Granite Falls Bridge #102 Replacement
Snohomish County, Washington

2021 USDOT RAISE Grant Application
Granite Falls Bridge #102

1934

TODAY
June 28, 2021

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

Re: RAISE Letter of Support for replacing Granite Falls Bridge #102 in Snohomish County, Washington

Dear Mr. Secretary:

I am pleased to write this letter of support for the Granite Falls Bridge #102 Replacement project in Snohomish County, Washington, submitted under the 2021 USDOT RAISE Discretionary Grant program.

Granite Falls Bridge #102 is located approximately 1.5 miles northeast of downtown Granite Falls, Washington, and carries traffic over the South Fork Stillaguamish River. The bridge provides direct access to the Mount Baker/Snoqualmie National Forest via the Mountain Loop Highway which offers recreational opportunities and tourism for people across the state of Washington. Granite Falls Bridge #102 is also part of a vital freight route for transportation of natural resources including timber, sand, gravel and aggregate resources. These resources are crucial for the Puget Sound region’s infrastructure and construction industry.

The current 340-foot-long, 20-foot-wide bridge deck is not wide enough for two large vehicles to pass comfortably. This 87-year-old bridge is considered fracture critical and functionally obsolete. Granite Falls Bridge #102 provides an essential route for residents living outside Granite Falls and in the rural communities of Verlot, Robe Valley, and Silverton. If the bridge were to fail or close, the detour route is 94 miles, and part of that route is built to minimal forest service standards and is closed during the winter months. A closure would prevent or delay imperative emergency services; the County cannot afford to wait until a disaster occurs before replacing the bridge.

I would like to request your consideration and selection of this important project to support the transportation and economic needs of our community.

Sincerely,

Dave Somers
County Executive
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June 22, 2021

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

Dear Mr. Secretary:

Thank you for considering the RAISE Grant for Granite Falls Bridge #102 Replacement, a critical Snohomish County project. The Public Works Department is responsible for over 200 bridges of which Granite Falls Bridge #102 is the largest and one of the last needing replacement.

If Snohomish County is awarded the RAISE Grant for Granite Falls Bridge #102 Replacement Project, our Public Works Department is prepared to match 23% of the total project costs with our local County Road Fund. We have expended almost $4 million of County Road Funds for evaluating alternatives, preparing plans, initiating federal and state environmental procedures, and engaging in preventative measures to ensure the safety of the existing bridge. We will also be applying for other state and federal grants and have included support letters with our application.

This letter is provided as documentation of the financial commitment from Snohomish County Public Works. The County is committed to providing its share of the project cost as the RAISE program is the only viable option for funding a project of this size in a rural location.

Sincerely,

Kelly Snyder
Kelly A. Snyder, MPA
Public Works Director
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Granite Falls Bridge #102 Replacement

See web page for attachments: www.snohomishcountywa.gov/3028

I. Project Description

Granite Falls Bridge #102 is approximately 1.5 miles northeast of downtown Granite Falls in a rural area of Snohomish County, Washington. The 340-foot long steel arch truss bridge was built in 1934. It carries Mountain Loop Highway (MLH) traffic consisting of residents, workers, school buses, freight and tourists at 90 feet above the South Fork of the Stillaguamish River. (See attached Vicinity MAPS #1 and #2.)

- **Age.** This bridge replacement project is the highest priority in Snohomish County because of the potential failure due to the condition of the bridge and its age of 87 years. Design life of this type of bridge is approximately 75 years.
- **Functionally Obsolete.** Bridge #102 is functionally obsolete.
- **Critical access.** Bridge #102 provides critical access to the Mount Baker-Snoqualmie National Forest (MBSNF). Because this bridge is of strategic importance, and because the only available detour route is approximately 94 miles long and open only in non-winter seasons, traffic across the river must be maintained. The only alternative route results in lost time, lost value, higher rate of diesel-related emissions and increased safety conflicts. (See attached Detour MAP #3.)
- **Economic and recreational corridor.** This important economic and recreational corridor is vital to the Puget Sound Region. The highway carries a large volume of car and heavy truck traffic and is the only route existing that can transport the region’s quarry products and lumber to Puget Sound area markets. Gravel quarries contribute much of the truck traffic carried on the bridge. Future developments at these quarries are expected to produce an increase in truck traffic. Granite Falls Bridge #102 is also the “Last Mile” connection between the MBSNF to freight corridors State Route 92 and State Route 9; both on the National Highway System (NHS).

Purpose and Need

Snohomish County has applied for multiple TIGER/BUILD grants for this bridge replacement project. Each time, the application passed all the technical reviews and was forwarded to the United States Secretary of Transportation as a “highly recommended” project. Included is a detailed BCA completed in 2019 which shows a 69 to 1 Benefit Cost Ratio. Granite Falls Bridge #102 is recommended for replacement in the Snohomish County Public Works 2020 Annual Bridge Report due to the following:
**Transportation Challenge I – Insufficient in serving current needs**

This rural bridge was constructed in 1934 to support the timber industry during a time when logs were transported one-by-one on trucks. Although the existing structure is more than 87 years old, it is the third version of a bridge to be constructed at this important location. Significantly, each replacement was in response to changing economics; including levels and types of usage that it served. Since the opening of the current structure, design technology has evolved and the bridge no longer meets current design standards. Also, new industries such as aggregate mining, recreational uses, and tourism have emerged to introduce new economic and transportation demands into the region.

- The vehicle-travelled way is only 20 feet wide. Trucks, or a truck and school bus, need to wait on either end of the bridge for similarly sized vehicles to pass in the opposite direction.
- Both sidewalks are too narrow to accommodate non-motorized transportation and are not ADA compliant.
- Additionally, Federal Highways no longer accepts using a hinged steel truss construction; thus, widening the bridge is not a feasible option for eliminating these problems.

The existing rural bridge is 87 years old and functionally obsolete. Concerns with the existing structure include:

- Safety concerns due to narrow lanes;
- A limit of one truck at a time on the bridge (about 620 trucks per day use the bridge on average);
- The fracture-critical nature of the structure.

Finding a crack in a fracture-critical element would cause the structure to close for evaluation and/or repair. Failure of the structure would require a 94-mile detour that is only available during non-winter months. A new bridge needs to be constructed before the existing structure can no longer support traffic. Snohomish County has determined that the existing bridge cannot be depended on to meet the area’s transportation needs in the coming decades.
Transportation Challenge 2 – Functional obsolescence is increasing in the face of a changing economy and demographics

Bridge #102 provides the gateway to the Mt. Baker-Snoqualmie National Forest (MBSNF) and is located less than two hours from a major urban metropolitan area. It is one of the most closely situated national forests with wilderness areas (Boulder River) to a major metropolitan area. The bridge and corridor provide access to sand and gravel quarries and logging operations, homes and vacation properties as well as Forest Service campgrounds, interpretive sites, mountain biking routes, hiking trails and other outdoor recreation activities in rural areas to the east. (See attached Census MAP #4.)

In the past, the Granite Falls and Darrington area economies were heavily dependent on logging and lumber manufacturing and the rural communities are working hard to diversify their local economies to increase tourism and recreation. Access is an important part of the desired recreational experience for both residents and visitors.

The Mountain Loop Highway (MLH) is central to the economic goals of Snohomish County, Granite Falls and Darrington. Job creation, tourism, recreational opportunities, timber harvesting, and mining are tied to the rural communities that are geographically situated along the corridor.

Snohomish County Opportunity Zone 7, authorized in the Federal Tax Cuts and Jobs Act of 2017, includes the MLH and the MBSNF (see attached Opportunity Zone information). This program is designed to provide tax incentives to investors who fund businesses in under-served communities and will be beneficial for the economies of both Darrington and Granite Falls, especially along the Mountain Loop Highway.

The Puget Sound Metro area is one of the fastest growing in the United States. The average age of new residents is under 40 with above-average incomes. Recent studies by the State of Washington Recreation & Conservation Office show that recreational opportunities available in MBSNF are consistent with the top ten most popular outdoor activities in the state with day hiking and backpacking. Studies indicate more than 40% of the state’s population participated in these activities and the fact that this district also has wilderness adds small percentages to these numbers. Thus, while heavy truck traffic is high during weekdays (750+ in June 2021), personal and service traffic has escalated to more than 5,427 vehicles/day and as much as 6,800 on weekends during the summer.
The Granite Falls School District provides transportation for students on the Mountain Loop Highway and across the bridge. According to the District, during the 2018-2019 school year, approximately 220 students were picked up and 213 driven home with an average of 42 daily school bus trips across the bridge. The population of the area is expected to increase substantially by 2035, resulting in additional school bus usage of the bridge. As an example, there was a 23% increase in the number of trips across Bridge #102 from 34 in 2017-2018 to 42 in 2018-2019.

It is important to note that based on data provided by Snohomish County Search and Rescue (SAR), calls on the Mountain Loop Highway, which the rural bridge accesses, account for nearly 20% of all SAR calls in the County. Closure or failure of the bridge would essentially land-lock these missions if they occur during the winter months when Barlow Pass is closed.

**Transportation Challenge 3 - Functional obsolescence is jeopardizing the USFS mission in the Mount Baker Snoqualmie National Forest**

The Forest Service’s mission is "Land of Many Uses." As set forth in law, the mission is to achieve quality land management under the sustainable multiple-use management concept to meet diverse needs. While Bridge #102 is serving the increasing traffic levels, it is inhibiting expanded accessibility and other outdoor recreation. For example, the current facility does not support the expansion of mountain biking due to the narrow sidewalks and shoulders at each end. Mountain biking is a growing outdoor activity. (See attached Countywide Bicycle Facility System MAP #5).

Another example is the Scenic Byway status. The Mountain Loop Highway had been designated as a Scenic Byway in 1991 but was dropped from the list due to several factors. Because of the geometrics of the bridge and the roadway, neither can be considered for the status. Scenic Byways have a unique attraction component and offer the additional benefit of opening the highway to people with disabilities. For this and other reasons Snohomish County and management of the MBS Forest Service have formed a partnership to study further uses and improvements to the Mountain Loop Highway and subsequently to pursue mutually beneficial capital projects that make the highway more usable for people of all ages and abilities. The Mountain Loop Highway begins at Bridge #102. (See attached Recreational Visitor Destinations MAP #6).
Project Details

The project consists of replacing the existing rural Granite Falls Bridge #102. The proposed Bridge #102 Replacement project will fulfill its purpose and need through the following details:

Transportation

The proposed bridge plan will have two 12-foot lanes, two 5-foot shoulders, and two 5-foot-6-inch sidewalks, making it wide enough for construction trucks and large vehicles to cross concurrently without having to wait as well as providing multi-modal access.

Bridge Strategic Value

The mission of the US Forest Service (USFS) is to achieve quality land management under the sustainable multiple-use management concept to meet the diverse needs of people. As noted earlier, the rural bridge is the gateway to popular recreation activities and natural resources critical to the regional economy. Moreover, the majority of emergencies to which the Snohomish County Sheriff’s Office and the Search and Rescue Units respond occur between Granite Falls Bridge #102 and Barlow Pass, which is closed in the winter. Thus, the bridge is not only economically important to the regional economy, it is the only year-round access to emergency responders. While it is presently serving increasing commercial and recreational traffic levels, its early 20th century design, structural issues and the potential loss of the bridge, even for minor structural repairs, will inhibit or prevent the mission of the USFS, and will limit access to essential natural resources and emergency responders.

The proposed bridge will be designed and built to current engineering design standards. The design-life of the new structure is 75 years. Hence, the bridge will become a reliable economic link between all USFS activities, commercial and recreational, and the greater Puget Sound Area for decades. The new Granite Falls Bridge #102 will improve long-term efficiency, reliability and costs in the movement of workers and goods.

Expected Project Users

☒ Average Daily Traffic (ADT)

Attached traffic data shows that the bridge has varying degrees of use depending on the time, day, and month of year. There were 5,427 vehicle trips per day in June 2021. Peak daily trip counts reach up to 6,800 during the summer months. In June 2021, there was an average of 755 heavy vehicle trips, including heavy trucks and school buses, per day on the bridge. Based on information from current, long-term permits, this traffic provides at least $86.4M per year in building material for the major metropolitan areas.
Local-area Residents

According to the 2010 Census, there are approximately 3,525 residents in the City of Granite Falls and 1,385 residents in the Town of Darrington. Residents, truck drivers, bus drivers and tourists perceive a safety concern due to the narrow bridge. Snohomish County is one of the fastest growing counties in the country and is expected to see a population increase of 250,000, or 33%, in the next 20 years. The increase in population that must be accommodated is roughly the same size as St. Petersburg, Florida, or Buffalo, New York.

Mining and Timber Industries

In 2018, there were an estimated 668 workers in the Granite Falls and Darrington areas that commute in from other communities, and 3,376 workers living in these communities that commute elsewhere for work. Only 138 live and work in the area. (U.S. Census Bureau; Longitudinal Employer-Household Dynamics, OnTheMap.) According to the Washington State Employment Security Department, in 2019, the quarries and logging-related operations utilizing the crossing at Granite Falls employed an average of 272 workers with an average wage of $62,884 per year; their annual payroll was $17,078,380. (Employment Security Dept. U.S. Bureau of Labor Statistics; Quarterly Wages).

Emergency Services – Fire and Search and Rescue (SAR)

Granite Falls Fire District 17 has five grids east of Bridge #102, which constitutes five square miles of their 38.5 square mile district. The response area continues east on the Mountain Loop Highway to the bottom of Sand Hill; however, they also provide coverage in the outlying area in conjunction with Robe Valley Fire District 23. They average 165 fire/aid calls per year.

Snohomish County Sheriff’s Office Search and Rescue (SAR) Unit’s use of the Granite Falls Bridge #102 on the Mountain Loop Highway is paramount. A bridge that is in good condition is critical to life-saving efforts of Emergency Response Teams.

From 2014 to 2018, the Snohomish County Sheriff’s Office reported 84 collisions involving 111 vehicles within 25 miles of Bridge #102 along the Mountain Loop Highway. Three crashes involved a total of five fatalities. There were six serious injuries with another 49 injuries of unknown extent.

Only three accidents and four injuries can be attributed directly to the bridge. For the remaining 81 incidents, the closure of Bridge #102 would prevent timely emergency response. It is estimated that potentially all six of the serious injuries could have led to fatalities if emergency response could not cross Bridge #102. In that scenario, the societal cost of the fatalities would exceed $36M.
Snohomish County Search and Rescue Teams have responded to 323 incidents (missions) in a five-year period from 2016-2020 on the Mountain Loop Highway. Responses required an estimated 3,520 round trips across the Bridge involving Sheriff’s Search and Rescue Teams and volunteers. These incidents accounted for 12,813 mission hours responding to incidents accessed by the Mountain Loop Highway.

**Tourism**

Supporting growing tourism and recreational use leads to economic development. Washington State visitors spent $21.4 billion in 2016, accounting for $1 billion in tax revenues and created 177,000 jobs. Snohomish County visitors spent $1.04 billion, creating 10,850 jobs. The Mountain Loop Highway is featured in many outdoor publications which focus on the recreational opportunities in the national forest such as hiking, fishing, snowshoeing, whitewater rafting, mountain climbing and camping. Much of the County’s outdoor recreational opportunities are in this area.

Mountain Loop Highway is one of the main routes to and through the Mt. Baker-Snoqualmie National Forest (MBSNF) – one of the most visited National Forests in the country, according to the U.S. Forest Service website [http://www.fs.usda.gov/mbs/](http://www.fs.usda.gov/mbs/). According to the 2017 update of the Washington State Recreation and Conservation Plan, seven of the top-10 outdoor recreation activities in Washington are available at locations accessed by the Mountain Loop Highway. These include walking in a park or trail-setting, visiting rivers or streams, gathering or collecting things in a nature setting, day-hiking, sightseeing at a scenic or wilderness area, wildlife or nature viewing, and swimming/wading at a freshwater beach. (See attached Wilderness Area Overview MAP #7.)

In 2014, the Verlot Public Service Center, located 9.8 miles east of Bridge #102, was the most visited public information site in Snohomish County. In 2015, the U.S. Forest Service collected data at trailheads immediately off the Mountain Loop Highway or that are served by the Mountain Loop Highway and reported that there were 61,566 visitors. Use of the Mountain Loop Highway by recreational users is growing by 2-5% per year. This creates additional congestion and potential conflict at the Granite Falls Bridge #102 bottleneck.
Prior Investment
The Granite Falls Bridge #102 Replacement Project connects with and complements, but has independent utility from, an earlier project on the same freight corridor, the Granite Falls Alternate Route (GFAR). This project was completed in 2011 and administratively reviewed and accepted by WSDOT in 2012. GFAR had substantial federal funding; approximately $8 million. Federal fund sources included American Recovery and Reinvestment Fund (ARRA), Demonstration, Discretionary and Surface Transportation Program (STP). In addition, the project had substantial state support through the Freight Mobility Strategic Investment Board and private funding of more than $1 million from quarry operators dependent on the bridge. Now called Quarry Road, it routes approximately 1200+ heavy trucks per day rather than the trucks having to travel through the city of Granite Falls. The Bridge #102 project will be aligned to intersect with Quarry Road such that truck traffic in both directions can safely maintain optimum operating speeds to and from the quarries while allowing private and other small vehicles to travel as well. (See attached GFAR MAP #8.)

Snohomish County and multiple funding partners in the Granite Falls area have invested more than $31 million dollars during the past two decades on transportation infrastructure from Bridge #102 to SR 92. The investments include more than $25.53 million on GFAR (Quarry Road). A roundabout was constructed along Quarry Road where Jordan Road and Engebretson Road join it for an additional $2.38 million.

Approximately $2.57 million was invested on rehabilitation of Bridge #102 to extend its useful life. The County has invested local funds to coordinate the interdisciplinary project development, including completion of the 30% design.

II. Project Location
Granite Falls Bridge #102 is located approximately 1.5 miles northeast of the City of Granite Falls, Washington, at the coordinates of 48°06’12” N, 121°57’12”W, in the County of Snohomish, and carries Mountain Loop Highway traffic over the South Fork Stillaguamish River.
Bridge #102 is a rural transportation project vital to major freight corridors and a necessary connection between communities. This bridge provides direct access to the Mountain Loop Highway (MLH) and the Mount Baker-Snoqualmie National Forest (MBSNF). It is a key through-route for transport of construction materials including timber, gravel and aggregate resources critical to the Puget Sound Region via a T-2 freight route on the Granite Falls Alternate Route (GFAR).

The MLH is used for recreational opportunities and tourism, and for residents in the rural townships of Verlot, Robe Valley, and Silverton. If the current 87-year-old bridge was to fail, the effects would be devastating to residents and to the local economy as the detour route is 94 miles long and takes approximately three hours one way.

During the winter months, the portion of the MLH which leads to the Town of Darrington is closed and a portion is only built to minimal forest service standards. This highway was used for local residents as a secondary detour after the SR530 Landslide (March 2014 Presidential Disaster Declaration) to access the Town of Darrington.

(a) Area of Persistent Poverty
Neither Snohomish County nor the census tracts in which the project is located have been designated as Areas of Persistent Poverty.

(b) Census-Designated Area
Granite Falls Bridge #102 crosses the South Fork Stillaguamish River between Census Tracts 536.02 and 536.04. This is a rural project that is not located in a Census-designated urbanized area. (See attached Census MAP #4.)
III. Grant Funds, Sources and Uses of Project Funds

(a) Project Costs

Snohomish County is requesting $22,106M in RAISE federal dollars, which is 77% of the total remaining project costs, to fund this bridge replacement project. Remaining total costs include completion of preliminary engineering to ready-to-advertise/award status. Total costs for this project are summarized in this table. (See attached Estimate for Construction costs.) Costs incurred to date for preliminary engineering are included for informational purposes but are not part of this application. Design will not proceed any further without additional funding. The project will be implemented under the rules of Titles 23 & 49 of the Code of Federal Regulations. Snohomish County is a WSDOT Certified Agency with experienced staff to initiate and enforce regulatory provisions related to NEPA, including mitigation, Underutilized Disadvantaged Business Enterprises, Equal Employment Opportunity and Buy America.

(b) Source and Amount of Eligible Project Costs

As noted in the table to the right, the total estimated project cost for this application is $28,709M. The RAISE grant request is for $22,106M (77%), and local match is $6,603M (23%).

Grant Management: Grant funds will be managed by Snohomish County Public Works Department, which manages transportation and other externally funded projects throughout the county, including grant funds disbursed by FHWA/WSDOT and other agencies.

A detailed cost estimate for the project is attached. The County may request a pre-award agreement for any preliminary engineering required before obligation to ensure the County meets their proposed match spent on future eligible costs.
(c) Non-Federal Fund Documentation of Commitment

Please see the attached Funding Letter for which $6.603M (23% of the total project cost) in local funds is committed.

(d) Non-Federal Match Source Information for Federal Funds

Snohomish County Road Fund will be used as match, as referenced in the attached Funding Letter. As shown in the table, 74% of the County Transportation Improvement Plan is non-federal.

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<th>2021-2026 Snohomish County TIP</th>
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IV. Selection Criteria

(1) Primary Selection Criteria

(a) Safety

The existing structure is presently a low incident location. The safety improvements associated with this application are preventive, rather than corrective in nature. As has been noted, the structure does not meet current design standards for accident prevention or incident impact mitigation. The fact that there have been no serious incidents is largely attributed to the fact that users are generally familiar with, and cautious on the bridge. For example, the one-truck/bus-at-a-time characteristic is user-initiated and self-monitored. However, regional projections assume that industrial and personal traffic will increase steadily through 2040. Local data already demonstrates that the Granite Falls area is one of the most rapidly growing in Snohomish County. Thus, the familiarity that has helped keep the accident rate manageable will decrease while the opportunity for accidents increases. This trend has two major potential types of implications: on the structure and off.

Comparing the existing and proposed structures, simply stated: a minor incident on the proposed structure is easily a major incident on the existing structure. Barring a catastrophic, head-on collision on the proposed structure, an incident could be sufficiently cleared to resume traffic flow for personal and moderate sized vehicles; significant damage to the structure itself is unlikely. In the case of a side swipe incident, the most likely, the deflected vehicle would be safely captured by the shoulder buffer, higher curb and bridge railing. On the current structure, a serious deflection would easily result in the lighter vehicle being thrown through the railing and into the river ninety feet below. It’s important to note that Washington State’s Highway Safety Plan identifies three major contributors to incident risk on a rural two-lane major arterial: 1) run-off the road; 2) lane encroachment resulting in head-on collision and; 3) rear-end collisions due to abrupt stopping. All three characteristics are present in the current geometry of Granite Falls Bridge #102.

Off the bridge, the potential impacts appear less dramatic but have serious implications. In addition to the incident response situations described above, the bridge structure is defined as “fracture critical.” This means a fracture in one or more of the members may require a full closure which would be devastating to residents and to the local economy as the detour route is
94 miles long and takes approximately three hours one way (see attached Detour MAP #3). During the winter, the portion of the Mountain Loop Highway which leads to the Town of Darrington is closed and part of it is built to minimal forest service standards.

As has been described, a serious accident on the present bridge could result in closure, at least to heavy-truck traffic for one day, more if there was structural damage. While a lane for personal vehicles could be cleared relatively easily, this does not account for what kind of vehicles larger than personal cars would be permissible. For example, information from the Snohomish County Sheriff’s Office indicates that emergency vehicles, including Search and Rescue, use the bridge an average of over 900 times per year. Granite Falls Fire District 17 is also stationed on the near side of the bridge; the District responds to an average of 165 incidents across the bridge annually. What is not available in these statistics is what vehicle types comprised these trips and whether they would be able to move the appropriate equipment across the river in essential response time. The proposed project eliminates this issue by providing a geometry that is designed to keep the structure open under almost all circumstances.

**(b) Environmental Sustainability**

Snohomish County is making government operations more environmentally and economically sustainable. Through a combination of policy development, adjustments to existing programs and processes, and projects that produce results, the County is working across departments and agencies, including continued collaboration with local tribes, to implement change. We have a Sustainable Operations Action Plan, an Environmentally Preferable Purchasing Policy Benchmark and Progress Reports. Snohomish County Public Works operates in a sustainable manner by developing new solutions in environmentally and socially responsible ways, while striving to deliver services and infrastructure which citizens expect, with the best economic outcomes. Granite Falls Bridge #102 Replacement project will follow environmentally sustainable design and construction best practices. The proposed project implements this approach.

Snohomish County Public Works released a pilot Climate Change Decision-Support Tool (Climate Tool) in 2017 to better understand climate change considerations for transportation infrastructure including the proposed replacement of Bridge #102. The Climate Tool was developed with Cascadia Consulting Group, Public Works staff and contributions of climate related data from numerous sources such as the University of Washington Climate Impact Group (CIG). It has projected air and stream temperature changes, precipitation changes, flooding risks, and Sea Level Rise data to approximately 2100, and additional data on wildfire, inland erosion, and other risks, with guidance on how to make projects more resilient.

A preliminary analysis of this project using the Climate Tool was done in 2017. If awarded a RAISE grant, the Climate Tool will once again be used, and additional data/analysis will be conducted to further consider climate risks and recommendations on any modifications of design, construction and operations and maintenance to make the project more resilient. Recommendations would include financial impacts of addressing the risks or not.

Bridge #102 is located in an area where examples of climate risks identified so far include:
To the north, south and east of the bridge the current wildfire hazard risk is high and anticipated to get worse as climate change worsens.

Average summer ambient temperature increase in the local project area of up to +9.2 degrees F higher (not considering extremes) from historical baseline conditions under the high GHG emission scenario (RCP 8.5). Hottest days in the Puget Sound region are projected to be on average up to +15.3 degrees F higher from historical baseline conditions by the 2080’s.

The percent change in the monthly wet season precipitation at the high-end projection (not considering extremes) is an increase of +13% from baseline by the 2080’s. There is an up to -13% projected decrease in monthly precipitation during the dry season by the 2080’s. The average spring snowpack in the Puget Sound region is projected to be on average 55% lower compared to the historic baseline time period under the high emission scenario.

These and other risks will all factor into design (e.g., improved stormwater infrastructure on/under/around the bridge, modern seismic standards), materials used (e.g., strength of steel girders, expansion joints, bearings, concrete mix, paint/coatings), construction (e.g., contractor equipment/emissions, work practices, recycle existing bridge materials), and operations and maintenance considerations. The project will consider components that reduce emissions, promote energy efficiency, increase resiliency, and recycle as feasible the existing infrastructure.

Snohomish County has considered climate action and environmental stewardship for County government operations through its Sustainable Operations Action Plan (SOAP). The SOAP focuses on County government operations and is updated every 5 years. This project has and will consider the goals and actions of the SOAP. In addition, the County is in the process of developing a Climate and Environmental Action Plan that considers the greater Snohomish County community. Snohomish County has also completed a Greenhouse Gas Emissions (GHG) inventory for government operations in 2018 and will be developing a County wide GHG inventory starting in 2022. Additional information can be found here: Office of Energy & Sustainability | Snohomish County, WA.

The structure will be designed to current seismic standards and include redundant structural members. This ensures availability, even following a major seismic event and prevents the detour situation previously described. The environmental benefit is that diesel emission related air quality impacts remain at minimum levels as trucks continue to use the most energy efficient route. Maintaining air quality is a major environmental benefit. The analysis also applies to serious incidents. A serious collision on the bridge would close it for one day and not result in long-term structural damage; again, this ensures the availability of the most energy efficient route. Comparing this situation to the current structure, clearing serious collisions would be slower due to geometry and load bearing capacity. Structural damage is highly likely, and repairs are difficult and time consuming because of the structural type and multiple potential failure points.

Alignment of the current structure was not designed to avoid or protect wetlands or wildlife habitat. The NEPA evaluation for the proposed project is underway. Critical habitat, including wetlands, have been mapped and avoidance, protective and mitigation measures have been developed. These have been incorporated into the design and cost estimate to ensure their long-term viability with inclusion to prevent debris from falling into the river. Stormwater run-off
from the present structure is currently unmanaged; the new structure will be designed to current drainage codes and improve stormwater management. The location of the project, in a National Forest and over a river, requires consultation with multiple agencies; this process has been initiated and will result in environmentally sustaining features and actions being incorporated into the design and construction.

(c) Quality of Life

The project, as described in the application will create a safer and more non-motor friendly crossing at this location. This is important as access to the MBSNF and the nearby Washington State Department of Fish and Wildlife facility is also completed on foot and by bicycle. The project will contain ADA compliant sidewalks, as opposed to the existing structure, including widened shoulders, sidewalks, and a pedestrian lookout to improve safety between motorized and non-motorized users. It will improve non-motorized access to Granite Falls as well. It is important to note that mass transit service terminates at Granite Falls and there is no plan to extend service to the far side. People wishing to, or having no alternative to, using mass transit will have a safe opportunity to cross the bridge. From a larger perspective, the project will contribute to the regional quality of life, by providing access to the recreation opportunities discussed in this application.

Snohomish County Public Works has a strong Title VI of the Civil Rights Act of 1964 program, that includes consideration of Environmental Justice (EJ) and Limited English Proficiency (LEP) requirements. Snohomish County Public Works developed a demographic analysis tool (Tool) that is updated with the latest U.S. Census Bureau and American Community Survey data for Snohomish County on minority, low-income, and LEP populations. The Tool is used to screen project areas to better understand the demographics and follow internal guidance that results in consideration of EJ and LEP issues in planning, design, construction, and operation and maintenance of projects. At a minimum a Memorandum to File is completed to document the consideration of EJ and LEP for projects. On federally funded projects requiring NEPA compliance, a detailed EJ report may be prepared.

Snohomish County recently formed an Office of Social Justice (OSJ). If granted RAISE funds, Public Works will consult with the OSJ and others to consider how the project can further support more equitable development.

Public Works has formed a Diversity, Equity and Inclusion (DEI) Task Force, and hired a consultant to facilitate meetings with the DEI Task Force, other staff and leadership to develop a department DEI Plan. As part of this broader effort, including continued development of our Title VI of the Civil Rights Act program, the department will review existing and/or consider developing new equity-focused policies related to project procurement, material sourcing, construction, inspection, hiring and other activities designed to ensure racial equity in the overall project delivery and implementation. County administration is already addressing DEI and racial equity in their policies and practices in coordination with OSJ.

Bridge #102 connects residents of the city of Granite Falls and others seeking recreational and tourism opportunities from the west of the bridge to the very rural area to the east and north of the bridge via the Mountain Loop Highway, ending near the small town of Darrington. Initial
analysis shows that closer to Granite Falls there are up to 25% minority populations, up to 15% low-income populations and up to 10% LEP populations. To the east and north of the bridge to Darrington, minority populations are as low as 5%, low-income populations as high as 30% and LEP populations as low as less than 5%. Communication and outreach plans will consider those impacted and benefiting from the project short- and long-term.

Low-income and disadvantaged communities, communities underserved by affordable transportation, and potential overburdened communities would be disproportionately impacted by a bridge failure and would instead benefit from a resilient bridge built to modern standards, with new ADA compliant sidewalks and a bike path. New seismic and stormwater standards will also make the bridge much more resilient than its degraded current condition.

**(d) Economic Competitiveness**

Construction of the bridge identified in this application will contribute to the economic competitiveness of the United States over the medium to long-term and ensure preservation of good paying jobs. It is helpful to understand the context of this bridge and its major economic characteristics in a regional framework. The Puget Sound Regional Council has identified that construction aggregates, the primary resource output of this area, constitute the largest single product moved by truck in the Central Puget Sound Region.

The most recent data available indicate that, in 2010, the volume of this commodity totaled 35 million tons. By 2035 this tonnage is projected to increase to approximately 42 million tons. The quarries served by this bridge account for 10-15% of that trade and transport. This is projected to increase as permits for mining within a competitive distance from major metropolitan areas become more difficult and expensive to obtain due to encroachment from residential development and/or the depletion of resources.

The quarries using this bridge are advantageously insulated from those limitations. First, new or renewed permits have been issued for 26 years for those quarries using the bridge. Second, these quarries have been designated Mineral Resource lands consistent with the Washington State Growth Management Act; as such, encroachment by incompatible uses is prohibited under the County’s Comprehensive Plan. In addition to mineral resources, management of the MBSNF has written a letter of support for replacing Bridge #102 as a decision was made on the basis of the South Fork Stillaguamish Vegetation Management Project which will thin between 2,100 to 3,600 acres of timberland over a ten year period.

Access/egress via Granite Falls Bridge #102 is the preferred and most cost-efficient route. According to the Washington State Employment Security Department, in 2017, the quarries and logging-related operations utilizing the crossing at Granite Falls employed more than 272 workers with average wages of more than $62,000/year; their annual payroll was more than $17 million. Replacement of the bridge ensures adequate, efficient transport capacity for the future in a metropolitan area with $36 billion worth of construction underway or permitted. Bridge #102 is
truly an economic lifeline for the success of the Region. (Please see attached Economic Alliance flyer.)

While heavy trucks account for approximately one-third of the traffic on average, a reliable bridge crossing benefits recreational traffic as well. The importance of a reliable crossing to the Granite Falls School District has already been discussed. In addition, a recent (2017) analysis of the MBSNF estimated that the non-extraction component of the Forest’s operation contributed 1400 full time jobs and over $60 million to local economies. (See attached Quarries/Timber Permits MAP #9.)

(e) State of Good Repair

With the no-build scenario, the Benefit Cost Analysis model shows an additional $34 million in road preservation and maintenance costs will be spent in the 20-years post construction. This is based upon the net increase travel mileage of 284 million miles due to the length of detour and travel choices when the bridge is unavailable.

The rural project is consistent with relevant plans to maintain transportation facilities or systems in a state of good repair and address current and projected vulnerabilities. Snohomish County Public Works Department is responsible for more than 200 bridges including Bridge #102. As noted earlier in this application, the project constitutes the final link between major resource areas to the east for strategic building materials and the state and interstate systems to the west through which these materials are delivered. It aligns the structure with the Granite Falls Alternate Route (GFAR) project (see attached GFAR MAP #8) which connects with these systems to maintain reliability and travel time.

The current structure cannot be retrofitted to correct width, stress or seismic criteria due to its structural type and age. It is important to note that this project is the “last mile” connection to the regional freight system; the connection at Granite Falls is considered a Regionally Significant Project in the Metropolitan Transportation System and the Regional Freight Strategy. The critical nature of this link and regional policy support can be found in Transportation 2040, Appendix J, which is the regional transportation plan for the Puget Sound Region, prepared and adopted by the Puget Sound Regional Council, the Metropolitan Planning Organization.

Replacement of the bridge with a structure meeting 21st century standards will ensure resiliency of the transportation system and reduce annual maintenance costs. The current structure is a) not seismically adequate; b) inadequate for the volume and type of traffic; c) very inadequate for pedestrian and bicycle access and therefore, non-ADA compliant. Moreover, the concrete deck has a high salt content and is nearing the end of its useful life. If the bridge is not replaced the deck will need to be completely replaced within the next ten years. Replacing the functionally obsolete bridge will also reduce maintenance costs.

Regarding deck replacement and expansion joint replacement, it is important to note that, while the replacements can be completed one lane at a time, this will add dramatically to the increasing
bottleneck created by current traffic levels; the 94-mile detour identified elsewhere in this application is not a practical option.

The RAISE grant will fully capitalize the project and construction can be initiated and completed per the attached Schedule. The new bridge will be incorporated into Snohomish County’s Asset Management system to be inspected and maintained per standard engineering practice and as prescribed by federal regulations.

(2) Secondary Selection Criteria
(a) Partnership
Snohomish County’s Public Works Department has approximately 600 employees and is responsible for the development and maintenance of the transportation system, disposal of solid waste, and control and management of surface water quantity and quality. The Roads Division is responsible for more than 1,600 miles of road and more than 200 bridges.

☐ Awards:
2021 Public Works Project of the Year Award, American Public Works Association
2020 Public Works Project of the Year Award, American Public Works Association
2019 Local Outstanding Civil Engineering Achievement, American Society of Civil Engineers
2019 Build Washington Award, Associated General Contractors of Washington
2017 Project of the Year Award, International Right of Way Association
2016 President's Award, Washington State Association of County Engineers

Snohomish County will work directly with the Washington State Department of Transportation (WSDOT) through their Local Programs Office for administration of RAISE funds as well as with Puget Sound Regional Council, the local Metropolitan Planning Organization. Snohomish County has Certification Acceptance (CA) to manage FHWA administration funds and is experienced working with stimulus funds including ARRA.

☐ Washington State: Washington State Department of Transportation (WSDOT)
☐ Metropolitan Planning Organization: Puget Sound Regional Council (PSRC)
☐ Additional Stakeholders:
  United States Forest Service
  WA State Dept. of Natural Resources
  Frontier Communications, Verizon
  Snohomish County Public Utility District
  Comcast Cable
  Cities of Granite Falls and Darrington
  Fire, Police, and EMS Agencies

☐ Quarries/Mines/Timber:
Discussions with quarry operators and the USFS indicate a projected increase in activity in the mining and timber industries that transport building materials over the bridge. (See attached Quarries/Timber Permits MAP #9.) Freight traffic on the bridge is expected to increase as mines southwest of the bridge are closed due to declining material and urban growth pressure.
Similarly, much of the land along the MLH is owned by timber companies. As with aggregates, the private timber owners are expecting future growth which is associated with the growth in the Puget Sound region. Both industries are strategically located to provide building materials to the
I-5 corridor. Quarry customers and destinations include The Port of Everett, including Naval Station Everett, WSDOT, BNSF, multiple local jurisdictions and private businesses building capital projects at various destinations throughout the greater Puget Sound area. For example, the Boeing 777X wing plant was receiving a truck from these quarries every six minutes during construction of the foundation. Aggregate products typically comprise approximately 60%, by volume, of the material in any large commercial building.

Due to the nature of what they produce and the cost of transport, these quarries cannot economically ship their product more than 50-75 miles. There is no viable alternative, over the long or medium term, for shipping aggregate products to the Puget Sound Metropolitan Region; the only truck accessible detour is 188 miles round trip which is not sustainable for more than approximately four weeks before it is more effective to temporarily shut down the quarries. The crossing at Granite Falls is truly an economic lifeline for the Region. For PSRC information visit: Transportation 2040 | Puget Sound Regional Council.

Conversely, there are very few quarries within the 50-75 mile radius to make up the difference over the long term. Thus, the cost of aggregate products for the region can reasonably be expected to increase with the loss of the Granite Falls operations for a protracted period of time.

According to the Washington State Department of Natural Resources, on average, each Washington resident uses about 13.5 tons of aggregate per year. Demand can be linked to projected population growth. The cost of transport for aggregate doubles every 25 miles traveled by truck from the mine source. In 2010, Washington had 955 permitted mines.

Equally significant is the relationship between the Granite Falls area products and the national defense related facilities within the same geographic boundaries: Naval Station Everett, Whidbey Island Naval Air station and the Port of Everett. Mineral aggregate products from this area have been approved for use as Class I Railroad ballast as well as more common building materials. The region’s military goods movement system consists of the Strategic Highway Network (STRAHNET), Strategic Rail Corridor Network (STRACNET), military bases, and seaports of embarkation (see Transportation 2040 Map D-8). Both projects, Bridge #102 Replacement and GFAR are efficiently connected to STRAHNENT via SR92. Products from the Granite Falls quarries are used by national defense related facilities.
This project is supported by Washington State Congresswoman Suzan DelBene and Senators Maria Cantwell and Patty Murray. Please see attached Support Letters. Also available on our Project Funding website www.snohomishcountywa.gov/3028. Previous BUILD Support Letters are included as placeholders for new RAISE Support Letters that will be delivered directly to the Secretary of Transportation.

<table>
<thead>
<tr>
<th>Letters of Support (Current/Past Applications)</th>
<th>Attached</th>
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<tr>
<td><strong>United States Government</strong></td>
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<td>• Congresswoman Suzan DelBene</td>
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<td>• Senator Patty Murray</td>
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<td>• Senator Maria Cantwell</td>
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<td>• United States Forest Service, Local Program</td>
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<td><strong>Washington State/Regional</strong></td>
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<td>• Washington State Department of Transportation</td>
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<td>• Puget Sound Regional Council</td>
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<td><strong>Local Government and Other Agencies</strong></td>
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<td>• Snohomish County Executive’s Office</td>
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<td>• City of Arlington</td>
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<td>• Town of Darrington</td>
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<td>• City of Granite Falls</td>
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<td>• Economic Alliance of Snohomish County</td>
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<td>• Port of Everett</td>
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<td>• Granite Falls Historical Society</td>
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<td>• Granite Falls School District Transportation</td>
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<td>• Snohomish County Sheriff’s Office</td>
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(b) Innovation
The project employs innovative strategies, tailored to the context of the bridge’s location, purpose and need, in the areas of civil/structural engineering, project delivery and financing.

(i) Innovative Technologies
The project proposed in this application is innovative in its development processes. In addition, the proposed design implements several innovative design methods which either reduce or self-mitigate environmental impact or reduce the use of construction material. Conduit will be installed under the bridge for future broadband and high-speed networks.

The project development process is based upon context sensitive design. Three technically viable construction types and locations were developed, and peer reviewed by expert structural engineers in consultation with geo-technical and constructability analyses. A rigorous life-cycle analysis was applied to each alternative. Concurrently, substantial research was undertaken in the disciplines of public perception, biology, historic preservation and archaeology.

Innovative design methods used in the preferred alternative include, but are not limited to:
• 3-dimensional rock bolting to reduce the amount of rock excavation next to the river;
• Long span alternative to remove intermediate foundations off the steep rock slopes;
• Octagonal shaped spread footings to fit skew/reduce rock excavation next to river;
• Use of Grade 80 reinforcement bars to reduce the amount of steel in the footings;
• Designing for user experience by including pedestrian lookouts on both bridge sides.

The project is also significant in that it builds upon and completes an effort initiated in 2009 using early stimulus funding. In 2009 Snohomish County helped the community of Granite Falls design, fund and construct the Granite Falls Alternate Route project. This completed project routes heavy-truck traffic around rather than through the community on a facility that is safer and less disruptive to the community. In fact, downtown Granite Falls is experiencing a renaissance with less heavy trucks traversing its main streets. ARRA funds were made available through Congressional and State support. The Granite Falls Bridge #102 Replacement project is designed to intersect with the Granite Falls Alternate Route Project to efficiently move heavy trucks around the community to intercept with SR 92 and channel them towards the Puget Sound Metro Area.

Finally, when the new structure is constructed, it will be added to the Snohomish County Public Works Department Asset Management System. This system will employ GIS technology to map and track the condition of critical structures. It will also integrate rigorous maintenance standards and records with historical and environmental information on an asset specific rather than program general basis.

(ii) Innovative Project Delivery

Due to Snohomish County’s status as a Certified Agency through WSDOT’s Certification Acceptance program, the County is authorized to implement this project, consistent with the attached schedule and fulfill objectives of both the NOFO and Executive Order 13985. WSDOT has both a Stewardship & Oversight (S&O) Agreement and a Programmatic Agreement with FHWA. Through the S&O, FHWA has delegated specific 23 CFR approval authority to WSDOT including but not limited to design; plans, specifications, and estimates (PS&E); contract awards; and inspections. The Programmatic Agreement authorizes WSDOT to determine, on behalf of FHWA, whether a project qualifies for a Categorical Exclusion (CE) specifically listed in 23 CFR 771 without further review and approval by FHWA. This agreement allows WSDOT to make NEPA CE approvals on FHWA’s behalf for projects. In turn WSDOT has, through its Certification Acceptance Program, delegated and/or significantly streamlined these processes by direct consultations between WSDOT and the County. No WSDOT approval is required for design or construction estimates. PS&E is prepared using FHWA Standard Specifications. Requirements of Titles 23 & 49 CFR delegated to WSDOT include determination of Underutilized Disadvantaged Business Enterprise (UDBE) participation and Training Hour (apprenticeship) Goals. Consistent with Executive Order 13985, it is important to note that requirements and enforcement of both goals is under the supervision of the Washington EEO Office and include consultants as well as construction labor. Goals are typically established within 24 hours of submittal of the required data. The County has trained staff who administer all requirements of both programs on-site.
Concurrently, the County’s environmental staff has extensive expertise in direct resource agency consultation, permitting and coordination with WSDOT to have all permits in-hand or satisfactorily progressing to advertisement. For this project, we have assumed that if selected by November of 2021, NEPA and related design will be initiated as described above and will be completed in time to obligate RAISE construction funds within two years of project selection, as shown on the attached Schedule.

Functionally, the foregoing is supported by the strategy that the existing bridge will remain open during construction. Thus, no additional environmental complications will arise due to a temporary detour being incorporated into the Area of Potential Effect. This not only simplifies the NEPA review, it also ensures that economic activities that benefit County businesses and the MBSNF will remain in operation.

(iii) Innovative Financing

RAISE Grant funds will be utilized to construct a new bridge. The bridge replacement is difficult to fund with grant funding sources other than RAISE; because of the construction methodology of the existing bridge, which is no longer accepted by the American Society of Civil Engineers, replacement is the only option for federal assistance, thus precluding renovation.

The Washington State Growth Management Act compels the County to prioritize funding on transportation improvements in the unincorporated urban area over those in the rural area. The impact is that less than 5% of local transportation funding for the next six years will go to projects in the rural area. This means that funding for many roadway projects that are critical for rural economic development, such as the rural Granite Falls Bridge #102, must depend on external funding sources. (Please see attached Census MAP #4.)

MAP-21 eliminated the Highway Bridge Program as a stand-alone funding source for bridges. Instead, WSDOT allocates between $60-$70M biennially for existing local bridges. In Washington State, a local Bridge Advisory Committee (BRAC) recommends projects for WSDOT Local Programs Director approval. In 2019, BRAC awarded 38 bridge grants which ranged from $300,000 to $8.9 million with an average replacement award of $3 million. More information on BRAC funding is available at: [WSDOT Local Bridge Program](https://www.wsdot.wa.gov/bridge/bridge-financing).  

The principal uses of the bridge are in support of resource extraction and recreation, including Wilderness activities (Please see attached Wilderness Area Overview MAP #7). These uses are isolated and thereby have few potential direct contributors that can be specifically identified. However, because replacement of the structure accesses the Mount Baker Snoqualmie National Forest and serves its mission to provide for recreational and commercial uses, it is eligible for funding through the FHWA Western Federal Lands Access Program (FLAP). The County has pursued this source successfully in the past. A feasibility study was completed in 2019 to evaluate improvements to the MLH to improve recreational experiences. County and USFS management are discussing partnerships to jointly pursue funding resources for this and other infrastructure improvements. Several projects have been identified to be submitted for FLAP assistance.
V. Environmental Risk

Technical Feasibility

Snohomish County completed early planning and design for the Granite Falls Bridge #102 Replacement project. Early planning activities included conducting an Alternative Creation Workshop and the completion of a Type, Size, and Location Study Report (TS&L). To continue moving the Bridge #102 design forward, Snohomish County followed the TS&L with Phase I Design, consisting of final bridge type comparison selection and geotechnical investigation. The TS&L Study, Design Memorandum, and 30% plans are available for review on the Application Website: www.snohomishcountywa.gov/3028.

Proposed Bridge Characteristics

The design of the Granite Falls Bridge #102 Replacement is 30% complete and advancing towards 60% completion. The proposed replacement bridge will be wider and longer than the existing structure to meet current bridge standards. Current design plans include replacing Bridge #102 with a two-span steel plate girder bridge, 351 feet in total length (span lengths of 88 feet and 263 feet, measured south to north), with three piers. The new planned bridge section will have a total width of 45 feet (two 12’ lanes, two 5’ bike lanes, and two 5.5’ sidewalks on either side of the bridge) and will accommodate the horizontal curvature of the roadway using straight girders. All components will comply with Buy America requirements.

The end span steel plate girder segment will start at Pier 1 and cantilever out past the intermediate pier (Pier 2) 48 feet. The main span (Span 2) drop-in girder consists of two segments that are at-grade field spliced on-site just prior to erection. The superstructure depth, measured from top of bridge deck to the top of bottom flange, is 10 feet 6 inches.

The bridge span arrangement is not balanced and if unrestrained, the end of the girders at Pier 1 will want to lift off their bearings once the Span 2 girder segments are erected. This differs from the other concrete alternatives, whereby the girders have sufficient weight to prevent uplift from occurring at Pier 1. Therefore, a temporary hold-down assembly is required to transfer the uplift forces directly to the substructure elements of Pier 1. From a permanent perspective, to avoid the need of a mechanical hold-down assembly and a potential maintenance concern, the Pier 1 end diaphragm will be cast integrally around the steel girders and with the abutment stem wall and
spread footing. Thermal expansion and contraction displacements in the longitudinal direction of the bridge will be designed to be accommodated at Pier 2 and Pier 3.

The steel plate girders were made to act composite with the cast-in-place concrete deck. Unlike the other alternatives, this option provides continuity along the full length of the bridge under dead loads, superimposed dead loads, and live loads.

The long-term maintenance of this bridge type is expected to be minimal. Typically, the steel members of this new bridge design would require more maintenance to uphold durability, however the steel members of the new Bridge #102 would be metalized prior to painting. Metalizing refers to a thermal spray coating of zinc aluminum alloys directly onto steel surfaces that aids in corrosion protection. The paint system would provide 25 to 30 years of service life and metalizing would provide another 50 years. The combination of the two would yield a lifecycle that will outlive the design life of the structure. (See Cross Section and Design Memorandum attachment.)

Existing Bridge Characteristics

Granite Falls Bridge #102 was built in 1934; the trusses and 20’ wide floor system were designed for an H-15 (15-ton) Live Load plus a 30% impact factor. Today, each loaded quarry truck crossing the bridge weighs more than 50 tons (almost 3.5 times the original design load). As the size of the loads increased, the number of loads also increased dramatically. Currently, approximately 750 heavy trucks cross the bridge each workday; on weekends, the number of vehicle crossings often increases but the average weight per load is lessened.

Bridge #102 is currently rated functionally obsolete. The 20-foot curb-to-curb deck width is inadequate for the bridge to be able to handle its normal traffic load of almost 5,500 ADT (Average Daily Trips) with peak daily trip counts reaching 6,800.

Removal of the existing bridge is estimated at $1.57 million (2024). The demolition of the existing bridge could be accomplished in the following manner:

- Mid-Span Removal
  - Close Roadway
  - Mobilize two 150T Cranes
  - Lift Midspan Segment onto new bridge
  - Transport Midspan Segment to Adjacent Staging
  - Remove Concrete Deck and Disassemble Steel
- Approach Removal
  - Demo Concrete Deck and Steel Girders in place
- Pier Removal
  - Use Concrete Munchers and Concrete Breakers to Remove Pier

(A) Project Schedule

Please see the attached Schedule. It is available, as is all other pertinent information, on our Funding Website: https://snohomishcountywa.gov/3028.
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<tr>
<td>Complete Construction</td>
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</table>

(1) Obligation of PE/CN RAISE Funds
As noted in the schedule milestones, Snohomish County expects to submit obligation documentation for RAISE funds for construction in May 2024 and begin Construction in February 2025.

(2) Construction Readiness and Funds Expended Deadline
As previously described, a significant amount of work has been invested into this project. Several studies have been completed including a Type, Size, and Location Study. The design stage has surpassed the 30% phase, and could be approaching 60% as early as December 2022, pending the award of this RAISE grant. The construction completion date of October 2026 is well ahead of the required grant deadline.

(3) Right-of-Way Acquisitions/Readiness
All necessary right-of-way has been acquired and all documents have been recorded. Should any unforeseen additional right-of-way be needed as the design phase approaches 60%, our project schedule accounts for this with an expected right-of-way certification date of January 2024. (Please see attached ROW Plan MAP #10). All utility owners have been notified about the proposed project. Utilities within the project footprint include Snohomish County Public Utility District (SCPUD), Frontier Communications (telephone) and Comcast Cable.

(B) Required Approvals
(1) Environmental Permits and Reviews
No major environmental impacts are anticipated by the construction of this project. The proposed alignment is adjacent and parallel to the existing bridge. The existing bridge will remain open.
during construction which eliminates the need for a temporary bridge or lengthy detour. This significantly reduces the scope of NEPA and expedites a CE Classification.

Due to its longer length and height above the river, the replacement bridge will require minimal clearing and grading. The proposed bridge is 90 feet above the South Fork Stillaguamish River and will require minimal in-water work. The area immediately adjacent to the bridge is undeveloped. There are no structures that would be impacted. A portion of the proposed alignment has been previously disturbed by the existing road shoulder, a parking lot and an access road for a WA State Department of Fish and Wildlife fish ladder.

Snohomish County Public Works includes an in-house Environmental Services team of biologists and environmental planners with extensive expertise in all phases of permitting, critical area mitigation design and implementation. Snohomish County has an in-house archeologist, as well as consultants to assist with permitting and mitigation design. Based on previous experience with similar bridge replacements in the County, permitting for this bridge project is expected to be completed in approximately 12 to 14 months.

The project will potentially require the Federal, State and Local permits listed below.

(i) NEPA Status

National Environmental Policy Act (NEPA)
A Categorical Exclusion Form will be submitted for review and approval by Washington State Department of Transportation (WSDOT) and Federal Highway Administration (FHWA) as soon as the project is in the STIP. The County assumes this project is a Categorical Exclusion (CE). Inclusion of the project in the STIP will be initiated upon notification of award; it does not require completion of NEPA although it cannot be approved by WSDOT until the project has been adopted into the STIP. The process of adding the project to the STIP takes between two to three months.

(ii) Reviews, Approvals, and Permits from other Agencies

- Section 106 National Historic Preservation Act/WA State Archaeological Laws
A Cultural Resource Inventory of the bridge was completed in 2005, and a Historic American Engineering Record (HAER) report was completed in 2008. These studies concluded that the bridge meets the criteria to be eligible for the National Register of Historic Places. Further study may be needed to determine if additional mitigation would be required for removal of the bridge structure. Consultation with the Department of Archaeology and Historic Preservation would begin as soon as the project is in the STIP.
Snohomish County Public Works has an in-house archeologist to assist with this review, including Tribal consultation and coordination with local historical societies.

- **Section 4F Evaluation**
  The project will require a 4F Evaluation. In addition to the historic bridge, the proposed bridge alignment will impact a small, informal parking lot and a portion of a trail which accesses a fish ladder maintained by the Washington Department of Fish and Wildlife (WDFW). The fish ladder is approximately 360 feet downstream of the bridge on the South Fork Stillaguamish River. The parking lot and a portion of the trail will be replaced as part of the new bridge. There are several alternative alignments available to replace and improve this public access. The County has coordinated with the WDFW during the preliminary design phase and has acquired right-of-way from WDFW for the proposed bridge alignment. The final design of the parking lot and trail access will be determined in consultation with WDFW.

- **Corps of Engineers Section 404 Permit**
  There are several small wetlands adjacent to the highway in the vicinity of the bridge. These may be impacted by the realignment and would require a Corps permit if impacted. Mitigation for these impacts will occur on-site or within the watershed. Snohomish County has a Water Resources Development Act (WRDA) agreement with the Corp of Engineers to expedite permits.

- **Endangered Species Act**
  A Section 7 (Endangered Species Act) consultation will be required. A Biological Assessment will be prepared.

(iii) **Environmental Studies**

- **A NEPA Categorical Exclusion (CE) Form** will be submitted for review and approval by WSDOT and FHWA as soon as the project is in the STIP. The County assumes this project is a Categorical Exclusion (CE) with documentation as required. The duration of this process is typically twelve months long.

- **A Critical Area Study** will be completed by the County for this project to meet local regulatory requirements. This study will describe impacts to wetlands, streams, steep slopes and other critical areas associated with the project. The study will include proposed mitigation for these impacts. Mitigation for impacts to critical areas will occur close to the project site or within the same watershed. A preliminary map of potential impacts to critical areas is available on the web site in the Type, Size, and Location Study (page 412).

- **Snohomish County Public Works** will also prepare a Biological Assessment for this project. In this document, Public Works will determine the potential effects of construction activities associated with replacing Bridge 102 on species listed and proposed for protection under the Endangered Species Act.

(iv) **WSDOT Environmental Compliance**

  Consultation and approval for all aspects of this project, including NEPA, will be coordinated with WSDOT.
(v) Public Engagement

- A **Type, Size, and Location Study** was conducted in 2011-2012 to compare potential alignments and bridge types. At the conclusion of the study a newsletter was issued (2013) describing potential solutions to replacing the bridge.
- A **SEPA Environmental Checklist** and Determination of Non-significance (DNS) was issued April 11, 2014 based on the preferred alignment. Public notification of the SEPA Checklist was mailed to all adjacent landowners, interested parties and posted on the County’s website. The County received several comment letters from agencies and one citizen. An article was published in the Everett Herald in 2015 describing the proposed project. This document would be updated, if needed, with an Addendum to reflect proposed changes.
- An updated communication plan will be developed by the County including public meetings and newsletters to inform the local residents of the progress of the project and timeline including updates on the project website. The County continues to coordinate and communicate with local Tribes.

(2) State and Local Approvals

- **Hydraulic Project Approval (HPA)**
  A Hydraulic Project Approval from the Washington Department of Fish and Wildlife will be required for the proposed bridge. The proposed bridge is situated 90 feet above the South Fork Stillaguamish River.
- **State Environmental Policy Act (SEPA)**
  Preliminary environmental review of the project area is complete. A **SEPA Environmental Checklist** was prepared and a Determination of Non Significance was issued in 2014 for the project’s first phase: Acquisition of Right-of-Way. This phase is complete, and right-of-way has been acquired.
- **Shoreline Substantial Development Permit**
  The bridge crosses the South Fork Stillaguamish River and will require a Shoreline Substantial Development Permit. However, because the proposed bridge is 90 feet above the ordinary high-water mark, little or no impacts to the river are expected. Stormwater drainage facilities will be integrated into the design to provide stormwater runoff treatment and to minimize impacts to the river. There will be minimal in-water construction.
- **Snohomish County Critical Area Regulations**
  The proposed bridge will comply with all Snohomish County Critical Area Regulations. Mitigation will be required for the loss of trees and vegetation within the buffer of the river and potential impacts to the wetlands and small streams draining into the river. Mitigation for these impacts will occur on site or within the watershed.
- **Land Disturbing Activity Permit**
  Snohomish County Public Works will issue a Land Disturbing Activity Permit (Clearing and Grading permit) in-house.
• WSDOT – Consultation and approval for all aspects of this project, including NEPA, will be coordinated with WSDOT. A WSDOT Letter of Support is attached.

(3) Federal Transportation Requirements Affecting State and Local Planning

The Granite Falls Bridge #102 project is identified for replacement in the Snohomish County 2020 Annual Bridge Report. This is an appendix to the Transportation Needs Report which is the capital projects plan for the County’s GMA Comprehensive Plan. The project is included in the Snohomish County 2021-2026 Six Year Transportation Improvement Program (TIP) (see attached) in anticipation of receipt of RAISE funds. Upon notification of a RAISE Grant award, Snohomish County will submit the required documentation (TIPNEW) to the Metropolitan Planning Organization (Puget Sound Regional Council/PSRC) which is how the County is required to add projects into the STIP. This is typically a two-month process. PSRC has provided a letter of support, please see Support Letters. If award decisions are made by November 2021, the project can be in the STIP by February 2022 and design can be obligated almost immediately.

The project meets the definition of a “last-mile” project to connect the resource areas described elsewhere in this application to SR 92, a T2 Freight Corridor. As such it is supported from a policy perspective in the regional transportation plan, Transportation 2040, Appendix J, the Regional Freight Strategy, the Metropolitan Transportation System (MTS), and on the Washington State Truck Freight Corridors Map contained in the Washington State Freight Mobility Plan.

(C) Assessment of Project Risks and Mitigation Strategies

Snohomish County Public Works Department has assembled a project preliminary risk register. It includes external and internal factors. Risks are identified as positive (strength or opportunity) and negative (weaknesses or threat).

<table>
<thead>
<tr>
<th>Type of Risk</th>
<th>Project Risk</th>
<th>Risk Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative (Weakness)</td>
<td>Construction Traffic Impacts to local roads</td>
<td>Early and frequent community outreach to inform local residents, business owners and tourists about project construction.</td>
</tr>
<tr>
<td>Positive (Strength)</td>
<td>Underground unknowns</td>
<td>The pier foundations and proposed bridge abutments will be driven into bedrock. Low likelihood of presence of utilities or cultural resources.</td>
</tr>
<tr>
<td>Positive (Strength)</td>
<td>Traffic Detours</td>
<td>The existing bridge will remain in place and open to traffic until the new bridge is completed.</td>
</tr>
<tr>
<td>Negative (Threat)</td>
<td>Opposition to existing bridge removal (cultural/historic preservation)</td>
<td>Plan A: Early collaboration with the public, local historic organizations and tribes. Plan B: Postpone the existing bridge removal to another project phase. This would have no impacts to the new bridge structure.</td>
</tr>
</tbody>
</table>
VI. Benefit Cost Analysis

The results of the 2019 Benefit Cost Analysis (BCA) indicate a positive Benefit-Cost Ratio demonstrating that the proposed project is a good federal investment. As shown below, the BCA model was run using an assumption that due to the length of a required 94-mile detour, 65 percent of the trips would be eliminated. The results of the 2019 BCA model at a 7% discount rate is 69:1 with a Net Present Value of $1.368 Billion.

### 2019 BCA Results (20-year analysis-post construction)

At 65% Traffic Eliminated due to Detour

<table>
<thead>
<tr>
<th>Long-term Outcomes</th>
<th>Social Benefit</th>
<th>Inputs</th>
<th>Value</th>
<th>Monetized Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety</td>
<td>Reduced accidents with new Bridge</td>
<td>Reduction in Fatalities and lessor injuries due to access across Granite Falls Bridge #102</td>
<td>No fatalities have occurred in last 5 years, reduced collisions by 9 over life of analysis</td>
<td>$744,495</td>
</tr>
<tr>
<td>State of Good Repair</td>
<td>Reduction of maintenance on US Roads &amp; Hwys, Consistent with State and Regional Plans</td>
<td>Maintenance, preservation and upgrade savings of Highways</td>
<td>Decrease of 492 million Road miles when No-Build is compared to Build due to the 65% elimination of trips in the No-Build Scenario</td>
<td>($14,083,003)</td>
</tr>
<tr>
<td>Economic Competitiveness</td>
<td>Fuel savings with replacement of Granite Falls Bridge #102</td>
<td>Gallons of fuel saved due to replacement of Bridge</td>
<td>An additional 27 million gallons of fuel used when 65% of detour trips are eliminated</td>
<td>Included in Op Costs</td>
</tr>
<tr>
<td>Economic Competitiveness</td>
<td>Operating Cost Saving</td>
<td>Saving on miles vehicles are operated</td>
<td>492 million miles increase with new bridge compared to No-Build Detour at 65%</td>
<td>($52,652,826)</td>
</tr>
<tr>
<td>Mobility</td>
<td>Travel Time Savings</td>
<td>Savings in travel hours due to full access across Granite Falls Bridge #102</td>
<td>185 million hours saved</td>
<td>$1,448,945,618</td>
</tr>
<tr>
<td>Environmental Protection</td>
<td>Environmental Benefits from Reduced Emission with replacement of Granite Falls Bridge #102</td>
<td>Savings in CO2</td>
<td>An additional 269,000 MT were produced due to the choice not to travel the detour route</td>
<td>($148,721)</td>
</tr>
<tr>
<td>Environmental Protection</td>
<td>Environmental Benefits from Reduced Emission with replacement of Granite Falls Bridge #102</td>
<td>VOCs 0.2 ST Saved</td>
<td>Truck idling pollutants calculated</td>
<td>$1,829</td>
</tr>
<tr>
<td>Quality of Life</td>
<td>Ability to Live/ work in current locations with access without a detour</td>
<td>Saving of the need to relocate / change jobs</td>
<td>Not Quantified, Not Calculated</td>
<td></td>
</tr>
<tr>
<td>Quality of Life</td>
<td>Emergency Response Benefits from replacement of Granite Falls Bridge</td>
<td>Savings in Structural Damage from improved fire response</td>
<td>Not Quantified, Not Calculated</td>
<td></td>
</tr>
<tr>
<td>Total Benefits before Maintenance and Residual</td>
<td>$1,382,803,392</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Maintenance and Residual</td>
<td>$5,615,806</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Societal Benefits including Maintenance and Residual</td>
<td>$1,388,419,198</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Cost</td>
<td>$20,172,053</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net Present Value</td>
<td>$1,368,247,145</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benefit to Cost Ratio with Travel Time Savings</td>
<td>69.83</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benefit to Cost Ratio without Travel Time Savings</td>
<td>-3.00</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A favorable Benefit-Cost Ratio is one that exceeds 1.0, indicating that the 20-year analysis of the benefits; life-cycle costs and residual value of the asset exceed the capital costs expended during
that same time. As 2019 BCA Summary above shows, the Project, when discounted at 7 percent, generates $1.382 billion in societal benefits before life-cycle costs of $2.7 million and a residual value of $2.9 million, for a total benefit of $1.388 billion.

Based on the 2019 BUILD application and BCA, project costs are $20.2 million when discounted at 7 percent. Using the potential of 65 percent of the detoured travelers choosing to eliminate their trip versus travel the additional 94 miles, the Benefit Cost Ratio BCR is estimated to be 69:1 with a Net Present Value of $1.36 billion. This BCR is unusually high due primarily to the length of the 94-mile detour route required through a canyon in the No-Build alternative. The effect of which is expressed in the Mobility improvements as represented in the Travel Time Value difference between the No-Build and Build scenarios. Without access to a Bridge crossing the South Fork of the Stillaguamish River just outside of Granite Falls, the residents, employees and businesses to the east of the bridge will be land-locked an average of five months per year each winter. This is due to snow blocking the only detour available between Bridge #102 and Darrington. Without a bridge, there will not be any access to services or goods for this rural community during the winter months.

- **Mobility** is increased by $1.5 billion in Travel Time Value savings (106 percent of the benefits). Travel Time Value savings accounts for more than 100 percent of the benefit due to the length of the detour under the No-Build scenario and an estimated 65 percent of the travelers by either choice or economics deciding not to use the detour. Thus, the No-Build annual vehicle count during the 20-year period post construction is lower than the Build vehicle volume. This causes other factors to become a cost (i.e. negative savings) versus the traditional savings often seen in a Benefit Cost Analysis.

- **Economic Competitiveness** accounts for a negative 5 percent of the total societal benefit with $53 million in additional operating costs due to the detour.

- **Safety Benefits** of $0.7 million saved account for less than 1 percent of the Project’s public benefits since the model used only accidents reduced on the Bridge versus using a VMT calculation of accidents that may occur in the No-Build scenario that generates an additional 94 miles per trip. The model estimates that there will a savings of approximately nine potential collisions with the completion of the Replacement Bridge.

- **State of Good Repair** accounts for an additional 492 million VMT on the local roads and highways due to the closure of the bridge in 2034. This is estimated to cost local and state governments $14 million in preservation and repair costs to keep the roads in good condition.

- **Environmental Emissions** costs increase by $0.1 million due to the length of the detour and 65 percent of the users choosing to eliminate their trips due to economic or life-style considerations.

The proposed project is appropriately capitalized up front and uses an asset management approach that optimizes its long-term cost structure. Additionally, a sustainable source of funds is available for long-term operation and maintenance of the proposed project. The detailed results, assumptions, and calculations can be found in the attached BCA Spreadsheet and Narrative and is available on the Application Website: [www.snohomishcountywa.gov/3028](http://www.snohomishcountywa.gov/3028).