Granite Falls Bridge #102 Replacement
Snohomish County, WA

2017
USDOT TIGER
Grant Application
October 13, 2017

The Honorable Elaine L. Chao  
Secretary, U.S. Department of Transportation  
1200 New Jersey Avenue S.E.  
Washington, DC 20590

Dear Secretary Chao:

Snohomish County Department of Public Works is respectfully submitting a 2017 TIGER application for Granite Falls Bridge #102 Replacement project.

The proposed bridge will replace the current bridge which provides direct access to the Mount Baker-Snoqualmie National Forest and the Mountain Loop Scenic Byway in East Snohomish County, WA. In addition to recreation and tourism, this is a key through-route for transport of construction resources including timber, sand, gravel and aggregate critical to the Puget Sound Region via a T-2 freight route.

The current bridge was constructed in 1934 and has been rated structurally deficient and fracture critical. The existing bridge is not wide enough for construction trucks and large vehicles to fit concurrently and must wait on either end of the bridge to allow for another large vehicle to pass in the opposite direction. This is particularly problematic because the bridge is heavily used by trucks in the mining and timber industries.

If the bridge were to fail, the detour route is 94 miles on a route that is closed during the winter months and is only built to minimal forest service standards. This detour would have impacts at both the local and the Regional level. If not replaced, the poor condition of the Granite Falls Bridge #102 will threaten future transportation network efficiency, mobility of goods, accessibility and mobility of people, and economic growth.

If awarded, Snohomish County will be the sole recipient of this grant. Nonetheless, we have the support of multiple agencies including the Washington State Department of Transportation, Washington State Fish and Wildlife and the Puget Sound Regional Council, to name a few. We respectfully submit this application for your consideration.

Sincerely,

[Signature]

Steven E. Thomsen, P.E.  
Public Works Director
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NARRATIVE
Granite Falls Bridge #102 Replacement (Snohomish County) Washington

i. PROJECT DESCRIPTION

Granite Falls Bridge #102 is located on Mountain Loop Highway in East Snohomish County, WA. This is a rural state scenic byway heavily used by thousands of visitors to the Mount Baker-Snoqualmie National Forest, truck drivers hauling millions of tons of construction materials that support economic growth in the Greater Puget Sound area and by local Granite Falls’ adults and children making their way to work and school.

Granite Falls Bridge #102 is of strategic importance to Snohomish County and the Puget Sound region as a direct connection between designated mineral resource lands; it is a T-2 freight corridor that moves 4 to 10 million tons of construction materials per year. This equates to approximately $70M/year of raw construction materials being transported on the Granite Falls Bridge #102. These mineral resource lands are designated and protected by Snohomish County’s Comprehensive Plan, and are critical supply source of basic construction materials for the Puget Sound Region. Granite Falls Bridge #102 is a key component for transport of these materials, and thus plays a vital role in both local and regional economic growth. This bridge also completes the “Last Mile” on State Routes 9 and 92 to the national freight system.

Being in such a remote area, should the bridge fail or need to be closed for maintenance, the only detour route is 94 miles on a route that is closed during the winter months; portions of it are built to minimal forest service standards. The detour is approximately three hours long each way. This alternative route results in lost time, lost value, higher rate of diesel-related emissions and increased safety conflicts.

Purpose and Need

Granite Falls Bridge #102 was first recommended for replacement in the 2012 Snohomish County Public Works Annual Bridge Report due to the following:
Transportation Challenge I – Insufficient in Serving Current Needs

The existing bridge was constructed in 1934 to support the timber and logging industry during a time when logs were transported one-by-one. Since then, transportation technology has evolved; new industries, such as aggregate mining, have emerged, and population and economic demand in the region has increased. Granite Falls Bridge #102 continues to provide a vital connection along the Mountain Loop Highway but is insufficient in serving current needs.

Most critically, Bridge #102 is not wide enough for two trucks. The bridge is only 20 feet wide from face-of-curb to face-of-curb, making it challenging even for two sedans to pass each other. Trucks larger than FHWA Class 5 and/or school buses need to wait on either end of the bridge for similarly sized vehicles to pass in the opposite direction; the situation is voluntary and unmonitored. This is particularly problematic because the bridge is heavily used by trucks in the mining and timber industries. Construction materials are constantly transported on the bridge from the local mines and timberlands per day to the Greater Puget Sound area.

Additionally, the bridge is on a school bus route. The Granite Falls School District provides transportation for students on the Mountain Loop Highway year-round. There are approximately 150 students picked up in the morning and 144 driven home in the afternoon with an average of 34 daily school bus trips across the bridge on peak days. School bus drivers have noted there have been several instances where the driver has rubbed the bus wheel against the side of the bridge in an attempt to pass another large vehicle safely. There was also at least once instance where a truck and school bus attempted to cross the bridge at the same time and their mirrors barely missed each other. Traffic counts from 2017 indicate that heavy vehicles comprise over 30% on average and 13% of bridge traffic during peak hours. In 2017, there has been an average of 629/day heavy trucks that cross the bridge.

Moreover, the obsolete geometry of the bridge requires significant speed reductions. The posted speed limit on both bridge approaches is 45 mph while the bridge itself is posted at 35 mph, thus when a heavy truck passes any vehicle on the bridge, the effective speed is significantly less than the posted speed for safety reasons. Due to its narrow width and reduced speed limits, the Granite Falls Bridge #102 is a bottleneck which not only feels unsafe for drivers crossing the bridge, but for pedestrians as well. If crossing at the same time as a passing truck, pedestrians can easily feel the wind and shaking caused by larger trucks.

Transportation Challenge II – Threat to Local Economy: Bridge Strategic Value (Preventive Measure)

The condition of the existing bridge is not reliable in the long term. Granite Falls Bridge #102 is 83 years old and coming close to the end of its useful life. The structure is a hinged steel truss which eliminates the possibility of widening the bridge. This type of bridge construction is no longer approved for construction, as it is functionally obsolete by AASHTO standards. The
existing structure is rated structurally insufficient and is fracture critical with a sufficiency rating under 50 on a scale of 100. With this in mind, we know it is only a matter of time before the existing structure can no longer support traffic. If the current bridge was to fail, the detour route is 94 miles on a route that is closed during the winter months and has a portion of it built to minimal forest service standards. The detour is approximately three hours long.

Granite Falls Bridge #102 provides a link between construction resources (sand, gravel, rock and timber) and the construction industry in the Greater Puget Sound Metropolitan area for both public and private construction. For example, Granite Falls Bridge #102 provides an economic connection between Mountain Loop Mine (Formerly Green Mountain Mine, a local quarry) and the Boeing Company in Everett, WA. Mountain Loop Mine provided aggregate-rock, gravel and sand for contractors working on a new 1.3 million square foot Boeing facility. Construction of Boeing’s 777X wing plant began in the fall of 2014. The building was the largest single structure under construction in Washington State. At its peak, the construction employed 1,200 people, and consumed 31,000 tons of steel and 170,000 tons of concrete. (See Section ii. for Maps).

From an economic perspective, this project aligns with the North Stillaguamish Valley Economic Development Plan supported by the Office of Senator Maria Cantwell, the City of Arlington and the Town of Darrington. Specific goal alignment:

1.1 Build highway and arterial infrastructure critical for economic development
2.1 Support and grow existing businesses in the Stillaguamish Valley
2.7 Stabilize natural resource industries in the Stillaguamish Valley and continue to grow value-added activities
2.8 Continue to strengthen the Stillaguamish Valley’s sustainable tourism assets and supporting services
6.3 Advance the quality and sustainability of natural resource-based employment in timber and mining.  

Mountain Loop Highway is an east-west alternate route to SR530 and serves as a critical access way for residents of the rural townships of Verlot, Robe Valley, and Silverton. In March 2014 after the SR 530 Landslide (Presidential Disaster Declaration), Mountain Loop Highway via the Granite Falls Bridge #102 was used as a secondary detour route for residents and emergency supplies heading in and out of the Town of Darrington. If not replaced, the poor condition of the Granite Falls Bridge #102 will threaten future transportation network efficiency, mobility of goods, accessibility and mobility of people, and economic growth. This project promotes community resiliency by providing people with a reliable and safe connection to employment, higher education institutions and other essential services such as major hospitals.

Granite Falls Bridge #102 also provides access for visitors to significant recreational opportunities. This bridge is on the Mountain Loop Highway, one of the main access routes to Mount Baker-Snoqualmie National Forest and the Boulder River Wilderness. Tourism is economic development. Visitors in Washington State spent $21.4 Billion in 2016, accounting for $1.8 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 and focuses on the recreational opportunities in the national forest such as hiking.
fishing, snowshoeing, mountain climbing, whitewater rafting, and camping. Much of the County’s outdoor recreational opportunities are in this area.

**Project Details**

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

A. **Transportation**

   The proposed bridge will have two 12-foot lanes, two 5-foot shoulders, and two 5-foot-6-inch sidewalks (see Section v-A for engineering details of existing and proposed bridges). The new structure will be wide enough for construction trucks and large vehicles to fit concurrently without having to wait.

B. **Bridge Strategic Value**

   The proposed bridge will be designed and built to current engineering design standards. The life expectancy of the new structure is 75 years. Hence, the bridge will become a reliable economic link between local construction material sources and the Greater Seattle Metropolitan Area for decades. The new Granite Falls Bridge #102 will improve long term efficiency, reliability and costs in the movement of workers and goods.

TIGER Grant funds will be applied towards the construction phase of the proposed Granite Falls Bridge #102 replacement and the removal of the existing bridge. This bridge is difficult to fund with grant funding sources other than TIGER. Because of the high construction cost estimate, replacement is the only option for federal assistance as the structural type is no longer accepted as discussed earlier, thus precluding renovation. Also, the mandates of the Washington State Growth Management Act compel the County to prioritize County transportation funding on transportation improvements in the unincorporated urban area over those in the rural area. The impact is that less than 5% of 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 Granite Falls Bridge #102, must depend on outside funding sources. The amount being requested is 80% of the estimated construction cost of $21.3 Million, or an approximate total of $17.0 Million (see Section iii. for project costs and budget). The project design is fully funded with County funds. MAP-21 eliminated the Highway Bridge Program as a stand-alone funding source for bridges. Instead, bridges located on the Interstate or the National Highway System are eligible for funding under the National Highway Performance Program. In Washington State, a local Bridge Advisory Committee (BRAC) recommends projects for WSDOT Local Programs Director approval. In 2014, BRAC awarded 16 bridge replacement grants. The BRAC funds ranged from $1 to $12 Million with the average award of $3.5 Million. More information on BRAC funding is available at: [http://www.wsdot.wa.gov/LocalPrograms/Bridge/Funding.htm](http://www.wsdot.wa.gov/LocalPrograms/Bridge/Funding.htm)

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), later named Quarry Road. This project was completed in 2011 and was administratively reviewed and accepted by WSDOT in 2012. The Granite Falls Alternate Route Project had substantial federal funding, approximately $8 Million. Federal fund sources included
ARRA, Demonstration, Discretionary and STP. In addition, the project had substantial state support through the Freight Mobility Strategic Investment Board (FMSIB) and private funding of over $1 Million from quarry operators dependent on the bridge for product delivery.

**Expected Project Users**

**Average Daily Traffic (ADT)**
Documented traffic counts have shown that the bridge has varying degrees of use depending on the time, day, and month of year. On average there are 4,801 trips per day. Peak daily trip counts reach 5,116 and over 6,700 in the summer months. In 2017, there was an average of 629 heavy vehicle trips, including school buses, per day on the bridge. This equates to approximately $70M/year of raw construction materials being transported on the Granite Falls Bridge #102 (See Attachment-Traffic Data).

**Granite Falls School District Students**
The Granite Falls School District provides transportation for students on the Mountain Loop Highway year round. There are 150 students picked up in the morning and 144 driven home in the afternoon with a total of 34 daily school bus trips across the bridge.

**Local-area Residents**
According to the 2010 Census, there are approximately 3,525 residents in 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 United States. It is expected that the county will see a population increase of 250,000, or 33%, in the next 20 years. To put this in perspective, the increase in population that the county must accommodate is roughly the same size as St. Petersburg, Florida, or Buffalo, New York.

**Mining and Timber Industries**
As of 2015, there were 571 workers in the Granite Falls and Darrington areas that commute in from the outside. The 3,695 workers living in the rural areas commute elsewhere for work. Only 164 live and work in the area. Local residents are not those who are employed in the mining, forestry and wood products manufacturing industries. According to the Washington State Employment Security Office, the quarries utilizing the crossing at Granite Falls employ over 250 employees with average wages of over $57,000/year; their annual payroll is over $14.5 Million.

**Emergency Services**
In 2014, the Snohomish County Sheriff’s Office responded to 1,294 emergency service calls from Granite Falls to the Town of Darrington along the Mountain Loop Highway.

The Snohomish County Sheriff’s Search and Rescue Team responded to 212 missions (25% of their total) between 2013–2016. There were 1,823 volunteer responses to the 212 Mountain Loop Highway missions and a total of 13,442 hours spent by Sheriff’s Office personnel and members of Snohomish County Volunteer Search & Rescue.
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 and aid calls per year.

Tourism
Mountain Loop Highway is one of the main routes and to and through the Mt. Baker-Snoqualmie National Forest—one of the most visited National Forests in the country, according to the U.S. Forest Service website http://www.fs.usda.gov/mbs/. According to the 2017 update of the State of Washington Recreation & Conservation Office update to the state recreation plan, seven of the top-10 outdoor recreation activities in Washington are available at location accessed by the Mountain Loop Highway. These include: walking in a park or trail-setting (84%), visiting rivers or streams (66%), gathering or collecting things in a nature setting (54%), day-hiking (53%), sightseeing at a scenic or wilderness area (51%), wildlife or nature viewing (50%), and swimming/wading at a freshwater beach (50%). 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 US 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 bottleneck at the Granite Falls Bridge #102.

Prior Investment

Granite Falls Alternate Route (GFAR)
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. This project was completed in 2011 and administratively reviewed and accepted by WSDOT in 2012. The Granite Falls Alternate Route Project had substantial federal funding; approximately $8 Million. Federal fund sources included ARRA, Demonstration, Discretionary and STP. In addition, the project had substantial state support through the Freight Mobility Strategic Investment Board and private funding of over $1 Million from quarry operators dependent on the bridge for product delivery. The project is now called Quarry Road and routes approximately 1200 +/day heavy trucks around rather than through the community of Granite Falls. The Granite Falls Bridge #102 Replacement 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.

Investment by Snohomish County and multiple funding partners in the Granite Falls area has been extensive. Over $31 million dollars has been spent in the past two decades on the transportation infrastructure serving Granite Falls from Granite Falls Bridge #102 to SR 92. These investments include over $25.53 Million on the Granite Falls Alternate Route (Quarry Road). A roundabout was also 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 the existing Bridge #102 to help extend its useful life. As noted earlier, the County has spent $2.2 Million in local funds coordinating the interdisciplinary project development, including completion of the 30% design.
ii. PROJECT LOCATION

Granite Falls Bridge #102 is located approximately 1.5 miles east 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.

In accordance with the 2010 Census data, the bridge is located in an Urbanized Cluster with a population estimate of 3,400. Under the TIGER Program, the project is considered Rural. This bridge provides direct access to the Mountain Loop Scenic Byway and the Mount Baker-Snoqualmie National Forest. 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) (See Attachment-Maps). The area surrounding the Bridge, rich in bedrock and sand and gravel deposits, has been identified as a mineral resource land. Additionally, the area is in extremely close proximity to commercial forest land (See Attachment-Maps).

The Mountain Loop Highway is used for recreational opportunities and tourism, and for residents in the rural townships of Verlot, Robe Valley, and Silverton. If the current 83 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 take approximately three hours one way. In the winter months, the portion of the Mountain Loop Highway which leads to the Town of Darrington and Oso is closed and part of it is built to minimal forest service standards. This same highway was used for local residents as a secondary detour after the SR530 Landslide (Presidential Disaster Declaration) to access the Town of Darrington.
Granite Falls Alternate Route (GFAR) –T2 Freight Route–Granite Falls Bridge to GFAR to Puget Sound Area
Granite Falls Bridge #102 Replacement Project (Recreational Visitors Vicinity)
iii. GRANT FUNDS AND SOURCES / USES OF PROJECT FUNDS

A. Project Costs:
Snohomish County is requesting approximately $17 Million (80% of total construction cost) in TIGER federal dollars to fund construction of this bridge replacement project. In 2015, Snohomish County applied for TIGER and scored very well. The application passed all of the technical reviews and was forwarded to the United States Secretary of Transportation as a “highly recommended” project.

The County has spent approximately $2.2 Million in local funds coordinating the interdisciplinary project development, including completion of the 30% design.

### Granite Falls Bridge #102 Replacement Project Cost Estimate (2017 dollars)

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B. Source and Amount of Eligible Costs:
As noted in the table above, the total estimated project cost is $24.9 Million, with the eligible construction phase portion being approximately $21.3 Million. For this $21.3 Million construction phase, our TIGER request is for 80% ($17 Million), and our local match is 20% (approximately $4.2 Million).

C. Non-Federal Fund Documentation of Commitment:
Funding Commitment Letter is attached.

D. Non-Federal Match Source Information for Federal Funds:
Snohomish County Road Fund as referenced in the Funding Commitment Letter attached.

E. Budget:
Please see attached Engineer’s Estimate.
iv. MERIT CRITERIA

1. Primary Selection Criteria

   A. Safety
   Due to its rural location, the existing structure is a low volume and, hence, a low incident facility. The safety improvements associated with this application are preventive, rather than corrective in nature. As has been noted, the current structure does not meet current AASHTO design standards for either 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 the bridge. For example, the one-truck-at-a-time characteristic is self-monitored. However, regional projections assume that both 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 down will decrease while the opportunity for accidents increases. This trend has two major potential types of implications: on the structure and off the structure.

   Comparing the existing and proposed structures, simply stated: a minor incident on the proposed structure is easily a major incident on the existing structure and vice versa. Barring a catastrophic, head on collision between two large vehicles on the proposed structure the incident could be quickly cleared at least sufficiently to resume traffic flow for personal and moderate sized vehicles; significant damage to the structure 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 completely thrown through the railing and into the river ninety feet below.

   Off the bridge, the potential impacts appear less dramatic but have serious implications nonetheless. As has been described, a serious accident on the bridge could close the bridge, at least to heavy truck traffic for one day, more if there was structural damage. A lane for personal vehicles could be cleared relatively easily. However, what is not accounted for in the data is 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 & Rescue used the bridge over 900 times. Granite Falls Fire District 17 is also stationed on the near side of the bridge. They respond 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.

   B. State of Good Repair
   The project is consistent with relevant plans to maintain transportation facilities or systems in a state of good repair and address current and projected vulnerabilities. As noted earlier in this application the project constitutes the final link between major resource areas to the north for strategic building materials and the state and interstate systems through which these materials are delivered. It aligns the structure with the Granite Falls Alternate Route project.
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 final 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. Appendices D&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.

With award of the TIGER grant, the project will be fully capitalized and construction can be initiated per the schedule in Section v.B of this application. 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. Stable funding for the capitalization of this project and its ongoing maintenance are discussed in more detail in Section iii. of this application.

C. 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 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 volume of this commodity totaled 35 million tons. By 2035 this tonnage is projected to increase to approximately 42 million tons. Please see Figure 4 of Appendix J, Transportation 2040. The quarries served by this bridge account for four million tons of that trade and transport; this is expected to increase as permits for aggregate mining become more difficult and expensive to obtain. According to the Washington State Employment Security Office, the quarries utilizing the crossing at Granite Falls employ over 250 employees with average wages of over $57,000/year; their annual payroll is over $14.5 Million. 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 even medium term, for shipping aggregate products to the Metropolitan Region; as noted above, the only truck accessible detour requires a 188 mile round trip which is not sustainable for more than approximately four weeks before it is more effective for the quarries to temporarily shut down. The detour route is also closed for four months of the year due to weather. The crossing at Granite Falls is truly an economic lifeline for the economic success of the Region. 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. Aggregate costs are currently rising in the region due to the construction boom. Any long term closure will worsen the situation.

While heavy trucks account for approximately one-third of the traffic on average, a reliable crossing at the current location benefits general traffic as well. The importance of a reliable
crossing to the Granite Falls School District has already been discussed. In addition, this is the most direct route to employment opportunities, tourism activities, vocational and academic training and social services.

D. 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 coordination and collaboration with local tribes, to implement change. We have a Sustainable Operations Action Plan, an Environmentally Preferable Purchasing Policy and monitor our Benchmark and Progress Reports. Snohomish County Public Works operates in a sustainable manner that allows new solutions to be developed in environmentally and socially responsible ways, while striving to deliver services and infrastructure which citizens expect, with the best economic choice in the long run. Granite Falls Bridge #102 Replacement project will follow environmentally sustainable design and construction best practices. The proposed project implements this approach.

The proposed structure will be designed to current seismic standards. This ensures it stays open, even following a major seismic event and thus prevents the detour situation previously described. The environmental benefit to this approach is that diesel emission related air quality impacts remain at minimum levels as trucks will continue to use the most energy efficient route. Maintaining air quality is a major environmental benefit. This same analysis applies to serious incidents on the bridge. Even a serious collision would only close the bridge for one day and would not inflict long term structural damage; again, this ensures availability of the most energy efficient route to market. Comparing this situation to the current structure, serious collisions would be cleared more slowly due to geometry and load bearing capacity. Structural damage is highly likely and repairs are difficult and time consuming to implement because of the structural type and multiple potential failure points.

The current alignment is not environmentally friendly. It does not avoid or protect wetlands or wildlife habitat. The NEPA evaluation for the proposed project is underway. Critical habitat, including wetlands, has been mapped along with potential cultural resources; avoidance, protective and mitigation measures have been developed. These measures have been incorporated into the design and cost estimate to ensure their long term viability. 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.

E. 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 some access to the Mt. Baker – Snoqualmie National Forest and the nearby Washington State Department of Fish and Wildlife facility is done on foot and by bicycle. The project will contain ADA compliant sidewalks as opposed to the existing structure and will include widened shoulders and a pedestrian lookout to improve safety between motorized and non-motorized users. This will improve non-motorized access to the City of Granite Falls as well. It is important to note that mass transit
service for this part of Snohomish County terminates at Granite Falls and there is no plan to extend service to the dispersed population on the far side. People wishing to, or having no alternative to, using mass transit will have a safe opportunity to cross the bridge.

2. **Secondary Selection Criteria**

A. **Innovation**

The project proposed in this application is innovative in its project development processes, in the fact that it builds upon, complements and completes prior Stimulus (ARRA) funded projects and will manage the project’s integrity throughout its life cycle. In addition, the proposed bridge design implements several innovative design methods which either mitigate environmental impact, or reduce the use of construction material.

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.

Some 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 of the site and reduce rock excavation next to river
- Use of Grade 80 reinforcement bars to reduce the amount of steel in the footings
- Designing for the user experience by including pedestrian lookouts on both sides of the Bridge

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 project is now complete; it routes heavy truck traffic around rather than through the community on a facility that is safer as well as less disruptive of the community. In fact, downtown Granite Falls is experiencing something of a renaissance as heavy trucks are no longer traversing its main thoroughfare. Substantial Congressional and State support was also made available to supplement the ARRA funds and is discussed previously in this application. The Granite Falls Bridge #102 Replacement project proposed in this application is designed and aligned to intersect with the Granite Falls Alternate Route Project to efficiently move heavy trucks efficiently 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.

B. Partnership

**Snohomish County**

Snohomish County’s Public Works Department employs approximately 600 employees and is responsible for the development and maintenance of the County’s transportation system, disposal of solid waste generated within all of Snohomish County; and control and management of surface water quantity and quality. The Roads Division is responsible for over 1600 miles of road and over 200 bridges.

Recent Awards:

- 2015 Build Washington Construction Excellence
- 2015 American Public Works Association (National and Washington State Level)
- 2013 County Engineer of the Year

Snohomish County will work directly with the Washington State Department of Transportation (WSDOT) through their Local Programs Office for administration of TIGER funds. Snohomish County has Certification Acceptance (CA) to manage Federal Highway Administration funds. Public Works staff is experienced at working with stimulus funds including ARRA.

**Washington State**

Washington State Department of Transportation (WSDOT)
Northwest Region HQ Office, Local Programs Office
15700 Dayton Avenue North, Shoreline, WA 98133

**Metropolitan Planning Organization**

Puget Sound Regional Office (PSRC)
1011 Western Avenue, Suite 500, Seattle, WA 98104-1035

**Additional Stakeholders**

Cadman (Aggregates/Quarry) Frontier Communications/Comcast Cable
United States Forest Service (USFS) Puget Sound Regional Council
Snohomish County Public Utility District Washington Dept. of Fish and Wildlife
Washington Dept. of Natural Resources

**Quarries/Mines/Timber**

Snohomish County contacted three Quarry Businesses: 1) Iron Mountain Quarry, 20800 Wayside Mine Road, Granite Falls, WA, 98252 (360) 691-4996; 2) Kyle Hasu, Aggregate Sales Manager Cadman, 22022 Mountain Loop Highway, Granite Falls, WA 98252 (360) 691-3542; and 3) Granite Falls Aggregate, 11423 Jordan Road, Granite Falls, WA 98252 (360) 691-3858. All of the companies were helpful in assisting us with delivery information including tonnage, trips and locations.
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. 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 Mountain Loop Highway is owned by private 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 primary 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 even medium term, for shipping aggregate products to the Puget Sound Metropolitan Region; the only truck accessible detour requires a 188 mile round trip which is not sustainable for more than approximately four weeks before it is more effective for the quarries to temporarily shut down. The crossing at Granite Falls is truly an economic lifeline for the success of the Region. 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 State 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 commonly identified building materials. The region’s military goods movement system consists of the Strategic Highway Network (STRAHNET), Strategic Rail Corridor Network (STRACNET), military bases, and sea ports of embarkation (Transportation 2040 Map D-8 https://www.psrc.org/sites/default/files/t2040update2014appendixd.pdf). Both projects, Granite Falls Bridge #102 Replacement and GFAR are efficiently connected to STRAHNET via SR92. Products from the Granite Falls quarries, are used by national defense related facilities such as Naval Station Everett and Naval Air Station Whidbey Island.

**Letters of Support**

**United State Government**
- Senator Maria Cantwell
- Congresswoman Suzan DelBene
- Senator Patty Murray
- United States Forest Service, Local Program

**Washington State/Regional**
- Washington Department of Transportation
- Puget Sound Regional Council

**Local Government**
- City of Arlington
- City of Darrington
- City of Granite Falls
- Economic Alliance of Snohomish County
- Granite Falls Fire District
- Granite Falls School District Transportation
- Snohomish County Sheriff’s Office

**Private/Non Profit**
- American Whitewater

Attached and Available on Application Website at https://snohomishcountywa.gov/3028
v. PROJECT READINESS

A. Technical Feasibility – Design Readiness

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 Report). 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, design-level geotechnical investigation, and solid 30% design plans. The Design Review Memorandum, 30% plans, Geotechnical Report and the Drainage Report are available for review on the Application Website www.snohomishcountywa.gov/3028.

The TS&L Report

The TS&L Report includes investigation and documentation on:

- Existing Conditions
- Roadway Geometrics and Alignment
- Surface Water Management
- Utilities
- Alternative Constructability Analysis
- Code Design Requirements
- Right-of-Way and Easements
- Environmental
- Geotechnical Design Recommendations
- Alternative Cost Comparison

The following information demonstrates the technical feasibility of the Granite Falls Bridge #102 Replacement project:

Phase I Design - Detailed Statement of Work

Proposed Bridge Characteristics

The design of the Granite Falls Bridge #102 Replacement is past 30% complete and advancing towards 60% completion. For 30% bridge design plans, see Application Website www.snohomishcountywa.gov/3028. At this time the proposed bridge characteristics include:

The replacement bridge will be wider and longer than the existing structure to meet current bridge standards. Bridge #102 will be replaced by 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 bridge section will have a total width of 45 feet (two 12 foot lanes, two 5 foot shoulders, and two 5.5 foot sidewalks on either side of the bridge) and will accommodate the horizontal curvature of the roadway using straight girders, which minimize the girder pick weights.

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 of service life. The combination of the two would yield a lifecycle that will outlive the design life of the structure.

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 (3.5 times the original design load). As the size of the loads increased over the years, the number of loads also increased dramatically. Currently, approximately 629 heavy trucks cross the bridge each work day; on weekends, the number of vehicle crossings often increases although the average weight per load is lessened.

The existing Granite Falls Bridge #102 is rated Structurally Deficient (SD) due to a deteriorated deck condition, and is fracture critical (Sufficiency Rating is 49.11.) The 20 foot curb-to-curb
deck width is considered inadequate for the bridge to be able to handle its normal traffic load of 4,816 ADT (Average Daily Trips) with peak daily trip counts reaching 6,734. Demolition of the existing bridge was estimated at $1.3 Million (2018 dollars). The demolition of the existing bridge could be accomplished in the following manner:

1. Mid-Span Removal
   a. Close Roadway
   b. Mobilize two 150T Cranes
   c. Lift Midspan Segment onto new bridge
   d. Transport Midspan Segment to Adjacent Staging
   e. Remove Concrete Deck and Disassemble Steel

2. Approach Removal
   a. Demo Concrete Deck and Steel Girders in place

3. Pier Removal
   a. Use Concrete Munchers and Concrete Breakers to Remove Pier

**Right-of-Way Phase**

All right-of-ways have been acquired and all documents have been recorded. For details on the acquisitions, please refer to the project schedule.

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. Project Schedule**

Attached and Available on Application Website [https://snohomishcountywa.gov/3028](https://snohomishcountywa.gov/3028)

**Schedule Milestones**

<table>
<thead>
<tr>
<th>Task</th>
<th>Month/Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROW Phase</td>
<td>April 2018</td>
</tr>
<tr>
<td>Approaching 60% PS&amp;E Bridge Design</td>
<td>June 2018</td>
</tr>
<tr>
<td>Final Review 60% PS&amp;E Bridge Design</td>
<td>July 2018</td>
</tr>
<tr>
<td>90% PS&amp;E Bridge Design</td>
<td>March 2019</td>
</tr>
<tr>
<td>100% PS&amp;E Bridge Design</td>
<td>May 2019</td>
</tr>
<tr>
<td>Final PS&amp;E</td>
<td>June 2019</td>
</tr>
<tr>
<td>NEPA</td>
<td>July 2019</td>
</tr>
<tr>
<td>Obligate TIGER Funds</td>
<td>June 2019</td>
</tr>
<tr>
<td>Construction Bid Award</td>
<td>October 2019</td>
</tr>
<tr>
<td>Notice to Proceed</td>
<td>December 2019</td>
</tr>
<tr>
<td>Start Construction</td>
<td>January 2020</td>
</tr>
<tr>
<td>Complete Construction</td>
<td>November 2021</td>
</tr>
</tbody>
</table>
1. **Obligation of Tiger Funds:**
As noted in the schedule milestones, Snohomish County expects obligation of TIGER funds to occur June of 2019. This date works well, and will not be an issue for the required September 2020 obligation deadline.

2. **Construction Readiness**
As previously described, a significant amount of work has been invested into this project. Several studies have been done including a Type, Size, and Location Study. The design stage has surpassed the 30% phase, and could be approaching 60% as early as June of 2018, pending the award of this TIGER grant.

3. **Right-of-Way Acquisition:**
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 phase completion date of April 2018.

C. **Required Approvals**

1. **Environmental Permitting and Approvals**
No major environmental impacts are anticipated by the construction of this replacement bridge. 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.

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 not 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 Washington 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 environmental permitting, critical area mitigation design and implementation. The department also has access to on-call 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 twelve to fourteen months.
The bridge replacement will potentially require the Federal, State and Local permits listed below.

A. Federal Permits and Approvals (NEPA):
   - National Environmental Policy Act (NEPA)
     A Documented Categorical Exclusion (DCE) Checklist (formerly called Environmental Classification Summary) would be submitted for approval by Washington State Department of Transportation (WSDOT) and Federal Highway Administration (FHWA) when funding becomes available. The County assumes this project is a Documented Categorical Exclusion (DCE). The duration of this process is typically twelve months long.

B. Other Agency Approval/Permits Required
   - Section 106 National Historic Preservation Act/Washington State Archaeological Laws
     A cultural review and a Historic American Engineering Record (HAER) report were completed in 2005. 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 when funding becomes available.
   - Section 4F Evaluation
     A 4F Evaluation will be required for this project. 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 construction. 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. The county currently 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.

C. Environmental Studies
   A web site for this project (different from the project funding webpage) is currently available to the public on Snohomish County’s web pages. This site is updated as new information becomes available. Existing environmental information can be found on the site. A link to the
A Critical Area Study will be completed by Snohomish County for this project. This study will describe impacts to wetlands, streams, steep slopes and other critical areas associated with the bridge replacement. 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 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.

D. WSDOT Approvals
Consultation and approval for all aspects of this project, including NEPA, will be coordinated with the Washington State Department of Transportation.

E. Public Engagement
A Size, Type 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 (available on Application Website www.snohomishcountywa.gov/3028) 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. A newsletter article was published in the Everett Herald in 2015 describing the proposed bridge replacement project.

An updated communication plan is being developed by the County including public meetings and newsletters to inform the local residents of the progress of the project and timeline for construction including updates on the project website. The County is also making sure to continue communication and coordination with local tribes.

2. State and Local Planning and Approvals

- Hydraulic Project Approval (HPA)
A Hydraulic Project Approval will be required for the proposed bridge. The proposed bridge is 90 feet above the South Fork Stillaguamish River.

- **State Environmental Policy Act (SEPA)**
  Preliminary environmental review of the project area has been completed. A SEPA Environmental Checklist was issued in 2014 for the first phase of this project: Acquisition of Right-of-Way. This phase has been completed and the needed 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 little or no impacts to the river are expected. Stormwater drainage facilities will be integrated into the design 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 other 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**
  A Land Disturbing Activity Permit (Clearing and Grading permit) will be issued in-house by Snohomish County Public Works.

- **WSDOT – Washington State Department of Transportation**
  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 in the County’s Six Year Transportation Improvement Program adopted by County Council. The proposed project is specifically included in the Transportation Element of the Snohomish County GMA Comprehensive Plan (Comp Plan). Because of its connection with the Granite Falls Alternate Route (GFAR) Project, it is implicitly included in Transportation 2040 (T2040, ID#1950), 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. The Granite Falls Bridge #102 Replacement project proposed in this application is designed and aligned to intersect with the GFAR Project to efficiently move heavy trucks around the community, intercept with SR 92 (a T-2 freight corridor) and channel freight materials to the Puget Sound Metro Area.
Upon notification of TIGER Grant award, Snohomish County will submit the required documentation (TIPNEW) to the Metropolitan Planning Organization (Puget Sound Regional Council). They have provided a letter of support which is attached.

The project is supported by Congresswoman DelBene and Senators Cantwell and Murray. See Application Website www.snohomishcountywa.gov/3028 for Support Letters.

F. 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: Post-pone 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 (BCA)

Analyzing benefits and costs for the Granite Falls Bridge #102 Replacement presents unique challenges as the project is preventive rather than corrective in nature. The BCA relies on consultation with subject matter experts primarily in the fields of structural engineering and environmental analysis to project what is reasonably likely to happen to identify changes from the project baseline. The value of the benefits and costs of these changes is based on basic literature research produced by credible agencies such as the US Department of Labor, US Environmental Protection Agency, Washington State Department of Employment Security and the Washington State Department of Transportation among others. Every effort has been made to keep the analysis as simple, straightforward and transparent as possible. The assumption parameters were developed in consultation with the Freight Policy Institute at Washington State University. The planning horizon was established as 2040; this is consistent with the horizon.
used by the Metropolitan Planning Organization in its transportation planning document Transportation 2040. This is appropriate because the project is a regionally significant capacity improvement within the context of that document and the benefits will accrue to that region. It is important to establish that benefits that accrue to the Puget Sound Region accrue to the nation as well. The region is one of the largest and most rapidly growing in the United States. It is a major international gateway and home to numerous military installations as well the regional headquarters of many federal agencies including but not limited to the Federal Transit Administration, Federal Aviation Administration, US Department of Commerce and the US Department of Labor. It is also the headquarters of the Seattle District of the US Army Corps of Engineers.

The Benefit/Cost Ratio for this project is estimated to be 1.14. Detailed assumptions are included on the spreadsheet which is attached and available on Application Website: www.snohomishcountywa.gov/3028

vii. COST SHARE

A. Maximization of Non-Federal Funding:

The TIGER program is the only viable option for funding a project of this size in this location. Locally, capital transportation projects are funded and administered through the Transportation and Environmental Services Division of the Snohomish County Public Works Department. Funding sources for this department are established through the Washington Administrative Code (WAC). The amount of local funds for capital projects has remained relatively fixed for several years. At present a significant portion of this funding is expended as match to support current state and federal grants and loans; these comprise approximately 40% of the total Transportation Capital Budget. The balance is programmed for projects that support ADA compliance, major maintenance and capacity projects. Regarding the last - Snohomish County is compelled, under state law, to allocate transportation capital resources consistent with the State Growth Management Act (GMA). A principal mandate of GMA is to make capital transportation investments that maintain levels of service within the unincorporated Urban Growth boundaries surrounding existing incorporated municipalities to constrain untimely encroachment on rural lands. Snohomish County is the fastest growing county in the State of Washington and one of the fastest growing in the United States. GMA has been effective in containing most of this growth within Urban Growth Areas but demand is so great that only 5% of the capital transportation budget is available for major projects in the unincorporated county.

Regionally, the situation is similar. The County pursues approximately half of its capital transportation funding through the Metropolitan Transportation Organization (MPO), in the county’s case the Puget Sound Regional Council (PSRC). PSRC competitively distributes approximately $90 Million biennially in CMAQ and STP funding. However, less than 5% of this funding is available exclusively to rural projects. Projects such as the Granite Falls Bridge do not compete well. Awards greater than $10 Million are rare and they are not bankable; they must be spent within specific planning horizons.

Statewide, Granite Falls Bridge only qualifies for three programs. The Highway Bridge Program has been fairly fixed – between $50-60 Million Statewide, biennially. Snohomish County has
been successful in pursuing assistance through this program but awards are typically in the $3-5 Million range. Another source, the County Road Administration Board (CRAB), is programmed out through 2020-2021 and can make only $1-1.5 Million available biennially to even the largest counties. The final source, the Freight Mobility Strategic Investment Board (FMSIB) has shown some interest in the project but their application process entails being accepted on to a six-year candidate project list made up predominately of large port and railroad projects.

Historically, Snohomish County has applied to the TIGER program three times with increasing levels of interest shown by project evaluators. In 2015 application was made to FMSIB but was not approved to be put on the list because other funding was uncertain. In 2016 an application was made through FASTLANE but was deemed ineligible during the application process. We are again presenting this to the TIGER program in the hope that we can replace the bridge with a structure that meets the future needs of existing businesses, the increased population and the recreational needs of the Mount Baker Snoqualmie National Forest.

B. Fiscal Constraints:
There are no legal fiscal constraints on the use of local funds planned for this project. There are however legal requirements under GMA and The Americans with Disabilities Act (ADA) that effectively limit the amount of local funds available for locally funded projects and matching funds to state and federal grants.

The largest categories are described briefly below:

**Overlay & ADA**
Investment in the County’s pavement management system to assure that the 1,581 miles of roads are resurfaced on a schedule that protects them from deterioration which would result in more extensive and expensive reconstruction later on.

**Concurrency**
These projects provide satisfactory levels of service to meet transportation system concurrency requirements and remain in compliance with the Transportation Element of the County’s Comprehensive Plan and Growth Management Act (GMA) goals.

**Non-Motorized, Transit & HOV**
Snohomish County is continues to invest in its non-motorized program and is placing an increased emphasis of transit integration in urban corridors in preparation of the light rail and BRT expansion into the community. Snohomish County is number two nationwide for net population increase in 2015 and 2016. Unincorporated Snohomish County has experienced a 16 percent growth since 2010, and during that time congestion on the region's freeways increased over 95 percent. Voters recently approved ST3, a $54 Billion regional mass transit expansion that will connect up to 30 cities to the system.
C. Non-Federal Share of Applicant’s Transportation Program:

As shown in the table below, 70% of our County TIP is non-federal.

<table>
<thead>
<tr>
<th>2018-2023 Draft County TIP (in $1000s)</th>
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<tbody>
<tr>
<td>Federal</td>
</tr>
<tr>
<td>Non-Federal</td>
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<tr>
<td>Total</td>
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D. Full Life-Cycle Costs/Maintenance:

During project development, a peer review workshop of structural engineers from the public and private sectors reviewed the TS&L study. The team selected the option identified in this application as having the best life-cycle cost based, in major part, on the relatively low maintenance cost. The bridge will be inspected every two years as required by WSDOT.

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 of service life. The combination of the two would yield a lifecycle that will outlive the design life of the structure.

viii. FEDERAL WAGE RATE CERTIFICATION

Attached and available on Application Website www.snohomishcountywa.gov/3028