

HYANNIS ACCESS PHASE II



BUILDING A
COMPLETE STREETS
CONNECTION TO THE
HEART OF CAPE COD

2019 BUILD GRANT APPLICATION



CAPE COD
COMMISSION

PREPARED BY CAPE COD COMMISSION STAFF ON
BEHALF OF THE TOWN OF BARNSTABLE AND THE
CAPE COD COMMISSION



Executive Summary

PROJECT CO-APPLICANTS

Town of Barnstable, MA and the Cape Cod Commission

GRANT OPPORTUNITY

2019 Better Utilizing Investments to Leverage Development (BUILD) Program

FUNDING REQUEST

\$25 million

HYANNIS ACCESS PHASE II



BUILDING A COMPLETE STREETS CONNECTION TO THE HEART OF CAPE COD

PROJECT DESCRIPTION

This design-build project is part of a 20-year, \$100 million vision to improve access to the Village of Hyannis, the largest and most urbanized area in the Town of Barnstable and on Cape Cod, for all users.

Yarmouth Road provides direct access from Route 6, the only limited-access highway on Cape to the region's economic and transportation hubs in Hyannis Center. Yarmouth Road has reached its service life and currently only provides two single lanes of travel with a narrow shoulder and no multi-modal

accommodations. It is the main route to Cape Cod Hospital, the region's largest emergency and health care service provider, for ambulances from the rural lower and outer Cape towns. Due to significant traffic congestion on the corridor, many ambulances seek alternate routes which lengthens emergency response times. Traffic congestion on Yarmouth Road is a barrier to economic development in Hyannis and complicates freight access as residents, visitors and commercial traffic avoid the area due to long delays and the lack of alternative transportation modes. This project will also directly benefit the Hyannis Opportunity Zone.

The Complete Streets reconstruction of Yarmouth Road improves connectivity by converting the roadway from two lanes to a four-lane boulevard and includes the addition of a bicycle-pedestrian path connecting the Cape Cod Rail Trail to the region's transit hub. The project will serve the entire Cape Cod region, including the 15 communities (including both urban and rural) that use the Yarmouth Road corridor to access the region's largest hospital, national and regional retail stores, , the regional airport, the Cape Cod Regional Transit Authority Transportation Center, and passenger and freight ferry service to Nantucket and Martha's Vineyard islands.

Broad public and regional support of the project has been consistently demonstrated through a series of public engagement processes and surveys. Letters of support from legislators, agencies and organizations are included in this application.

PROJECT SCOPE

Upgrading this portion of Yarmouth Road will connect two recent bookend projects - the \$6 million upgrade of the Route 6 interchange to the currently planned \$13 million Route 28 intersection upgrade. The final segment of the Yarmouth Road corridor upgrade will enhance this vital link between the Cape's two main thoroughfares and the region's economic hub, Hyannis.

The addition of a multi-use path along Yarmouth Road will connect the region's multi-use path network, the Cape Cod Rail Trail. \$23 million has been expended or is currently obligated for the build-out of the Cape Cod Rail Trail which will ultimately span 88 miles across Cape Cod.



KEY PROJECT BENEFITS

- **Improves Emergency Medical Access:** Improves access to the region's largest hospital and regional airport, cutting crucial minutes off the main ambulance route to the hospital and the route for advanced medical air transport at the Barnstable Municipal Airport
- **Provides new access and development opportunities to the regional airport** with construction of a roundabout at the Yarmouth Road and Ferndoc Road intersection
- **Reduces Freight Delays:** Reduces delays to freight moving through the corridor and connecting to the islands of Martha's Vineyard and Nantucket via ferries from Hyannis
- **Creates New Multi-Modal Connections** between the regional path network and the regional transit hub (regional bus, intercity bus, rail, air, and ferry)
- **Reduces Traffic Congestion:** Reduces congestion that stifles economic development and job access to an area uniquely suited for such activities
- **Improves Roadway and Pedestrian Safety** in a corridor with documented safety issues
- **Improves Road Conditions:** Improves the state of good repair of a roadway that is critical to the region's transportation network
- **Economic Improvement:** Improves economic competitiveness and movement of goods in a key freight corridor and critical economic opportunity, including expansion of the regional broadband network, and direct benefit to the Hyannis Opportunity Zone.
- **Enhances Quality of Life** by addressing high priority needs for pedestrians and bicycles (located near identified concentration of individuals with limited access to personal automobiles) and through the construction of a planted median
- **Enhances the Environment:** Promotes environmental sustainability by reducing carbon emissions, improving stormwater management, removing pollutants from the Cape's sensitive public water supply and potentially improving water quality in a nitrogen-sensitive area

PROJECT SCHEDULE

	Start	Complete
Grant Agreement Negotiation	January 2020	May 2020
Permitting & Approvals	September 2020	August 2022
Design	September 2020	September 2022
Right-of-Way Assembly	February 2021	June 2022
Construction Procurement	October 2022	January 2023
Construction	Spring 2023	Spring 2026

PROJECT BUDGET

Sources	Funding
BUILD Request	\$25,000,000
Town of Barnstable	\$10,049,016
TOTAL	\$35,049,016

Uses	
Design and permitting	\$2,004,456
Construction	\$20,044,560
Right-of-way acquisition	\$13,000,000
TOTAL	\$35,049,016

Selection Criteria:

- **Safety** – Proposed project will result in a 68% crash reduction with proposed median and roadway cross section. Improved hospital access and reduced time of travel for ambulances from urban and rural communities on Outer and Lower Cape Cod.
- **State of Good Repair** – This project has been designated as one of the most important regional projects within the next 20 years in both the 2016 and 2020 RTP by the MPO.
- **Economic Competitiveness** – Directly serves the Barnstable Opportunity Zone and a future Transit Oriented Development. Presents an opportunity for up to 175,000 square feet of aviation-related private economic development.
- **Environmental Sustainability** – No adverse environmental impacts expected. Improved quality to air, a sensitive public water supply and a nitrogen-limited watershed.
- **Quality of Life** – Increased opportunities for regional connectivity via proposed multiuse path. Project will reduce travel times for residents, ferry passengers, businesses, freight deliveries and ambulances.
- **Benefit-Cost Analysis** – The life-cycle benefits outweigh the costs by 2.1 to 1. The return of public investment is 17 percent. The benefits will exceed the costs in five years.
- **Innovation** – Design-build construction to expedite project and proposed broadband installation will innovate the corridor.
- **Partnership** – A strong partnership between the Cape Cod Commission and the Towns of Barnstable and Yarmouth, as well as, other key stakeholders (e.g. MassDOT, MassBike, Steamship Authority, CCRTA, Cape Cod Hospital) has been established since 2012 with the initial planning studies.

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I. Project Description

The Yarmouth Road project is part of a 20-year, \$100 million vision to improve access for all users to the Village of Hyannis, the economic hub for the Town of Barnstable and the broader Cape Cod region (Figures 1 and 2).

The roadway network leading into Hyannis is the region's most important link to key transportation assets, including Cape Cod's largest airport, second largest ferry terminal, largest hospital, only train and bus terminal, its major retailers, professional service providers, and a designated Opportunity Zone. One key link in this roadway network, Yarmouth Road, is woefully inadequate for the daily vehicle demand it faces, including ambulances and freight from all across the region heading towards Cape Cod Hospital and Hyannis Harbor.

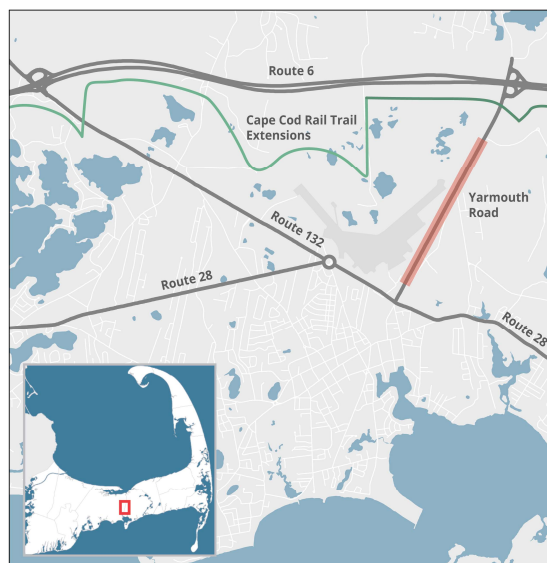


Figure 1. Project Locus Map

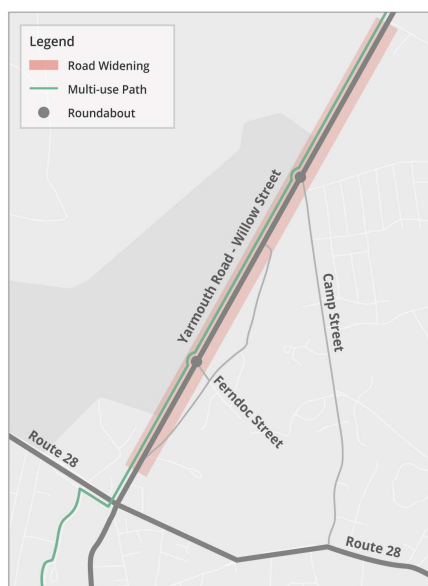


Figure 2. Proposed Project Location

Improvements to Yarmouth Road are needed to eliminate the chronic, potentially dangerous congestion and close a major gap in the region's extensive multi-use path network to the Hyannis area. With an alignment that predates the founding of our nation and a configuration that is largely unchanged since the advent of modern paving, Yarmouth Road cannot meet the demands and needs of a 21st century multi-modal transportation network.

Project Development

The development of improvement options for the Yarmouth Road spans three planning efforts; the 2008 Hyannis Access Study¹, the 2012 Yarmouth Road Corridor Study², and the 2013 Hyannis Access Study Implementation Report³, linked on the [project development website](#).

The goals, alternatives, and recommendations of the studies were developed with a robust public participation process. By engaging with the public, local policymakers, and many other interested parties from the outset, the proposed project

¹ *Hyannis Access Study*. Prepared by TranSystems, Inc. for the Massachusetts Executive Office of Transportation (August 2008)

² *Yarmouth Road Corridor Study*. Prepared by the Cape Cod Commission. (December 2012)

³ *Hyannis Access Study Implementation Report*. Prepared by the Cape Cod Commission. (June 2013)

is informed by an in-depth understanding of issues facing the Hyannis area and a comprehensive assessment of needs and opportunities for improvement.

A task force was established for each of these three studies, including over two dozen representatives from multiple levels of government, business interests, transportation providers, local residents, and other stakeholders. More than 50 meetings were held over the course of seven years culminating in a unified vision for improving access to the Hyannis area.

The improvements identified in the Hyannis Access Study Implementation Report was adopted in three phases in the most recent Cape Cod Regional Transportation Plan (RTP)⁴. The preferred improvement alternative for Yarmouth Road (“the Project” for the purposes of this application) represents Phase II of this vision (Figure 3).

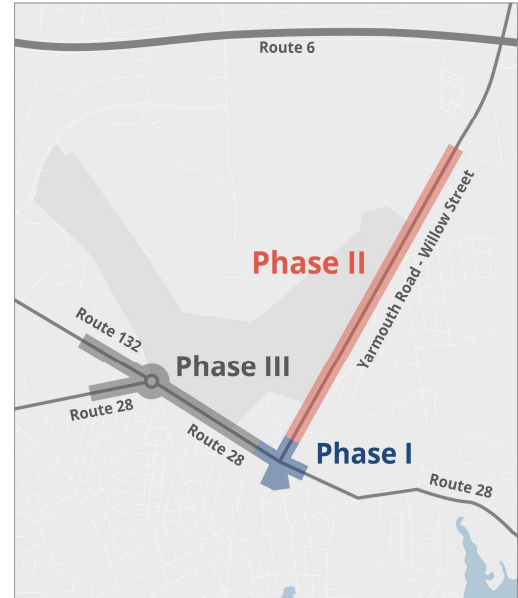


Figure 3. Hyannis Access Vision Phasing

Needs Assessment & Challenges

Yarmouth Road is a two-lane, undivided roadway with eleven-foot lanes, one-foot shoulders, and a single four-foot sidewalk for portions of the 1.5-mile corridor. The road is an essential link between the only limited access highway in the region, Route 6, and the regional hospital, transportation hub and ferry ports to the islands, as well as Cape Cod’s major commercial and residential center.

Perpetual Congestion

The Yarmouth Road corridor experiences significant traffic congestion (Figure 3). During the summer months, there are 22,000 to 24,000 vehicle trips on the road each day, far more than a two-lane roadway can effectively accommodate. The frequent curb cuts, more than 100 within the project limits, add to the congestion. Queuing on Yarmouth Road frequently extends more than a mile from Route 28 back towards Route 6. Traffic congestion on the corridor causes delays in emergency trips to the Cape Cod Hospital and the Barnstable Municipal Airport, and freight deliveries to the islands, impacts the ability of residents and visitors to access other modes of transportation, and stifles Hyannis’ economic development.



Figure 4. Congestion on Yarmouth Road

Yarmouth Road is the ideal route for ambulances exiting US Route 6 to access Cape Cod Hospital, the largest emergency and health care service provider in the region (more information on how the proposed project impacts health care and hospital access is available in Section 5, Selection Criteria: [Safety](#)). Traffic congestion on Yarmouth Road also impacts the ability of vehicles

⁴ Draft 2020 Regional Transportation Plan for Cape Cod. <http://www.capecodcommission.org/rtp>

to access the regional airport, ferry terminal, bus and train depot in Hyannis. The inconvenience of congestion deters people from using these forms of public transportation. As noted in the Steamship Authority's (SSA) support letter, approximately 52,000 trucks were transported from Hyannis to Nantucket on the SSA ferries providing necessities of the life for the island including food, medical supplies and fuel. The SSA along with Hy-Line Cruises transported over 1.3 million passengers to/from Nantucket from Hyannis Harbor in 2018. The majority of the freight and passenger traffic originating from Route 6.

Hyannis has long been the commercial center of Cape Cod hosting a wide range of industries. All fifteen Cape communities and the islands of Martha's Vineyard and Nantucket rely on Hyannis for goods and services that are available nowhere else in the region. The Town has collaborated with the Cape Cod Commission to continue focusing growth in the area, designating the Downtown Hyannis Growth Incentive Zone (GIZ) in 2006. The GIZ is a regulatory tool to direct growth and redevelopment to areas of existing development (Figure 5). The Hyannis GIZ, which was renewed in 2018, is a 448-acre area where the Town encourages a concentrated mix of residential and commercial uses while ensuring that all growth is properly served by adequate infrastructure. The GIZ is connected to Route 6, the region's main highway, by Yarmouth Road. Since the designation, the area has seen over \$70 million in public investment and \$125 million in private investment in the area, but further improvements can be made if Yarmouth Road congestion can be reduced.



Figure 5. Example of Redevelopment in the Downtown Hyannis GIZ

Yarmouth Road also intersects the Barnstable Opportunity Zone (discussed in below in, [Economic Competitiveness](#)), and implementing the suggested roadway improvements would also facilitate economic growth and redevelopment in this Zone.

Inadequate Pedestrian and Bicyclist Facilities

While driving the corridor can be quite challenging, navigating the corridor as a pedestrian or bicyclist can be dangerous, as noted with the presence of pedestrian and bicycle crashes in the [Safety](#) section. Roughly half the corridor has no dedicated pedestrian accommodation. Where sidewalks exist, they only serve pedestrians on one side of Yarmouth Road and must cross frequent, poorly delineated, often wide curb cuts. The existing sidewalk is four feet wide with utility poles located within the sidewalk every 150-200 feet. In most places, there is less than one foot separating the sidewalk from passing cars and trucks.



Figure 6. Existing Condition of Pedestrian Facility

There are no marked crosswalks within the 1.5-mile corridor despite the fact that there are businesses and residences on both sides of the roadway. With a posted speed limits of 35 and 40 mph in the corridor, crossing Yarmouth Road as a pedestrian is challenging (see Figure 6).

A \$9 million extension of the region’s multi-use path network, known as the Cape Cod Rail Trail (CCRT), will soon bring bicyclists within a short ride of Hyannis within the next five years⁵. The path will cross Yarmouth Road near the northern extent of the project, leaving a two-mile gap to Downtown Hyannis and potentially exacerbating existing safety issues on Yarmouth Road. Modern communities need robust, well-integrated transportation networks with a variety of modal choices for long-term viability. Yarmouth Road is a weak link in that network that negatively impacts all transportation modes.

Description of Improvement

The recommended complete street concept for Yarmouth Road is a cross-section with the following features (listed starting from the west side of the roadway to the east side, see Figure 7):

- 12’ multi-use path
- 10’ landscaped buffer
- 5’ shoulder
- Two 11’ northbound travel lanes
- 20’ landscaped median divider
- Two 11’ southbound travel lanes
- 5’ shoulder
- 5’ sidewalk

The recommended improvement concept also involves construction of roundabouts at two currently un-signalized intersections: Yarmouth Road at Camp Street and Yarmouth Road at Ferndoc Street, which will provide added safety to the corridor.

The Yarmouth Road and Ferndoc Street roundabout will provide the groundwork to create additional direct vehicular access to the Barnstable Municipal Airport. This direct new access will incentivize private economic activity in the eastern portion of the airport as further discussed below, in [Economic Competitiveness](#). As these improvements require more right-of-way than is available, the taking of approximately 18 properties on the west side of Yarmouth Road would be required.

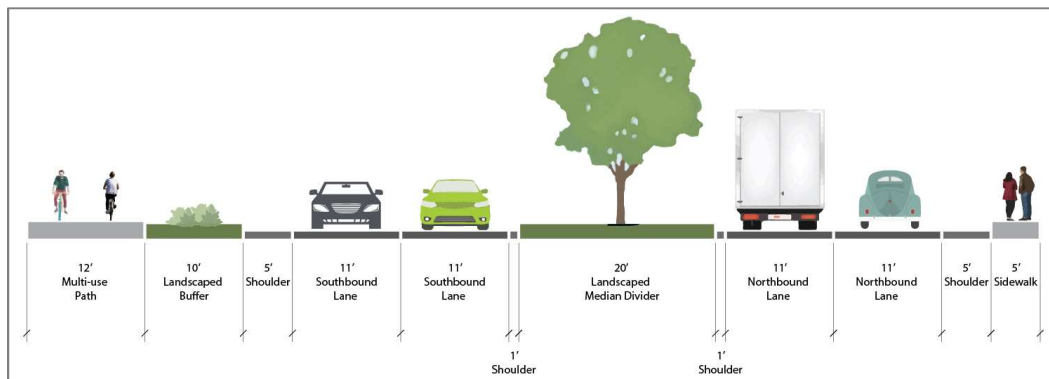


Figure 7. Proposed Cross Section (looking north)

⁵ Funding allocated in the FFY2018-2022 Cape Cod Transportation Improvement Program.

II. Project Location

The Town of Barnstable is home to 21% of the Cape's resident population. Hyannis is the largest of the seven villages of the Town of Barnstable, and the largest town on Cape Cod.

Hyannis has been the hub of Cape Cod throughout the region's evolution. Hyannis Harbor, originally a key port for the whaling industry, remains a vital link for passenger and freight transportation to the islands of Martha's Vineyard and Nantucket. The Hyannis rail spur, once a key passenger and freight link to the mainland, now supports the tourism industry with vehicle-free options for visiting Cape Cod in the summer via the Cape Flyer rail. Hyannis is linked to US Route 6, the Cape's only limited-access highway, via Yarmouth Road.

Hyannis is home to the Cape Cod Hospital, the largest of only two hospitals in the region, and many associated medical offices. The Hospital has one of the busiest emergency rooms in Massachusetts and many of the patients must use Yarmouth Road to get there despite the chronic delays experienced along the key section connecting Route 6 to the Hospital.



Figure 8. Hyannis Transportation Center

The Hyannis Transportation Center, also reliant on Yarmouth Road for access, is the hub of local and regional bus transportation on Cape Cod as well as the most active rail station on Cape Cod (Figure 8). Within a mile of the Hyannis Transportation Center is the region's largest airport and one of two major passenger and freight ferry terminals serving the islands of Nantucket and Martha's Vineyard.

Hyannis is the commercial hub of the region as well, with a traditional town center undergoing revitalization and an extensive large retail strip and industrial park area that provide essential goods and services to residents across the Cape. Recent improvements in zoning rules, along with regulatory relief, have laid the foundation needed to see private re-investment in downtown Hyannis but access to the town center remains a major impediment that this project seeks to help resolve.

Figure 9. Project Area Map



Community Profile

While Cape Cod is viewed as an idyllic summer destination by many, year-round residents face limited employment and housing markets. The buying power of second homeowners and retirees, coupled with land and natural resource constraints, result in housing that is largely unaffordable to the Cape Cod residents. A 2017 study of the region’s housing market indicated that over 22,000 households (nearly ¼ of the total) already spend over 30% of their income on housing, which will only increase with projected population and employment trends.⁶

Hyannis is also home to many of the region's lowest income families, immigrant families, people in need of social services, and seasonal J1 Visa workers. Comparing census-block-level data within a mile of the proposed project to census data for Cape Cod as a whole, shows lower per capita income, higher rates of poverty, and limited educational attainment for Hyannis residents:

Table 1. Demographic Profile of Barnstable Residents Proximate to the Project Limits

	Residents in Hyannis Census Tract*	Barnstable County
Per Capita Income	\$26,967	\$40,886
Percentage of Household with Income < \$25,000	22.7%	7.7%
Percentage of Household with Income < \$15,000	14%	3.4%
Percentage of Residents with a Bachelor’s Degree or Higher	13%	41.7%
Source: U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates (Census Block 153)		

Hyannis is home to more young adults, working families, and single parent working families, than other communities on the Cape. Residents are far more likely to rent their home, live in poverty, and work in low-wage jobs than people living elsewhere in the region. While Barnstable County identifies as 92.2% white, racial diversity is much higher in Hyannis than elsewhere in the region, with 20.8% of residents identifying as non-white.⁷

The State of Massachusetts also identifies several census block areas in Hyannis as Environmental Justice communities based on income (annual median household incomes equal to or less than 65 percent of the statewide median , which was \$62,072 in 2010, when the designation was last set); and race (25% of the residents identify as a race other than white).⁸

⁶ Cape Cod Housing Market Study, 2017.

<http://www.capecodcommission.org/resources/housing/MarketAnalysis/Final%20Report/2017-09-11-Regional%20Housing%20Market%20Analysis%20and%2010-Year%20Forecast%2C%20Final%20Report.pdf>

⁷ ACS 2017 5-Year Estimates

⁸ Massachusetts Executive Office of Energy and Environmental Affairs (EEA) Environmental Justice Program - 2010 Environmental Justice Populations Analysis.

III. Project Partners

The Town of Barnstable and the Cape Cod Commission are joint applicants on this proposal, with the Town of Yarmouth joining the effort as a project partner. As noted in the attached letters of support, this project is widely supported by public and private entities across the region, including the island of Nantucket. Below is a brief summary of each of the project partners and their role in 2019 BUILD grant application and potential management.

Town of Barnstable



Figure 10. Main Street, Hyannis.

The largest town on Cape Cod, the Town of Barnstable, has a year-round population of 44,325 (ACS 2017 5-Yr Estimates). There are over 26,480 housing units in town; 24.7% of these are seasonal second homes. During the summer, with seasonal homeowners and tourists staying at the many inns, hotels, and other types of lodgings, the population is closer to 100,000.

The Town of Barnstable is the only non-town meeting form of government on Cape Cod; it is led by a thirteen-member elected Town Council and a professional Town Manager with a full staff of professionals. The Council develops, adopts, and enacts policies and ordinances and hires the Town Manager. The town has an \$177 million annual operating budget, and its most recent bond rating from Standard and Poor's is AAA due to strong management and budgetary performance, a strong debt position, a strong institutional framework and budget flexibility/liquidity, as well as a strong regional economy. Barnstable has maintained this rating since June 2007.

The Town of Barnstable has the largest professional municipal staff in the region and has the capacity to manage the proposed project from design and permitting through construction and operation and maintenance.

Cape Cod Commission

The Cape Cod Commission (CCC) is the regional planning and regulatory authority for Barnstable County. The CCC is led by a 19-member board representing the fifteen towns of Cape Cod, the County Commissioners, minority populations on Cape Cod, the Wampanoag Native American Tribe, and the Governor.

The agency's mission is to protect the unique values, resources and quality of life on Cape Cod by coordinating a balanced relationship between environmental protection and economic progress. The CCC carries out this mission by leading, supporting, and enforcing the development of regional plans, policies, regulations, and infrastructure to guide and manage growth, and by supporting the 15 Cape Cod towns with professional and cost-effective planning and technical support services. The CCC forty-member staff includes professionals to staff the Cape Cod Metropolitan Planning Organization (MPO). The Commission also brings capacity to the proposed project and will devote its professional staff to project implementation, including in the areas of transportation engineering and planning, land use, law, economic development, housing, GIS, water resources, wildlife and plant habitat and cultural and historic resources.

Town of Yarmouth

The third largest town on Cape Cod, the Town of Yarmouth, has a year-round population of 23,459 (ACS 2017 5-Yr Estimates). There are over 17,116 housing units in town; 32.3% of these are seasonal second homes. During the summer, with seasonal homeowners and tourists staying at the many inns, hotels, and other types of lodgings, the population is over 50,000.

The Town of Yarmouth has a town meeting form of government it is led by a five-member elected Board of Selectmen and a professional Town Manager with a full staff of professionals. The Board develops, adopts, and enacts policies and ordinances and hires the Town Manager. The town has an \$67 million annual budget, and its most recent bond rating from Standard and Poor's is AA+ due to strong management and budgetary performance, a strong debt position, a strong institutional framework and budget flexibility/liquidity, as well as a strong regional economy.



Figure 11. Scenic Destination in Yarmouth (Judah Baker Windmill)

IV. Grant Funds, Sources, and Uses of All Project Funding

This section details the estimated cost to design and construct the project and the anticipated sources of funding. None of the matching funds listed are from federal sources; nor have any federal funds been previously applied to this project. All funding will be available when needed, consistent with the project schedule.

Table 2. Project Budget by Funding Source

Sources	Funding
BUILD Request	\$25,000,000
Town of Barnstable	\$10,049,016
TOTAL	\$35,049,016

The Project Budget by Use table outlines the estimated project costs for each component project. The construction cost estimates summarized here are supported by a detailed cost estimate included in the supporting materials. Estimated design costs include survey and geotechnical borings, permitting, and engineering studies. Construction costs include general conditions, mobilization, and traffic management. The construction cost estimate included in this application incorporates a 25% construction contingency to allow for potential cost increases as the design is further advanced. Construction costs are escalated to the mid-point of construction utilizing 4% annual escalation consistent with trends observed in Massachusetts. All costs assume compliance with federal and state public procurement requirements and payment of prevailing wages.

Table 3. Project Budget by Use

Uses	
Design and permitting	\$2,004,456
Construction	\$20,044,560
Right-of-way acquisition	\$13,000,000
TOTAL	\$35,049,016

The proposed reconstruction of Yarmouth Road as part of this BUILD grant ends just north of Route 28. The planned reconstruction of the intersection of Yarmouth Road at Route 28 is currently funded in FFY2019 and FFY2020 of the Cape Cod Transportation Improvement Program (TIP) with a combination of federal and state funds. This intersection project is considered a related investment but NOT included in the BUILD project. The current estimated construction cost for the intersection project is \$15.8 million with design and right-of-way acquisition likely to exceed \$3 million. Together, these projects will significantly improve access to Hyannis.

V. Selection Criteria

The following section details the project consistency with the five primary selection criteria, safety, state of good repair, economic competitiveness, quality of life, and environmental sustainability and the two secondary selection criteria, innovation and partnership.

Safety

The Yarmouth Road corridor has a well-documented crash history (Table 4). Within the project area there were 154 crashes reported over the most recent five years on record, 2012-2016, including 41 injury crashes.

Table 4. Existing Crash Profile

Collision Type	Number of Crashes (2012-2016)
Rear-end	73
Angle	31
Single Vehicle Crash	25
Sideswipe	18
Head-on	5
Unknown	2
TOTAL	154
Source: MassRMV	

Crash trends on this corridor relate directly to deficiencies in the current roadway configuration. The rear-end crashes occurred frequently during the periods of congestion on the roadway. The angle crashes were mostly spread between the numerous uncontrolled driveways along the corridor. In total, there are over 100 curbs cut along the 1.5-mile corridor.

Conversion of Yarmouth Road from a two-lane undivided roadway to a four-lane divided roadway will address nearly all of the safety deficiencies on the corridor. Based on peer-reviewed literature, it is estimated that the proposed project will result in a 68% crash reduction⁹. This equates to an anticipated annual reduction of 21 crashes (Table 5). The proposed improvements will also reduce the likelihood of a fatal crash by eliminating many of the turning movements related to the current angle crashes. It is likely that an even greater crash reduction will be realized considering the 29 driveway access points that will be eliminated on the west side of the roadway.

⁹ Source: Evaluation of the Safety Effectiveness of the Conversion of Two-Lane Roadways to Four-Lane Divided Roadways: Bayesian vs. Empirical Bayes, Ahmed et al., 2015 as presented in the FHWA Crash Modification Factors Clearinghouse.

Table 5. Anticipated Crash Reduction

Severity	Number of Crashes (2012-2016)	Anticipated 5-Year Crash Reduction Total (68% reduction)
Fatal	0	NA
Injury	41	28
Property Damage Only/Unknown	113	77
TOTAL	154	105

Source: Evaluation of the Safety Effectiveness of the Conversion of Two-Lane Roadways to Four-Lane Divided Roadways: Bayesian vs. Empirical Bayes, Ahmed et al., 2015 as presented in the FHWA Crash Modification Factors Clearinghouse.

There were six non-motorist crashes within the same five-year period, all resulting in injuries. Three of the crashes involved pedestrians attempting to either cross Yarmouth Road where there are no crosswalks or walk within a portion where there is no sidewalk. The remaining three non-motorist crashes involved bicyclists as there are minimal shoulders provided on Yarmouth Road.

As designed, the proposed project will separate pedestrian and bicycle users from automobiles. Together with anticipated intersection improvements at Yarmouth Road and Route 28, programmed for construction in the 2019 and 2020 TIP, the proposed project will provide a direct connection of multi-modal access to the Hyannis Transportation Center with regional bus, intercity bus, taxi, and rail access. The addition of a separated multi-use path on the west side of the roadway and a continuous sidewalk on the east side of the roadway will improve pedestrian and bicyclist safety and provide increased transportation choices. The future CCRT expansion scheduled in the FY2022 TIP will also bring additional non-motorists to Yarmouth Road and safety improvements must be addressed now.

The proposed project will also improve hospital access and time of travel for ambulances heading to Cape Cod Hospital. Yarmouth Road connects US Route 6 to Cape Cod Hospital, the largest emergency and health care service provider on Cape Cod, and Barnstable Municipal Airport, which is used on a weekly basis to accommodate advanced medical care and air transportation. Frequent queuing, coupled with no shoulders for emergency or other vehicles to pull off, makes the road a challenging place for ambulances to navigate. Often ambulances will take longer, alternative routes to Cape Cod Hospital to avoid traffic congestion on Yarmouth Road, exacerbating vital response times which are already some of the highest in the Commonwealth: Provincetown has the longest route to a hospital for any community in Massachusetts. Improving access through this project will greatly benefit the rural and suburban populations of the Outer Cape, as well as its elderly at-risk population. Barnstable County’s population is one of the oldest in age in the United States, due to Cape Cod’s higher-than-average number of retirees (the median age is 53.8, compared to 39.4 in Massachusetts and 38.2 in the United States, according to the US Census 2018 estimates).



Figure 12. Ambulance En Route to Cape Cod Hospital

Additionally, as coastal hazards and storms increase in intensity, Cape Cod residents' and visitors' safety becomes a critical concern. Yarmouth Road leads directly to US Route 6, the central evacuation route for Cape Cod in the event of an emergency.¹⁰ Improving capacity and traffic flow on Yarmouth Road will alleviate congestion towards the region's central evacuation route in the event of an emergency.

State of Good Repair

The Cape Cod MPO's RTP, Cape Cod Commission Regional Policy Plan (RPP), and the Barnstable Local Comprehensive Plan, all identify improving and revitalizing Hyannis as a key priority for the long-term viability of the region. These plans and numerous studies have identified the current barriers to accessing Hyannis that threaten revitalization. Yarmouth Road's inability to effectively handle the current and future projected transportation demands presents a major barrier to accessing Hyannis. This barrier threatens the mobility of goods and people accessing Hyannis and the islands of Nantucket and Martha's Vineyard as noted in the Steamship Authority's support letter. This barrier further threatens the economic growth demands of Hyannis and the region.

As a testament to the importance of the project to the region, the Cape Cod MPO's RTP includes Hyannis Access Phase II as one of the most important regional projects within the next 20 years. Bringing Yarmouth Road into a state of good repair would drastically improve this constrained corridor.



Figure 13. Yarmouth Road, Current Roadway Condition

The Towns of Barnstable and Yarmouth have and will continue to maintain the project corridor. As detailed in the Cost Share section of the application, both Towns have a demonstrated ability and the financial capability to maintain this asset. The Towns are, however, somewhat limited in the scale of capital improvement projects they can independently fund. Transportation funds within the Towns are largely dedicated to state of good repair maintenance activities. As such, the Towns rely on other funding opportunities to assist in funding large-scale improvements such as this Hyannis Access Phase II project.

Economic Competitiveness

The Yarmouth Road corridor is the primary means of access to Hyannis, the economic and transportation hub of Cape Cod, and the largest single employment center in the region. More

¹⁰ Cape Cod Emergency Traffic Plan. <https://www.mass.gov/service-details/cape-cod-emergency-traffic-plan>

than a quarter of the jobs and payroll in Barnstable County are generated by the 1,200 establishments within the Hyannis zip code area (02601) (Table 6).¹¹

Table 6. Community Business Patterns (2016)

Severity	Establishments	Paid Employees	Annual Payroll (\$1,000)
Hyannis	1,228	20,022	910,668
Barnstable County	8,596	76,683	3,429,556
Hyannis as % of the Region	14.3%	26.1%	26.5%
Source: U.S. Census Bureau			

The proposed improvement to Yarmouth Road is a major remaining public infrastructure investment needed to stimulate the redevelopment of downtown Hyannis and the surrounding residential and commercial areas. Over the past decade, there has been significant public investment in the area, including a new Regional Transportation Center, a new airport terminal, additional wastewater treatment capacity, streetscape improvements downtown, and revitalization of public parks and gathering places (see project example in [Technical Feasibility](#)). At the same time, town and regional regulations have been significantly streamlined to encourage redevelopment in and around downtown. The town is currently examining options to promote new development and redevelopment in the area of existing commercial national and regional retail development along Route 132, as well as identifying opportunities for high density housing development to provide needed housing diversity for the region.



Figure 14. Recent Redevelopment in Hyannis

Private investment has begun to occur, primarily at the hospital and in downtown, where over \$125 million has been invested in several mixed-use retail-residential developments and a major office renovation. In addition, the Cape Cod hospital is planning a major expansion to include an expanded cancer center and critical care unit (see Section V: Selection Criteria: [Quality of Life](#) below). Nevertheless, the potential and need for redevelopment in the area is still enormous. There are several developers considering major investments in the harbor area and the Cape Cod

Regional Transit Agency plans for a mixed-use Transportation Oriented Development in the area surrounding the Regional Transportation Center.¹²

In addition, creating direct vehicular access into the regional airport from Yarmouth Road will incentivize aviation-related private economic development: the construction of general and corporation aviation-related facilities (or modification of existing facilities) could result in up to 175,000 square feet of additional aviation facilities at the East Ramp. (The MassDOT Aeronautics Division’s 2019 Economic Impact Study states that the Barnstable Municipal

¹¹ U.S. Census Bureau’s County Business Pattern

¹² Prepared for CCRTA by AECOM Technical Services. Transit Oriented Development Master Plan Study: Hyannis Transportation Center Area Final Report. December 2013.

Airport currently supports over 1,700 jobs, has a payroll of \$73.8 million, and a total economic output of \$157.2 million.)

However, Hyannis has a reputation as being a difficult place to reach due to traffic, particularly during peak summer months, with Yarmouth Road a key culprit, and thus a place to be avoided if possible. The Cape Cod Commission conducted a 2017 survey of Hyannis residents, second homeowners, and visitors; responses to “What are your perceptions of the quality of life in Hyannis?” included:

- “I try to avoid Hyannis as much as possible and when I have to go into Hyannis, I try to get ALL my errands done as quickly and strategically as I can. Traffic can be a nightmare in certain parts of Hyannis and where the traffic tie-ups are...”
- “Traffic congestion is always a concern and depending on time of day and time of year it will also effect my choice of where to shop or visit.”¹³

Removing the Yarmouth Road bottleneck would stimulate pent up private investment and economic development to the area.

The direct impact of the proposed project will be to improve access and travel time for workers, hospital patients, public transportation providers, businesses and federal, state and local government and social services in Hyannis, many coming from the rural Lower and Outer Cape. The proposed project will improve access to ferries and regional bus providers departing from Hyannis as well as the regional airport, jobs, education, shopping and other services for all roadway users. It will greatly improve public safety by reducing the time needed to reach the hospital and enabling the rapid circulation of police and fire vehicles throughout the area.



Figure 15. Steamship Authority Vessel, providing a vital link from Hyannis to the Islands

Travel time will also be improved for the many freight trucks serving Hyannis, facilitating efficient and reliable freight movement. The Yarmouth Road corridor was designated by the Cape Cod MPO as a Critical Urban and Rural Freight Corridor in May of 2017. The corridor also serves as the primary freight route from US Route 6 to the Nantucket and Martha’s Vineyard ferries which transport many of the goods supplied to the rural communities on the islands. This link to the islands is also important for workers, many of whom live on Cape Cod rather than on the islands where they work. Two regional distribution centers (Fed Ex and UPS) located off of Yarmouth Road in the town of Yarmouth will also benefit from a more efficient system. Overall, by improving travel time,



Figure 16. Freight Vehicle on Yarmouth Road

¹³ Cape Cod Commission. Hyannis Survey, 2017. www.capecodcommission.org

businesses will reduce freight costs, increase customers, and enjoy greater productivity by their workers.

A BUILD grant to fund a portion of Phase II would allow the region to continue to make progress towards reducing congestion in Hyannis, the center of the Barnstable urbanized area.

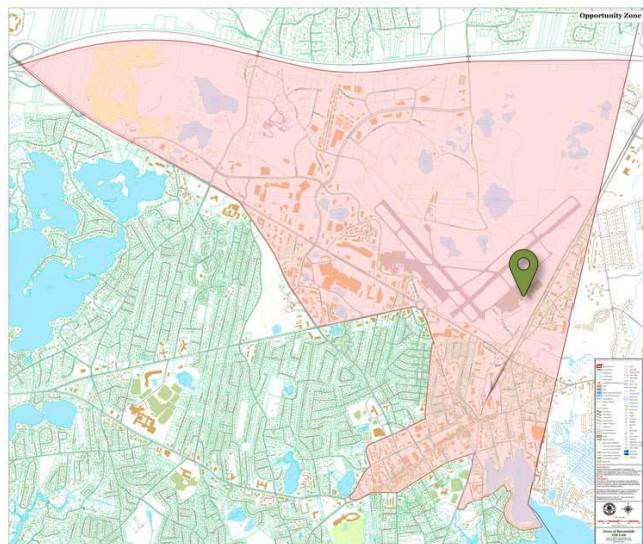


Figure 17. Barnstable Opportunity Zone. (BARNSTABLE 25001015300). Green icon indicates Yarmouth Road.

In addition to travel time, the Project brings the opportunity to expand broadband along the roadway corridor, as discussed in [Innovation](#) below.

The Project also intersects and directly serves the Barnstable Opportunity Zone (Figure 17)¹⁴. The anticipated improvements of this proposed project including reduced travel times, improved airport access, expansion of broadband access, environmental and quality of life improvements, reductions in freight delays, improved safety and roadway conditions, and additional economic benefits, will all serve to attract the private investments that were envisioned in the 2017 Tax Cuts and Jobs Act.

Environmental Sustainability

There are no significant adverse environmental impacts to air or water quality, wetlands, endangered species, nor cultural or historic resources identified in the location of the proposed project. The project instead negates the need for the environmentally disruptive construction of a new highway interchange, considered in the 2008 Hyannis Access Study¹⁵. Rather than impacting undeveloped areas, this improves already disturbed areas, aligning with the 2018 RPP growth policy for Cape Cod (see [Partnership](#) below).¹⁶

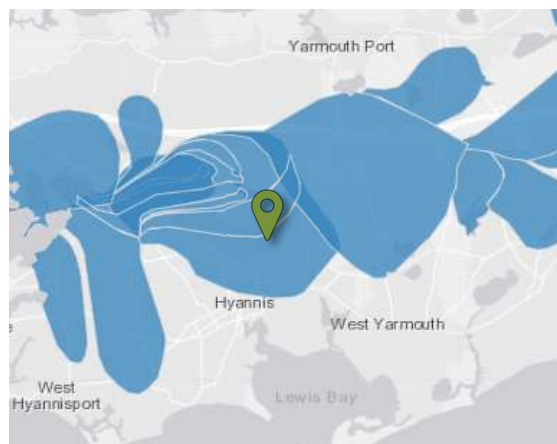


Figure 18. DEP-Approved Wellhead Protection Areas. Green icon indicates Yarmouth Road. Source: Cape Cod Commission Open Data Hub.

¹⁴ Full Map available at:

https://static1.squarespace.com/static/59831e4917bffc0a99443ba5/t/5bfd9efff950b74e2c25ba33/1543347974883/Mp_ozm_153.pdf

¹⁵ Mass Executive Office of Transportation and MassHighway. Hyannis Access Study, 2008.

http://www.capecodcommission.org/resources/transportation/Hyannis_Access_Study_2008_final_report.pdf

¹⁶ Cape Cod Commission. Regional Policy Plan Update, 2018. www.capecodcommission.org/rpp

The proposed projects will improve local water quality by removing eight aging automobile sales and services businesses, preventing potential releases of hazardous materials into the drinking water supply over which they reside and that serves nearly 20,000 homes and businesses. These properties are within Wellhead Protection Areas for the Hyannis Water District and Town of Yarmouth public water supply wells (Figure 18). Drainage improvements associated with the new roadway infrastructure will also improve stormwater runoff into Lewis Bay, which has impaired water quality due to nitrogen.¹⁷

By adding a multi-use path, the proposed project will encourage residents and visitors to shift to bicycle and public transportation, reducing congestion-related emissions and improving air quality. The path will connect Hyannis to the CCRT, which currently extends to Eastham, and is currently under design to extend further into Barnstable. The proposed project will also improve access to the regional transportation center, encouraging visitors to the region to take public transportation. With over 7 million visitors to the region annually, even a small shift towards public transportation will reduce congestion throughout the region. The recent successful return of seasonal passenger rail to Hyannis has spurred the desire for a “car-free” trip to Cape Cod that would be more realistic as a result of this project.

Quality of Life

This project will advance quality of life for urban and rural residents by improving access to employment opportunities, health care, critical social services, and community and cultural assets by more modes of travel.

Hyannis has two distinct centers of employment, the downtown area near Main Street, and Route 132, where four major retail plazas are located. The downtown area, designated a growth incentive zone, contains 921 businesses and over 16,000 jobs. Figure 19 indicates the employment concentration for the Town of Barnstable, highlighting the important of Hyannis as an economic driver.

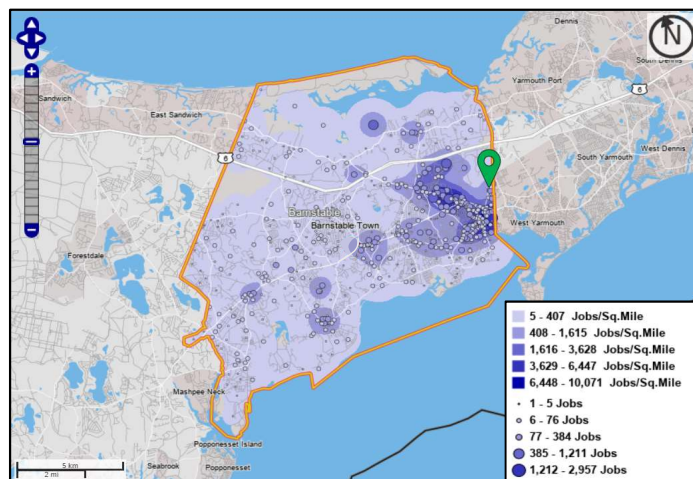


Figure 19. US Census On the Map. Green icon indicates Yarmouth Road. Employment Concentration for the Town of Barnstable, 2015.

Additionally, Hyannis is home to 38 health care and social assistance businesses, serving the entire region. The Yarmouth Road improvement will expand the modes of transportation needed to reach these businesses, including the proposed Cape Cod Hospital expansion that will increase quality of local care for residents.

It will also open up new opportunities to access Hyannis via bicycle for work and pleasure that can lead to better health and air quality. Increasing regional bicycle connections into Hyannis will benefit the workforce on Cape Cod, especially the seasonal workforce that frequently relies on public transportation and bicycling. Providing a safe off-road bicycle path from the CCRT

¹⁷ Cape Cod Commission. Implementation Report: Lewis Bay Watershed, 2017.

http://www.capecodcommission.org/resources/208/watershedreports/2017_Watershed_Report_MC_Lewis_Bay.pdf

into the Hyannis regional transportation center will increase the quality of life for all visitors, residents, and employees.

Innovation

The Cape Cod region received federal stimulus funds to construct a broadband backbone along the Cape, operated by [OpenCape](#). OpenCape broadband infrastructure went live in 2013 and is currently installed along Route 132 and Route 28 in Barnstable, bringing it within less than a mile of the Project Area (the build-out along Willow Street is currently at 11,130 feet). Expanding OpenCape via the Project would create the potential for numerous commercial properties and developable parcels to access broadband for commercial purposes, supporting redevelopment efforts in the area. As noted in their support letter, an expansion opportunity such as this will significantly enhance economic opportunity and diversify business for the corridor, facilitating redevelopment and development of vacant land in the regional commercial center.



As a regionally significant roadway construction project, the proposed project will be constructed following a design-build method to expediate the project. This is innovative project delivery method will allow the project to be completed on an accelerated schedule to meet the requirements of the grant program while minimizing disruptions to the region's economic hub and align with other regionally prioritized projects.

The applicants will employ best construction practices to minimize traffic disruption during roadway construction. The applicants will develop innovative contract bid language that incentivizes awardees to maximize daily work duration (including promoting night work) to shorten impacts on the traveling public and the duration of the overall construction project.

The applicants will review current and future utility demands in the area and, as feasible, make utility improvements in parallel with the roadway construction activities. By addressing transportation and utility needs during the same construction window, overall cost and disruption to the public will be minimized. The applicants will also investigate options to incorporate intelligent transportation system (ITS) applications along the corridor in the future, such as dynamic parking signs to direct passengers to ferry, bus, rail, and airport parking often in high demand and difficult to locate. Visitors to Downtown Hyannis can also find parking challenging and complex. Leveraging technology to optimize parking and reduce parking-related congestion greatly benefit the community.

The co-applicants proposed to explore the use of SEP-15 to increase efficiencies in right-of-way acquisition (as mentioned in the NOFO), which can be cumbersome and seemingly overly time consuming under current Title 23 of the U.S. Code, FHWA regulations or policy. Project partner staff propose that they will invest their time and expertise in exploring ways to meet the intention and spirit of ROW acquisition regulations while finding ways to streamline the process.

Partnership

Strong collaboration among a broad range of stakeholders has been a priority since the project's conception (see [Project Development](#)). Cape Cod Commission staff guided the project development process up to conceptual design, with the close cooperation of state and municipal

partners. The project has been vetted by state and local policy makers, other public entities, and interested private and nonprofit entities.

The project will result in significant regional benefits given the importance of Hyannis and its many community assets to all of Cape Cod. As such, the project has been a priority in all regional transportation planning documents, including the most recent Cape Cod RTP endorsed by the Cape Cod MPO. Several transportation agencies have been involved in this project development process including MassDOT, MassBike, Cape Cod Regional Transportation Authority, Barnstable Municipal Airport, Steamship Authority, and Cape Cod Railroad. The Cape Cod Hospital and other key regional entities were also involved in the project development.

Furthermore, the project is coordinated with economic development, housing, water infrastructure, and land use plans and policies of regional significance. The project supports the regional growth policy adopted in the 2018 Cape Cod RPP to focus growth in centers of activity and areas supported by adequate infrastructure and guided away from areas that must be protected for ecological, historical, or other resources. The Yarmouth Road project is aligned with regional goals related to Economy and Transportation, and the regional growth policy.

Similarly, the Cape Cod Commission updated both the Comprehensive Economic Development Strategy (CEDS) and RTP. The proposed project is closely aligned with the regional CEDS goal for Capital Facilities and Infrastructure, “to advance reliable, resilient, and efficient infrastructure that is appropriately located, equitably distributed, and meets regional needs including energy independence, waste reduction, clean air and water, and multimodal transportation.”¹⁸ The proposed project, Hyannis Access Phase II (Yarmouth Road Corridor), was explicitly included in the Highway Regional Target Funding Program of Projects in the Draft 2020 RTP.¹⁹

This project is consistent with the redevelopment goals of the Hyannis Growth Incentive Zone and improves protection of one of the region’s most important drinking water supply areas (see [Needs Assessment & Challenges](#)).



Figure 20. Yarmouth-Barnstable Cape Cod Rail Trail Extension

The Towns of Barnstable and Yarmouth will continue to work collaboratively on the development of the project and the implementation of any improvement for the mutual benefit of the region. Another project being jointing development by the Town of Barnstable and Yarmouth is the Yarmouth-Barnstable Cape Cod Rail Trail Extension which is funded for FFY2022 in the Cape Cod Transportation Improvement Program (Figure 20).

¹⁸ Draft 2019 Comprehensive Economic Development Strategy for Cape Cod.

<http://www.capecodcommission.org/ceds>

¹⁹ Draft 2020 Regional Transportation Plan for Cape Cod. <http://www.capecodcommission.org/rtp>

VI. Project Readiness

The Hyannis Access Phase II project will allow US DOT to obligate BUILD funds within the timeline established in Consolidated Appropriation Act, 2019.²⁰

Technical Feasibility

The Town of Barnstable is committed to implementing this regionally important project as proposed in this BUILD grant application. The project is fairly typical from a technical perspective; all of the project elements are routinely constructed in the region. The design criteria used on this project is based on Massachusetts Department of Transportation (MassDOT) design standards and specifications.

A similar project (two-lane undivided roadway to four-lane divided roadway with multiuse path) was completed on Route 132 in Barnstable approximately 14 years ago with relatively few challenges. Given the construction sequencing, there was relatively little disruption to regional traffic and the Route 132 project has been universally viewed as a success in dealing with congestion issues and redevelopment opportunities.



Figure 21. Route 132 Boulevard Project
(Source: Google Earth)

The specific design elements of the proposed project are as follows (see **Error! Reference source not found.** and Figure 7 [above](#)):

- Widening Yarmouth Road from 2 lanes to 4 lanes with a landscaped median
- New/improved 5' concrete sidewalk (east side)
- New 12' multi-use path (west side)
- New roundabouts at Camp Street and Ferndoc Road

Both ends of the projects will tie into portions of roadway that, at the time of construction, will have a comparable configuration.

Project Schedule

Table 7 on the following page outlines the proposed project schedule, which will enable the project to complete all pre-construction activity prior to September 30, 2021 and all construction prior to September 30, 2026. A more detailed project schedule is included with the supporting materials.

²⁰ Pub. L. 116-6, February 15, 2019

Table 7. Project Schedule

	Start	Complete
Grant Agreement Negotiation	January 2020	May 2020
Permitting & Approvals	September 2020	August 2022
Design	September 2020	September 2022
Right-of-Way Assembly	February 2021	June 2022
Construction Procurement	October 2022	January 2023
Construction	Spring 2023	Spring 2026

The Permitting & Approvals timeframe is conservative given the relatively limited number of approvals that will be required (see Required Approvals section of the application). The Design timeframe allows for the project to be designed from the conceptual level up to the final plans, specification and estimate phase. The right-of-way assembly timeframe allows for the process to be completed in accordance with CFR part 24, 23 CFR part 710, and other applicable legal requirements. The construction timeframe allows for the Cape Cod summertime construction moratorium (while it is likely that waivers for activities that do not impact traffic flow are likely to be granted see the following section for more details).

Required Approvals

Environmental Permits and Reviews

- National Environmental Policy Act (NEPA) – pending a consultation with the Federal Highway Administration (FHWA), preparation of an Environmental Assessment (EA) is anticipated as the project does not clearly require the preparation of an Environmental Impact Statement (EIS) per CFR 771.115. To be conservative, the timeline and budget allow for the preparation of an EIS should one be required.
- Massachusetts Environmental Policy Act (MEPA) – Based on the transportation threshold of “widening of an existing roadway by four or more feet for one-half or more miles,” the preparation of an Environmental Notification Form (ENF) is required. Preliminary project analysis has not identified any impacts that would require the preparation of an Environmental Impact Report (EIR); however, the timeline and budget allow for the preparation of an EIR should one be required.

State and Local Approvals

The following state and local and approvals are included within the project timeline.

- Barnstable Town Council – Council approvals will be required to accept and expend the federal grant and to authorize and execute the takings related to the project.
- Yarmouth Board of Selectmen – Board approvals will be required to execute the takings related to the project.
- Barnstable and Yarmouth Planning Boards – Board approvals will be required due to laying out the new roadway right-of-way.
- Massachusetts Department of Transportation (MassDOT) District 5 and Rail and Transit Division) – MassDOT has been involved with the project development since the

preliminary planning phases and have voiced support for the preferred alternative as a member of each task force. No issues with MassDOT review are anticipated. A letter of support from MassDOT is included in the supporting materials.

- Barnstable Municipal Airport/Federal Aviation Agency (FAA) – Given the airport’s proximity to the project, airport officials have been involved with the project development since the preliminary planning phases. A letter of support from the Barnstable Municipal Airport is included within the supporting materials. FAA review, primarily related to flight path height restrictions is included in the project timeline, however no issues are anticipated given that the project will likely improve existing height nonconformities with the removal of structures.

Federal Transportation Requirements Affecting State and Local Planning

The following federal transportation processes are included within the project timeline.

- Transportation Improvement Program (TIP) – As detailed in the Cape Cod Metropolitan Planning Organization (MPO) support letter included within the supporting materials, the MPO is in full support of the project and is prepared to promptly amend the TIP as required upon request subject to the required 30-day public notice period.
- Regional Transportation Plan (RTP) – The project is included in the 2020 Cape Cod RTP, showing the region’s commitment to the proposed project.

Assessment of Potential Risks and Mitigation Strategies

The acquisition process for the taking of parcels to the west of the current roadway alignment should begin early in the design process as complete taking of the properties will be required regardless of any design details (and Project co-applicants propose to explore the use of SEP-15 to streamline acquisition as discussed in Section V, [Selection Criteria, Innovation](#), above).

The project co-applicants also recommend commencing utility relocation conversations early in the design phase, to ensure timely relocation.

Another unique challenge of roadway construction is a summer construction moratorium for construction activities (Memorial Day to Labor Day), which has been accounted for within the project construction schedule. Waivers for construction activities that will not impact the roadway operations (e.g. the multi-use path and southbound travel lanes) will be considered, though not factored into the current, conservative proposed construction schedule.

Other factors that have delayed past construction projects in the region are permitting and mitigation related to wetlands, rare species habitat, historic resources, and coastal resiliency. Based on consultations with subject-matter experts, there are no identified wetlands, rare species habitat, or cultural or historic resources that would be impacted by the project. The project is not located within the FEMA flood zone.

VII. Benefit Cost Analysis

The Benefit Cost Analysis (BCA) takes a conservative approach to estimating the benefits of the project. Where the known benefits were not readily quantifiable, a qualitative description is offered. The BCA was conducted consistent with the *2018 Benefit-Cost Analysis Guidance for Discretionary Grant Programs*. The analysis utilized a model developed by the California Department of Transportation, modified to reflect local conditions. The analysis spreadsheet and an associated memo is included in the supporting materials.

The BCA expresses benefits and costs monetarily in “constant dollars” and “present value” (PV) to capture the flows of benefits and costs over the project horizon. Project costs and benefits are forecast over 20 years, discounted at 7% in line with federal practice. The BCA calculates a Benefit Cost Ratio (BCR) for the project, expressed as the ratio of benefits of a project relative to its costs, both expressed in present-value terms. A BCR above 1.0 suggests that benefits exceed costs, in which case, the project creates a positive return on investment.

Table 8. Summary of Benefit Cost Analysis Conclusions

Total Project Benefit & Costs		
	Constant \$	Present Value 7% Discount Rate
Benefits	\$169,252,507	\$77,682,265
Costs	\$40,705,000	\$36,893,219
Benefit / Cost Ratio		2.1

The BCR of the proposed project is 2.1, suggesting a positive return in investment over a 20-year time period. The rate of return on investment is 17.7 %, and the payback period is five years.

Project Costs

The estimated total project cost is \$40,705,000 (present value rounded \$36,893,000); 7.8% of this cost is for design and permitting, 49.2% is for construction, and 31.9% is for right-of-way acquisition. On-going maintenance costs constitute 11.1% of the total cost in current dollars.

Project Benefits

The proposed project will have quantifiable benefits in four areas: travel time savings, vehicle operating savings, accident reductions, and vehicle emission reductions (Table 9).

Table 9. Summary of Project Benefits (Total Over 20 Years)

Project Benefit	Constant \$	Present Value 7% Discount Rate
Travel Time Savings	\$69,979,639	\$32,222,938
Vehicle Operating Savings	\$3,798,284	\$1,724,457
Accident Reductions	\$95,409,264	\$43,713,930
Vehicle Emissions Reductions	\$65,320	\$20,940
TOTAL	\$169,252,507	\$77,682,265

The largest savings are found in travel time and accident reductions, which can be attributed to

the significant reduction in curb-cuts and other improvements that enhance vehicle speed and safety.

There are a number of additional project benefits that cannot be quantified but contribute to the importance of this project to the entire region, including:

- **Direct Economic Benefits:** The proposed project will directly benefit private entities based in the Cape Cod region, notably: Cape Cod Hospital, for which access to patients and travel times for emergency services are critical needs addressed by this project; Peter Pan Bus Lines, one of the largest privately-owned motorcoach companies in the USA that has intercity bus service to and from the Hyannis Transportation Center that will incur cost savings due to reduced congestion; Hy-Line Cruises, which operates cruises and passenger ferry service out of Hyannis to Martha's Vineyard and Nantucket, and that will benefit from reduced travel times to the ferry terminal. Additionally, the proposed project could facilitate expansion of the local non-profit OpenCape, which provides Broadband services to more than 100 institutions in the region, in turn facilitating redevelopment and development opportunities in Hyannis.
- **Facilitates Airport Access and Expansion:** The Barnstable Municipal Airport is directly adjacent to the proposed project, which will lay the groundwork to improve vehicular interconnection to the eastern portion of the airport, for both emergency equipment and personnel. The airport accommodates advanced medical care and air transportation to and from the Barnstable Airport and local hospitals. Improved access will also facilitate anticipated construction and/or modification of general and corporation aviation-related facilities, resulting in up to 175,000 square feet of additional aviation facilities at the East Ramp of the airport. The proposed project would ultimately provide direct private economic growth and increase airport and town revenues.
- **Healthcare/Hospital Access:** Improved access to Cape Cod Hospital and its emergency room, in situations where delays may be life threatening. Provincetown on the Outer Cape has the longest travel time to a hospital in the Commonwealth, and reduced congestion will save crucial travel time for residents and visitors.
- **Emergency Evacuation Access:** Route 6 is the main emergency evacuation route for Cape Cod. Yarmouth Road is a key roadway connecting Route 6 with the downtown Hyannis area. Reduced congestion would increase public safety in the event of an emergency evacuation.
- **Increased Recreational Opportunities:** The multi-use path would also increase quality of life and recreation and transportation opportunities for residents and visitors, connecting the widely used Cape Cod Rail Trail with downtown Hyannis. At a 2019 count on the Cape Cod Rail Trail at the crossing of Route 134, 1,300 people were observed using the trail during a 12-hour period, between 7 AM and 7 PM. Further connecting the Rail Trail with Hyannis via a multi-use path on Yarmouth Road would likely generate an increase in ridership and use.
- **Increased Quality of Life:** Recent qualitative survey results in Hyannis indicate that residents and visitors avoid Hyannis due to traffic congestion, particularly during peak demand times in the summer (see Narrative page 17). Reducing congestion by expanding the roadway from the main highway to Hyannis would reduce avoidance behavior and

encourage residents and visitors to frequent the businesses, restaurants, and amenities centralized in the area.

- **Expanded Transportation and Employment Opportunities:** The proposed project expands transportation opportunities connecting to downtown Hyannis, the commercial center for the region. Building on the existing Rail Trail connects residents who use public transportation or bicycling/pedestrian facilities to reach employment opportunities in Hyannis.

The future of the Cape's economy depends on the ability of regional activity centers, notably Hyannis, to absorb population growth and provide desirable and affordable living options and quality of life to current and future residents. These few areas have the infrastructure and potential for density necessary for sustainable growth.

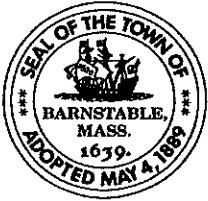
VIII. Cost Share

As discussed in [Section IV](#) of this application, the total project is estimated at \$35,049,016. The Town of Barnstable is seeking \$25,000,000 from the 2019 BUILD, which will be matched by contributions of \$10,049,016 from local Town funds (non-federal).

The budgets and bond ratings for the Towns of Barnstable and Yarmouth are listed in the [Project Partners](#) section above. The Town of Barnstable annually receives approximately \$2 million and the Town of Yarmouth Town receives approximately \$850,000 in State Chapter 90 funding for roadway improvements.

The Towns have also been successful in seeking grants to support transportation improvements. Over the past 10 years the Towns of Barnstable and Yarmouth have benefited in projects totaling \$27.4 million and \$5.3 million, respectively, through the Cape Cod Transportation Improvement Program. The Towns have long advocated for including the Hyannis Access Phase II in the Cape Cod Transportation Improvement Program; however, it greatly exceeded the approximately \$10 million annual allocation the region receives.

In 2018, the Town of Barnstable obtained a \$2 million MassWorks grant to construct sidewalks and signalize two intersections to serve new high-density residential development and a variety of new commercial developments in the vicinity of the BUILD project.



The Town of Barnstable

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Mark S. Ells, Town Manager

mark.ells@town.barnstable.ma.us

M. Andrew Clyburn, Assistant Town Manager

andy.clyburn@town.barnstable.ma.us

Federal Wage Rate Certification

I, Mark S. Ells, Town Manager for the Town of Barnstable, Massachusetts hereby certify that the Town of Barnstable will comply with the requirements of subchapter IV of chapter 31 of title 40, United States Code (Federal wage rate requirements), as required by the FY 2019 Consolidated Appropriations Act for the proposed *Hyannis Access Phase II* project seeking federal funding under the BUILD Transportation Discretionary Grants program.

Signature: *Mark S. Ells*

Date: 9.10.2019

Name: Mark S. Ells

Title: Town Manager

X. Supporting Documentation

The following supporting materials can be found at: <http://www.capecodcommission.org/build>

- List of Referenced Reports
 - Detailed Cost Estimate
 - Letter of Commitment
 - Town Manager, Town of Barnstable
 - Executive Director, Cape Cod Commission
 - Detailed Schedule
 - Benefit/Cost Analysis
 - Documentation
 - Analysis spreadsheets
 - Letters of Support
 - US Senator Warren
 - US Senator Markey
 - US Representative Keating
 - State Senator Cyr
 - State Representative Crocker
 - State Representative Hunt
 - State Representative Whelan
 - State Representative Fernandes
 - State Representative Peake
 - Massachusetts Department of Transportation
 - Cape Cod Metropolitan Planning Organization
 - Nantucket Planning and Economic Development Commission
 - Barnstable Municipal Airport
 - Cape Cod Healthcare
 - Steamship Authority
 - Hyline Cruises
 - Open Cape
 - MassBike
 - Cape Cod Regional Transit Authority
 - Peter Pan Bus Lines
 - Cape Air
 - Cape Cod Chamber of Commerce
 - Greater Hyannis Chamber of Commerce
 - Yarmouth Chamber of Commerce
 - Hyannis Main Street Business Improvement District
 - Cape Cod Housing Assistance Board
 - Emergency Responders – Barnstable County, Brewster, Eastham, Wellfleet
- Federal Wage Rate Certification