U.S. Department of Transportation

BETTER UTILIZING INVESTMENTS TO LEVERAGE DEVELOPMENT
"BUILD" TRANSPORTATION DISCRETIONARY GRANTS
FY 2019 GRANT APPLICATION

Project Name:	Station 46 Bridge Replacement
Project Type:	Bridge Replacement
Project Location:	Rural, Maine 1st Congressional District
Funds Requested:	$25,000,000 - 83.3%
Funds Matched:	$5,000,000 - 16.7%
Total Project Cost:	$30,000,000
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Station 46 Bridge Replacement Project
MAINTAINING ACCESS TO MAINE'S COASTAL COMMUNITIES

Project Summary

Maine Department of Transportation (MaineDOT) is seeking $25,000,000 from a U.S. Department of Transportation (USDOT) Better Utilizing Investments to Leverage Development (BUILD) FY 2019 Grant. The total cost of the project is $30,000,000, 16.7 percent ($5,000,000) of which will be matched by MaineDOT.

The *Station 46 Bridge Replacement Project* ("Project") will:

a) Replace the fracture critical US Route 1 Station 46 Bridge in Woolwich, Maine which has deteriorated to the point that the end of its useful life is near.
b) Maintain accessibility for those living and working along Maine's Midcoast and the millions of tourists visiting Maine's coast each year, which is paramount to Maine's economy.
c) Realize the USDOT stated goal of improving and facilitating freight movement, particularly for Maine's $1 billion lobster industry statewide.

The Project entails replacing the aging, fracture critical Station 46 Bridge in Woolwich, Maine. The Project bridge is located near the Woolwich-Bath town line in Midcoast Maine; a region vital to the tourism industry and a critical route for residents along US Route 1, part of the National Highway System in coastal Sagadahoc County and beyond. Replacement of this bridge is one of the final portions of recent and planned road and bridge improvements in the region, including the replacement of the nearby Bath West Approach Bridge, which was completed in 2017. Directly adjacent to Project is an area which is the focus of an ongoing feasibility study and preliminary design to improve highway coastal resilience and tidal marsh health. Failure to replace this bridge would have devastating consequences to residents as well as the numerous small businesses dependent on its existence to support the tourism industry in the region. The Project is located in a rural region that relies on tourism and aquaculture as primary drivers of the economy. It also takes into account the need to improve access to schools and basic emergency services for residents in this rural region. This Project is located on US Route 1; which is the lifeline of this rural coastal region. This road enables businesses along coastal US Route 1 to connect to their suppliers, while allowing recreational enthusiasts continued access to Maine's outdoor activities that drive the tourism industry in the state. US Route 1 passes through many small coastal towns in the region, with nearly 19,000 vehicles crossing the bridge on an average day.

MaineDOT has been investing consistently in bridge improvements and replacements statewide, but additional funding sources are necessary in order to cover increasing construction prices throughout the state. Funding constraints make it even more difficult to maintain the transportation system in a State of Good Repair. This bridge is in need of replacement. MaineDOT is an accomplished and responsible recipient of past TIGER, FASTLANE, BUILD and INFRA grants. As such, MaineDOT can be relied upon to fully fund and commence the Project in advance of the 2021 obligation date and to complete the project by the 2026 requirement. Replacement of the bridge ensures this region retains the levels of safety and mobility necessary for the region and eliminates burdensome challenges that this rural area simply cannot afford.

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Project Narrative

I. Project Description

a) Project Details and Background

The Project entails the replacement of the Station 46 Bridge, located on US Route 1 in the Midcoast town of Woolwich, Maine. Woolwich is part of rural Sagadahoc County, and Maine is number one in the nation for having the highest proportion of its residents living in rural areas, approximately 61.3%.[1] "Rural residents tend to be more heavily reliant on their limited transportation network - primarily rural roads and highways - than their counterparts in more urban areas. Residents of rural areas often must travel longer distances to access education, employment, retail locations, social opportunities and health services."[2] The need for this bridge replacement extends far beyond meeting the needs of only the local residents. Maine's multi-billion-dollar tourism industry benefits when those visiting Maine travel on roads and bridges that are up to standards, modern and safe.

US Route 1 is the transportation spine of Midcoast Maine. The 150,000 residents of the four, rural counties that comprise the Midcoast[3] are dependent on US Route 1 for access to employment, services and recreation both within the region and beyond it. Two transportation-dependent sectors of the economy: natural resources and leisure/hospitality have grown steadily across the Midcoast since 2001.[4] Lobster landings valued at $228 million and a $5 million farm-raised oyster harvest exit the region by truck annually.[5] The Project bridge is a vital conduit for those employees of Bath Iron Works (BIW), the state's largest private employer. Many of BIW's employees use the bridge each work day to access the shipyard from the north on US Route 1.

Tourism and trade are two important ways the impacts of the Project will be felt well beyond residents living directly along these roads. However, local residents will benefit as well. US Route 1 also serves as a gateway south for essential medical services. The Midcoast's high median-age population migrates from smaller, local hospitals and health centers to the larger hospitals in Brunswick and Portland where specialists are clustered.

[1] https://www.quora.com/Which-U-S-state-has-the-most-rural-land-out-of-all-the-other-states
[2] http://www.tripnet.org/docs/Rural_Roads_TRIP_Report_2017.pdf, page 2
[3] Waldo, Knox, Lincoln and Sagadahoc Counties
[4] Maine Department of Labor, Center for Workforce Research and Information
[5] Maine Department of Marine Resources, Commercial Landings Data

The Project bridge also provides residents living in Midcoast Maine access to schools, shopping, and basic life necessities. The roads provide access for residents and visitors to Maine seeking state parks, lakes, beaches, ski resorts and snowmobile trails that drive the tourism industry, which had more than 35.8 million visitors in 2016, generating nearly $6 billion in spending.[6] "With an economy based largely on manufacturing, agriculture, tourism and fishing, the quality of Maine's transportation system plays a vital role in the state's economic growth and quality of life."[7] Therefore, the Project solves a critical problem faced by rural residents in many parts of Maine: having to use a fracture critical bridge nearing the end of its useful service life – a bridge that both the local and state economies depend upon to handle more and more freight, including heavy truck traffic.

Station 46 Bridge (#3039) over the State of Maine Railroad & Back River Marsh, US Route 1 in Woolwich, ME

There are 2,433 bridges in Maine; 68 are within Sagadahoc County. Statewide, there are currently 306 bridges in poor condition, which equates to 12.6% of Maine's bridges. Though this is an improvement from previous years, Maine still outnumbers New England and the United States with the percentage of structurally deficient bridges.[8] Maine clearly still has an unmet need. The Project is located on US Route 1, a Highway Corridor Priority 1 road and part of the National Highway System (NHS), and is one of Maine's 306 bridges in poor condition. As such, the Project bridge is prioritized for replacement by MaineDOT, but presently there is not enough funding to accomplish the work. This is partially the result of the department experiencing much higher costs associated with improvements necessary for other Maine bridges. "The needs of the transportation system in Maine, as in all other states, continue to outpace available federal and state resources. Our state's large land area, relatively low population, and high number of state-jurisdiction highway miles all contribute to Maine's challenge."[9]

US Route 1, including this bridge, is the lifeline of this rural coastal region, connecting these communities with the rest of the state, nation and even Maine's neighbor to the north and east, the province of New Brunswick, Canada. This road and the Project bridge promote cross- border commerce, in addition to providing residents and visitors access to some of the state's most attractive tourist and recreational destinations, including beaches, state parks, inns, boutique bed and breakfasts, and world-renowned restaurants. This region of the state offers countless boating and sailing opportunities, hiking, golf and is a popular location for weddings, attracting people from all over the world.

[6] https://www.pressherald.com/2017/03/15/maine-tourism-economy-continues-growth-in-2016/
[7] http://www.tripnet.org/docs/ME_Transportation_by_the_Numbers_TRIP_Report_October_2016.pdf, page 2
[8] https://www.infrastructurereportcard.org/wp-content/uploads/2016/10/Maine-Report_Card_final_booklet.pdf, Bridges pages 2-3, 8 May 2019
[9] https://www.maine.gov/mdot/docs/2016/roadsreport2016.pdf, page 5

Quantitative Facts[10]

Project Name: Station 46 Bridge Replacement Project

- The $30 million in bridge infrastructure investment will yield $1.24 billion in economic output for this region (on a discounted basis).
- This project will replace an aging bridge, built in 1933, with a safe, modern, and environmentally-friendly design.
- The Project has a total Net Present Value (NPV) benefit of at least $1.24 billion and a benefit-cost ratio of at least 52 to 1.
- The Project is regional in scope and is located in a rural region of the country.
- The bridge in the Project is located in Sagadahoc County.
- The Project is located in Maine's 1st Congressional District (Representative Pingree). The state is represented by U.S. Senators Susan Collins and Angus King.[11]
- Total Cost of the Project: $30 million
- Total amount of BUILD FY 2019 funds requested: $25 million (83.3 percent of the total cost of the project). A match has been committed by the Maine Department of Transportation in the amount of $5 million (16.7 percent).[12]
- The Project's geospatial data can be found in a table in Section II. Project Location.
- The BCA conservatively estimates that a no-build scenario will lead to an increase in vehicle crashes due to an increase in vehicle miles traveled (VMT) as a result of rerouted trips.

b) Current and Future Condition of the Bridge

Station 46 Bridge during initial construction in the early 1930s

Built in 1933, this bridge is nearing the end of its useful life despite having undergone life-extending improvements in the past, such as a deck replacement and widening project in 1981, and a rehabilitation and wearing surface replacement in 2012. The Project's mission is to replace the bridge with a new modern bridge. Routine bridge maintenance such as wearing surface repairs, cleaning, restriping, and barrier/guiderail and joint repairs, has been performed routinely since 1933, but these are all temporary fixes, minimally extending the bridge life for a few additional years. The bridge needs to be safer. If the Project is not completed the bridge will continue to deteriorate and the safety issues will intensify. At its current rate of deterioration, it is forecasted the bridge will need to be permanently closed within the next 10 years, even if the state invests substantial resources into deck and substructure rehabilitation work and scheduled maintenance work. The Project bridge has a high need and a high cost of replacement, making it a top priority of MaineDOT, which is responsible for the vast majority of bridges in the state.

[10] *See* Appendix A, Benefit-Cost Analysis, for an explanation of the statistics cited below.
[11] *See* Appendix D, Support Letters.
[12] *See* Appendix E, Match Letter.

Details of the current bridge condition, the impact of continued bridge deterioration and the replacement plan for the bridge in the Project follows:

Station 46 Bridge (#3039) over the State of Maine Railroad & Back River Creek Marsh, US Route 1 in Woolwich, ME

Bridge	Year Built	Remaining Service Life (Yrs)	Bridge Length (Feet)	Bridge Type	Challenge
Station 46	1933	5-10	672	Steel Multi Beam	Structurally Deficient

1) Current State

The Project bridge carries US Route 1 (Main St.), a Priority 1 road on the NHS, over a State of Maine owned railroad formerly known as the Rockland Branch of the Maine Central Railroad (M.C.R.R.), and the Back River Creek Marsh. The existing seventeen-span, steel beam structure was constructed in 1933, and reconstructed with a deck replacement/widening project in 1981, and a rehabilitation/wearing surface replacement project in 2012. The substructures consist of two (2) concrete spill-through abutments with cantilever wingwalls bearing on bedrock, and sixteen (16) steel pile bents braced together in pairs to comprise eight (8) pile bent pier towers, all of which are supported on a combination of footings cast on bedrock or timber friction piles. These pier towers are considered fractural critical members, which as defined by FHWA are non-redundant members "whose failure would probably cause a portion of or the entire bridge to collapse."

Side view of the Station 46 Bridge looking northeasterly, over the railroad and Back River Creek Marsh

Spalled and delaminated soffit, South side

The bridge is in overall poor to fair condition. The concrete deck and wearing surface have minor cracking and delamination. The concrete deck overhangs have extensive areas of spalled and delaminated concrete with exposed reinforcing steel, and the deck joints show signs of leakage. There are also scattered areas of collision damage to the bridge rail. The superstructure components are documented as being in fair condition, with areas of paint loss and steel section loss, mainly in the areas of the deck joints.

The substructure components are in poor condition. The concrete abutments are in fair condition with areas of cracking. The steel bents and their concrete supports are in poor condition with areas of significant concrete cracking in the supports and significant section loss of the steel piles and bracings.

Section loss on bracing

Cracking of the center column, 6th bent

The roadway is generally oriented in a north-south direction and crosses over the railroad and Back River Marsh such that the substructure units are normal to the superstructure. The bridge has a curb-to-curb width of 50', and a 1' - 10" curb and railing width along both sides of the structure for a total out-to-out width of 52' - 8". Per existing plans and survey there are two 12' travel lanes with a varying width center line striped median and varying width shoulders on the bridge.

View from Station 46 Bridge looking northeasterly, depicting general view of bituminous wearing surface on bridge deck

Routine maintenance in the form of wearing surface repairs, cleaning, restriping, and barrier/guiderail and joint repairs has been performed on this bridge since 1933. In 1981 the structure was widened from 27'-0" to the current 52'-8" width. In 2012 a rehabilitation of the structure was performed including replacing the wearing surface and bridge joints, as well as concrete repairs to several pier tower supports.

2) <u>Replacement of Bridge</u>

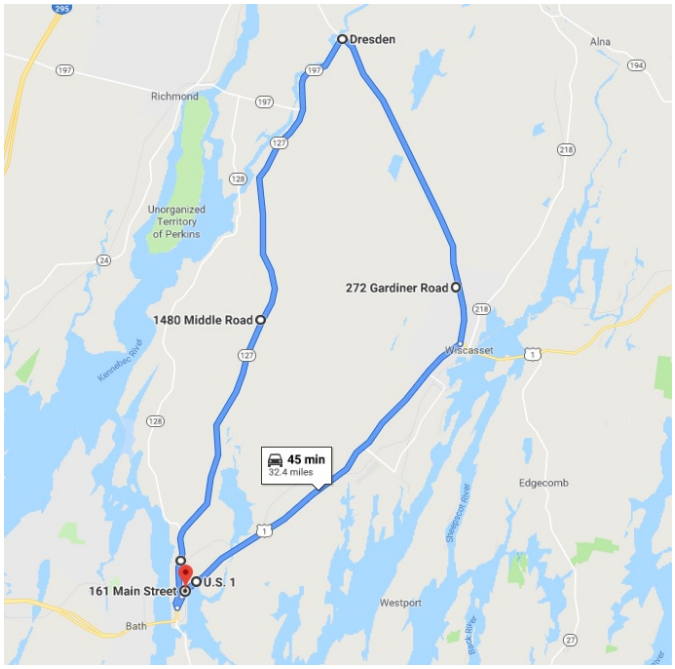
MaineDOT will evaluate replacement alternatives that will consist of a similar length structure that maintains as much of the existing roadway alignment as possible. Poor subsurface conditions will ultimately control the length of the bridge, as previous subsurface investigations and analysis projected significant levels of settlement which led to the existing 675' bridge length. The proposed structure will optimize the span lengths to minimize the number of required substructure units. The new substructure units will be founded on bedrock where possible, and on steel piles driven to fixity at all other locations. The superstructure will be either steel multi-girders or precast concrete girder beams. The bridge width will accommodate two 12' travel lanes with at least 4' shoulders along the length of the structure, and the need for the centerline striped median will be examined as part of preliminary design. To ensure service life of the new bridge and minimize future maintenance costs, corrosion-resistant materials will be utilized for superstructure and substructure elements. The roadway approaches will be reconstructed in accordance with current standards to accommodate all design vehicles. The bridge will maintain a minimum vertical clearance of 22'-6" over the railroad.

3) Maintenance of Traffic

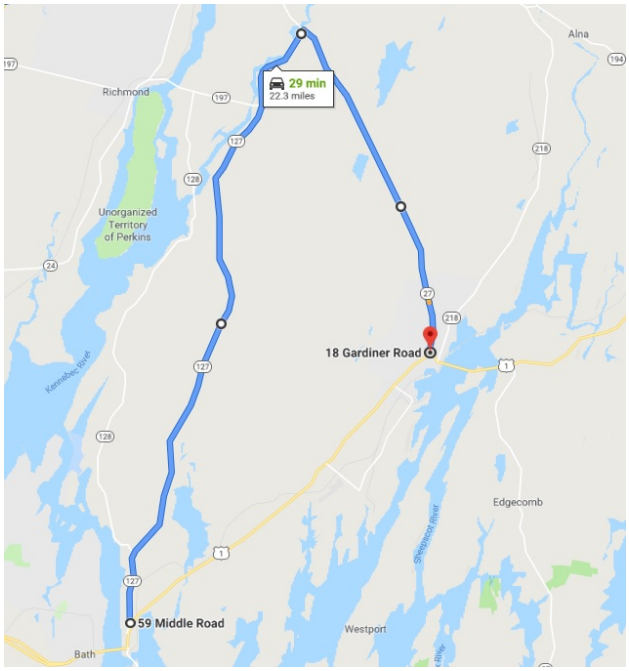
Maintenance of traffic will be a controlling factor for the project. Several alternatives will be examined during project design to keep traffic flowing through the area during construction; an on-site temporary detour roadway, and staged construction alternatives utilizing partial alignment shifts in one direction or the other (east or west) that would allow two lanes of traffic to be maintained on the existing structure as part of a staged construction process.

Impact of Closure Detour- 32 one-way miles

Bridge	Functional Classification	Total AADT	Heavy Truck AADT
Station 46	Rural – Principal Arterial	18,881	982



Abutment to abutment detour of Station 46 Bridge resulting from bridge closure



Through route detour for US Route 1

If the project is not completed and there is a bridge closure, the abutment to abutment detour for crossing the Project bridge is 32 one-way miles and would be expected to take 45 minutes. The abutment to abutment detour is the shortest route not employing local roads. This route has a daily user cost of approximately $245,000. The 18,881 users on an average day would take a variety of alternate state routes, depending on trip origins and destinations. The average trip length of a bridge user would increase by 13.7 miles and more than 17 minutes. Even though the state routes are well-maintained through the area, they are not designed to handle an additional 19,000 vehicles daily. These routes would experience significant delays, especially at all intersection locations along the detour, due to the significant increase in traffic.

One detour route for the area to bring traffic back on to US Route 1, would be 22 one-way miles and take 29 minutes, not including any delays resulting from significantly increased traffic on lesser corridor priority roads. It would add 13 miles and close to 20 minutes for US Route 1 travelers.

II. Project Location

Location - Maps, geo-spatial information[13]

PROJECT	Longitude	Latitude	County
Station 46 Bridge	-69.797043	43.923023	Sagadahoc

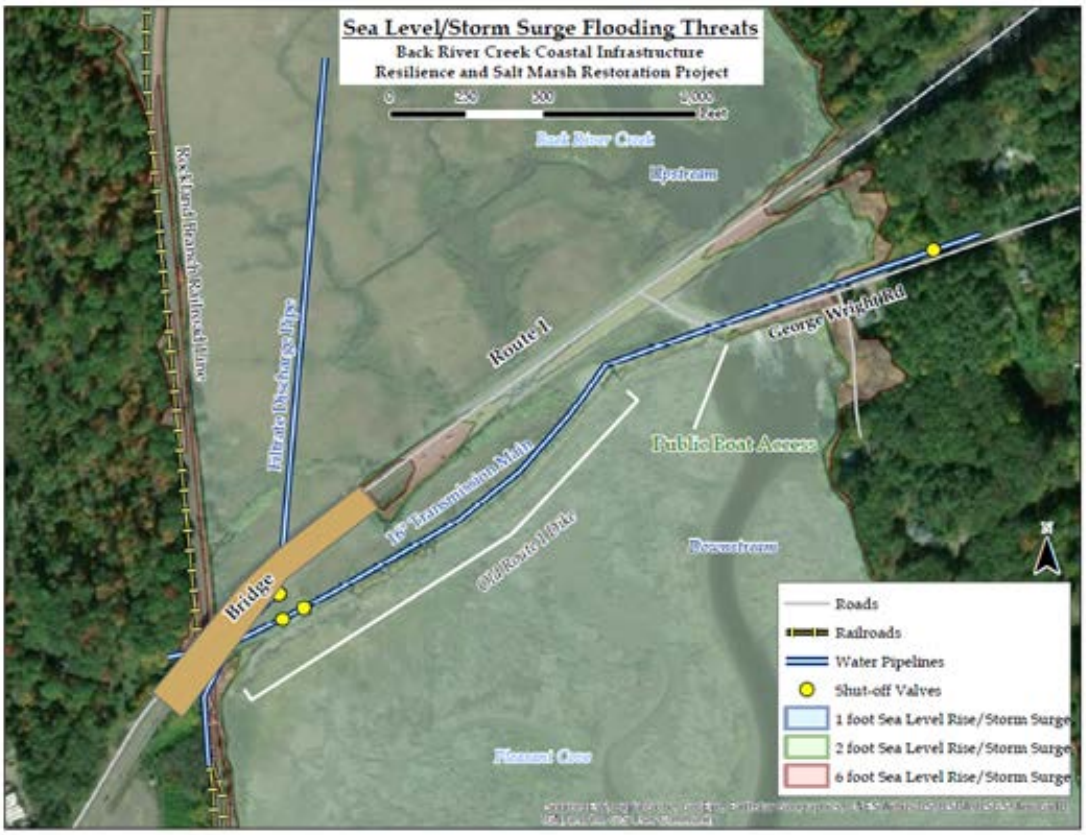
The bridge in the Project is in Sagadahoc County in Maine's 1st Congressional District. It is located in the town of Woolwich, in the heart of Maine's Midcoast region.

Of the more than 2,433 bridges in Maine, 306 bridges or 12.6 percent are in poor condition. This is well above the national average of 9.1 percent of structurally deficient bridges nationwide. In 2016, the American Society of Civil Engineers graded Maine's Bridges a C- and noted that "structurally deficient bridges aren't necessarily unsafe, but could become so and need to be closed without substantial improvements."[14] This bridge was selected due to its critical location on US Route 1, and the significant role it plays in Maine's economy. This bridge is key to connecting users to the region's employment, emergency services, healthcare, tourism and recreation.

With limited public transportation and a mere 0.1 percent relying on it in this region, residents depend on personal vehicles and local roadways to get to and from work. In Sagadahoc County, nearly 73 percent of the population relies on a personal vehicle, and another 15.5 percent carpool to commute to work while only 3.6 percent walk.[15]

[13] *See* Appendix B, Maps with Project Locations.
[14] https://www.infrastructurereportcard.org/wp-content/uploads/2017/01/Bridges-Final.pdf, page 1, 28 May 2019
[15] http://www.city-data.com/county/Sagadahoc_County-ME.html, 28 May 2019

The Project bridge is also located in the area of Back River Creek Marsh, which is the subject of an ongoing feasibility study in partnership with the Kennebec Estuary Land Trust (KELT). The study will assist The Partnership in selecting a project alternative that meets prescribed restoration and resilience criteria and addresses property and infrastructure impacts. The feasibility study aims to improve highway coastal resilience as well as to improve tidal marsh health of the US Route 1 highway corridor across the marsh. Most importantly, the study will help determine an elevation at which the terminus of the new bridge approach should tie into the causeway. Together, these projects will dramatically improve the overall region surrounding the Project and provide an opportunity to improve safety for those traveling Maine's Midcoast.



Location of Station 46 Bridge in relation to Back River Creek Marsh Resilience and Restoration Project

III. Grant Fund Sources/Uses

Table showing sources and uses of project funds and percentage:

	Non-Federal/ MaineDOT	BUILD	TOTAL
Preliminary Engineering (PE) Right-of-Way (ROW)	$2,750,000 $15,000	$0	$2,765,000
Construction Engineering (CE)	$2,235,000	$765,000	$27,235,000
Construction	$0	$24,235,000	
TOTAL	$5,000,000	$25,000,000	$30,000,000
% of TOTAL Project	**16.7%**	**83.3%***	**100%**

All BUILD grant funding for the Project will be spent on actual construction-related costs. Federal funds will not be used for Preliminary Engineering costs or any Right-of-Way acquisition.

**Because this is considered a Rural Project, the Federal share may exceed 80%*[16]

MaineDOT – Funding match: $5,000,000

MaineDOT is a cabinet-level state agency with primary responsibility for statewide transportation by all modes of travel. MaineDOT employs approximately 1,900 people and expends or disburses more than $600 million per year, including federal, state and local funds. The primary source of transportation funding in Maine is gas tax revenue, which by statute can be used for highways and bridges only. The funding source for the Project will be State General Obligation Bonds. In Maine that comes from state bonds approved by the legislature and taxpayers from 2015-2018. Due to its significant economic and transportation impact on the entire state and region, the Project has been prioritized by MaineDOT. This Project was included in the most recent MaineDOT *Work Plan* encompassing calendar years 2019-2020-2021 and will be included in the next Statewide Transportation Improvement Program (STIP). It is also consistent with MaineDOT's long-range plan.

MaineDOT is well equipped to manage and administer this grant, having received and managed numerous USDOT grants for highway, railroad and transit programs including previous TIGER, FASTLANE, and most recently BUILD and INFRA awards. Those awards include several Maine bridge projects which utilized MaineDOT matching funds. It is anticipated that Preliminary Engineering and minimal Right-of-Way acquisition for the Project, with an estimated cost of $250,000 will be incurred by MaineDOT prior to contracting of the Project with FHWA. This amount is not included in the cost of the Project and is separate and apart from MaineDOT's matching dollars. A match commitment letter from the MaineDOT Commissioner is attached in Appendix E.

[16] https://www.transportation.gov/sites/dot.gov/files/docs/subdoc/391/fy-2019-build-nofo-fr.pdf

IV. Merit Criteria

a) Introduction

The Project is not only regionally significant, but significant to the entire State of Maine due to its prime location on US Route 1 in Midcoast Maine. The Project meets all of the merit criteria, both primary and secondary, and most importantly it addresses past underinvestment in rural transportation that has allowed a slow and steady decline in connecting rural Americans to each other and the rest of the country. Like USDOT, MaineDOT recognizes the importance of investing in rural areas and the need to grow rural economies by improving our transportation system, allowing for the efficient movement of freight. Equally important is enhancing access to healthcare, employment, recreation and tourism opportunities; and most importantly, improving safety for users of the transportation system. The Project bridge is in need of immediate replacement and is built to yesterday's obsolete design standards, creating a potential *safety* issue for those using this bridge. MaineDOT has already invested over $15 million in recent years, with another $20 million worth of future investments planned in the next two years, upgrading adjacent sections of the US Route 1 corridor in the greater Woolwich region. It is now imperative to replace the Project bridge and tie previous and ongoing improvement projects together. The Project would place this bridge in a *State of Good Repair*.

Rural residents generally do not have the same transportation options as their urban counterparts. The Census Bureau estimates that Sagadahoc County has a population of 35,634 residents.[17] The mean travel time to work is 23.4 minutes.[18] With limited alternative routes, none of which are reasonable and practical, this bridge is essential to this region. Outdoor recreation and the environment play a vital role in Maine's tourism industry. As such, the Project will be constructed in an *environmentally sustainable* way reflective of the unique and recent agreement MaineDOT has with FHWA for the National Environmental Policy Act (NEPA). The Project has a broad base of support from numerous stakeholders, enabling MaineDOT to once again be a great *partner* with USDOT for a significant federal grant.

b) Primary Selection Criteria

- Safety

The Project will maintain safety at the regional level and provide opportunities for improved safety on-site. At the regional level, replacement of the Project bridge will allow the more than 18,000 daily users to continue to use US Route 1, the principal arterial highway access to the Midcoast region of Maine. Closure of the bridge would result in massive shifts of traffic onto secondary routes, less able to accommodate arterial traffic. Because these secondary routes are more circuitous for US Route 1 travelers, additional travel miles would be required, exposing the travelers to additional risk of involvement in a highway crash. Over a 10-year period, the nearly 100 million vehicle-miles of travel per year added to the road network would likely result in more than 2,000 additional crashes, including several fatal (K) crashes and hundreds of other crashes (A, B, C) involving personal injuries, as shown in the following table. The benefits of avoiding added crashes would be more than $10 million per year and are summarized in the Benefit-Cost Analysis found in Appendix A.

[17] https://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml?src=bkmk, 8 May 2019
[18] https://www.indexmundi.com/facts/united-states/quick-facts/maine/average-commute-time#map, 8 May 2019

Ten-Year Safety Impacts of Added Vehicle-Miles Travelled Due to Bridge Closure

	Crash Severity					
	K	A	B	C	PDO	All Crashes
Added Crashes	9	44	145	355	1,615	2,168

View from Station 46 Bridge looking northeasterly over Back River Creek Marsh

On-site, the Project provides an opportunity to improve safety at the bridge location. In the last 10 years, there have been 18 crashes on or near the existing bridge, including one fatal crash and two other crashes involving incapacitating injuries. Eight of the crashes, 44% of the total, occurred when surface conditions were snowy, slushy, or icy. In contrast, statewide experience has shown that only 19% of crashes occur under those surface conditions. In general, bridge surfaces tend to freeze before the approaching roadways do, but the curve, grade, and relative length of the existing bridge may be contributing factors. Replacement of the Project bridge provides a unique opportunity to make this a much safer location.

- State of Good Repair

As previously mentioned, the Project bridge is structurally deficient. The proposed design of the new bridge will eliminate vulnerabilities in the features of the current bridge. This bridge was completed in the 1930s prior to the adoption of better, safer and more efficient bridge design elements. The new bridge will be designed for a 100-year lifespan. Meanwhile, if not replaced, the remaining service life of the bridge, as well as the cost to maintain the bridge during that timeframe, is estimated as follows:

Station 46 Bridge	
Remaining Service Life (Yrs)	**5-10**
Joint Replacement	-
Superstructure Rehab	-
Deck Rehab	$1,500,000
Substructure Rehab	$3,500,000
Wearing Surface Mill & Fill	-
ONE-TIME TOTAL:	**$5,000,000**
Annual:	
Deck Patching	$5,000
Bridge Inspections	$2,500
Bridge Washing	$500

- Economic Competitiveness

Operating Costs

Costs to operate vehicles according to the *BCA Guidance for Discretionary Grant Programs* includes costs such as fuel, maintenance, tires and depreciation. Using the BCA Guidance suggested values, this project will result in operating costs savings of $244 million over the course of 30 years. These costs savings are significant, particularly for this rural region of Maine.

A key goal of the current administration is to reduce America's dependence on foreign oil, which will serve the purpose of increasing the country's energy security. The project moves the United States closer to seeing a real reduction in the nation's dependency on foreign oil by reducing unnecessary fuel use due to having to detour and intersection delays.

Maintenance savings are a critical component of any highway infrastructure project. Maintenance costs are persistent and constantly increasing, making it difficult for the state to budget for large capital projects. This project will save Maine $4,143,571 over the course of 30 years.

The elimination of truck-miles from the highway decreases travel time for the average highway user thus improving mobility. The travel time savings are critical to this project. By avoiding the detour time, the capacity queuing time, slower through traffic and intersection delays for passenger and truck users of the bridge, the project will save $310 million in travel time costs over 30 years.

a. The Goods Economy

Roads and bridges are key examples of rural infrastructure supporting commerce and economic growth in a region that is economically challenged. In this rural Midcoast region of Maine with limited means of transportation, existing roads and bridges are the backbone to the economic and social livelihood of the area. A network of rural roads and bridges provides the foundation for residents and freight to connect to the larger economy outside their area.

The town of Bath, just south of Woolwich on US Route 1, is home to General Dynamics Bath Iron Works (BIW), a defense contractor for shipbuilding, and one of the state's largest employers, employing 6,000 people in Maine.[19] Many of these employees travel across the Project bridge each day on their commute. A park and ride commuter lot, utilized primarily by BIW employees, is located just south of the bridge adjacent to the *Taste of Maine Restaurant*. Substantial percentages of the workforce also travel US Route 1 south to the healthcare, information technology and financial services opportunities in the Portland region.[20]

Aerial View of Bath Iron Works

BIW was awarded an $87 million-dollar contract with the US Navy in 2018 to continue integrating planning yard services for Arleigh Burke-class destroyers and Oliver Hazard Perry-class of frigates.[21] In September 2018, the US Navy also awarded BIW a $3.9 billion-dollar contract for the construction of four new Arleigh Burke-class destroyers, and later won a contract for a fifth. Most recently, in early 2019, BIW was awarded an additional $126 million-dollar contract for planning yard services for DDG 51 Arleigh Burke-class guided missile destroyers for the first year, with additional four option years, which if exercised and fully funded by the Navy, would bring the total value of the contract to $719 million-dollars.[22] As a major regional employer, BIW contributes significantly to both the local and state economy.

Valued at $386 million-dollars in 2018 ($228 million of which originate from Maine's Midcoast), lobsters are the number one export for Maine, and this highly valuable industry is supported by movement along US Route 1 and the Project bridge.[23] The lobster supply chain as a whole, contributes $1 billion to the Maine economy each year, with 4,000+ associated jobs on land and 6,000 jobs on the water.[24] Avoiding costly reroutes by replacement of this bridge is crucial to local businesses and industries using the US Route 1 corridor, as well as to the economy of the entire state.

Lobster traps and boats in Midcoast Maine

[19] https://www.apnews.com/24a4f2bacb774614812971d0241097b2, 13 May 2019
[20] Labor Market and Workforce Profile of the Coastal Counties Workforce Investment Region, December 2015 Maine Center for Business and Economic Research, USM
[21] https://www.mainebiz.biz/article/biw-awarded-87m-for-us-navy-work, 13 May 2019
[22] https://www.gdbiw.com/sites/default/files/docs/DDG%2051%20PY%20Press%20Release.pdf, BIW website, 13 May 2019
[23] https://www.census.gov/foreign-trade/statistics/state/data/me.html, 6 June 2019
[24] http://www.islandinstitute.org/resource/waypoints-2018, 26 June 2019

International trade, including both imports and exports, supports more than 171,300 Maine jobs, and more than one in five nationwide.[25] Canada is Maine's largest trading partner and receives 50.1% of the state's exports[26], and supports more than 31,500 Maine jobs[27]. US Route 1 is the critical link between Midcoast Maine (and points south) and Canada, allowing trade between the two to flourish.

It is clearly evident that the goods economy in Maine is critical in maintaining the financial success of the state and a quality of life that is conducive to retaining workers and residents long-term.

b. The Service Economy

Sailboat and Lighthouse off Maine's coast

Travel, tourism and recreation are integral to a state's economic health. Maine is no exception and depends on these industries to sustain the state's economy. A strong and reliable transportation system is key to allowing visitors to traverse the state safely, with ease and to keep them coming back. This bridge project is in the hub of Maine's Midcoast region, which offers an abundance of restaurants, oceanside lodging, hiking and biking trails, and sandy beaches. Many visitors return to this region year after year, forging memories to last a lifetime. Tourism is the largest industry in Maine as measured by employment and sales.[28]

"Tourism sustains 107,000 jobs in Maine, generates nearly $9 billion in sales and contributes $600 million in taxes with more than 36 million visitors choosing our state as a destination. By any measure it is one of the largest industries in the state. The tourism market continues to grow each year in Maine and offers highly-skilled, professional careers, plus flexible and seasonal opportunities. Tourism businesses contribute to the local economy." Chris Fogg, CEO Maine Tourism.[29]

Maine's "Lobster Trail", US Route 1 along Maine's Midcoast, delivers tourists hailing from both the north and south, access to *Red's Eats* in Wiscasset, just north of Woolwich and the Project bridge. Arguably the most legendary roadside take-out stand in Maine, customers stand in line for hours for their infamous lobster rolls.[30]

[25] https://tradepartnership.com/wp-content/uploads/2019/03/Trade-and-American-2019-FINAL.pdf, 6 June 2019
[26] https://www.census.gov/foreign-trade/statistics/state/data/me.html, 6 June 2019
[27] https://tradepartnership.com/wp-content/uploads/2019/03/Trade-and-American-2019-FINAL.pdf, 6 June 2019
[28] https://www.meliving.com/mainetourism/, 24 May 2019
[29] Chris Fogg, CEO Maine Tourism https://bangordailynews.com/2018/10/09/opinion/contributors/maines-tourism-industry-is-too-important-to-forget/ 24 May 2019
[30] https://downeast.com/route-1-road-trip/#mile33to85 8 May 2019

Also known as Maine's "Lighthouse Trail", US Route 1 affords access to Maine's 60+ Lighthouses, many in the Midcoast region. Visitors often continue their quest north on US Route 1, crossing the Project bridge in search of Maine maritime history. Midcoast Maine is also home to several historic forts, such as Fort Popham and Fort Baldwin, both located in nearby Phippsburg. In addition, the greater Woolwich area also offers the Maine Maritime Museum, Merrymeeting Bay, and *Monkey C Monkey Do*, an amusement park offering zip lines and high ropes courses.

Not surprisingly, bicycling is a popular summertime activity in Maine, attracting thousands each year to Maine's beautiful Midcoast and beyond. In fact, Midcoast Maine offers several bicycling tours, many of which traverse the Project bridge in Woolwich. *BikeMaine*, an event sponsored by the Bicycle Coalition of Maine, has chosen a route along Maine's Midcoast for 2019.[31] In Maine, outdoor recreation is a huge driver of the economy, generating $2.2 billion in wages and salaries and $548 million in state and local tax revenue.[32]

The Coastal Maine Botanical Gardens and the Maine State Aquarium, both located in Boothbay, a short drive north from Woolwich, offer visitors an opportunity to experience Maine's Midcoast flora and fauna firsthand. Festivals and fairs, such as the Bath Heritage Days, Boothbay Harbor Windjammer Days, and Maine Lobster Festival in Rockland, dictate the social calendars of locals and visitors alike year-round. The top of the Midcoast offers the Penobscot Narrows Observatory, which is taller than the Statue of Liberty and the tallest public bridge observatory in the world, offering 360-degree views of Fort Knox and Penobscot Bay.

The Project bridge is important since Midcoast and the islands are a primary regional destination in Maine's multi- billion dollar tourism industry, and three out of four overnight visitors use their personal vehicle to travel to Maine.[33] The tourism economy supports roughly one in every six jobs in the state, and total direct expenditures on tourism equaled nearly $6.2 billion in 2018, a 3% increase from the previous year.[34] Maine residents also enjoy exploring activities and opportunities the state has to offer; according to the Outdoor Industry Association, 70% of Maine residents participate in outdoor recreation each year.[35] The Project bridge plays a critical role in Maine's service economy.

[31] https://www.bikemaine.org/bike-maine/, 22 May 2019
[32] *See* 2017 Annual Report https://visitmaine.com/research
[33] Supra, 2017 Annual Report
[34] https://www.pressherald.com/2019/04/10/tourist-visition-trends-down-in-maine-for-second-year/
[35] https://outdoorindustry.org/wp-content/uploads/2017/07/OIA_RecEcoState_ME.pdf

- Environmental Sustainability

MaineDOT endeavors to exercise exceptional stewardship over both natural resources and transportation infrastructure through its commitment to addressing aquatic organisms and wildlife habitat and fish passage in cooperation with local, state and federal natural resource agencies. It does this by weighing all aspects of a proposed project. An agreement between the Federal Highway Administration (FHWA), Maine Division and MaineDOT authorizes MaineDOT to determine on behalf of the FHWA whether a project qualifies for a NEPA Categorical Exclusion (CE) if the project does not have a significant effect on the human environment.[36] MaineDOT and various other state and federal departments have executed agreements to expeditiously but thoroughly review environmental impacts from projects *(and they are listed in Section V. Project Readiness.)*

Additionally, MaineDOT has entered into a Partnership with the Kennebec Estuary Land Trust (KELT) for a feasibility study of Back River Creek Marsh, which is directly adjacent to the Project. The purpose of the feasibility study is to assist in the selection of a project alternative that meets specific restoration and resilience criteria and addresses property and infrastructure impacts. The overall feasibility study aims to improve highway coastal resilience and tidal marsh health of the US Route 1 highway corridor across the marsh. The ultimate outcome of the feasibility study will be a project recommendation and preliminary design that will advance the goals of the marsh restoration and improved infrastructure/habitat resilience in the face of sea level rise.

US Route 1 flooding, looking west from George Wright Rd., 3/2/18

Though these projects are independent, stand-alone projects, they will be completed in concert with each other, sharing preliminary survey and site work where applicable. Additionally, the feasibility study will help determine an elevation at which the terminus of the new bridge approach should tie into the US Route 1 causeway. Together, these projects will dramatically improve the overall region surrounding the Project. MaineDOT is committed to transportation improvement investments that sustain and/or improve the quality of the natural environment.

Pollutants of Concern

By replacing the Project bridge now, the added costs of pollution due to rerouting and permanent detour will be avoided. Most heavy trucks are powered by diesel engines, which are major sources of emissions of nitrogen oxides (NO_x), sulfur dioxide and particulate matter (PM). NO_x reacts with volatile organic compounds to form ground-level ozone, commonly known as smog. Diesel

[36] Programmatic Agreement between the FHWA, Maine Division and the MaineDOT Regarding the Processing of Actions Classified as Categorical Exclusions for Federal-Aid Highway Project

exhaust is of specific concern because it is likely to be carcinogenic to humans by inhalation and may additionally cause non-cancer respiratory effects.[37]

The avoided net costs of emissions of sulfur dioxide and volatile organic compounds over the 30-year life of the project are projected to be approximately $21.5 million. Sulfur dioxide is emitted at a rate of 0.097 g/mile and has a social cost of $48,900 per short ton attached to it. Volatile organic compounds emit at a rate of 0.445 g/mile with a corresponding value of $2,000 per short ton.

Likewise, the avoided costs of emissions of nitrogen oxide (NOx) over the course of the 30-year life of the project are projected to be approximately $289 million. Trucks produce approximately 9.191 g/mile of NOx which has an assigned social cost of $8,300 per short ton. The avoided costs of particulate matter (PM) emissions are valued at approximately $308 million. Particulate Matter is emitted at a rate of 0.215 g/mile and has a social cost of $377,800 per short ton attached to it.

The Social Cost of Carbon (SCC) avoided over the 30-year project period is estimated at $366,149. Based on an average miles per gallon consumed[38], a gasoline fueled vehicle emits 398.52 grams of CO_2 per mile with a social cost of $1 per metric ton, rising to $2 per metric ton after 2034. The overall net cost associated with these emissions over the 30-year project period is over $619 million.

- Quality of Life

In a rural area especially, roads and bridges are crucial to providing an enhanced quality of life for residents and visitors, enabling access to every-day life essentials. In the Midcoast region of Maine there are few transportation options, therefore the condition of roads and bridges are critical. Maintaining safe, dependable access to employment, schools, shopping, healthcare and the area's robust outdoor recreation activities requires roads and bridges maintained in a state of good repair.

This bridge allows residents and visitors from north of Woolwich, access to two of Maine's most beautiful sand beaches, Popham Beach State Park in Phippsburg and Reid State Park in Georgetown. Popham Beach State Park is Maine's busiest state park beach, and during Maine's short summer season, these beaches provide a welcome reprieve from the Maine summer and are often filled to capacity, with their parking lots filling up early in the day.[39] In Maine, an enhanced quality of life includes access to recreation and activities at Maine's beaches, and a visit to Midcoast Maine is not complete without a trip to either state park.

Reroutes would be costly, time-consuming and inconvenient for those living, working or traveling in the Midcoast region and beyond, and the replacement of the Project bridge will maintain the continuity and quality of life the residents and visitors of this region deserve.

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[37] *See* U.S. DEP'T. OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION, CHAPTER 2: NATIONAL FREIGHT TRANSPORTATION TRENDS AND EMISSIONS, http://www.fhwa.dot.gov/environment/air_quality/publications/effects_of_freight_movement/chapter02.cfm, 11 June 2019

[38] *See* U.S. DEP'T. OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION, HIGHWAY STATISTICS 2017, https://www.fhwa.dot.gov/policyinformation/statistics.cfm, 25 June 2019

[39] https://www.maine.gov/dacf/parks/water_activities/popham_beach_conditions.shtml, 24 May 2019

c) Secondary Selection Criteria

- Innovation

The expected design life of a new bridge structure is 100 years. This has been a difficult age to meet for many of the existing structures across the State of Maine due to a harsh winter maintenance environment requiring the heavy use of deicing salts. This Project will examine the use of several innovative products to help aid in the lifespan of the structure. In the concrete components of the structure, such as the bridge deck and substructure units, Glass Fiber Reinforced Polymer (GFRP) reinforcing and stainless steel reinforcing will be utilized to provide increased corrosion resistance. Any prestressed precast concrete components on the Project will be analyzed for the possible use of epoxy coated and or stainless steel prestressing strands. Any structural steel beams used on the Project will be analyzed for potential to use protective coating systems that can provide increased proposed life to the steel, such as metalizing and galvanizing. The design technology that will be used in project completion is very sound and repeatable, and though not all of it is necessarily innovative, it is reliable.

From a project delivery perspective, there may be an opportunity to utilize some Accelerated Bridge Construction (ABC) methods to help speed up construction and reduce the impact the construction will have on US Route 1 traffic. ABC methods may include precast bridge elements and preassembled bridge units (PBUs). Furthermore, the Bridge Program at MaineDOT will follow the standard operating procedures that enable it to complete well over 90% of projects within 30-days of schedule. There are no innovative financing aspects to the project, but it does have the commitment of the State of Maine.

- Partnership

Not surprisingly, due to its critical location on US Route 1, the Project has wide support from a variety of stakeholders. They stand ready to assist in completing project reviews and approvals rapidly and assisting in completing the Project with as little disruption as possible to traffic and adjoining communities. Appendix D contains numerous letters confirming stakeholder collaboration and project support. The stakeholders understand the importance of this bridge to residents, workers, tourists, local businesses, emergency responders and area schools.

There will be a unique partnership at play in the Project. MaineDOT and FHWA have established several programmatic agreements to expedite the NEPA process by concurrently handling state and federal reviews. These agreements cover Categorical Exclusions, programmatic wetlands findings, state and national historic preservation and the Federal Endangered Species Act. Signatories to these agreements also include US Army Corps of Engineers (USACE), US Fish & Wildlife Service (USFWS), Advisory Council on Historic Preservation and Maine State Historic Preservation Officer, NOAA's National Marine Fisheries Service and the Maine Turnpike Authority. These partnerships greatly expedite construction projects such as this bridge replacement (*and will be discussed further in Section V. Project Readiness*) in the Project.

MaineDOT will follow all public process requirements and hold communication sessions for the town of Woolwich and affected businesses, as well as the surrounding area regarding expectations and details of construction.

V. Project Readiness

a) Technical Feasibility

The bridge in the Project will be designed by HNTB and construction will be led by seasoned project managers from the Bridge Program at MaineDOT. This team has a demonstrated history of completing well over 90% of their projects within 30-days of the originally scheduled deadlines, despite facing the challenging Maine climate. Given the scheduled completion date of the end of 2023 (*see Section V.b) Project Schedule on the following page*) for the Project, there is minimal risk of exceeding the funds expended deadline in 2026. MaineDOT is confident this Project will be no exception. As an example of MaineDOT's commitment to excellence, the Bridge Program has delivered very complex and challenging projects in the recent past, including:

Project	Cost
Sarah Mildred Long Bridge	$194,566,452
Portland-South Portland, Veterans Memorial Bridge	$68,323,016
Richmond-Dresden, Maine Kennebec Bridge	$17,921,394
Bath, West Approach Bridge	$16,918,464
South Bristol, Gut Bridge	$16,389,279
Howland-Enfield Bridge	$14,772,025
Howland, Piscataquis Bridge	$13,737,256
Peru-Mexico, Androscoggin River Bridge	$10,917,022

While no bridge replacement project is without challenges, the Project is well within the capability of the team and is not anticipated to have complicated engineering design challenges nor technical issues.

The Cost Estimate of the Project by broad category is as follows:

Project Location	Preliminary Engineering (PE)*	Right of Way (ROW)	Construction Engineering (CE)	Construction	TOTAL
Station 46 Bridge	$2,750,000	$15,000	$3,000,000	$24,235,000	**$30,000,000**

**Preliminary Engineering and minimal Right-of-Way acquisition for the Project, with an estimated cost of $250,000 will be incurred by MaineDOT prior to contracting of the Project with FHWA. This amount is not included in the cost of the Project and is separate and apart from MaineDOT's matching dollars.*

b) Project Schedule/Gantt Chart

Project Schedule Key Events[40]

Woolwich, Station 46 Bridge #3039 WIN: 023929.00

Project Schedule Key Events

Task Name	Duration	Start	Finish
Project Kickoff	0 days	7/1/18	7/1/18
Gather Existing Project Data	25 wks	12/21/18	6/17/19
Initial Team Meeting	0 days	3/6/19	3/6/19
Preliminary Public Meeting	0 days	8/21/19	8/21/19
Survey Completed	6 wks	6/19/18	7/31/19
Hydraulic Analysis Completed	12 wks	8/5/19	10/28/19
Preliminary Geotechnical work	15 wks	7/11/19	10/24/19
Preliminary Design and Detailing	30 wks	7/16/19	2/10/20
Draft PDR completed	0 days	2/10/20	2/10/20
PDR reviewed, amended & resubmitted	10 wks	2/10/20	4/20/20
Preliminary Design Report	0 days	4/20/20	4/20/20
Formal Public Meeting	0 days	5/4/20	5/4/20
Utility Coordination	12 wks	3/9/20	6/1/20
Approach Plans Completed	4 wks	5/4/20	6/1/20
Plan Impacts Complete	0 days	6/1/20	6/1/20
Structural Design and Detailing Completed	36 wks	6/1/20	2/8/21
Utilities Certified	8 wks	3/11/21	5/6/21
ROW Coordination	48 wks	6/1/20	5/6/21
NEPA complete	0 days	2/11/21	2/11/21
Environmental Approvals Complete	41 wks	5/4/20	2/15/21
PS&E package complete	0 days	7/7/21	7/7/21
Advertise	0 days	7/28/21	7/28/21
Bid Opening	0 days	8/25/21	8/25/21
Award	0 days	9/8/21	9/8/21
Begin Construction	0 days	9/8/21	9/8/21
Construction	110 wks	9/8/21	10/20/23
Construction Substantially Complete	0 days	6/30/23	6/30/23
End Construction	0 days	10/20/23	10/20/23

The Project plan anticipates both obligation of funding and completion of the Project will occur well within the September 30, 2021, and 2026 deadlines, respectively.

[40] *See* Appendix C, Gantt Chart.

c) Required Approvals

Communication with environmental agencies and interested parties has been initiated and is ongoing. Baseline data collection is underway to identify natural and cultural resources potentially affected by the Project. This information will be used to inform the evaluation of alternatives and to avoid and minimize impacts while meeting the Project Purpose and Need.

(1) Environmental Permits and Reviews

a) National Environmental Policy Act (NEPA)

The Project is anticipated to be classified as a Categorical Exclusion in accordance with 23 CFR 771.117(d) (13). The FHWA Maine Division will be the lead agency for NEPA with an anticipated completion date of February 2021. The current schedule allows sufficient time for MaineDOT and FHWA to work directly with respective agencies and the public to address any potential NEPA issues without jeopardizing completion of NEPA and final design prior to the required BUILD Discretionary Grant obligation date in September 2021.

b) Other Federal and State Environmental Permits

Field delineation of freshwater and coastal wetlands in the project area is currently underway. A U.S. Army Corps of Engineers permit will be required under Section 404 of the Clean Water Act. MaineDOT will evaluate the preferred alternative to determine whether it requires a permit under the Maine Natural Resources Protection Act or if meets the exemption criteria at 38 M.R.S.A. Section 480-Q2 for existing crossings. All permit approvals for the three segments are expected to be received by February 2021.

c) Historic and Archeological

MaineDOT and FHWA have initiated the Section 106 process. The Maine State Historic Preservation Office (SHPO) has concurred with MaineDOT/FHWA determinations on National Register eligibility for properties within the project area. The Project bridge is eligible for listing in the National Register of Historic Places under Criterion A for its local significance in Transportation. The railroad formerly known as the Rockland Branch of the Maine Central Railroad, which passes underneath the Project bridge, is also eligible for listing in the National Register of Historic Places as an Historic District under Criterion A and C for its local significance in Industry, Entertainment/Culture, and Transportation.

MaineDOT has reviewed the replacement of Project bridge and anticipates making a determination that the Project will have No Adverse Effect on historic properties in the project area[41]. The basis for this determination is that the Project bridge's significance is due to its role in the overall transportation system under Criterion A, rather than the structural type of the bridge itself. The Project bridge is significant for its association with the US Route 1 realignment effort at that location and its association with the Rockland Branch Historic

[41] Pursuant to the "Programmatic Agreement Among Federal Highway Administration, Federal Transit Administration, the Advisory Council on Historic Preservation, the Maine State Historic Preservation Officer, and Maine Department of Transportation Regarding Implementation of the Federal Aid Highway and Federal Transit Programs in Maine"

District as a grade separation. The replacement crossing will generally preserve the elements that make the crossing significant (e.g., maintaining grade separation, general alignment, and adequate under-clearance to allow for the passage of trains). MaineDOT will notify SHPO and all consulting parties of this determination as set forth in 36 CFR 800.11, and the final determination of effects shall be made available for public review. MaineDOT anticipates completion of Section 106 Consultation by June 2020.

d) Section 4(f) of the Department of Transportation Act

The Section 106 resources described above are Section 4(f) resources. Because MaineDOT anticipates a Finding of No Adverse Effect to the Project bridge from the proposed undertaking, no Section 4(f) use of the Project bridge is anticipated. MaineDOT anticipates a finding of No Adverse Effect on the Knox & Lincoln/Rockland Branch of the Maine Central Railroad and does not expect to acquire property rights from the railroad. Therefore, MaineDOT does not anticipate a Section 4(f) use of the Rockland Branch of the Maine Central Railroad Historic District.

In addition, the Robert DeWick Recreation Area is located immediately south of the Project bridge and is protected by Section 4(f) of the U.S. Department of Transportation Act. The property is owned by the Town of Woolwich and includes a recreational boat launch.

MaineDOT will work with FHWA to consider alternatives that would avoid use of the Robert DeWick Recreation Area. If no avoidance alternative is determined to be reasonable and prudent, MaineDOT will work with FHWA to obtain approval under Section 4(f). MaineDOT anticipates completion of Section 4(f) by October 31, 2020.

e) Endangered Species Act (ESA) and Essential Fisheries Habitat (EFH)

Federally-listed Endangered Species in the project area include the Gulf of Maine distinct population segment (DPS) of Atlantic salmon, Shortnose sturgeon and Atlantic sturgeon. MaineDOT will consider the potential effects each alternative may have on these species and will consult with National Marine Fisheries Service on the preferred alternative.

The Project is also within the range of the Northern Long-Eared Bat, which is on the Federal List of Threatened Species. MaineDOT anticipates that the Project may affect but is not likely to adversely affect Northern Long-Eared Bats and that it will be eligible for Streamlined Section 7 consultation pursuant to the U.S. Fish and Wildlife Service Northern Long-Eared Bat 4(d) Rule.

The project area contains coastal species Essential Fish Habitat. MaineDOT will consider the potential effects of each alternative to EFH and will consult with National Marine Fisheries Service on the preferred alternative.

MaineDOT and FHWA will coordinate with federal agencies during project design to avoid and/or minimize effects to ESA/EFH. MaineDOT and FHWA will complete ESA and EFH consultations by October 31, 2020.

f) Public Engagement

MaineDOT will follow all public process requirements and hold communication sessions for the town of Woolwich, including local businesses and stakeholders, as well as the surrounding area regarding expectations and details of construction.

(2) State and Local Approvals

The Project is included in MaineDOT's most recent annually updated *Work Plan* covering calendar years 2019-2021, which may be found here: https://www.maine.gov/mdot/projects/workplan/docs/2019/Work-Plan-2019-2020-2021-Feb-2019.pdf. The Project will also be included in the next State Transportation Improvement Plan (STIP) and is consistent with MaineDOT's long-range transportation plan. The Project has broad public support, as evidenced by many the Letters of Support, found in Appendix D.

(3) Federal Transportation Requirements Affecting State and Local Planning

Though MaineDOT does not list specific projects in the long-range transportation plan, this Project is consistent with the goals of the plan.

d) Risks & Mitigations

Project Risks	Mitigations
Environmental permitting/restrictions	Streamline Review and Consultation Process • Collaborative agreements with MaineDOT, USFWS, USACE, FHWA, under the Endangered Species Act through a process that expedites endangered species consultations and aims to meet both wildlife and project goals[42] • Programmatic Agreements with FHWA, MaineDOT and MHPC to complete Section 106 consultation Avoid and Minimize Impacts to ESA and EFH • Minimize in water work. • Constructability reviews will be completed during preliminary design to insure the selected alternative is buildable given the various environmental restrictions and to look for opportunities to avoid and minimize impacts Avoid and Minimize impacts to Section 106 and 4(f) properties • Avoid/minimize impacts to Section 106 and 4f properties • Mitigate effects that cannot be avoided or minimized

[42] http://www.maine.gov/mdot/maspc/

Cost control • While the preliminary design phase has begun, the final recommended improvements could lead to scope and cost increases if additional required work is identified.	Thorough preliminary evaluation • Multiple alternatives will be evaluated during preliminary design with many scenarios of how to maintain traffic being considered • Constructability reviews will be a key focus during preliminary design with a focus on ***most constructible*** and cost effective.
ROW acquisition • There is minimal right-of-way acquisition for the project	State of Maine law for required takings[43] • Statutes in the State of Maine allow for this process to be completed expeditiously and according to an existing process that MaineDOT executes often. • Follows a 5-step process 1. Mapping 2. Appraisal 3. Negotiation 4. Offer 5. Condemnation • The process cannot be stalled at any phase including condemnations as there is a separate appeal process that allows the project to proceed with no delay • The entire Right-of-Way process is allotted up to 48 weeks in the project schedule • There are no local statutes or challenges that can impact the process

The numerous programmatic agreements MaineDOT has with reviewing agencies will mitigate potential project delays. MaineDOT will take advantage of the following agreements to streamline the environmental review and approval process:

i. Cooperative Agreement between US Department of the Interior Fish and Wildlife Service (USFWS), FHWA and the MaineDOT State Transportation Reviews by the USFWS in Maine 2015-2020
ii. Cooperative Agreement between USFWS, FHWA and the MaineDOT for State Transportation Reviews by the USFWS in Maine 2016-2021
iii. Maine Atlantic Salmon Programmatic Consultation between the USFWS, MaineDOT, U.S. Army Corps of Engineers (USACE), and the Maine Turnpike Authority (MTA finalized on January 23, 2017), which covers activities that involve work in streams to construct, preserve and maintain the state transportation system
iv. Programmatic Agreement for the State of Maine concerning identification of listed and proposed species and designation of non-federal representative under the Federal Endangered Species Act between FHWA, Maine Division USACE, MaineDOT, USFWS, NOAA's National Marine Fisheries Service
v. Programmatic Agreement between the FHWA, Maine Division and the MaineDOT Regarding the Processing of Actions Classified as Categorical Exclusions for Federal-Aid Highway Project

[43] *See* MaineDOT's The Land Owner's Guide to the Acquisition Process *Revised 12/2014,* http://www.maine.gov/mdot/publications/docs/brochures/landownersguideoct2014.pdf

vi. Programmatic Agreement for the State of Maine Between MaineDOT, FHWA Maine division, USFWS Regarding Endangered Species Act Section 7 Consultation for Canada Lynx
vii. Section 106 Programmatic Agreement between MaineDOT, FHWA and MHPC
viii. Memorandum of Agreement for Stormwater Management Between the MaineDOT, MTA and Maine Department of Environmental Protection

MaineDOT and its Bridge Division have decades of experience completing bridge replacement projects on time and within budget. The Project will meet all statutory deadlines required for a BUILD grant.

VI. Results of Benefit-Cost Analysis

7% NPV Summary over 30 Years		
Bridge #3039	**Costs**	**Benefits**
CAPEX	$23,124,836	
M&O	$590,092	$4,733,663
Travel Time Savings		$310,302,832
Safety		$61,242,677
Emissions		$619,688,190
Operating Costs		$244,238,028
TOTAL	**$23,714,928**	**$1,240,205,390**
Benefit-Cost Ratio		**52.30**

Explanation of Methodology and Benefits

The results of the Benefit-Cost Analysis (BCA) yield a conservatively calculated 52.3 to 1.0 ratio. An analysis period of 30 years was used with future cost and benefit values discounted to net present value (NPV) using a discount rate of 7%. The analysis examined the AADT traffic levels for the Project bridge and increased them linearly between 2019 and 2048 at a rate of 0.29% per year based on Maine Statewide Travel Demand Model forecasts. An average increase in vehicle miles traveled per user of 13.73 miles was used for the detour caused by the bridge closure. The analysis assumed two weeks of closure per year to address maintenance issues for the remaining service life of the bridge, after which the bridge would be closed to traffic to ensure public safety. Included in the replacement bridge maintenance costs was a wearing surface replacement after 14 years of service and a wearing surface mill and fill after an additional 7 years of service.

For more detail on the BCA, please see Appendix A.

Grant Request Supporters

MaineDOT's grant request for BUILD FY 2019 funds is supported by a diverse group of elected officials and stakeholders due to the significant impact the Project will have on the region. This list of supporters includes:

Members of Congress *(expected)*

U.S. Senator Susan Collins
U.S. Senator Angus King
U.S. Congresswoman Chellie Pingree

State Elected Officials/Offices

Governor Janet Mills
State Legislators representing Woolwich

State and Local Organizations

Lincoln County Regional Planning Organization
Maine Better Transportation Association

Local Employers

Bath Iron Works

Please visit https://www1.maine.gov/mdot/grants/

****** As additional letters of support are submitted, MaineDOT will place them on the website noted above.

APPENDIX