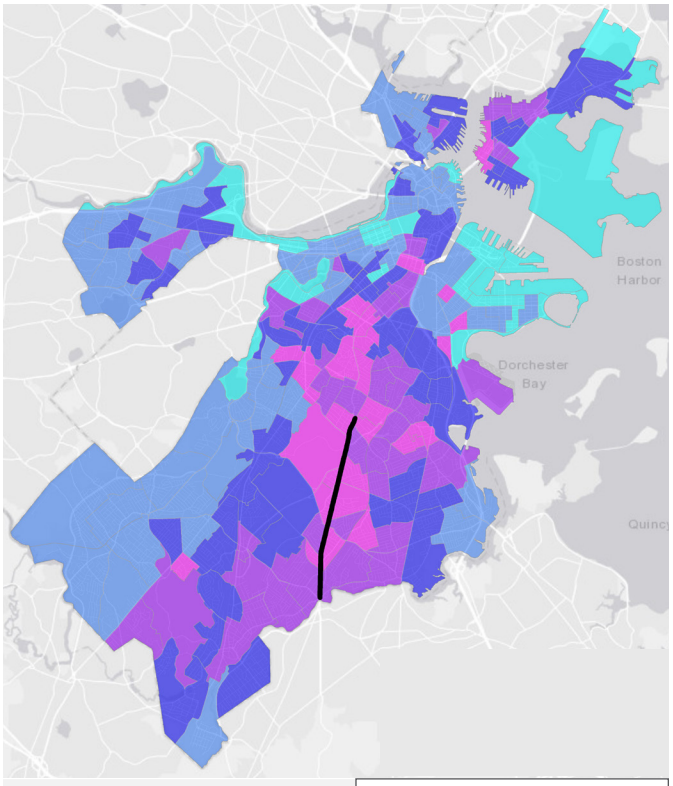
An EJScreen Analysis of the Census Tracts that abut BHA show very high Environmental Justice populations (due to the limitations with selecting multiple CTs within EJScreen, the corridor was broken into two segments, Table 4-2).

Since this project will result in more frequent buses, shorter bus trips, and less crowding along this high volume, capacity-constrained corridor, it will **enhance transit connectivity to major employment centers, vital healthcare institutions, retail sites, and other critical destinations** at a regional level. Through the development of safe and fully accessible pathways leading to and from the new accessible in-line bus stations, this project will **improve access to the transit system for the neighborhoods EJ populations**.

Equally as important as the project's time savings is the benefit that will accrue to riders on every trip they take—freedom from allotting more time than is needed just in case the bus is delayed. While **faster trips bring travel time savings, better reliability enables riders to confidently plan** and arrange their daily lives, freeing up time for additional productivity or leisure.

This project will **enhance pedestrian and bicyclist connectivity, access, and safety** along a corridor that is home to numerous schools and libraries, community centers for every stage of life, grocers offering fresh nutritious food, cultural and entertainment sites, and centers of learning and worship (Figure 1-2). By easing

FIGURE 4-3: CITYWIDE SOCIAL VULNERABILITY MAP



Map generated from vision zero data (apps.boston.gov/vision-zero/). Included in the social vulnerability are: people of color, limited english proficiency, low to no income, people w/ disabilities, older adults (age>65), children (age <5), and people w/ medical illness.

KEY

BHA Project Corridor

Cumulative Social Vulnerability (SV)

- Lowest SV
- Low SV
- Medium SV
- High SV
- Highest SV

TABLE 4-2: CENSUS TRACTS EJ SCREEN ANALYSIS

Demographic Indicators	Project Area	State Avg.	US Avg.
BHA North – CTs 820, 821, 901, 902			
People of Color Population	**97%**	28%	39%
Low Income Population	**56%**	23%	33%
Linguistically Isolated Population	**18%**	6%	4%
Population with <HS Degree	**21%**	10%	13%
Population < 5 years of age	**6%**	5%	6%
Population > 64 years of age	**12%**	16%	15%
BHA South – CTs 924, 1001, 1002, 1011.01, 1011.02			
People of Color Population	**98%**	28%	39%
Low Income Population	**51%**	23%	33%
Linguistically Isolated Population	**13%**	6%	4%
Population with <HS Degree	**21%**	10%	13%
Population < 5 years of age	**7%**	5%	6%
Population > 64 years of age	**10%**	16%	15%

crossing challenges, providing new dedicated space for bicycling, and new lighting fixtures along BHA, the **convenience and appeal of active transportation will increase** in the near- to mid-term as the longstanding anxieties that many corridor residents currently associate with walking and biking begin to subside. For many living in Mattapan and Dorchester, areas which currently lack biking and walking paths, the **new facilities will address equity issues** within the active transportation network.

Reducing auto-based trips and their associated air and noise impacts will also be significant to the long-term health and vitality of this commercial corridor, not just its users. By reducing the presence of personal vehicles and increasing the canopy along BHA, users visiting its many businesses will arrive to an avenue that generally feels more welcoming, smells cleaner, and sounds less noisy to pedestrians, bicyclists, bus riders, and drivers alike.

4.4. ECONOMIC COMPETITIVENESS

KEY IMPACTS:

- *Speed and reliability gains provide bus service that is faster, more reliable, more frequent, and less crowded, saving bus riders 246,072 hours per year, totaling 4.9 million hours over the 20-year life-cycle of the project.*
- *The project leverages two other transit priority corridors (being constructed this summer) to develop a key missing crosstown bus link to the jobs-rich LMA, along with better connections to the Silver and Orange Lines*
- *The City is actively working to support businesses and revitalize the corridor and adjacent Opportunity Zones*

At its core, the BHA Multimodal Corridor Project seeks to make the MBTA bus the preferred mobility choice for anyone traversing the corridor, regardless of their race or income. By providing faster service speeds, this project will **save riders between eight and 13 minutes**

on each peak period trips, thereby affording working-class riders extra spare time. With the additional trips enabled through the speed and reliability improvements, commuting burdens will be further reduced. **Not only will passengers spend less time on the bus, but the bus will come more often, more reliably and will be less crowded.** This, in turn, will increase the appeal of the bus, resulting in less reliance on personal vehicles and a savings in vehicle operating costs.

> ***Over the years, traveling by bus along Blue Hill Ave—which myself and most of my neighbors do—has taken longer and longer, has gotten unbearably crowded, and even though the [MBTA]adds service, it doesn't improve. The congestion is unbelievable. In fact, that is exactly what got me into cycling."***
>
> Roxbury Resident

All six of BHA's bus routes provide direct access to an Orange Line Rapid Transit station. Since the Rapid Transit system already provides enviable access to the region's employment centers and this project will enable quicker connections to that system, the **bus lanes will improve access to job centers**. In its opening year alone, the project will **save corridor users over 245,000 hours and decrease VMT by 700,000 miles**, with $40.45 M in cumulative benefits over the BCA's 20-year lifecycle (Table 4-3).

As discussed in Section 1.5 and depicted in Figure 1-8, by enhancing bus speed and reliability on the longest segment of Go Boston 2030's Mattapan to Longwood Medical Area Rapid Bus proposal, this project will pave the way towards realizing a **key crosstown transit link between both BHA and the LMA's world-class medical facilities and employment opportunities**, as well as the MBTA's Red and Green (heavy rail) Rapid Transit Lines. Design for the MBTA's Columbus Avenue Bus Priority Corridor, which would connect BHA to Longwood, is nearly complete and will go out to bid this summer, with planned completion this fall. The two projects together will help the City realize the goal of **a fast connection to good jobs and services** which will boost their physical and financial health.

While its racial and ethnic composition has varied throughout the past century, the boulevard itself has always been home to low-income populations. As a result, it has consistently been **an oasis for those who become entrepreneurs** out of necessity. BHA features the highest proportion of minority-owned businesses in the city and many of these locally owned businesses are struggling, especially in pandemic times. In addition, two Qualified Opportunity Zones—an economically distressed community where new investments, under certain conditions, may be eligible for

TABLE 4-3: ESTIMATED TRAVEL TIME & VEHICLE OPERATING COST SAVINGS BENEFITS
(7% Discount Rate) Values in Millions of 2019 Dollars, Discounted

	Opening Year		Project Lifecycle	
Benefit Category	**Annual Quantity**	**Discounted (7%)**	**20-year Quantity**	**Discounted (7%)**
Travel Time Savings (Person-Hours)	246,072	$3.33	4.9M	$37.80
Vehicle Operating Cost Savings (VMT)	700,000	$0.23	14.0M	$2.65
Economic Competitiveness Benefits	**-**	**$3.56**	**-**	**$40.45**

On a revived BHA, the MBTA bus will be faster, more reliable, and less crowded—resulting in a reduction in personal vehicle use and operating cost.

Much like the conditions of the intersection at BHA and Johnston Road (above), City pavement condition ratings show that 91% of BHA's length is in need of repaving or some form of maintenance.

preferential tax treatment—are immediately west of the corridor (Figure 1-2).

Three departments within the City are actively engaged in an initiative to **spark economic development and business growth opportunities**, as well as improve existing business, along BHA. While this revitalization effort includes near-term strategies to support existing establishments (e.g., storefront improvement grants), it is primarily oriented toward **sustaining the long-term health of the corridor by encouraging growth that aligns with community values**. The following bullets detail this ongoing multi-departmental effort.

- **Office of Economic Development**—Identifying business opportunities for aspiring business owners and the community's preferences for new commercial and mixed uses on 30 City-owned parcels totaling 94,120 square feet
- **Department of Neighborhood Development**—Providing assistance in exploring financing for mixed-use (commercial and residential) projects by leveraging City's access, funding, and experience
- **BPDA**—Implementing the outcomes of the PLAN: *Mattapan* study by aligning project goals for disposition with the plan's vision statement and community's values

The development of a **more pleasant, inviting, and safer corridor for pedestrians and bicyclists along a densely packed commercial corridor** like BHA will generate additional foot and pedal traffic to the area. Despite not being able to carry a trunk-load of goods, experience from other U.S. cities demonstrates that pedestrians and bicyclists typically visit local businesses more often and spend more money in total relative to drivers.[15] In addition, a comparison of the growth in sales tax receipts along New York City's 9th Avenue, Columbus Avenue, and **other nearby corridors indicated that the installation of protected bike lanes produced a significant increase in commercial activities** along the improved bike corridors.[16]

15 *Clifton et al. "Consumer Behavior and Travel Choices: A Focus on Cyclists and Pedestrians." Presented at 92nd Annual Meeting of the Transportation Research Board, January 2013, Washington, DC. Table 3 on page 13. bit.ly/TRB-Clifton*

16 *New York City Department of Transportation. The Economic Benefits of Sustainable Streets. 2013. bit.ly/EBSS-2013*

4.5. STATE OF GOOD REPAIR

KEY IMPACTS:

- *91% of BHA is in need of maintenance, including 65% due for mill and overlay*
- *Repaving this state route and the Mattapan Square Redesign will renew key regional transportation assets*
- *The MBTA & City jointly maintain two priority corridors and reliable funding is available to support O&M*

Beyond its significance as a transit corridor, most of the project corridor functions as a portion of State Route 28 between Mattapan Square and Franklin Park (Seaver Street). Since this corridor carries volumes of up to 50,000 vehicles each day, renewing this valuable and regionally important asset's pavement **will generate substantial operations and maintenance savings for those using personal vehicles by reducing wear and tear**.

Repaving Blue Hill Avenue had been on the City's agenda prior to the launch of the planning and design effort that garnered **robust public support for the Avenue's transformation**. According to pavement condition ratings from the City, 65% of BHA's length is in need of mill and overlay (i.e., has a pavement condition rating of less than 47) and another 26% is in need of maintenance. Improving the condition and resilience of BHA is consistent with the asset management principles and approaches adopted within the MBTA's *2018 Asset Management Plan*.

Based on lessons learned from other transit priority project implementations, the MBTA and the City of Boston have developed an effective arrangement for splitting design, implementation, and maintenance duties. Prior to the construction of each of the five bus priority corridors that have already been implemented in Boston, **the City and MBTA have developed a standard Memorandum of Understanding (MOU) that outlines each partner's responsibilities**. The MOU outlines that the MBTA is responsible for all design and for funding the capital costs for pavement markings, signage, and signals. The City manages the construction of the facility and is responsible for maintenance, including snow removal. An MOU for Blue Hill Avenue is under development and will follow the example of prior projects.

The City typically spends between $78,000 and $85,000 each year on snow removal from BHA. A slight cost increase due to the median removal and additional paved area is not likely to have a noticeable effect on the snow removal budget.

4.6. INNOVATION

KEY IMPACTS:

- *The project incorporates innovative technologies like TSP, bike signals, and real-time bus arrival information*
- *The project partners already have a proven method to jointly accelerate project delivery and minimize costs*
- *Lease payments from planned installation of 5G infrastructure at stations will create a new revenue stream*

This project **incorporates innovative technologies** (e.g., TSP, bike signals, and real-time bus arrival information), as well as **innovative approaches to financing and delivery**. The MBTA—a critical partner in this project—has installed eight similar transit priority corridor projects in six different municipalities over the last four years, allowing it to emerge as a leader in the rapid deployment of bus only lanes. The MBTA's success at accelerating these projects has been driven by four key factors:

- **General engineering contracts—**Enables faster project delivery and more projects completed in a short time (in lieu of a separate contract for each project)
- **City-led public outreach concurrent with design—**Helps the design to respond to community concerns much faster, thereby building more trust and support for project

- **Quantity-based construction bidding—**Allows design and preparation of full plans to finish while the construction contracting is in process
- **MBTA reimburses the City for construction—** Provides faster build-out at reduced cost, as cities are better equipped to deliver these projects than transit agencies

Relative to finance, **the MBTA plans to generate additional revenues** by offering telecommunications companies the right to install 5G wireless equipment at new in-line bus stations in exchange for lease payments.

4.7. PARTNERSHIP

KEY IMPACTS:

- *Community-driven planning process has helped to avoid previous missteps and garner robust public support*
- *Planned installation of 5G infrastructure will improve resilience and emergency response by enabling the MBTA & City to leverage a redundant, high capacity "dark fiber" network during prolonged disruptions*

High turnout of community members at outreach events demonstrates that project partners have built on the lessons of previous experiences. This is most easily demonstrated by the constant engagement with the community on selection of the preferred project concept. For example, stakeholders developed a shared set of design principles during the first public meeting that were then applied to gauge the effectiveness of potential interventions along BHA within the second public meeting.

This **consensus-based approach resulted in public opinion rapidly coalescing around the concept** being advanced within this grant application. The list below showcases the diverse range of stakeholders whose concerns and support have enabled this project to move forward.

- Greater Grove Hall Mainstreets
- Artists for Humanity
- Project R.I.G.H.T.
- Ideal Mixer Studios
- Roxbury in Motion
- Bowdoin Street Health Center
- Grove Hall Senior Center
- TransitMatters
- LivableStreets Alliance
- Transit Riders Union
- Boston Cyclists Union
- Mattapan Teen Center

Supporting letters from the community and elected officials are included in Attachment 7.

The City of Boston and MBTA have also explored ways to further **encourage participation in this project among private sector entities**. The use of agency real estate (new in-line stations) by private telecommunications providers to install data-rich 5G infrastructure in exchange for lease payments and access to a redundant "dark fiber" network is an intriguing and relatively novel value proposition. The ability for emergency service personnel from both the City and the MBTA to leverage a redundant, high-capacity data network during times of extreme disruption will be critical in supporting resilient responses to future unforeseen, yet inevitable, events.

5. ENVIRONMENTAL RISK REVIEW

The City of Boston administers and manages millions of federal dollars from various federal agencies including the US Department of Housing & Urban Development and the US Federal Highway Administration through its partner MassDOT. Specific to this applications funding source, the City was awarded and successfully implemented a $15.5 million TIGER grant, delivering the project on time

and on budget. Additionally, its partner, the MBTA has implemented eight transit priority corridors within six jurisdictions over the last four years, including two projects within the City of Boston in 2019. **The MBTA has well-developed financial accounting and audit controls in place to effectively manage Federal Transit Administration (FTA) funds**, including substantial expertise with the FTA's TrAMS financial and progress reporting system. Thus, the City and its partners possess the technical experience to undertake this project, the practical experience (and legal capacity) to ensure that it meets state and federal requirements and that legal remedies are sought for noncompliance with specifications and/or construction deadlines, and the financial capacity to carry out this project to completion.

5.1. PROJECT SCHEDULE

As indicated in section 1-5, the final design is scheduled to be complete in April 2023 with bidding and contracting taking place in August of 2023—well in advance of the statutory deadline of June 30, 2024 for obligation of funds. This aggressive timeline is possible because of the lessons learned by (and partnership built bewteen) the BTD's Transit Planning and MBTA's Office of Transit Priority team while jointly delivering on several bus lane projects in the last two years.

5.2. REQUIRED APPROVALS

The environmental permitting and approval process for this project is relatively straightforward because the project is contained within the existing curbs of an urban roadway. The primary vertical elements, shelters and signage, would be sited in the center of the roadway, thereby limiting visual effects to the surrounding area. It has no potential to affect natural resources or to adversely affect historic properties, Section 4(f) resources, or EJ populations. No federal environmental permits and no state or local environmental permits or approvals are required.

Federal environmental approvals for construction of this project would be required under the National Environmental Policy Act (NEPA) and Section 106 of the National Historic Preservation Act (Section 106). It is expected that the FTA would approve a c-list Categorical Exclusion, as this project that would take place entirely within the existing operational right-of-way (23 C.F.R. §771.118 (c)(12)). A c-list Categorical Exclusion does not require documentation and normally requires a simple administrative approval, such as checking a box in FTA's electronic grants management system. Partner agency MBTA recently coordinated with FTA on NEPA compliance for similar projects in the City of Boston and confirmation by FTA of the c-list status of the Project was completed at the end of 2020. With construction of this Project anticipated to be complete by October 2023, the partners fully expect all funds to be obligated before the statutory deadline of June 30, 2024.

5.3. ASSESSMENT OF PROJECT RISKS & MITIGATION STRATEGIES

The environmental risks for the BHA Multimodal Corridor project are minimal. Additionally, relatively limited historical preservation for the project lends itself to a streamlined Section 106 process. Partner agency, MBTA and its consultant, have recently supported the FTA in the Section 106 process for similar projects in Boston, and it is expected that documentation, FTA coordination, and State Historic Preservation Officer (SHPO) consultation can be completed in 90 days from the availability of information on the location and dimensions of shelters and signage. The MBTA will provide documentation required to support the FTA in Section 106 consultation with the Massachusetts Historical Commission, which serves as the SHPO. Five properties currently listed in

the National Register of Historic Places are proximate to or within the project area. However, it is expected that the project's effects to historic properties would not be adverse.

For a short distance between Mattapan Square and the Milton town line, the project corridor may be considered part of the Blue Hills Parkway, which is a part of the Blue Hills Reservation, and therefore a state park. Thus, it is possible the FTA may decide that a use determination is required under Section 4(f) of the U.S. DOT Act. The northernmost part of the Reservation lies approximately three miles beyond the project's southern terminus and would not be affected. The portion that lies within the Parkway involves only widening sidewalks towards the roadbed and repainting the pavement. Thus, if a Section 4(f) determination is made, it is expected to result in a de minimis determination, which would require no further action. Should a Section 4(f) determination be required, the City would provide FTA with the documentation necessary to support issuing a determination.

6. BENEFIT—COST ANALYSIS

A benefit-cost analysis was conducted for the BHA Multimodal Corridor for submission to the U.S. Department of Transportation (U.S. DOT) as a requirement of this discretionary grant application. As detailed in Attachment 3, the analysis was conducted in accordance with the methodology outlined by U.S. DOT in the February 2021 Benefit-Cost Analysis Guidance for Discretionary Grant Programs. The period of analysis corresponds to 22 years, including two years of design and construction and 20 years of benefits beginning in fall 2025.

The capital cost for this Project is expected to be $39.5 million in undiscounted 2021 dollars. As shown in Table 6-1, these costs are $28.2 million in 2019 dollars when discounted at seven percent. The final BCR of 5.87 and NPV of $137.28M indicate that the Blue Hill Avenue project will generate a significant return on investment, with respect to safety, quality of life, and environmental sustainability for the local communities along the project corridor. The full analysis is contained in Attachment 4, Benefit-Cost Analysis Report. Calculations are shown in Attachment 5, BCA Modeling Spreadsheets.

TABLE 6-1: SUMMARY OF QUANTITATIVE BENEFITS OVER PROJECT LIFECYCLE

(In units of 2019$, discounted by prescribed 7%, with the exception of emissions reductions at 3%)

Description	Value
Benefit 1: Travel Time Savings (Blue Hill Avenue)	$31,093,734
Benefit 2: Transit Travel Time Savings (Mattapan Station)	$1,613,622
Benefit 3: Emissions Reductions	$229,670
Benefit 4: Crash Reductions	$132,540,903
TOTAL BENEFITS	***$165,477,958***
Previously Incurred Design Costs	$710,032
Capital Costs for Design/Engineering	$3,704,808
Capital Costs for Construction	$23,780,463
Residual Value (calculated)	($0)
TOTAL COSTS	***$28,195,303***
BENEFIT COST RATIO (BCR)	***5.87***
Net Present Value (NPV)	***$137,282,655***

$1 ANY SIZE
31 MATTAPAN STA
CNG
El Regreso
MARKET
617-238-7636
ENVIOS DE DINERO
EBT, WIC
LOTTERY
ROXBURY CENTER
THE ROXBURY SUNFLOWER PROJECT
SICUT PATRIBUS SIT DEUS NOBIS
CIVITATIS REGIMINE DONATA A.D. 1822
BOSTONIA
CONDITA AD
1630

ATTACHMENT 3: Blue Hill Avenue Multimodal Corridor Project | RAISE Grant Application

TECHNICAL MEMORANDUM: BCA METHODLOGY

July 1, 2021

Prepared for:

The City of Boston, Boston Transportation Department

Prepared by:

Stantec Consulting Services Inc.
226 Causeway Street
6th Floor
Boston, MA 02114-2155

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Executive Summary

A benefit cost analysis (BCA) was completed for the Blue Hill Avenue (BHA) Multimodal Corridor Project on behalf of the City of Boston for submission to the U.S. Department of Transportation (USDOT) as a requirement for the RAISE 2021 program. The analysis was conducted in accordance with the benefit-cost methodology as outlined by the USDOT in the Benefit-Cost Analysis Guidance for Discretionary Grant Programs dated February 2021.

The BHA Multimodal Corridor Project ("the Project") will provide for the reconstruction of BHA and will include bus-only lanes and bicycle lanes along the heavily used transportation corridor to improve transit reliability, safety, multi-modal access, and reduce travel time for transit users. The project also includes intersection improvements at Blue Hill Avenue and Mattapan Square which will eliminate the need for all buses to make a U-turn to reach the Mattapan Station bus terminal.

The following project benefits were modelled quantitatively within the BCA:

- Travel Time Reductions along Blue Hill Avenue
- Travel Time Reductions at Mattapan Square Station
- Emissions Reductions due to mode shift
- Crash Reduction along project corridor

The quantitative benefits of the project were modelled to determine the contribution to the BCA benefits. This BCA report describes the detailed methodology for how these benefits were determined, including sample calculations. The table below describes the quantified project benefits and costs:

Description	**Value**	**Units**
Benefit 1 - Travel Time Savings (Blue Hill Avenue)	$31,093,734	2019$, discounted
Benefit 2 - Transit Travel Time Savings (Mattapan Station)	$1,613,622	2019$, discounted
Benefit 3 - Emissions Reductions	$229,670	2019$, discounted
Benefit 4 - Crash Reductions	$132,540,903	2019$, discounted
Total Benefits	*$165,477,958*	*2019$, discounted*
Previously Incurred Design Costs	$710,032	2019$, discounted
Capital Costs for Design/Engineering	$3,704,808	2019$, discounted
Capital Costs for Construction	$23,780,463	2019$, discounted
Residual Value (calculated)	($0)	2019$, discounted
Total Costs	*$28,195,303*	*2019$, discounted*
Benefit Cost Ratio (BCR)	***5.87***	**-**
Net Present Value (NPV)	***$137,282,655***	***2019$, discounted***

The final BCR of 5.87 and NPV of $137.28M indicate that the Blue Hill Avenue project will generate a significant return on investment, with respect to safety, quality of life, and environmental sustainability for the local communities along the project corridor.

1.0 METHODOLOGY

The Benefit Cost Analysis (BCA) for the Project was completed to assess whether the expected benefits of the project justify the costs. The BCA compared a “no-build” scenario with the proposed “Build” Scenario.

A previous BCA was submitted by MBTA as part of a 2020 BUILD grant application. The methodology for several of the benefits was taken directly from the previous BCA submittal. The 2020 BUILD Grant application used 2019 data which is still the best data available since the 2020 data was significantly impacted by the COVID-19 pandemic and is not indicative of the future travel patterns.

1.1 ASSUMPTIONS

A detailed benefit-cost analysis (BCA) was conducted for the Project using best practices for BCA in transportation planning and reflecting current RAISE BCA guidance (USDOT BCA Guidance for Discretionary Grant Programs – February 2021). All dollar figures in the BCA are expressed in constant 2019 US Dollars. Detailed values are provided in the BCA model.

Values within the BCA model are subjected to a 7% discount rate, except for carbon emission reduction benefits which use a 3% discount rate, in accordance with BCA best practices. However, values within this memo, such as sample calculations, may be reported in undiscounted dollars to show consistency with source data and make the underlying calculations easier to understand. Where values are discounted within the memo, it will be indicated.

The analysis was performed over the period from 2020 to 2045 (inclusive), with 2020-2025 being the design/construction years (including previously incurred design costs) and 2026-2045 being the 20-year analysis period in which all project elements are open to the public and realize societal benefits. Project construction will occur over 24 months, so construction costs were distributed equally over the two years within the model.

2.0 PROJECT COSTS

2.1 CAPITAL COSTS

The costs associated with the project include, previously completed conceptual designs, future design/engineering costs, and construction costs. These costs are reported below in undiscounted 2019 dollars, so they will vary from other project documents (narrative, cost estimates, etc.) which report the capital costs in present dollars.

Table 1: Project Costs (Undiscounted 2019$)

Project Year	Design (Previously Incurred)	Design/Engineering	Construction	Total
2020	$589,440			**$589,440**
2021	$182,215			**$182,215**
2022		$2,346,013		**$2,346,013**
2023		$2,346,013		**$2,346,013**
2024			$17,240,610	**$17,240,610**
2025			$17,240,610	**$17,240,610**
Total	**$771,655**	**$4,692,026**	**$34,481,220**	**$39,944,902**

2.2 OPERATIONS AND MAINTENANCE

Since the roadway is being reconfigured to allow for dedicated lanes, the operations and maintenance are assumed to be equal regardless of the project completion or not. The width and sidewalk alignment of Blue Hill Avenue are largely fixed and are being reallocated per the concept design, thus the responsibility and costs for the City of Boston will remain similar.

2.3 RESIDUAL VALUE

The project's design life is equivalent to the length of the analysis period (20 years), so the residual value is calculated to be zero dollars at the end of the analysis period.

3.0 PROJECT BENEFITS

Four primary benefits were quantified for the Blue Hill Avenue project. They are indicated below, along with the corresponding RAISE grant primary selection criteria:

- Bus Passenger Travel Time associated with the Blue Hill Avenue improvements – Quality of Life
- Bus Passenger Travel Time associated with the Mattapan Square intersection improvements – Quality of Life
- Emission Reduction for mode shift – Environmental Sustainability
- Safety Benefits associated with collision reduction – Safety

3.1 DEMAND PROJECTIONS

Excerpt from MBTA 2020 BUILD application:

The MBTA has estimated increases in daily bus ridership as a result of the improved travel time and reliability from the Project as shown in Table 3-1. The weekday, Saturday and Sunday estimates were expanded to a full year assuming 253 weekdays, 54 Saturdays and Saturday schedule holidays, and 58 Sundays and Sunday schedule holidays, resulting in total annual ridership increases of 573,092.

Table 2: Projected Daily Ridership Increase by Route

	MBTA Route						
	14	**22**	**28**	**29**	**31**	**45**	**Total**
Weekday	50	248	936	331	376	197	2,137
Saturday	83	64	123	12	59	27	367
Sunday	0	52	82	0	58	24	216

Source: Massachusetts Bay Transportation Authority, 2020

Using the ridership projections developed by the MBTA Bus Operations team, the analysis calculated the percentage of the new bus passenger ridership who would otherwise use personal vehicles to complete

their trip using a transit-dependency factor of 43.9%. The transit-dependency factor is derived from survey data prepared by the California Climate Investments organization to determine vehicle ownership of transit users across modes, including local bus, BRT and light rail. The use of a personal vehicle or carpooling to complete commute and recreational trips is assumed to provide an approximation of what percentage of new ridership would have otherwise used a motor vehicle if public transit service were not available, estimated to be 321,505 passengers annual.

To control for those users who may carpool, the net ridership of users with access to a personal vehicle were divided by the U.S. DOT recommended peak vehicle occupancy factor of 1.48 to determine the total number of auto trips replaced by bus service in the Blue Hill Ave corridor. The number of replaced trips is calculated as 217,233.

The length of each trip diverted from automobiles was approximated using the length of transit trips in the corridor. The average length of trips on each of the six routes in the corridor was estimated from 2018 MBTA stop level load counts and assumes an average distance between stops. For riders transferring to bus or rail, the additional length of those trips was estimated by adding the average bus or rail trip length taken from MBTA 2018 NTD data for bus and rail modes. The average diverted trip length for each route was estimated using an average of the bus-only, bus + bus and bus + rail trip lengths weighted by the percent of trips of each type from the 2017 MBTA rider survey. The weighted average trip length was calculated to be 3.22 miles.

The annual reduction in auto VMT was estimated by multiplying the number of vehicle trips diverted from automobiles to each route by the estimated average trip length for that route.

To determine the total vehicle-miles avoided through users shifting from using their personal vehicle to using the bus service, the number of mode-shifted trips were multiplied by the average linked trip length of passengers using the MBTA bus service, calculated at 3.22 miles. Accounting for these factors, annual reduction in automobile VMT is estimated at 699,632 miles, which accumulates to nearly 14 million miles over the project lifecycle.

Table 3: VMT Projection Assumptions and Sources

Variable	Unit	Value	Source
Annual Increase in Ridership	Passenger trips	573,092	MBTA Bus Operations
Vehicle Occupancy Factor – Peak Period	persons per vehicle	1.48	U.S. DOT BCA Guidance January 2020
Transit Dependency Factor – Local bus/Rapid bus	% of transit users without access to a personal vehicle	43.9%	California Climate Investments[5]
Average length of passenger trip – Blue Hill Avenue Corridor	Miles	3.22	MBTA Bus Operations

3.2 TRAVEL TIME BENEFIT – BLUE HILL AVENUE

Excerpt from MBTA 2020 BUILD application:

Reductions in vehicle hours traveled or person hours traveled (PHT) were calculated from the changes in the project area as a result of the project improvements. Travel time savings in the Blue Hill Ave corridor are due to the dedicated bus lanes, expanded bus service for increased service frequency, and priority intersection signaling for transit.

Travel time savings for bus riders were estimated by determining the reduction in bus travel times by time of day on each of four segments of the corridor and applying that reduction to the estimated ridership on each segment for each of the corridor routes operating on that segment.

The corridor was divided into four segments:

- Mattapan Station to Morton Street (Routes 28, 29 and 31)
- Morton Street to Talbot Avenue (Routes 28 and 29)
- Talbot Avenue to Seaver Street (Routes 22, 28 and 29 with partial service by Routes 14 and 45)
- Seaver Street to Warren Street (Routes 14, 28 and 45)

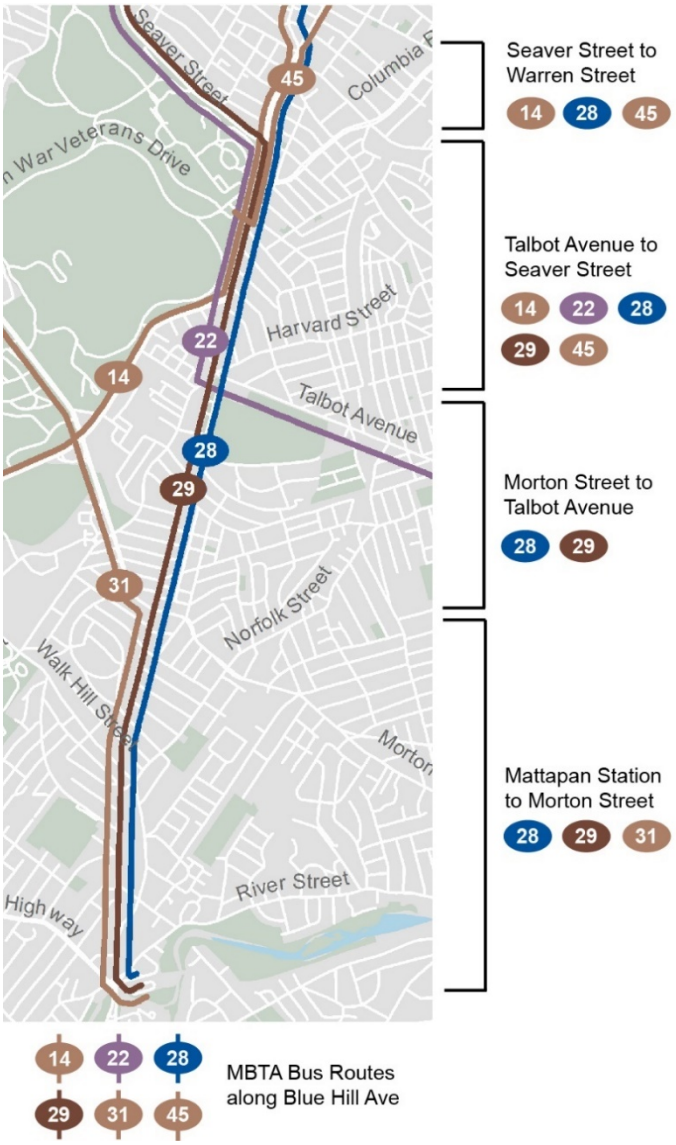

Figure 1: Blue Hill Avenue Bus Route Segments

Existing bus travel times for each segment were calculated from observed MBTA weekday median stop-to-stop travel times on Route 28 from the fall of 2019. Median segment travel times were first developed by half-hour increments but were then grouped into time periods based on similar median travel times.

Estimated post-construction travel times were developed using a spreadsheet model based on estimated free flow travel times and the components of bus travel delays as described in the Transit Capacity and Quality of Service Manual (TCQSM). The model estimates bus travel time between each pair of signalized intersections. It incorporates a free flow travel time at 25 mph, delay at traffic signals, bus stop dwell time, and bus deceleration and acceleration time at both bus stops and traffic signals. The model was tested against observed Route 28 AM and PM peak hour travel times for the full corridor and was found to approximate the observed travel times. The travel time model was then applied to the Build Scenario.

Estimated traffic signal delay was developed from the SYNCHRO traffic model for corridor intersections that was developed for the ongoing design phase of the project. For existing conditions, the travel time model used estimated signal delays from the traffic model for the through movement at each intersection. For the Build Scenario, consistent with previous MBTA and City of Boston bus lane experience, the traffic model assumed that traffic decreases by 10 percent in the AM peak hour and 15 percent in the PM peak hour. The Build Scenario assumes no congestion in the exclusive bus lane and therefore delay was determined by the likelihood that a bus encounters a red signal (modeled percent of red signal time in the cycle) and the average length of delay if the signal is red (half of the red signal time).

A typical bus stop dwell time per stop for existing conditions was taken from MBTA median travel time data for Route 28 from the fall of 2019 for both AM and PM peaks, and for inbound and outbound. In the Build Scenario, the reduction in stops is expected to increase the number of passengers per stop by roughly 50 percent so the portion of dwell time typically associated with boarding passengers was increased by 50 percent. This led to an overall corridor increase in dwell times of about one third when door opening/closing time is accounted for.

A bus deceleration and acceleration time of ten seconds (consistent with a 25-mph operating speed) was applied each time a bus would stop. The likelihood of stopping at a traffic signal was determined by the percent of time a signal would be red, based on the SYNCHRO traffic model. Due to the very high passenger boarding activity in the corridor, it was assumed that buses would always stop at every bus stop. In the Build Scenario, for intersections with near side bus stops in bus lanes, it was assumed that buses would only have to stop once due to the location of the stop at the signal and the lack of congestion in exclusive bus lanes.

Using the travel time model, estimated travel times for each corridor segment were developed for AM and PM peak hours and for a typical moderate traffic volume and a typical low traffic volume hour in both the inbound and outbound direction. (For Routes 14 and 45, which only cover part of the Blue Hill Avenue-Talbot Avenue to Seaver Street segment, a separate partial segment travel time was estimated.)

Ridership on each segment on each route was estimated by averaging the existing fall 2019 observed load departing each stop in each period and weighting it by the distance to the next stop to get an average ridership on the segment. Weekend ridership was estimated by adjusting the weekday all-day corridor ridership on each route by the ratio of Saturday and Sunday observed route ridership to weekday ridership from MBTA 2018 ridership data.

Person-hours of travel time savings was then calculated by multiplying the travel time savings on each segment in each time period by the ridership in each time period on each route operating on that segment. The weekday, Saturday and Sunday estimates were expanded to a full year assuming 253 weekdays, 54 Saturdays and Saturday schedule holidays, and 58 Sundays and Sunday schedule holidays.

Using this methodology, total annual travel time savings for bus riders is calculated as 246,072 hours. Due to uncertainty in future ridership patterns, this value is assumed to remain constant over time, accumulating to 4.9 million hours over the 20-year project lifecycle.

It should be noted that this benefit is calculated conservatively. Additional mode shift may be accrued through the service improvements creating a 'virtuous cycle' of increased transit ridership and reduced VMT. Further, population growth could also prompt a growth in mode shifted VMT over time. In light of the impacts of an uncertain COVID recovery, no ridership growth was assumed over the course of the analysis.

The monetization of the benefit is shown below, with a sample calculation, for clarity (all monetized benefits are shown in undiscounted dollars for easier confirmation of correctness):

Table 4: Sample calculation for Blue Hill Avenue travel time savings benefit

Description	Equation	Value	Source
Annual reduction in bus passenger travel time (person-hours)	(a)	246,072	Calculated from MBTA data (above)
Value of time for transit users (2019$)	(b)	$17.90	USDOT BCA Guidance
Monetized annual travel time savings (2019$)	(c) = (a) * (b)	$4,404,686	-

3.3 TRAVEL TIME SAVINGS – MATTAPAN SQUARE STATION

The intersection of Mattapan Square and Blue Hill Avenue is being reconfigured to allow a direct left turn from Blue Hill Avenue to the MBTA Driveway for buses, which is a significant improvement over existing conditions. In the existing conditions, buses are required to travel through the intersection of Blue Hill Avenue and River Street and make a U-turn to access the driveway. This causes delay for each bus. Using a Vissim model of the intersection, it was calculated that the intersection will save 12,770 person-hours for transit riders each year. Due to uncertainty in future ridership patterns, this value is assumed to remain constant over time. Figures 2 and 3 show the existing and proposed conditions at Mattapan Square.

Figure 2 Existing Condition at Mattapan Square

Figure 3 Proposed Condition at Mattapan Square

Table 5: Sample calculation for Mattapan Square intersection travel time savings benefit

Description	Equation	Value	Source
Annual reduction in bus passenger travel time (person-hours)	(a)	12,770	Calculated using Vissim model (above)
Value of time for transit users (2019$)	(b)	$17.90	USDOT BCA Guidance
Monetized annual travel time savings (2019$)	(c) = (a) * (b)	$228,583	-

3.4 CHANGE IN EMISSIONS

Based on the annual reduction 699,632 vehicle miles traveled (VMT) discussed in Section 3.1, the emission reduction was calculated based on a rate of 0.000398 metric tons of CO2 equivalents emitted per vehicle-mile. This results in an annual reduction of 278 metric tons of CO2 emitted.

Table 6: Sample calculation for emissions reduction benefit

Description	Equation	Value	Source
Annual reduction in VMT due to mode shift	(a)	699,632	Calculated using MBTA data (above)
Metric tons of CO2 equivalent emitted per vehicle-mile	(b)	3.98E-4	USDOT BCA Guidance
Monetized value CO2 equivalent per metric ton in 2023 (2019$)	(c)	$57	USDOT BCA Guidance
Monetized emissions reduction benefit (2019$)	(d) = (a) * (b) * (c)	$15,872	-

3.5 CRASH REDUCTION

The safety benefits assessed in this analysis include a reduction in fatalities and injuries, as well as a reduction in property damage crash costs resulting directly from the Project.

The conflicts between cars, transit buses and bicyclists on the roadway in the Blue Hill Avenue corridor and the high rates of incidents within the Project area indicate a lack of appropriate infrastructure to ensure the safety of roadway users. With peak hour congestion resulting in significant traffic volumes in a dense mixed-use residential area, the current configuration of the roadway and intersections in the Blue Hill Avenue corridor has resulted in frequent incidents resulting in damage to people and property.

The City of Boston maintains a Vision Zero database which aggregates data related to crashes which resulted in Emergency Medical Services, and fatalities. The data was loaded into ArcGIS, where the data was cleaned to eliminate crashes which did not occur along the Blue Hill Avenue project corridor, Figure 4 on the following page. The data indicated that through 2015 to 2020, **904 injury crashes and 3 fatal crashes** (indicated in red) occurred along the project corridor. This equates to an average of 150.7 injury crashes and 0.5 fatal crashes annually.

Figure 4: Blue Hill Avenue crash data visualized in ArcGIS

The analysis uses crash modification factors (CMFs) related to the modifications of the roadway to calculate their projected reduction in incidents related to the project improvements. By converting two lanes of the four- to six-lane roadway and the concrete median into two dedicated bus lanes and protected bicycle lanes, the changes in the roadway configuration effectively result in a road diet with additional safety improvements. The highest-quality CMF noted in the CMF Clearinghouse database indicated a CMF of 0.71 (CMF ID: 199), with a full five stars, indicating very high confidence in the CMF value.

Note: The road diet CMF used in the previous BUILD grant application of 0.95 has only one star for its quality ranking, indicating very low confidence in the CMF value. While the previous CMF was more conservative, the accuracy of previous results for this benefit are questionable, and benefits may have been undercounted in the previous BUILD grant submission.

In addition, protected bicycle lanes will be installed along the length of the corridor, which provides an additional traffic safety treatment and associated CMF to the analysis. The CMF Clearinghouse database provides a CMF of 0.734 (CMF ID: 10741) for installation of bicycle lanes, where bicycle traffic does not grow post-installation (this was used as a conservative estimate, as CMFs which assume bicycle traffic does grow indicate higher crash reductions).

To combine these CMF treatments, guidance from the CMF Clearinghouse was referred to, which recommended the "Systematic Reduction of Subsequent CMFs" method (Method 4.3), as most accurate to observed results of the treatments. The method produced the following combined CMF:

$$CMF_{combined} = 0.71 \times \left(\frac{1 - 0.73}{2} + 0.73\right) = 0.616$$

The corresponding reduction in both injury and fatal crashes is therefore estimated to be 38.4%. As no KABCO or MAIS crash severity data was available, the USDOT BCA Guidance's "injury crash" and "fatal crash" monetization values were applied to the combined CMF and annual average crash data.

Table 7: Sample calculation for crash reduction benefit (vehicle crash fatalities)

Description	Equation	Value	Source
Annual average fatal vehicle crashes	(a)	0.17	City of Boston Vision Zero data
Annual average fatal pedestrian crashes	(b)	0.33	City of Boston Vision Zero data
Combined Crash Reduction Factor	(c)	38.4%	CMF Clearinghouse, calculated
Reduction in annual average fatal vehicle crashes	(d) = [(a) + (b)] * (c)	0.19	-
Monetized value of fatal crash (2019$)	(e)	$12,071,000	USDOT BCA Guidance
Monetized fatal crash reduction benefit (2019$)	(f) = (d) * (e)	$2,320,227	-

4.0 SUMMARY

The project results in a final BCA of 5.87, with the full breakdown of benefits and costs described below, in discounted 2019 dollars:

Table 8: BCA Results

Description	Value	Units
Benefit 1 - Travel Time Savings (Blue Hill Avenue)	$31,093,734	2019$, discounted
Benefit 2 - Transit Travel Time Savings (Mattapan Station)	$1,613,622	2019$, discounted
Benefit 3 - Emissions Reductions	$229,670	2019$, discounted
Benefit 4 - Crash Reductions	$132,540,903	2019$, discounted
Total Benefits	**$165,477,958**	**2019$, discounted**

Previously Incurred Design Costs	$710,032	2019$, discounted
Capital Costs for Design/Engineering	$3,704,808	2019$, discounted
Capital Costs for Construction	$23,780,463	2019$, discounted
Residual Value (calculated)	($0)	2019$, discounted
Total Costs	**$28,195,303**	**2019$, discounted**

Benefit/Cost Ratio (BCR)	***5.87***	**-**
Net Present Value (NPV)	***$137,282,655***	***2019$, discounted***

BLUE HILL AVENUE MULTIMODAL CORRIDOR PROJECT
CONCEPT-LEVEL PROJECT COST ESTIMATE **9-Jul-21**

CONSTRUCTION ITEM	Quantity	Unit	TOTAL
Roadway Excavation - Full Depth Median and Platform Location Removal	18,000	CY	$1,080,000
Drain Manhole	100	EA	$500,000
Drainage Pipe (12")	2,500	LF	$162,500
Roadway Repaving - Full Depth Median Pavement	30000	TON	$2,454,860
Roadway Repaving - Sawcutting	29350	FT	$89,250
Roadway Repaving - Bituminous Tack Coat	1150	GAL	$11,500
Airport Pavement	4000	SY	$400,000
Separated Bike Lane Painting	62,900	SF	$943,500
Roadway Pavement Markings - Existing Paint Removal and Legends	170,900	SF	$323,715
Roadway Pavement Markings - Crosswalks and Stop Lines	146,600	FT	$217,850
Curbing for Platforms; Foundations	300	TON	$7,500
Curbing for Platforms; Base Course	80	CY	$20,000
Curbing for Platforms; Excavation	7,800	FT	$468,000
Landscaping - Trees and Greenery	1	LS	$240,000
Platform Amenities	24	LS	$7,200,000
Platform Concrete	1,680	TON	$57,120
Lighting Columns/Fixtures	20	LS	$2,000,000
Signals/Communications	19	LS	$375,000
Placemaking - Parks and Amenities	1	LS	$60,000
Miscellaneous - Test Pits and Rodent Control	1	LS	$8,700
Mill and Overay Entire Roadway from Curb to Curb	120,350	SY	$3,008,750
Entire Roadway Curb Ramps	32	EA	$136,018
Roadway Excavation/Box Widening - Island Removal (Mattapan Sq)	334	CY	$17,194
Drainage (Mattapan Sq)	1	LS	$130,578
Pavement Milling and Overlay (Mattapan Sq)	15000	SY	$382,500
Cement Concrete Sidewalk (Mattapan Sq)	6000	SY	$468,000
Raised Bike Lane (Mattapan Sq)	1700	SY	$132,600
ADA Ramps (Mattapan Sq)	28	EA	$119,016
Curbing (Mattapan Sq)	5900	FT	$295,000
Landscaping - Trees and Greenery (Mattapan Sq)	1	LS	$140,000
General Pavement Marking (Mattapan Sq)	8500	SF	$21,250
Lighting Columns/Fixtures (Mattapan Sq)	1	LS	$300,000
Traffic Signal Modification - BHA, Cummins and River (Mattapan Sq)	1	LS	$500,000
Traffic Signal Modification - Babson/Fairway (Mattapan Sq)	2	LS	$300,000
CONSTRUCTION SUBTOTAL			**$22,570,401**
CONSTRUCTION CONTINGENCY			**5,642,600**
DESIGN			**$4,231,950**
FORCE ACCOUNT			**1,000,000**
PROJECT ADMINISTRATION			**1,600,000**
PROJECT SUBTOTAL			**35,044,951**
PROJECT CONTINGENCY			**4,410,353**
TOTAL PROJECT COST			**$39,455,304**

City of Boston, Massachusetts
Office of the Mayor
KIM JANEY

July 8, 2021

The Honorable Pete Buttigieg
Office of the Secretary of Transportation
1200 New Jersey Ave, SE
Washington, DC 20590

Re: Local Match Commitment for Blue Hill Avenue RAISE Grant Application

Dear Secretary Buttigieg:

I am pleased to support this application for the Blue Hill Avenue Transit Priority Corridor project. This multi-modal project, with a dedicated transit component, has been in the making for more than a decade. It is driven by close collaboration between civic associations, small businesses, residents, and city and state public agencies.

Blue Hill Avenue is one of Boston's primary arteries, linking its largest and most diverse neighborhoods to the heart of the city. It provides access for local residents to Boston's major employment centers and is home to thriving small businesses, places of worship, schools, housing, and open spaces. However, the corridor is not without its challenges. Though supporting the highest bus ridership of any street in the entire public transit service network, Blue Hill Avenue bus riders experience severe travel time delays. It features prominently on Boston's High Crash Network, falling within the top 3% of city streets with the highest density of vehicular crashes. Additionally, with its wide and mostly unplanted median and heavy traffic volumes, the avenue is a heat island that contributes to higher than city-wide average carbon emissions.

The City of Boston hereby commits $8,300,000 in match funding to couple with the Massachusetts Bay Transportation Authority commitment of $6,243,000. These funds are unrestricted, and available upon notice of award.

The realization of this project will be an investment in Boston's most vulnerable communities, addressing decades of inequities. It will give back bus riders hours of their weeks, improve safe mobility for pedestrians and cyclists, and create a more active, cleaner, and greener public realm. Your favorable consideration would be greatly appreciated.

Sincerely,

Kim Janey
Mayor of Boston

ONE CITY HALL SQUARE | BOSTON, MA 02201
BOSTON.GOV | 617-635-4500

Charles D. Baker, Governor
Karyn E. Polito, Lieutenant Governor
Jamey Tesler, Acting MassDOT Secretary & CEO
Steve Poftak, General Manager

massDOT
Massachusetts Department of Transportation

The Honorable Pete Buttigieg
Secretary of Transportation
U.S. Department of Transportation
1200 New Jersey Ave, SE
Washington, DC 20590

Re: MBTA Support for Blue Hill Avenue Center-running Bus Lane RAISE Grant Application

Dear Secretary Buttigieg:

The Massachusetts Bay Transportation Authority (MBTA) would like to express support for the City of Boston's Rebuilding American Infrastructure with Sustainability and Equity (RAISE) application for the construction of center running bus lanes on Blue Hill Avenue. This project has been a priority for the region and was submitted in 2020 by the MBTA for BUILD grant funding that was not awarded. This year, the City of Boston is submitting the application with support from the MBTA.

This project is critical for the communities along this corridor as it will improve transit trip times, reliability, throughput capacity, and accessibility for riders along this key bus corridor through a collaborative effort between the MBTA and the City of Boston. Further, this project greatly improves bus service on four routes (Routes 14, 22, 28, and 29) of the MBTA's 15 identified bus routes serving underserved riders of color or low-income riders, and intersecting with a fifth underserved route (Route 23) at Grove Hall. Additionally, this project will resolve a critical bus transit delay segment identified in the MassDOT's and CTPS 2016 *Bus Lane Corridor Study,* and serve to implement the cornerstone of the City of Boston's community-driven *Blue Hill Avenue Transportation Action Plan*.

If the project is selected for award under the 2021 RAISE Grant Program, the MBTA will make local funding sources available in the amount of $6,243,103 to support a center running bus lane project on Blue Hill Avenue in addition to further local contributions from the City of Boston to support this project. If the City is awarded the RAISE grant, the MBTA, as an entity of Massachusetts Department of Transportation, will work with MassDOT and the City to coordinate administration and construction of the project, understanding that the City of Boston will be responsible for any expansion of project costs. The Commonwealth of Massachusetts will support the City in procurement for this contract in order to progress in compliance with all applicable federal requirements.

The Blue Hill Avenue Center Running Bus Lane project will also result in providing an additional 100 weekday bus vehicle trips along the corridor, without increasing the number ofbuses or operators needed. The added mileage will result in an approximate $900,000 additional annual operating expense from fuel and maintenance, which the MBTA also commits to funding, if adding service as described in the Benefit Cost Analysis.

Sincerely,

Steve Poftak
General Manager

AYANNA PRESSLEY
7TH DISTRICT, MASSACHUSETTS

Congress of the United States
House of Representatives
Washington, DC 20515

WASHINGTON, DC OFFICE
1108 LONGWORTH HOB
WASHINGTON, DC 20515
(202) 225-5111

BOSTON OFFICE
1700 DORCHESTER AVENUE
BOSTON, MA 02122

WWW.PRESSLEY.HOUSE.GOV

July 6, 2021

The Honorable Pete Buttigieg, Secretary
United States Department of Transportation
1200 New Jersey Avenue, S.E.
Washington, DC 20590

Dear Secretary Buttigieg:

I am writing to express my support for the City of Boston's proposed Blue Hill Avenue Corridor project FY2021 RAISE grant application.

This multi-modal project, with a dedicated transit component, has been in the making for more than a decade. It is driven by close collaboration between civic associations, small-businesses, residents, and city and state public agencies. At its core, the project improves access to quality public transportation for Environmental Justice communities by expanding reliable connections to economic opportunity and community services.

Blue Hill Avenue is one of Boston's primary arteries, linking its most diverse neighborhoods to the heart of the city. It is home to thriving small businesses, places of worship, schools, playgrounds, and residence. However, Blue Hill Avenue too often fails to provide safe, quality modes of transportation for all those who live and work along it. Commute times for residents in this area are among the longest of any in the Boston. Enhancing access along Blue Hill Avenue is a priority for the City of Boston as it strives to address inequities and disinvestment in its neighborhoods. Sustainable transportation options, particularly for those disproportionately reliant on public transit, are key to its efforts.

The application shows how the project will make Blue Hill Avenue safer for all modes of transportation; consider climate change; improve transportation choices; provide reliable and efficient public transportation; and create attractive public spaces. Pedestrian-friendly crossings and sidewalks, bike facilities including bike share stations, a healthy tree canopy, and public art by local artists are all incorporated in the design.

The City of Boston has started to install small-scale early-action improvements along the corridor, such as a youth-based artists program, to set the stage for the complete redesign of the corridor. But to change the trajectory of this corridor and the lives of those who rely on it, I respectfully ask USDOT to give this application your full consideration.

If you have any questions or need any further information, please contact my District Director, Eric White at 617-850-0040 or Eric.White@mail.house.gov.

Sincerely,

Ayanna Pressley
Member of Congress

The Commonwealth of Massachusetts
House of Representatives
State House, Boston 02133-1054

RUSSELL E. HOLMES
STATE REPRESENTATIVE
REPRESENTING THE PEOPLE OF THE
6TH SUFFOLK DISTRICT
DORCHESTER • HYDE PARK • JAMAICA PLAIN
MATTAPAN • ROSLINDALE

VICE CHAIR
HOUSE COMMITTEE ON HOUSING

JOINT COMMITTEE ON WAYS AND MEANS
JOINT COMMITTEE ON FINANCIAL SERVICES
JOINT COMMITTEE ON PUBLIC SERVICE

STATE HOUSE, ROOM 254
TEL. (617) 722-2220
Russell.Holmes@MAhouse.gov

6/28/2021

The Honorable Pete Buttigieg, Secretary
United States Department of Transportation
1200 New Jersey Avenue, S.E.
Washington, DC 20590

Dear Secretary Buttigieg,

Please accept this letter of support for the City of Boston's proposed Blue Hill Avenue Corridor project to the U.S. Department of Transportation's RAISE Program. This multi-modal project, with a dedicated transit component, has been in the making for more than a decade. It is driven by close collaboration between civic associations, small-businesses, residents, and city and state public agencies. At its core, the project improves access to quality public transportation for Environmental Justice communities by expanding reliable connections to economic opportunity and community services.

Blue Hill Avenue is one of Boston's primary arteries, linking its most diverse neighborhoods to the heart of the city. It is home to thriving small businesses, places of worship, schools, playgrounds and housing. However, the Avenue too often fails to provide safe, quality access for all those who live and work along it. Commute times for residents in this area are among the longest of any in the Boston. Enhancing access along Blue Hill Avenue is a priority for the City of Boston as it strives to address inequities and disinvestment in its neighborhoods. Sustainable transportation options, particularly for those disproportionately reliant on public transit, are key to its efforts.

The application shows how the project will make Blue Hill Avenue safer for all modes of transportation; consider climate change; improve transportation choices; provide reliable and efficient public transportation; and create attractive public spaces. Pedestrian-friendly crossings and sidewalks, bike facilities including bike share stations, a healthy tree canopy, and public art by local artists are all incorporated in the design.

Extensive community outreach and transparent decision making will continue to inform this project. Through this work, the City of Boston has started to install small-scale early-action improvements along the corridor, such as a youth-based artists program, to set the stage for the complete redesign of the corridor.

For these reasons and many more, I submit my support. The Blue Hill Avenue Transit Priority Corridor aligns with the grant program priorities and would be a good investment of RAISE grant funding. Thank you for your consideration.

Sincerely,

Russell E. Holmes,
State Representative, 6th Suffolk District

The Commonwealth of Massachusetts

HOUSE OF REPRESENTATIVES

LIZ MIRANDA
STATE REPRESENTATIVE
5th Suffolk District

liz.miranda@mahouse.gov

Vice Chair - Human Resources and Employee Engagement
Veterans & Federal Affairs
Public Safety & Homeland Security
Community Development & Small Businesses

June 29, 2021

The Honorable Pete Buttigieg, Secretary
United States Department of Transportation
1200 New Jersey Avenue, S.E.
Washington, DC 20590

Dear Secretary Buttigieg:

Please accept this letter of support for the City of Boston's proposed Blue Hill Avenue Corridor project to the U.S. Department of Transportation's RAISE Program. This multi-modal project, with a dedicated transit component, has been in the making for more than a decade. It is driven by close collaboration between civic associations, small-businesses, residents, and city and state public agencies. By expanding reliable connections to economic opportunity and community services, this project improves much-needed access to high-quality public transportation for communities most impacted and vulnerable to the effects of environmental change.

As Massachusetts State Representative for the 5th Suffolk District, it is critical that we take advantage of every opportunity to help our communities nurture, grow, and develop. Blue Hill Avenue is one of our city's liveliest and busiest arterials. Congestion in one area can cause issues in a variety of industries. I cannot think of a better candidate for this grant than Blue Hill Avenue.

Blue Hill Avenue is one of Boston's main thoroughfares, connecting the city's most diverse neighborhoods to the heart of the city. It is home to thriving small businesses, religious institutions, schools, playgrounds, and housing. However, the Avenue all too often fails to provide safe, high-quality access to all who live and work along it. Residents in this area have some of the longest commute times in the city. The City of Boston prioritizes improving access along Blue Hill Avenue as part of its efforts to address inequities and disinvestment in its neighborhoods. Sustainable transportation options, particularly for those who rely disproportionately on public transportation, are critical to its efforts.

The application demonstrates how the project will make Blue Hill Avenue safer for all modes of transportation, take climate change into account, improve transportation options, provide reliable and efficient public transportation, and create attractive public spaces. The design incorporates pedestrian-friendly crossings and sidewalks, bike facilities including bike share stations, a healthy tree canopy, and public art by local artists.

The Commonwealth of Massachusetts

HOUSE OF REPRESENTATIVES

LIZ MIRANDA
STATE REPRESENTATIVE
5th Suffolk District

liz.miranda@mahouse.gov

Vice Chair - Human Resources and Employee Engagement
Veterans & Federal Affairs
Public Safety & Homeland Security
Community Development & Small Businesses

Extensive community outreach and open decision-making will continue to inform this project. Through this work, the City of Boston has begun to implement small-scale early-action improvements along the corridor, such as a youth-based artists program, in order to lay the groundwork for a complete redesign of the corridor.

For these reasons, I submit that the Blue Hill Avenue Transit Priority Corridor aligns with the grant program priorities and would be a good investment of RAISE grant funding. Thank you for your consideration.

Yours in service,

Liz Miranda

State Representative
5th Suffolk District

OFFICE OF

RICARDO ARROYO

BOSTON CITY COUNCILOR
DISTRICT 5

The Honorable Pete Buttigieg, Secretary
United States Department of Transportation
1200 New Jersey Avenue, S.E.
Washington, DC 20590

July 2, 2021

Dear Secretary Buttigieg,

Please accept this letter of support for the City of Boston's proposed Blue Hill Avenue Corridor project to the U.S. Department of Transportation's RAISE Program. This multi-modal project, with a dedicated transit component, has been in the making for more than a decade. It is driven by close collaboration between civic associations, small-businesses, residents, and city and state public agencies. At its core, the project improves access to quality public transportation for Environmental Justice communities by expanding reliable connections to economic opportunity and community services.

Blue Hill Avenue is one of Boston's primary arteries, linking its most diverse neighborhoods to the heart of the city. It is home to thriving small businesses, places of worship, schools, playgrounds and housing. However, the Avenue too often fails to provide safe, quality access for all those who live and work along it. Commute times for residents in this area are among the longest of any in the City of Boston. Enhancing access along Blue Hill Avenue is a priority for the City of Boston as it strives to address inequities and disinvestment in its neighborhoods. Sustainable transportation options, particularly for those disproportionately reliant on public transit, are key to its efforts.

The application shows how the project will make Blue Hill Avenue safer for all modes of transportation; consider climate change; improve transportation choices; provide reliable and efficient public transportation; and create attractive public spaces. Pedestrian-friendly crossings and sidewalks, bike facilities including bike share stations, a healthy tree canopy, and public art by local artists are all incorporated in the design.

Extensive community outreach and transparent decision making will continue to inform this project. Through this work, the City of Boston has started to install small-scale early-action improvements along the corridor, such as a youth-based artists program, to set the stage for the complete redesign of the corridor.

For these reasons, I submit that the Blue Hill Avenue Transit Priority Corridor aligns with the grant program priorities and would be a good investment of RAISE grant funding. Thank you for your consideration.

Sincerely,

Ricardo Arroyo
Boston City Councilor, District 5

MAPC
METROPOLITAN AREA PLANNING COUNCIL

SMART GROWTH AND REGIONAL COLLABORATION

July 2, 2021

The Honorable Pete Buttigieg, Secretary
United States Department of Transportation
1200 New Jersey Avenue, S.E.
Washington, DC 20590

Dear Secretary Buttigieg:

Please accept this letter of support for the City of Boston's proposed Blue Hill Avenue Corridor project to the U.S. Department of Transportation's RAISE Program. This multi-modal project, with a dedicated transit component, has been in the making for more than a decade. It is driven by close collaboration between civic associations, small-businesses, residents, and city and state public agencies. At its core, the project improves access to quality public transportation for Environmental Justice communities by expanding reliable connections to economic opportunity and community services.

Metropolitan Area Planning Council (MAPC) is the regional planning agency serving the 101 cities and towns that make up Greater Boston, and over the past five years has supported our municipalities and the MBTA to improve our busiest bus corridors with dedicated bus lanes and other bus priority features. As Vice Chair of the Boston Metropolitan Planning Organization (Boston MPO), we have also funded the implementation of these features.

Blue Hill Avenue is one of Boston's primary arteries, linking its most diverse neighborhoods to the heart of the city. It is home to thriving small businesses, places of worship, schools, playgrounds and housing. However, the Avenue too often fails to provide safe, quality access for all those who live and work along it. Commute times for residents in this area are among the longest of any in the Boston.

The application shows how the project will make Blue Hill Avenue safer for all modes of transportation; consider climate change; improve transportation choices; provide reliable and efficient public transportation; and create attractive public spaces. Pedestrian-friendly crossings and sidewalks, bike facilities including bike share stations, a healthy tree canopy, and public art by local artists are all incorporated in the design.

For these reasons, I submit that the Blue Hill Avenue Transit Priority Corridor aligns with the grant program priorities and would be a good investment of RAISE grant funding. Thank you for your consideration.

Sincerely,

Eric Bourassa
MAPC Transportation Director
617-933-0740

MASCO

MEMBER INSTITUTIONS

Beth Israel Deaconess Medical Center
Boston Children's Hospital
Brigham and Women's Hospital
Dana-Farber Cancer Institute
Emmanuel College
Harvard University
- Harvard Medical School
- Harvard School of Dental Medicine
- Harvard T.H. Chan School of Public Health

Isabella Stewart Gardner Museum
Joslin Diabetes Center
Judge Baker Children's Center
Massachusetts College of Art and Design
Massachusetts College of Pharmacy and Health Sciences University
Massachusetts Department of Mental Health
Simmons University
Temple Israel
Wentworth Institute of Technology
The Winsor School

ASSOCIATE MEMBERS

Boston University Wheelock College of Education & Human Development
Fenway Community Health Center
Massachusetts Eye and Ear Infirmary
Merck Research Laboratories

July 8, 2021

The Honorable Pete Buttigieg, Secretary
United States Department of Transportation
1200 New Jersey Avenue, S.E.
Washington, DC 20590

Dear Secretary Buttigieg:

MASCO is writing in support of the City of Boston's proposed Blue Hill Avenue Corridor project to the U.S. Department of Transportation's RAISE Program. This multi-modal project, with a dedicated transit-equity component, is community-driven and seeks to address severe safety concerns and long-standing travel time inequities. As a vital corridor that provides access to and from Boston's major employment centers, such as the Longwood Medical and Academic Area (LMA), for residents in Roxbury, Dorchester, and Mattapan, multiple city and state agencies, civic associations, small businesses, and residents have been working together on a transformative vision to substantially improve quality of life for commuters, workers, and neighbors.

At its core, the project improves access to reliable public transportation in a part of the city that has been underserved for the last several decades, severely limiting opportunities for residents to access jobs, education, and care.

Also known as the Medical Academic and Scientific Community Organization, MASCO is a non-profit organization located in the LMA with a mission to drive collaborative solutions enabling Longwood to be an innovative hub of health care, research, and education. The LMA has one of the highest concentrations of jobs in Massachusetts, employing 68,000 workers, educating 27,000 students, and treating 2.8 million patients each year. The LMA now has one of the highest concentrations of jobs in Boston, increasing by nearly 30%, or nearly 15,000 jobs, in only 10 years, double Massachusetts' growth rate during the same period.

Blue Hill Avenue is one of Boston's major transportation corridors, linking its most diverse neighborhoods, such as Roxbury, Dorchester, and Mattapan, to the heart of the city. However, Blue Hill Avenue too often fails to provide safe, quality access for all those who live and work along it. Commute times for residents in this area are among the longest of any in the Boston and the most unreliable. Enhancing access along Blue Hill Avenue is a priority because it would not only improve the experience for the thousands of current employees, students, and patients living in Roxbury, Dorchester, and Mattapan in getting to their jobs, schools, and medical care in the LMA but, more importantly, it would provide life-changing access to critical best in the nation care, diverse employment opportunities with career pathways, and higher-education to many for the very first time.

The City of Boston's application shows how the project will make Blue Hill Avenue safer for all modes of transportation; consider climate change; improve transportation choices; address

disparities; provide reliable and efficient public transportation; and create attractive and healthy public spaces. For these reasons, I submit that the Blue Hill Avenue Transit Priority Corridor aligns with the grant program priorities and would be a good investment of RAISE grant funding. Thank you for your consideration.

Sincerely,

Tom Yardley
Vice President, Area Planning and Development
Medical Academic Scientific Community Organization, Inc. (MASCO)

July 9, 2021

The Honorable Pete Buttigieg, Secretary
United States Department of Transportation
1200 New Jersey Avenue, S.E.
Washington, DC 20590

Dear Secretary Buttigieg:

Please accept this letter of support From ITDP-and our Boston partners LivableStreets Alliance and TransitMatters- for the City of Boston's proposed Blue Hill Avenue Corridor project to the U.S. Department of Transportation's RAISE Program. This multi-modal project, with a dedicated transit component, has been in the making for more than a decade and is one of the most important and heavily-used transit corridors in Boston, serving five bus routes and 35,000 passengers per day in some of the most racially diverse and economically marginalized neighborhoods in the region. At its core, the project improves access to quality public transportation for environmental justice communities by expanding reliable connections to economic opportunity and community services, with the potential to become one of the highest performing, busiest bus rapid transit corridors in the nation.

As a global organization at the forefront of sustainable mobility innovation, ITDP has developed The BRT Standard to evaluate bus rapid transit (BRT) based on international best practices to ensure world-class passenger experiences and positive environmental and social impacts. ITDP scores BRT corridors based on physical elements, service planning and other factors, assigning scores and rankings based on these criteria. **ITDP has identified Blue Hill Avenue as one of the most important corridors in the country with the potential to be among the highest ranking on the *BRT Standard*, improving access and mobility for bus riders, cyclists and pedestrians and positioning the city to deliver on its ambitious climate and equity goals.**

Blue Hill Avenue is one of Boston's primary road arteries, linking its most diverse neighborhoods to the heart of the city. It is home to thriving small businesses, places of worship, schools, playgrounds and housing. Travel times for residents in this area are among the longest of any in the Boston region. Enhancing access along Blue Hill Avenue is clearly a priority for the City of Boston as it strives to address inequities and disinvestment in its neighborhoods. We know that sustainable transportation options, particularly for those disproportionately reliant on public transit, are key to its efforts.

Blue Hill Avenue as Shovel Worthy

In many ways, this project revives Blue Hill Avenue as the transit-centered corridor that it was until the 1950s, when streetcars operated in a center-running dedicated right of way and people moved safely on foot between the many homes and businesses along its sidewalks. When streetcars were replaced by buses, the roadway was extended over the previous transit median and buses began to serve curbside stops, subject to delays and conflicts from traffic. In contrast, today much of the corridor is a wide expanse of concrete with multiple travel and parking lanes in each direction and no transit priority despite tens of thousands of daily transit riders. Bicycle facilities along the corridor are adjacent to parking, forcing people using bicycles to contend with buses frequently pulling to and from the curb in addition to parked cars and opening doors.

The project proposed by the Boston Transportation Department will effectively make Blue Hill Avenue safer for all modes of transportation by dedicating space for buses, bikes and pedestrians, in addition to but separate from cars . Its multimodal design clearly considers climate change, improves transportation choices, provides reliable and efficient public transportation, and creates attractive public spaces.

While bus improvements are the anchor of this project, pedestrian-friendly crossings and sidewalks, bike facilities including bike share stations, a healthy tree canopy, and public art by local artists are all incorporated in the design. Further, the median-aligned bus lanes will allow buses to avoid conflicts with bicyclists, delivery vehicles and other curb uses, while also bypassing traffic queues and congestion.

Ultimately, this application offers a roadway design that prioritizes moving *people*, not *vehicles*. In doing so, it will improve travel for tens of thousands of people every day, as well as attract substantive new transit ridership. Dedicated bus lanes will make trips faster and more reliable, since travel times will no longer vary according to congestion. This will allow the MBTA to operate more trips with the same number of buses, increasing service frequency, especially at rush hour. Based on an average travel time savings of 5 minutes per passenger, this corridor could save people approximately 500,000 hours of travel time per year. Furthermore, if bus operation time can be reduced by 5%, it will save the MBTA $1 million per year, which can be invested into increased operations on this corridor or elsewhere.[1]

Blue Hill Ave compared to other US BRT corridors

ITDP has worked closely with transit agencies across the United States and the world to score and rank BRT corridors. Currently, ITDP has identified five US BRTs which qualify as “Bronze” and two which qualify as “Silver.” Of these BRT systems, only two, in Pittsburgh and Los Angeles, have ridership even approaching that of Blue Hill Avenue.

[1] https://www.transit.dot.gov/ntd/transit-agency-profiles/massachusetts-bay-transportation-authority

We believe that Blue Hill Avenue could become the highest-ridership BRT corridor in the country. The exact BRT score will depend on a number of factors, specifically regarding how the corridor is operated by the transit agency. However, with the plans presented in this application, we expect that it would score at least in the Bronze range and, with improvements to level boarding and fare payment systems, may be able to score as a Silver or even Gold Standard BRT.

The City of Boston is currently building a similar center-running bus corridor on Columbus Avenue at a cost of approximately $10 million per mile. At this cost, a similar service on Blue Hill Avenue would be significantly less expensive than many peer systems which have been funded through TIGER, BUILD and FTA Capital Investment Grant programs. In fact, the Blue Hill Avenue BRT would be one of the less-expensive federally-funded BRT projects, many of which include minimal separated right-of-ways and carry a fraction of the passengers that Blue Hill Avenue buses carry today. In short, Blue Hill Avenue offers an exceptional opportunity to showcase BRT as a cost-effective solution to transportation challenges in Boston.

Extensive community outreach and transparent decision making will continue to inform this project. Through this work, the City of Boston has started to install small-scale early-action improvements along the corridor, such as a youth-based artists program, to set the stage for the complete redesign of the corridor.

For these reasons, we are proud to submit that the Blue Hill Avenue Transit Priority Corridor aligns with the grant program priorities and would be an excellent investment of RAISE grant funding. Thank you for your consideration, and please do not hesitate to contact us about this project.

Sincerely,

Michael Kodransky
US Director, ITDP

Julia Wallerce
Boston Program Manager, ITDP

Stacy Thompson
Executive Director, LivableStreets Alliance

Jarred Johnson
COO, TransitMatters

ZOO NEW ENGLAND
Franklin Park Zoo • Stone Zoo

July 2, 2021

The Honorable Pete Buttigieg, Secretary
United States Department of Transportation
1200 New Jersey Avenue, S.E.
Washington, DC 20590

Dear Secretary Buttigieg:

Please accept this letter of support for the City of Boston's proposed Blue Hill Avenue Corridor Project to the U.S. Department of Transportation's RAISE Program. This multi-modal project, with a dedicated transit component, has been in the making for more than a decade. It is driven by close collaboration between civic associations, small-businesses, residents, and city and state public agencies. At its core, the project improves access to quality public transportation for Environmental Justice communities by expanding reliable connections to economic opportunity and community services.

Franklin Park Zoo is both a not-for-profit business and cultural institution that faces on Blue Hill Avenue. With limited parking and limited parking expansion opportunities, our fiscal sustainability relies on public transportation improvements. Further, parking limitations up and down Blue Hill Avenue constitute constraints on businesses and residents. Public transportation is particularly important to the communities of color along the Avenue in ensuring accessibility to the zoo, work, shopping and home. As an organization with conservation at the core of its mission we further support this important project. Thus, we heartily support the Blue Hill Avenue Corridor Project.

Blue Hill Avenue is one of Boston's primary arteries, linking its most diverse neighborhoods to the heart of the city. It is home to thriving small businesses, places of worship, schools, playgrounds and housing. However, the Avenue too often fails to provide safe, quality access for all those who live and work along it. Commute times for residents in this area are among the longest of any in the City of Boston. Enhancing access along Blue Hill Avenue is a priority for the City of Boston as it strives to address inequities and disinvestment in its neighborhoods. Sustainable transportation options, particularly for those disproportionately reliant on public transit, are key to its efforts.

The application shows how the project will make Blue Hill Avenue safer for all modes of transportation; consider climate change; improve transportation choices; provide reliable and efficient public transportation; and create attractive public spaces. Pedestrian-friendly crossings and sidewalks, bike facilities including bike share stations, a healthy tree canopy, and public art by local artists are all incorporated in the design.

Extensive community outreach and transparent decision making will continue to inform this project. Through this work, the City of Boston has started to install small-scale early-action improvements along the corridor, such as a youth-based artists program, to set the stage for the complete redesign of the corridor.

Corporate Offices ♦ One Franklin Park Road Boston, MA 02121 Phone (617) 989-2000 Fax (617) 989-2025
Stone Zoo ♦ 149 Pond Street Stoneham, MA 02180 Phone (781) 438-5100 Fax (781) 438-9517
www.zoonewengland.com

For these reasons, I submit that the Blue Hill Avenue Transit Priority Corridor aligns with the grant program priorities and would be a good investment of RAISE grant funding. Thank you for your consideration.

Sincerely,

John Linehan
President & CEO
Zoo New England

Zoo New England/Franklin Park Zoo
1 Franklin Park Road
Boston, MA 02121
jlinehan@zoonewengland.org

Harvard Street
Neighborhood
Health Center Inc.
632 Blue Hill Avenue, Dorchester, MA 02121 | Tel: 617-825-3400 | Fax: 617-282-1450 | www.harvardstreet.org

The Honorable Pete Buttigieg, Secretary
United States Department of Transportation
1200 New Jersey Avenue, S.E.
Washington, DC 20590

July 2, 2021

Dear Secretary Buttigieg:

Please accept this letter of support for the City of Boston's proposed Blue Hill Avenue Corridor project to the U.S. Department of Transportation's RAISE Program. This multi-modal project, with a dedicated transit component, has been in the making for more than a decade. It is driven by close collaboration between civic associations, small-businesses, residents, and city and state public agencies. At its core, the project improves access to quality public transportation for Environmental Justice communities by expanding reliable connections to economic opportunity and community services.

Blue Hill Avenue is one of Boston's primary arteries, linking its most diverse neighborhoods to the heart of the city. It is home to thriving small businesses, places of worship, schools, playgrounds and housing. However, the Avenue too often fails to provide safe, quality access for all those who live and work along it. Commute times for residents in this area are among the longest of any in the Boston. Enhancing access along Blue Hill Avenue is a priority for the City of Boston as it strives to address inequities and disinvestment in its neighborhoods. Sustainable transportation options, particularly for those disproportionately reliant on public transit, are key to its efforts.

The application shows how the project will make Blue Hill Avenue safer for all modes of transportation; consider climate change; improve transportation choices; provide reliable and efficient public transportation; and create attractive public spaces. Pedestrian-friendly crossings and sidewalks, bike facilities including bike share stations, a healthy tree canopy, and public art by local artists are all incorporated in the design.

Extensive community outreach and transparent decision making will continue to inform this project. Through this work, the City of Boston has started to install small-scale early-action improvements along the corridor, such as a youth-based artists program, to set the stage for the complete redesign of the corridor.

For these reasons, I submit that the Blue Hill Avenue Transit Priority Corridor aligns with the grant program priorities and would be a good investment of RAISE grant funding. Thank you for your consideration.

Sincerely,

Charles Murphy
President & CEO (Interim)

GREATER GROVE HALL
MAIN STREETS

July 4, 2021

The Honorable Pete Buttigieg, Secretary
United States Department of Transportation
1200 New Jersey Avenue, S.E.
Washington, DC 20590

Dear Secretary Buttigieg:

Please accept this letter of support for the City of Boston's proposed Blue Hill Avenue Corridor project to the U.S. Department of Transportation's RAISE Program. This multi-modal project, with a dedicated transit component, has been in the making for more than a decade. It is driven by close collaboration between civic associations, small-businesses, residents, and city and state public agencies. At its core, the project improves access to quality public transportation for Environmental Justice communities by expanding reliable connections to economic opportunity and community services.

This funding is critical for the continuous improvement of Blue Hill Ave, especially implementing a 'Green Median" which would both beautify the area and improve environmental sustainability by helping with storm water management.

Sincerely,

Ed Gaskin
Executive Director
Greater Grove Hall Main Streets

320 A Blue Hill Avenue, Boston MA 02121 • GreaterGroveHall.org • 617.460.2326

July 9, 2021

Ms. Charlotte Fleetwood
City of Boston Transportation Department
1 City Hall Square
Boston, MA 02201

Re: Blue Hill Avenue Transportation Action Plan
RAISE Grant Application
GMNC Public Services Committee

Dear Ms. Fleetwood:

The Greater Mattapan Neighborhood Council is committed to working with the City of Boston Transportation Department toward an equitable vision for a revitalized Blue Hill Avenue. To that end, we offer our support of BTD's effort to bring federal funds to Greater Mattapan via a RAISE Grant. We believe that these funds will play a vital role in allowing the Blue Hill Avenue corridor to serve the Greater Mattapan community.

We welcome the City's ongoing efforts to ensure the final design of the corridor will meet the GMNC's expectations for sustainability and equity.

Signed,

The Greater Mattapan Neighborhood Council

Blue Hill Avenue Transportation Action Plan

7/8/2021

Shared Vision

The Blue Hill Ave. Transportation Action Plan seeks to improve quality of life for ***local residents in partnership with corridor users*** *to address inequities and reimagine how the corridor functions.*

Shared Goals

- ***Improve bus reliability and reduce travel time inequities*** *by creating center-running bus lanes. Work with the MBTA to develop this design and improve bus service.*
- ***Reduce heat island effects*** *by preserving mature trees and planting new ones. Work with the Boston Parks Department to determine tree locations, planting methods, and a maintenance strategy.*
- ***Improve conditions for older adults and persons with disabilities*** *by creating safe, comfortable, and accessible bus stops, sidewalks and street crossings. Work with the Commission for Persons with Disabilities and the Age Strong Commission to incorporate best practices.*
- ***Incorporate high quality bike facilities*** *so that people can choose biking as a safe, convenient, and healthy travel mode. Work with the city's Bluebikes manager, Boston's Bike Mayor, and youth cycling organizations to ensure that those who wish to ride have access to bikes, helmets, bike lights, repair events, and safety tips.*
- ***Contribute to a thriving small business community*** *by providing short term parking and loading, and by working with Mattapan Main Streets and others to identify opportunities to incorporate local art and programming that celebrates the diverse cultures of people who live in Mattapan and highlights local BIPOC owned businesses*
- ***Minimize driver delay*** *and communicate any expected changes with the community*

Education and Engagement

This project will be a success only if it is designed ***with the community*** through a robust, transparent, and accountable engagement process. To that end, we commit to:

- *An **open and transparent process** that includes multiple opportunities for collaboration in various languages, and regular updates*
- *Creating and updating the **project website** with a clear schedule, notice of upcoming events, and a rendering of the current design (or the latest presentation if pre-design)*
- *Getting the word out through **multilingual mailings, flyers, ads and radio announcements** in addition to electronic media*
- *Attending **virtual meetings hosted by the Greater Mattapan Neighborhood Council (GMNC) and the GMNC Public Services Committee** to share updates and seek feedback*
- ***Engaging directly with bus riders, pedestrians, and people who ride bikes** on Blue Hill Avenue and in the community*
- *Hosting **bimonthly (once every 2 months) virtual "office hours"** in coordination with Boston Planning & Development Agency (BPDA)*
- *Supporting group walks, bike rides, transit trips, workshops, and other **educational activities hosted by local community based organizations** as fun way to engage youth, families, older adults, and others*
- ***Document** the city's adherence to the process described above and provide a **report-card style document for the GMNC to complete and submit to the city***

Consistency with Existing Plans and Policies

The design for Blue Hill Avenue will be consistent with:

- **Go Boston 2030**'s Guiding Principles, Goals and Targets
- **PLAN: Mattapan**
- The city's **Transportation Equity Framework** which states that ***when making decisions we will:***
    - ➢ *Work with members of the community to **visualize** how transportation projects relate to people and places*
    - ➢ ***Prioritize equity** when making decisions*
    - ➢ *Discuss a **commitment to addressing inequities** across the city*

ATTACHMENT 8

BLUE HILL AVENUE MULTIMODAL CORRIDOR CONCEPT DESIGN

07/08/2021