May 18, 2020

Secretary Elaine L. Chao
U.S. Department of Transportation
Office of the Secretary of Transportation
1200 New Jersey Avenue, SE
Washington, D.C. 20590

Dear Secretary Chao:

The City of Fife is pleased to submit this FY 2020 Better Utilizing Investment to Leverage Development (BUILD) grant application for Phase II of the I-5/Port of Tacoma Road Interchange Improvement Project (Project). This Interchange Improvement Project completes this phase of a transformational effort by the City of Fife, the Port of Tacoma, and The Washington State Department of Transportation to address significant backups at this interchange and to dramatically improve the movement of freight and goods as well as traffic in general.

The Project includes road, intersection, and intersection improvements at the I-5/Port of Tacoma Road interchange that will greatly enhance a critical connection to the Port of Tacoma, which combines with the Port of Seattle to form the fourth largest gateway for containerized cargo in our nation.

This $25 million in requested investment will leverage $24.65 million secured local and state matching funds already allocated to fully fund Phase II of the I-5/Port of Tacoma Road Interchange Improvement Project, making federal FY 2020 BUILD funds the last dollars needed to expeditiously complete design and begin construction. Additionally, the City of Fife has already fully funded Phase I of the Project ($44.6 million) which is 80% complete. Federal BUILD funds will ensure that the travel-time savings, safety, accessibility, quality of life, and other benefits described in this application will come to fruition.

Thank you for this opportunity to submit this application for federal BUILD funding.

Sincerely,

Kim Roscoe
Mayor
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1. PROJECT DESCRIPTION

The Interstate 5 (I-5)/Port of Tacoma Road Interchange Improvement Project (Project) in the City of Fife, Washington, will complete Phase II of an interchange reconfiguration located along I-5 at the existing Port of Tacoma Road interchange (as shown in Figure 1). The final reconfiguration, a split-diamond with one-way couplet, will drastically enhance the operational capacity of the interchange and improve mobility for containerized truck freight between the interstate and the Port of Tacoma, which supports over 42,000 direct, indirect, and induced jobs as part of the port activities.¹

![Figure 1. I-5/Port of Tacoma Road Interchange Improvement Project](image)

The existing interchange inhibits free-flow of freight and general traffic, limiting economic growth to the community, Port of Tacoma, and the greater region. Originally constructed in the early 1960s, the interchange is functionally obsolete and has no capacity for the current and future growth of the surrounding industries and community.

Phase I of these improvements is currently under construction and is over 80 percent complete. Phase I includes improvements located on the north side of I-5, as shown in Figure 1. Phase II of the I-5/Port of Tacoma Road Interchange Improvement Project will construct the improvements located on the western and southern sides, as well as crossing over I-5, the primary artery connecting the entire Seattle-Tacoma region.

¹ [Port of Tacoma, Economic Impact](#)
The City of Fife is requesting $25 million (50 percent of total project costs) in FY 2020 BUILD program funds to fully fund Phase II of the $49.65 million I-5/Port of Tacoma Road Interchange Improvement Project.

The key components of the I-5/Port of Tacoma Road Interchange Improvement Project include:

- Full reconstruction of the I-5 northbound (NB) on-and-off ramps at the interchange
- Rechanneling Port of Tacoma Road for one-way traffic in the southbound (SB) direction.
- New 34th Avenue East roadway from 20th Street East to the I-5 SB Off-Ramp with new bridge crossing over I-5.
- Completion of an Americans with Disabilities Act (ADA) compliant pedestrian corridor across I-5 along 34th Avenue East from 20th Street East to Pacific Highway/SR 99.
- Traffic signals at interstate ramp terminals and at new or reconfigured intersections within the Project limits.

Local and Regional Transportation Challenges

The interchange of I-5 and Port of Tacoma Road is currently unable to facilitate the movement of freight and other local and regional traffic because of its out-of-date design and exponential traffic growth throughout the entire region.

Regional Growth and Congestion

According to a 2017 report by INRIX, Seattle and Tacoma both rank in the top 16 most congested commutes in the U.S. (Seattle ranked at 9th and Tacoma at 16th). Seattle drivers spent an average of 55 peak hours in congestion, while Tacoma drivers spent 41 peak hours in congestion.\(^2\) This exceptional congestion comes at a cost to drivers and the regional economy. INEX estimated that this time spent commuting cost Seattle drivers an average of $1,853 each in 2017, and cost Tacoma drivers $1,485 over the same period. This lost time due to congestion also cost the cities of Seattle and Tacoma a combined $7.5 billion in 2017 alone.

This increased congestion is due, in part, to an ever-increasing population boom in Seattle and overall Puget Sound region, which includes King, Kitsap, Pierce, and Snohomish Counties. The region will be close to 6 million in population by 2050, a 50% estimated increase in population from 2015.\(^3\) This population growth leads to more congestion by adding more cars to the region’s roadways.

Transportation infrastructure investments are taking place throughout the region to deal with this increased population. However, connections along I-5, including this I-5/Port of

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\(^2\) INEX Report, 2017

\(^3\) Puget Sound Regional Council
Tacoma Road Interchange Improvement Project, remain dangerous and outdated intersections for automobiles and the freight sharing the roadway.

Freight Demand
The I-5/Port of Tacoma Road Interchange Improvement Project is a necessary transportation infrastructure project to improve freight mobility and connectivity to the large Manufacturing/Industrial Center (MIC) of the Port of Tacoma, located in the central Puget Sound area. Additionally, I-5 is a major freight route connecting the Port to the metropolitan centers of Tacoma, Seattle, Everett, Olympia and Vancouver leading to traffic congestion during both AM and PM peak hours, as well as midday.

The I-5/Port of Tacoma Road Interchange Improvement Project provides increased access to Fife’s north business district, in addition to providing main access to the Port of Tacoma. Today, the interchange is characterized by closely spaced intersections with both State Route 509 (SR 509) and Pacific Highway East (also known as old SR 99), high volumes of truck traffic, and geometrically and functionally deficient on- and-off ramps accessing I-5. There are six intersections in just over a half mile of Port of Tacoma Road, which significantly slows freight and local community traffic. On some segments of the interchange, trucks constitute 30 percent of the traffic. These conditions result in heavy congestion and difficult truck and vehicle access to this industrial area and to the Port, the fourth largest container gateway in North America.

Accident Frequency
The I-5/Port of Tacoma Road Interchange Improvement Project is integral to improving safety and traffic conditions for area commuters and all users of Washington State’s vital and primary north-south corridor of I-5 traveling through the City of Fife limits. The history of
accidents around the I-5/Port of Tacoma Road Interchange Improvement Project site shows that the I-5 southbound off-ramp to Port of Tacoma Road contributes to 28 accidents per million vehicle miles. Traffic volume is expected to increase by 300 percent by the year 2040 and likely increase the occurrence of accidents by 300 percent or more. The primary reason for the accidents is the current geometry.4

Interchange Improvement Project Benefits

Design, value engineering and traffic modeling studies have confirmed the need for the improvements and identified the alternative configuration for the interchange and the I-5/Port of Tacoma Road ramps that is proposed in this funding application. General benefits include the following:

- The interchange reconstruction will improve level of service for trucks traveling to and from the Port of Tacoma.
- The I-5/Port of Tacoma Road Interchange Improvement Project will improve the operation of the I-5 mainline and all streets and intersections in the project vicinity.
- Traffic analysis indicates that the entire area would be in gridlock conditions by 2040 if anticipated growth occurred without the Project construction.5
- With I-5/Port of Tacoma Road Interchange Improvement Project construction, every intersection in the project vicinity will operate at level of service “D” or better and queue lengths will be reduced from thousands of feet to hundreds.6

With the completion of Phase II of the I-5/Port of Tacoma Road Interchange Improvements Project will come safety, travel time savings, quality of life, and other necessary benefits to the project area, as well as the larger Puget Sound Region. These major benefits are introduced below and discussed in more detail in Selection Criteria.

Safety Benefits

According to the Interchange Justification Report (IJR), located in Appendix E of this application, the southbound on-and-off ramps of the interchange are geometrically deficient and have substandard alignments that prevent traffic from safely entering and exiting the I-5 mainline at freeway speeds. The geometrically deficient ramps at the existing interchange prohibit

4 Interchange Justification Report, Appendix E.
optimum acceleration and deceleration for vehicles entering and exiting the freeway. Additionally, peak-period traffic demand and signal delays at the off-ramp intersections with Port of Tacoma Road can cause vehicle queues that back up onto the freeway mainline causing collisions and significant back-ups.

Figure 5. Phase I Construction

The new interchange will eliminate off-ramp queuing onto the I-5 main line, decreasing the amount of rear-end collisions in the area. Due to the reduction of conflict points along the interchange, the proposed improvement is expected to have a lower accident rate overall than the existing configuration.

The Project also adds a safe pedestrian and bicycle route across I-5 on the proposed new 34th Avenue East bridge, thereby reconnecting parts of Fife that were cut off by the original construction of I-5 over 50 years ago. Neither the existing Port of Tacoma Road overpass bridge nor any other I-5 crossing in Fife currently includes safe pedestrian facilities.

Reduced Congestion and Travel Time Savings Benefits
Per the benefit cost analysis (BCA) completed as part of this FY2020 BUILD application, there will be a reduction of over 35 million vehicle-hours traveled for automobiles and nearly 4 million vehicle-hours for trucks. This reduction in travel time is due to the significant decrease in congestion the Project will bring to the immediate area and does not take into account the even wider benefits of region traffic time savings. This interchange with Port of Tacoma road is a major pass through for drivers along I-5 from Tacoma and other areas south to Seattle.

Quality of Life Benefits
The new 34th Avenue East bridge crossing over I-5 will provide pedestrian and bicycle connections to the existing Pierce Transit Routes 500 and 501 on Pacific Highway East and 20th Street East, respectively. The I-5/Port of Tacoma Road Interchange Improvement Project will close sidewalk gaps along 20th Street East and provide new sidewalks along 34th Avenue East. This new sidewalk will provide a safe pedestrian route, meeting current standards for Americans with Disabilities Act (ADA), replacing the unsafe, non-compliant existing conditions along the Port of Tacoma Road and crossing over I-5.
Project History and Previously Completed Components

The **I-5/Port of Tacoma Road Interchange Improvement Project** is planned in consultation with Washington State Department of Transportation (WSDOT), the Federal Highway Administration (FHWA), the City of Tacoma, the Port of Tacoma, and led by the City of Fife. Design, value engineering, and traffic modeling studies began in 2009 and confirmed the need for improvements to the interchange and the I-5/Port of Tacoma Road ramps. A Technical Advisory Committee (TAC) including representatives of FHWA, WSDOT, Freight Mobility Strategic Investment Board, Puyallup Tribe of Indians, Washington Trucking Association, Port of Tacoma, and SSA Marine, and a private container terminal inspector agreed on a preferred alternative in 2010.

Since that time, Fife has assembled funding, acquired and constructed a wetland mitigation site, completed Phase I design, and acquired necessary right-of-way. Phase I of the project has been fully funded and is now under construction with completion over 80 percent. Phase II will complete this planned interchange reconfiguration.

Phases I and II of this project will provide road, intersection and interchange improvements of great value to the Port of Tacoma, the surrounding industrial area and businesses in the cities of Fife and Tacoma. The larger Project has been developed in phases over more than a decade, with past work on surface streets completed and a wetland mitigation site nearing completion.

**Detailed Statement of Work – Phase II**

The **I-5/Port of Tacoma Road Interchange Improvement Project** has five primary components featuring improvements as described in the following.
Existing Interchange Configuration
The I-5/Port of Tacoma Road Interchange Improvement Project reconfigures an existing interchange along Interstate 5 (I-5) by creating a new 0.73 mile-long roadway couplet serving the City, Port of Tacoma, and Interstate traffic with one-way movements adding 0.63 miles of additional lane-miles within the City of Fife.

The roadway couplet uses the existing Port of Tacoma Road and a new roadway constructed along 34th Avenue East. The existing interchange dates from the 1960s and does not meet current design and safety standards. The new configuration supports the high volume of truck traffic using the interchange for travel to and from the Port of Tacoma along Port of Tacoma Road. The Project provides 0.83 miles of new improved on-and-off ramps for I-5 replace the substandard existing ramps for both interstate directions of travel at the interchange. The I-5 southbound (SB) ramps are part of Phase I and the I-5 northbound (NB) ramps are part of Phase II.

Rechanneling Port of Tacoma Road
To complete the new roadway couplet, the existing Port of Tacoma Road (POTR) is converted from 2-way traffic to three lanes in the southbound direction from 12th Street East on the north side of I-5 to 20th Street East on the south side of I-5. Traffic improvements, updated ADA ramps, and an added turn lane at the intersection of POTR and Pacific Highway East/SR 99 are provided by the Project.

The new roadway created by the Project along 34th Avenue East parallels the Port of Tacoma Road and is located approximately 500 feet to the east. The north-south limits of 34th Avenue East extend from 12th Street East to 20th Street East, providing 2 new through traffic lanes in the northbound direction to create the northbound roadway for the couplet.

New Bridge over I-5 at 34th Avenue East
Phase I of the interchange configuration constructs the new roadway along 34th Avenue East from the SB I-5 Off-Ramp north to 12th Street East on the north side of I-5. Completing the 34th Avenue East construction south to 20th Street East on the south side of I-5, includes a crossing over the interstate on a new 225-foot-long bridge structure as part of Phase II.

The bridge spans over all NB and SB lanes of I-5 providing two through traffic lanes, 2 4-foot shoulders, and raised sidewalk along 34th Ave E, and creates the first ADA compliant crossing of Interstate 5 in the City limits.

The new bridge is composed of two 112-foot spans with a center pier located in the I-5 mainline median and features a cost-effective, low maintenance superstructure design using precast, prestressed concrete bridge girders that can be erected with minimum traffic disturbance to the I-5 mainline traffic.

Pedestrian Corridor
The Project provides 1,560 linear feet of additional or improved sidewalks updated to ADA compliant standards and creates a critical pedestrian connection across I-5 in the City of Fife, near the City of Tacoma and the Port of Tacoma. The I-5 pedestrian crossing located on the new bridge structure along 34th Avenue East, provides a safe pedestrian corridor from 20th Street East north to Pacific Highway.
The **I-5/Port of Tacoma Road Interchange Improvement Project** provides a direct connection to a proposed new signalized intersection of POTR at 20th Street East converted from a 1-way stop intersection, and direct connection to a proposed new signalized intersection of 34th Avenue East at 20th Street East.

**Traffic Signals**

Rechanneling of Port of Tacoma Road to one-way southbound to complete the roadway couplet requires reconfiguration of three intersection signals along that roadway located at:

- 12th Street East
- Pacific Highway
- SB I-5 On-Ramp

Phase II of the Project constructs three new signalized intersections located at:

- SB I-5 Off-Ramp and 34th Avenue East
- NB I-5 Off-Ramp and Port of Tacoma Road
- NB I-5 On-Ramp and 34th Avenue East

Additionally, there are 2 ramp meter signals associated with the Project located on the new SB and NB On-Ramps to I-5. All signals within the Project will be interconnected and coordinated.

### 2. PROJECT LOCATION

The **I-5/Port of Tacoma Road Interchange Improvement Project** is in the City of Fife, within Pierce County, Washington State just outside the City of Tacoma (coordinates: 47° 14’ 32” N; 122° 23’ 01” W). The Project is within Washington State’s Interstate 5 (I-5) interchange number 136, located 136 highway miles from Oregon and 140 highway miles from the Canadian border.

The Project’s strategic location connects the Port of Tacoma to I-5 in an area adjacent to tidelands where the Puyallup River enters Commencement Bay. The Port is an identified **Manufacturing and Industrial Center (MIC)** and downtown Tacoma is an identified Regional Growth Center by the **Puget Sound Regional Council (PSRC)**, the federally recognized metropolitan planning organization for Seattle-Tacoma-Bellevue Washington Statistical Areas. The Project corridor serves as a direct access connection to downtown and northeast Tacoma areas from SR-509 and I-705, which can be accessed from the Port of Tacoma Road just north of the project limits.

The **I-5/Port of Tacoma Road Interchange Improvement Project** provides the primary - and namesake - entrance to the Port of Tacoma.
from I-5. I-5 is Washington State’s transportation backbone. By connecting the Port MIC to I-5, this project provides direct connections to many Puget Sound Regional Council designated Growth Centers and indirect access to every center in the region and state.

Figure 8. City of Fife Location

The Project is in the Puyallup Reservation. The Puyallup Tribe supports this project and has submitted a letter attesting to this (See Appendix C).

Figure 9. Project Location, City of Fife
3. GRANT FUNDS, SOURCES AND USES OF PROJECT FUNDS

The City of Fife is requesting $25 million in FY 2020 BUILD program funds to fully fund Phase II of the **I-5/Port of Tacoma Road Interchange Improvement Project**. The City of Fife has secured full funding for Phase I of the Project ($44.57 million) and it is currently at 80 percent construction completion.

For Phase II of the Project, Fife has already secured and allocated local (Gte of Fife) and State funds for planning, design and right of way. The City of Fife is requesting $25 million to fully fund construction of the **I-5/Port of Tacoma Road Interchange Improvement Project**.

The following section details the committed funding for this project and includes information on the sources and uses of funds. See Appendix D for a detailed cost estimate that shows project costs at 30 percent level of design.
Table 1. Sources of Phase II Project Funds, $ millions

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<th>Project Funding Source</th>
<th>Local, State, Federal</th>
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<td>Connecting Washington</td>
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</tr>
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<tr>
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<tr>
<td>Total</td>
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As Table 1 shows, Phase II of the Project will be fully funded with FY2020 BUILD funds. Federal BUILD Funds would fund 50% of the total Project.

Project Sources and Uses of Funds

Table 2 shows the sources and uses of funds for the I-5/Port of Tacoma Road Interchange Improvement Project. FY 2020 BUILD funds will be utilized for the construction portion only of the Project and make up 62 percent of construction costs and 50 percent of total Project costs.

Table 2 Project Budget Summary by Source and Use, $ millions

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<td>$49.65</td>
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Twenty percent of Phase II construction funds are allocated to contingency and market conditions.

Phase II of the Project leverages the already secured funding for Phase I, which is currently 80 percent complete. As Phase I has moved to construction, its costs are not included in the match for this FY 2020 BUILD request. However, the Sources and Uses Table for Phase I is shown in Table 3 to show its broad support from local, state, and federal funding sources.

7 Totals may not sum due to rounding
Table 3. Phase I Funding Plan, Fully Secured and Total Project Costs

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Documentation of Funding Commitments

Documentation of all current funding commitments, federal and non-federal, is provided in Appendix B. Phase II funding match includes the following sources.

The Washington State Freight Mobility Strategic Investment Board is a comprehensive and coordinated state program that facilitates freight movement between and among local, national and international markets which enhances trade opportunities. The Board is also charged with finding solutions that lessen the impact of the movement of freight on local communities. The Board proposes policies, projects, corridors and funding to the legislature to promote strategic investments in a statewide freight mobility transportation system. They also propose projects that soften the impact of freight movement on local communities.

The 2015 Connecting Washington funding package is a $16 billion investment that enhances the statewide transportation system and maintains critical infrastructure. Connecting Washington is a 16-year program, funded primarily by an 11.9-cent statewide gas tax increase that was fully phased-in on July 1, 2016.

The City of Fife has committed Funds to fully complete the design, right of way, and construction of the Phase II of the I-5/Port of Tacoma Road Interchange Improvement Project.

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8 Totals may not sum due to rounding
4. SELECTION CRITERIA

Safety

The history of accidents around the I-5/Port of Tacoma Road Interchange Improvement Project site shows that the I-5 southbound off-ramp to Port of Tacoma Road contributes to 28 accidents per million vehicle miles. Traffic volume is expected to increase by 300 percent by the year 2040 and likely increase the occurrence of accidents by 300 percent or more. The primary reason for the accidents is the current geometry.9

Between January 2004 and April 2015 there have been 225 total collisions on Port of Tacoma Road between 20th Street East and SR 509 and 36 collisions on Pacific Highway between Port of Tacoma Road and 34th Avenue East. At the intersections along Port of Tacoma Road between Pacific Highway East and 20th Street East, there have been 96 collisions. In addition, there have been six fatalities from accidents in this area between 2004 and 2017.10

Design Improvement

The I-5/Port of Tacoma Road Interchange Improvement Project would create four intersections made up of two one-way approaches. Each of these intersections would have simple geometry and phasing, with only five conflict points and two signal phases per intersection. In comparison, the existing configuration has eleven conflict points and five signal phases for the southbound ramps’ intersection and six conflict points for the northbound ramps. An intersection with fewer conflict points and simpler signal phasing will have lower accident rates.

The proposed on-and-off ramp geometric improvements will prevent a portion of sideswipe collisions from vehicles entering and exiting the freeway. By improving the signal phasing at the ramp terminals and eliminating peak-hour vehicle queues, rear-end collisions related to vehicle queues backing up onto the mainline would also be reduced.

Ramp geometric improvements and the elimination of excess delay and traffic queuing at the ramp terminal intersections would reduce the number of single vehicle collisions, as well as congestion-related rear-end collisions.

The reconstructed interchange would shift the alignments of the northbound and southbound ramps to contemporary geometric standards.

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9 Interchange Justification Report, Appendix E.
10 WSDOT Accident Data
and allow traffic to more safely accelerate and decelerate when entering and exiting the freeway. Capacity improvements at the ramp intersections would alleviate queuing and spillback onto the I-5 mainline in periods of high demand. Converting Port of Tacoma Road and 34th Avenue East into a one-way couplet system will also create safety benefits by easing corridor congestion and reducing the number of conflict points at intersections.

Table 3 details the significant cumulative decrease (13% - 15%) in traffic incidents from project implementation over the benefit cost analysis period. See Appendix A for more details on the benefit cost analysis.

**Table 3. Traffic Incident Reduction from Project Implementation, Cumulative Benefits**

<table>
<thead>
<tr>
<th>Accident Type</th>
<th>No-Build</th>
<th>Build (with Project)</th>
<th>Reduction</th>
<th>% Reduction</th>
<th>Monetized Benefits (Undiscounted M$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatality</td>
<td>30</td>
<td>26</td>
<td>4</td>
<td>13%</td>
<td>$47.10</td>
</tr>
<tr>
<td>Injury</td>
<td>1,692</td>
<td>1,442</td>
<td>250</td>
<td>15%</td>
<td>$62.50</td>
</tr>
<tr>
<td>Property Damage Only (PDO)</td>
<td>5,754</td>
<td>4,905</td>
<td>849</td>
<td>15%</td>
<td>$3.70</td>
</tr>
<tr>
<td>Total</td>
<td>7,476</td>
<td>6,373</td>
<td>1,103</td>
<td>15%</td>
<td>$113.30</td>
</tr>
</tbody>
</table>

**Pedestrian Access**

The **1-5/Port of Tacoma Road Interchange Improvement Project** will include an ADA-compliant crossing of I-5 as there is currently no safe pedestrian crossing in the City of Fife limits. The simplification of traffic movements at intersections and provision of an ADA-compliant pedestrian route over I-5 are key safety improvements provided by the Project.

The new 34th Avenue East bridge will provide a safe ADA-compliant pedestrian and bicycle crossing over I-5, and the new continuous sidewalk along 34th Avenue East will replace the unsafe, non-compliant existing conditions.

More on pedestrian and ADA improvements is found in the *Quality of Life* section.

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11 See Benefit Cost Analysis, Appendix A for more information
State of Good Repair

The I-5/Port of Tacoma Road Interchange Improvement Project includes both local (City of Fife) and state (WSDOT) transportation assets that have been maintained in a state of good repair, along with new transportation improvements. The existing interchange is characterized by closely-spaced intersections with the surrounding roadway network that serves as access to the Port of Tacoma. Truck traffic experiences a delay as it enters and exits the Port, and truck traffic backups extend into the existing ramps serving I-5 and onto the interstate itself. Future traffic growth will exacerbate these conditions unless the Project is constructed.

In addition, the tight turn radii on the ramps exiting the freeway, in combination with the heavy percentage of truck traffic, degrades pavement structures more quickly than it would if truck traffic is more evenly distributed, as it will be on the new configuration. The I-5/Port of Tacoma Road Interchange Improvement Project will, therefore, reduce pavement stress consistent with such efforts. The new ramp and roadway segments constructed for the Project will include the latest improvements in pavement design and construction materials as adopted by WSDOT.

Operations and Maintenance of Project

The reconstructed local streets located within the City of Fife’s right-of-way will be maintained in accordance with the city’s pavement management system. A significant portion of the I-5/Port of Tacoma Road Interchange Improvement Project, including the existing and proposed bridges, are located within the right-of-way of I-5. These facilities will be owned and maintained by WSDOT in accordance with their policies and procedures. The I-5/Port of Tacoma Road Interchange Improvement Project generates very little new infrastructure for the city, and the City of Fife is committed to maintaining these new roadway improvements. The city currently budgets nearly $1 million each year for street maintenance and estimates that this will be sufficient to maintain the additional infrastructure from this project.

Detailed ROW plans have been developed and approved by City of Fife and WSDOT for the Phase II project area. These plans can be shared with USDOT as requested.
Economic Competitiveness

Travel Time Savings
The I-5/Port of Tacoma Road Interchange Improvement Project will reduce congestion and travel time for all vehicular travel modes, but most importantly for freight and general driver use.

Specifically, by 2045 the Project will:

- Improve the I-5 freeway level of service and will facilitate freight mobility to and from the Port, which in turn, improves access to local and area businesses.
- Improve PM peak-hour traffic operations dramatically, increasing I-5/Port of Tacoma Road Interchange Improvement Project area speeds by 15-20 percent, reducing total vehicle hours of delay by 30-35 percent, and dropping average delays by over 30 percent.\(^{12}\)
- Reduce AM travel time by nearly 20 percent. The AM travel-time reduction is significant as it is the period where the interchange serves the largest volume of trucks/freight entering and exiting the Port. Implementation of the Project will increase average truck speeds by over 50 percent in the AM peak and reduce delays by 55 percent.\(^{13}\)
- Provide full directional access between I-5 and Port of Tacoma Road, 34th Avenue East, and other local roads via interchange ramps and one-way couplet arterials.
- The proposed reconfiguration design accommodates spacing requirements and constraints and meets current geometric standards.

Table 4: Peak Hour Travel Time Savings

<table>
<thead>
<tr>
<th>Peak Period</th>
<th>Total Delay (hours) No-Build</th>
<th>Total Delay (hours) Build</th>
<th>Delay Savings (hours)</th>
<th>Yearly Delay Savings (hours)</th>
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</thead>
<tbody>
<tr>
<td>2030 AM</td>
<td>51</td>
<td>33</td>
<td>18</td>
<td>65,500</td>
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<tr>
<td>2030 PM</td>
<td>329</td>
<td>85</td>
<td>244</td>
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<tr>
<td>2045 AM</td>
<td>67</td>
<td>37</td>
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<td>84,500</td>
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<tr>
<td>2045 PM</td>
<td>416</td>
<td>108</td>
<td>308</td>
<td></td>
</tr>
</tbody>
</table>

The benefit cost analysis conducted as part of this BUILD application determined the following cumulative Project benefits:

- Reduction in over 35 million vehicle hours traveled
- Reduction in nearly 4 million truck hours traveled

\(^{12}\) Appendix A: Benefit Cost Analysis Memorandum
\(^{13}\) Appendix A: Benefit Cost Analysis Memorandum
These reductions in hours traveled translate to a nearly $700 million monetized cumulative benefit.

**Access to the Port and Surrounding Communities**

The **I-5/Port of Tacoma Road Interchange Improvement Project** will create significant national economic benefits, as Puget Sound is the fourth largest gateway in North America for containerized cargo. Specifically, the Port of Tacoma is one of the largest container ports in North America and one of the top 50 in the world, handling $52.1 billion worth of international trade.

Right now, the Port is experiencing the most intense global competition it has ever faced. The government of British Columbia, Canada, has spent $25 billion at the ports of Prince Rupert and Vancouver to lure jobs and cargo north of Washington’s borders. The new overcrossing and revised interchange will create efficiencies in the freight connections between the Port and the intermodal yard south of I-5, as well as the transload warehousing and distribution centers for the city and region, improving the Port’s competitiveness with these Canadian ports.

The **I-5/Port of Tacoma Road Interchange Improvement Project** also provides access to the City of Fife’s north business district. Improved access to I-5 and Pacific Highway East/SR 99 will improve general traffic circulation in the area. With better access and more efficient traffic movement, business will increase, in turn, stimulating private investment in the city and along the commercial corridors near the interchange. *Figure 14. Port of Tacoma Road, looking north towards Port of Tacoma.*

As the main access to the Port and an access to the City of Fife north business district, interchange truly is the “last mile” for products grown and manufactured in the Pacific Northwest and the nation’s Great Plains for export overseas. It also represents a critical choke point for truck movements between the Port and the warehouses and distribution centers in the Green River and Puyallup River valleys—the second largest logistics center on the West Coast. Forty-four percent of regional truck trips by the ports of Tacoma and Seattle are destined for this area.

The importance of this interchange to the region’s economy cannot be overemphasized. Specifically, the interchange provides the following:
1. The interchange supports two arterial streets, both of which are T-1 freight corridors, located on the U.S. Department of Transportation (USDOT) Highway Multimodal Freight Network (MFN) serving a USDOT MFN-designated port (the second largest gateway for containerized cargo on the West Coast and the fourth largest in North America).

2. The interchange serves four international container terminals and one international auto terminal. In 2018, the Washington United, Husky, and East and West Sitcum Terminals collectively handled 67 percent of the Port’s containerized cargo traffic, or 1,319,338 twenty-foot equivalents (TEUs), and over 185,000 automobile imports. These facilities generate $1.86 billion in business revenue and support over 7,000 direct jobs. The interchange also provides access from the south to the Pierce County Terminal, which moved 25 percent of the Port’s containerized cargo traffic, or 494,781 TEUs in 2018, as per the Northwest Seaport Alliance.

3. The Port of Tacoma Road interchange directly serves as the primary truck route connecting Joint Base Lewis-McChord (JBLM)—the largest power projection platform west of the Rocky Mountains—and the Port of Tacoma, a U.S. Department of Defense-designated strategic port serving as the Seaport of Embarkation for JBLM.

4. The I-5/Port of Tacoma Road Interchange Improvement Project will provide significant local and national economic benefits as Puget Sound is the third largest gateway in North America for containerized cargo. Specifically, in 2015, the Port handled $52.1 billion worth of international trade. Seventy percent of international container cargo passing through the Port is bound for locations in the American Midwest and East Coast. The Port also is the principal gateway for the state of Alaska, handling an estimated $3 billion worth of trade between the two states; approximately 70 percent of cargo bound for Alaska passes across the Port’s docks.

Washington is the most trade-dependent state in the nation, with an estimated 40 percent of jobs connected to international trade. The Port accounts for more than 12,000 direct, 10,000 induced, and 5,000 indirect jobs in Washington State and generates more than $2.4 million in annual wages. In Pierce County, Port activities account directly, indirectly, and induced for more than 16,000 jobs and generates more than $1.4 million in annual wages. In the state of Washington, 266,899 jobs are related to cargo movement at the Port, which generates $10.0 billion in wages, salaries, and consumption expenditures.

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14 [2015 Port of Tacoma Statistics](#)
15 [2013 Economic Impact of the Port of Tacoma](#)
Future Fife Growth

According to the Puget Sound Regional Council, Pierce County has experienced an 11.7 percent growth in population since 2010. Tacoma gained 2,300 people between 2018 and 2019, the third largest spike in the Puget Sound region\textsuperscript{16}. As shown in Figure 15, vehicle miles traveled routinely increases with population and employment, both of which are projected to rise steadily.

\textit{Figure 15. Puget Sound Regional Growth Trends (Source: PSRC)}

The interchange must be reconstructed to move vehicles and traffic more efficiently and safely. Port activities alone contribute more than $223 million each year in state and local taxes. Investments made by nearby businesses with better access will produce additional tax revenues that would be sacrificed if the I-5/Port of Tacoma Road Interchange Improvement Project is not constructed.

Figure 16 shows the significant amount of traffic increase in the I-5/Port of Tacoma Road Interchange area from 2012 through 2040. With a 40 – 60 percent increase in traffic over the interchange itself, the existing interchange reconfiguration and new 34th Avenue East crossing over I-5 are necessary to meet this future demand, and keep traffic moving safely and efficiently through the interchange.

Additionally, Figure 17 shows the future land use for the City of Fife. The area surrounding the interchange and project area are zoned as mixed commercial/high density residential, as well as industrial towards the Port of Tacoma.

\textsuperscript{16} Puget Sound Trends: Regional Population Trends - Aug 2019
Figure 16. Traffic Growth Map from 2012 – 2040 (Source: City of Fife)

Figure 17. Future Land Use, City of Fife (Source: City of Fife)
Environmental Sustainability

The I-5/Port of Tacoma Road Interchange Improvement Project will alleviate congestion, thus reduce air quality and environmental impacts within the vicinity. Additionally, improvements to the existing storm systems using sustainable practices will enhance overall water quality.

The project area is ordinarily choked by traffic attempting to maneuver through it. However, the Project will transform the Port of Tacoma Road/I-5 interchange into a more efficient means of travel for cars and trucks entering and exiting I-5 and reduce the vehicular hours of delay by redesigning the interchange from a mixed diamond/partial-cloverleaf to a diamond-couplet. A reduction in VHD will reduce the amounts of particulate matter emitted into the air, along with carbon monoxide (CO) emissions. The I-5/Port of Tacoma Road Interchange Improvement Project also will reduce the vehicle miles traveled by a cumulative 100 million VMT thus improving air quality, lowering fuel consumption, and reducing greenhouse gas emissions.\(^\text{17}\)

With the I-5/Port of Tacoma Road Interchange Improvement Project’s improved intersection and corridor operations, the amount of time spent idling per vehicle would decrease, resulting in fewer emissions Nitrous Oxides (NOx), Volatile Organic Compounds (VOC), and CO2 emissions expected under the Project’s build conditions. By the year 2040, the Project will reduce annual emissions of NOx by 13.7 tons, VOCs by 1.2 tons, and CO2 by 32,000 tons as compared to the No Build scenario.\(^\text{18}\)

In terms of resiliency during disasters, the I-5/Port of Tacoma Road Interchange Improvement Project will improve conditions during an extreme flood event. The Puyallup River lies to the southeast of the interchange, and currently, a Union Pacific Railroad embankment functions as a levee to protect the city. However, the embankment has numerous culverts and other drainage structures that would allow some flooding to occur. In addition, the embankment was not designed to function as a levee and may fail or be breached. With a potential increase in precipitation due to climate change, flooding of the

\(^{17}\) Appendix A. Benefit Cost Analysis
\(^{18}\) Appendix A. Benefit Cost Analysis
Puyallup River to the south is more likely. The interchange is, therefore, important as a potential evacuation route because it lies generally north of the river.

**Wetland Mitigation**
The I-5/Port of Tacoma Road Interchange Improvement Project involves the construction of new I-5 ramps within the WSDOT right-of-way. This includes impacts to low-quality wetlands located within the footprint of the existing interchange. The City of Fife has constructed a significant wetland mitigation site adjacent to Wapato Creek as part of Phase I. The exchange of freeway infield wetlands and ditches for the enhancement of a fish-bearing stream has been acknowledged as a significant net benefit by the Puyallup Tribe of Indians and is an important environmental restoration and sustainability element of the I-5/Port of Tacoma Road Interchange Improvement Project. The City of Fife as well as the Project is located entirely within the Puyallup Indian Reservation.

**Construction Practices**
Environmental protection measures used in the City of Fife during construction include the following:

- Implementing a dust control plan to identify sources and activities likely to generate fugitive dust and the means to control such emissions.
- Spill prevention, control, and countermeasures plans are required to identify and determine spill prevention measures regarding staging, storage, maintenance, and refueling areas and their relationship to drainage pathways and other sensitive areas.
- The construction contractor will also implement a stormwater pollution prevention plan (SWPPP) to identify best management practices (BMPs) for temporary erosion control measures to comply with the Washington State Department of Ecology’s Construction Stormwater General Permit.

**Quality of Life**
With proximity to major freeways and large cities, a growing parks and trails system, and year-round community activities, the City of Fife has become a world-class community for families to live and for businesses to prosper. The city represents the intersection of agriculture, industry, and community. This ever-growing community now boasts shopping, dining, and grocery stores along with library services, recreational opportunities, and more.
However, the heavy freight traffic entering and exiting the city with the associated traffic congestion create a less than ideal situation for Fife’s residents. By improving these traffic flows and routing through the north business district as previously described will improve the quality of life for the residents by improving the ability to walk, cycle, and drive within the city limits. The **I-5/Port of Tacoma Road Interchange Improvement Project** will improve air quality as described previously, an important health aspect for active transportation activities.

**Pedestrian Improvements**

Sidewalks and/or paved shoulders are included on the city's roadway segments. A significant portion of the Project is located within the right-of-way of I-5. The new bridge over I-5 on 34th Avenue East is a key project element, and it will provide the first pedestrian route across the I-5 corridor in Fife that will meet current standards for Americans with Disabilities Act (ADA) access.

The new 34th Avenue East bridge crossing over I-5 will provide pedestrian and bicycle connections to the existing Pierce Transit Routes 500 and 501 on Pacific Highway East and 20th Street East, respectively. Sidewalks are continuous along Pacific Highway East; sidewalks along 20th Street East are discontinuous. The **I-5/Port of Tacoma Road Interchange Improvement Project** will provide new sidewalks along 34th Avenue East. This new sidewalk will provide a safe pedestrian route, meeting current standards for Americans with Disabilities Act (ADA), replacing the unsafe, non-compliant existing conditions along the Port of Tacoma Road and crossing over I-5.

**Enhanced Transit Connections**

*Sound Transit’s Tacoma Dome Link Extension* (TDLE) will extend the agency’s light rail system through Fife to connect service from Seattle to Tacoma. The Fife Station is currently scheduled to open in 2031, approximately 1.5 miles east of the Port of Tacoma Road Interchange. Sound Transit is including the completed interchange as a base condition for its schematic design to be included in Sound Transit’s environmental impact statement (EIS).

*Figure 20. Sound Transit Tacoma Dome Link Extension – Fife Station*
Fife is working on a City Center subarea plan\textsuperscript{19}, including rezoning and Planned Action SEPA, that will support additional growth around the TDLE Fife station. Some workers and residents of the new Fife Downtown, “FiDo,” area may use the Port of Tacoma Interchange to access I-5 to and from the south. The \textbf{I-5/Port of Tacoma Road Interchange Improvement Project} is necessary to tie into the future transit connections coming to the City of Fife.

\textbf{Innovation}

\textbf{Project Design}

The \textbf{I-5/Port of Tacoma Road Interchange Improvement Project’s} interchange configuration creatively uses existing city streets and the existing freeway overpass to provide a substantial increase in capacity with a relatively small new footprint that minimizes environmental impacts and right-of-way needs. The design also avoids expensive new structures that are typical of these types of improvements and can be constructed with minimal impact to existing traffic.

\textbf{Intersection Design}

The Project improvements create four intersections made up of two one-way approaches. The overall interchange reconfiguration will add a new bridge over I-5 at 34th Avenue East to carry northbound traffic while the existing bridge at Port of Tacoma Road will be converted to one-way southbound. Each of these intersections would have simple geometry and phasing, with only five conflict points and two signal phases per intersection. The central four intersections, at the ends of the four freeway ramps, will be signalized and scaled for high volumes of trucks but will operate with much of the efficiency seen with roundabouts. The interchange design has affectionately been called a “square-about.” Technically, this configuration is a “split-diamond with one-way couplet.” Figure 21 shows this in more detail.

Locating the new southbound exit ramp from I-5 closer to the freeway and farther from Pacific Highway will eliminate tight turns for trucks and avoids interference with the intersection of Port of Tacoma Road and Pacific Highway. Extending 34th Avenue East and making it one way northbound will relieve traffic congestion at the major road intersections and improve access to the Port. This square-about design was endorsed by the Washington Trucking Association as the best solution for truck movements of the 12 alternatives considered for this location. This innovative configuration provides much of the efficiency of a roundabout for high volumes of truck traffic.

\textsuperscript{19}City of Fife Long Range Comprehensive Plan
Traffic Safety Technology Enhancements

The I-5/Port of Tacoma Road Interchange Improvement Project will include Intelligent Transportation System (ITS) to improve efficiency and safety. Together, Phase I and II of the Project include a total of seven signalized intersections, plus two ramp meter installations. All nine signals will be interconnected for control by the WSDOT Traffic Operations Center. This interconnect will feature high-speed fiber optic networks and high-tech software for adaptive traffic signals controls and cameras for monitoring and maintenance of traffic flows.

Additionally, illumination through the I-5/Port of Tacoma Road Interchange Improvement Project limits will be provided by use of low-energy LED streetlights and will provide substantial savings compared to existing fixtures.

Lastly, the new bridge over I-5 at 34th Avenue is more likely to remain available for use following a major seismic event due to the improved earthquake design employed for this structure.

Innovative Funding – Connecting Washington

The I-5/Port of Tacoma Road Interchange Improvement Project was awarded $22.3 million in Connecting Washington funds for the entire Project. The Washington State Legislature authorized the $16 billion transportation funding package in 2015. This innovative state funding mechanism for infrastructure investment is a 16-year program funded primarily by an 11.9-cent gas tax increase.

With the total funding now available exceeding the amount required to complete Phase I of the Project, the remaining amount is now programmed for completion of Phase II. Connecting Washington will fund additional important, impactful projects around the state, including:

- $1.9 billion: SR 167/SR 509 Gateway project
- $1.6 billion: SR 520 "Rest of the West"
- $1.3 billion: I-405 Lynnwood to Tukwila Corridor Improvements
- $879 million: US 395 North Spokane Corridor
- $494 million: JBLM Congestion Relief Project
- $426 million: I-90 Snoqualmie Pass
- $335 million: safety projects including I-90/SR 18 interchange, US 2, SR 20 and others.
Partnership

The I-5/Port of Tacoma Road Interchange Improvements Project is included in the Washington State Six-Year Transportation Improvement Plan (STIP) and has been coordinated with the state and local land use and transportation plans for the area. Statewide plans include the Washington Transportation Plan and the WSDOT State Highway System Plan. Regional plans include the PSRC Transportation 2040 Plan, the Pierce County Comprehensive Plan, and Sound Transit Sound Move Plan. Finally, local plans include the comprehensive plans of the cities of Tacoma and Fife. The development of those plans included surveys and feedback from all user groups.

The I-5/Port of Tacoma Road Interchange Improvement Project is much more than a freight project, and serves low-income residents, tribal community, transit users, and local businesses that utilize the interchange. The improved safety and reduced congestion along the interstate will benefit all users of I-5 through the Project area. Within the freight community, the preliminary design and selection of the preferred alternative was completed with oversight from a Technical Advisory Committee (TAC). The TAC included WSDOT, the Port of Tacoma, the cities of Tacoma and Fife, Marine View Ventures (the economic development agency for the Puyallup Tribe of Indians), SSA Marine, and other representatives of the industry supported by the transportation network in the immediate vicinity of the Project. Additional stakeholders who support the Project and who have provided $515,000 of funding for the Tidelflats Area Transportation Study—an important planning document for agencies affected by the proposed I-5/Port of Tacoma Road Interchange Improvement Project—include the following: Port, City of Tacoma, Pierce County, SSA Marine, and Marine View Ventures.

In addition to the partners listed above, the I-5/Port of Tacoma Road Interchange Improvement Project has received numerous support letters, as included in Appendix C of this application.

- Congressman Adam Smith
- Honorable Hans Zeiger, State Senator
- Honorable Kelly Chambers, State Representative
- Honorable Chris Gildon, State Representative
- Port of Tacoma
- Washington State DOT
- Washington State, Transportation Improvement Board
- Pierce County
- Puyallup Tribe of Indians
- Tacoma-Pierce County Chamber of Commerce
- Fife Milton Edgewood Chamber of Commerce
- The Northwest Seaport Alliance
5. Environmental Risk Review

The **I-5/Port of Tacoma Road Interchange Improvement Project** has completed environmental review in 2016, and will move forward expeditiously once FY 2020 BUILD funds are secured. As shown in detail below, the City of Fife will obligate FY 2020 BUILD funds in advance of the September 2022 deadline, and will begin construction in early 2023.

The following documents and plans have been completed that support the Project:

- Interstate Justification Report (IJR) – Located in Appendix E
- Phase II Project Design Documentation, Preliminary Design – Available on City of Fife Website
- NEPA environmental document, a Documented Categorical Exclusion (DCE) – Available on City of Fife Website

**Project Schedule**

Design for the **I-5/Port of Tacoma Road Interchange Improvements Project** is currently 30 percent complete.

FY 2020 BUILD funds will be obligated for construction following completion of Design in April 2020, in advance of the September 2022 obligation deadline. Phase II Project construction will begin in April 2023 and be completed by February 2025. The Phase I of the **I-5/Port of Tacoma Road Interchange Improvement Project** is under construction now and will be completed in 2020.

**Table 5. Project Schedule**

<table>
<thead>
<tr>
<th>Project Task</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
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</table>

The new I-5 overpass for Phase II can be constructed without the need for additional right-of-way, but the remainder of the **I-5/Port of Tacoma Road Interchange Improvement Project** improvements will require additional right-of-way. Right-of-way needs have been determined, plans have been submitted to WSDOT, and right-of-way acquisitions are fully
funded. Additionally, the schedule for Phase II will not be driven by the need to complete the construction of Phase I in order to avoid conflicts between the two construction contracts.

**Required Approvals**

**State and Local Planning**

The I-5/Port of Tacoma Road Interchange Improvement Project was planned in consultation with WSDOT, FHWA, the City of Tacoma, the Port or Tacoma, and the City of Fife. An Interchange Justification Report (IJR) was completed and approved, as well as the Project’s NEPA environmental document, a Documented Categorical Exclusion (DCE). The proposed alternative satisfies the Project’s objective and supports the FHWA eight policy points as described in the IJR. Both the IJR and NEPA DCE can be reviewed on the city’s website.

The overall Project and proposed phasing were adopted by the Fife City Council through its 2011 amendment process (Ordinance 1762-2011) into the city’s Comprehensive Plan and is listed in the State Transportation Improvement Plan (FIF-16). The Project does not require any additional state or local approvals in order to move forward.

As noted previously, the I-5/Port of Tacoma Road Interchange Improvements Project is included in the Washington State Six-Year Transportation Improvement Plan (STIP) and has been coordinated with the state and local land use and transportation plans for the area. Statewide plans include the Washington Transportation Plan and the WSDOT State Highway System Plan. Regional plans include the PSRC Transportation 2040 Plan, the Pierce County Comprehensive Plan, and Sound Transit Sound Move Plan. Finally, local plans include the comprehensive plans of the cities of Tacoma and Fife.

**NEPA Status**

NEPA approval was obtained on 12 October 2016 for the construction of the two phases of the I-5/Port of Tacoma Road Interchange Improvement Project. NEPA classification for the Project has been determined to be DCE. At the time of this FY 2020 BUILD application, the NEPA document is deemed to be current by WSDOT and no further environmental review is necessary.

**Assessment of Project Risks and Mitigation Strategies**

The I-5/Port of Tacoma Road Interchange Improvement Project faces two principal risks, obtaining certification of the right-of-way and securing funding to obligate construction funds by September 30, 2020. These risks are mitigated as described below.

**Mitigation of Right-of-Way Acquisition Schedule Risks**

Phase II of the I-5/Port of Tacoma Road Interchange Improvement Project does not require extensive acquisition of new right-of-way. However, it does impact nine parcels. Right-of-way plans for the Project have been revised and submitted to WSDOT for review and have received approval. The schedule includes two years for right-of-way acquisition, a sufficient timeframe to conclude any relocations of condemnation proceedings, if required. The City of Fife has historically exercised its condemnation authority when necessary.
**Mitigation of Local Funding Shortfall Risks**

As discussed in Section 3 of this grant application narrative, a $25 million FY BUILD 2020 grant will fully fund the I-5/Port of Tacoma Road Interchange Improvement Project. In the unlikely event that a local funding shortfall were to materialize, additional funding from the TIB, FMSIB, and/or the State of Washington is almost certain to be authorized. This will allow the Project to be completed as originally planned to realize the full potential of the original investments that have been made in the design and construction of Phase I of the I-5/Port of Tacoma Road Interchange Improvement Project.

**6. BENEFIT – COST ANALYSIS**

A benefit-cost analysis (BCA) was conducted for the I-5/ Port of Tacoma Road Interchange Improvement Project for submission to the U.S. Department of Transportation (U.S. DOT) as a requirement of a discretionary grant application for the BUILD 2020 program. The analysis was conducted in accordance with the benefit-cost methodology as outlined by U.S. DOT in the 2020 Benefit-Cost Analysis Guidance for Discretionary Grant Programs. The period of analysis corresponds to 30 years after operations begin in 2025.

This Project addresses significant traffic backups at this interchange and dramatically improves safety and movement of freight and goods, as well as traffic in general. The capital cost for this Project is expected to be $85.8 Million in undiscounted 2018 dollars, which includes about $26.9 Million in costs expended to date. Discounted at seven percent, the present value of capital costs is $73.4 Million.

The Project is expected to generate $242.1 Million discounted benefits using a seven percent discount rate. The primary benefits are about $193.7 Million in travel-time savings, $32.7 Million due to safety benefits, and $13.4 Million due to reduced vehicle operating costs. This leads to an overall project Net Present Value of $168.7 Million and a Benefit Cost Ratio (BCR) of 3.30. The overall project benefit matrix can be seen in Table 6.

*Table 6. BCA Results*

<table>
<thead>
<tr>
<th>BCA Metric</th>
<th>Project Lifecycle (30 years)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Undiscounted</td>
</tr>
<tr>
<td><strong>Total Benefits</strong></td>
<td>$888.5</td>
</tr>
<tr>
<td><strong>Total Costs</strong></td>
<td>$85.8</td>
</tr>
<tr>
<td><strong>Net Present Value (NPV)</strong></td>
<td>$802.6</td>
</tr>
<tr>
<td><strong>Benefit Cost Ratio (BCR)</strong></td>
<td>10.3</td>
</tr>
<tr>
<td><strong>Internal Rate of Return (IRR)</strong></td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Payback Period (Year)</strong></td>
<td>2028</td>
</tr>
</tbody>
</table>

The benefits over the project lifecycle are presented in the table below by U.S. DOT long-term outcome category.
Table 7. Benefits by Long-Term Outcome, Millions of 2018 Dollars

<table>
<thead>
<tr>
<th>Long-Term Outcome</th>
<th>Project Lifecycle (2025-2054)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Undiscounted</td>
<td>Discounted (7%)</td>
<td></td>
</tr>
<tr>
<td>Economic Competitiveness</td>
<td>$697.6</td>
<td>$194.7</td>
<td></td>
</tr>
<tr>
<td>Safety</td>
<td>$113.3</td>
<td>$32.8</td>
<td></td>
</tr>
<tr>
<td>State of Good Repair</td>
<td>$51.8</td>
<td>$14.0</td>
<td></td>
</tr>
<tr>
<td>Environmental Sustainability</td>
<td>$0.6</td>
<td>$0.1</td>
<td></td>
</tr>
<tr>
<td>Residual Value</td>
<td>$36.1</td>
<td>$3.9</td>
<td></td>
</tr>
</tbody>
</table>

7. APPENDICES

A. Benefit-Cost Analysis Technical Memorandum
B. Benefit-Cost Analysis Model (Attached Separately)
C. Letters of Support
D. Financial Commitments
E. Technical Documents