

# TIGER Discretionary Grant Application

**Port of Tacoma Road/Interstate 5  
Interchange Reconstruction  
Fife, Washington**

**Submitted to  
U.S. Department of Transportation**

**Submitted by  
City of Fife  
Fife, Washington**

**27 April 2016**

# TIGER Discretionary Grant Application

## Port of Tacoma Road/Interstate 5 Interchange Reconstruction Fife, Washington

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## **LIST OF ACRONYMS AND ABBREVIATIONS**

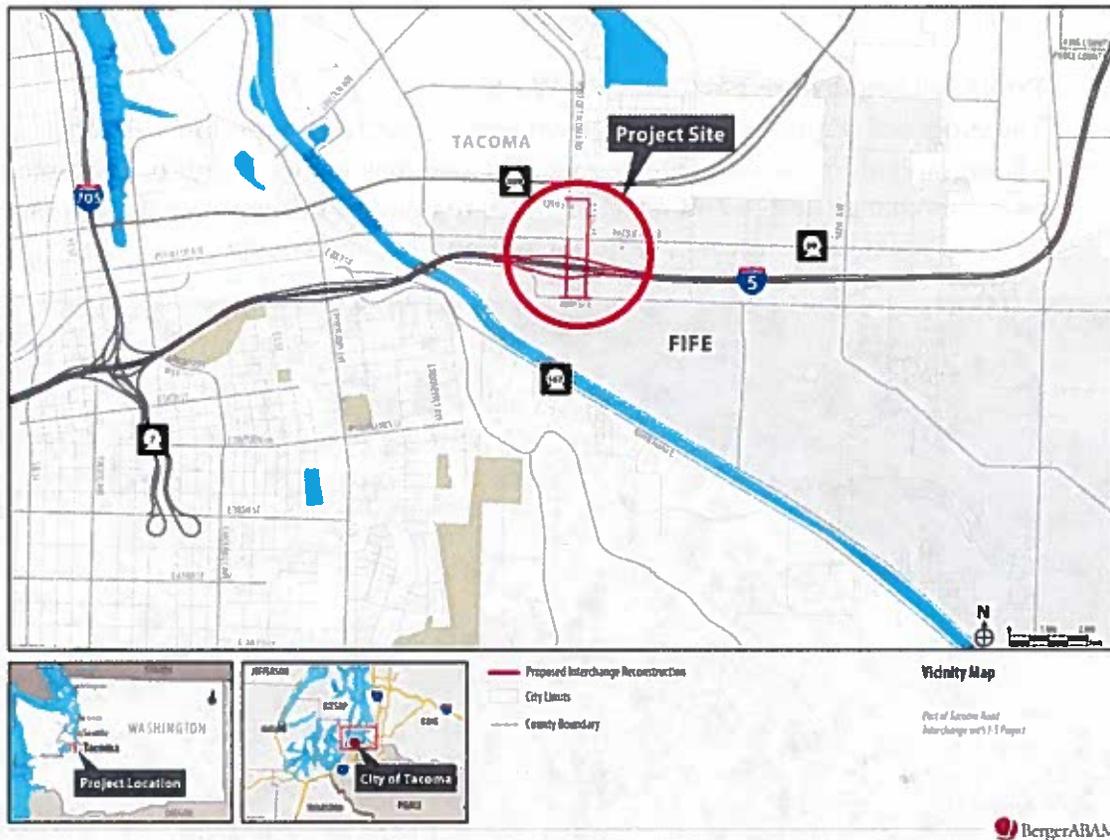
CO	carbon monoxide
DCE	Documented Categorical Exclusion
FHWA	Federal Highway Administration
FMSIB	Freight Mobility and Strategic Investment Board
I-5	Interstate 5
IJR	Interchange Justification Report
NEPA	National Environmental Policy Act
O&M	operation and maintenance
Port	Port of Tacoma
PRSC	Puget Sound Regional Council
SR 509	State Route 509
TIB	Transportation Improvement Board
TIGER	Transportation Investment Generating Economic Recovery
VHD	vehicular hours of delay
WSDOT	Washington State Department of Transportation

**TIGER DISCRETIONARY GRANT APPLICATION  
PORT OF TACOMA ROAD/I-5 INTERCHANGE RECONSTRUCTION  
FILE, WASHINGTON**

**1.0 PROJECT DESCRIPTION**

**1.1 Location**

The project is located in the city of Fife, Pierce County, Township 20, Range 04, coordinates: 47°14'32"N; 122°23'01"W, in the state of Washington. As indicated in the vicinity map below, Fife (the City) is just outside the city of Tacoma and neighbors the Port of Tacoma (Port) in low lying area adjacent to tidelands where the Puyallup River enters Commencement Bay in the Puget Sound.



**Figure 1. Vicinity Map**

**1.2 Existing Conditions**

The Port of Tacoma/Interstate 5 (I-5) interchange is the main access to the Port; the interchange also provides access to the City's north business district. Today, the interchange is characterized by closely spaced intersections with both State Route 509 (SR 509) and Pacific Highway South (also known as old SR 99), high volumes of truck traffic, and geometrically and functionally deficient on- and off-ramps. There are six

intersections in just over a half-mile of Port of Tacoma Road. 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, one of the largest ports on the West Coast. 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 three fatal accidents in this area since January 2004.

Design, value engineering, and traffic modeling studies confirmed the need for the improvements and identified an alternative configuration for the interchange and the I-5/Port of Tacoma Road ramps. A more detailed description of some of the substandard operational characteristics of the existing interchange is provided in the response to the selection criteria.

### 1.3 Proposed Improvements/Scope of Work

The proposed improvements are shown below (Figure 2), superimposed on an aerial photograph of the existing interchange. The two major components of the project—a new interchange design and related surface road improvements—will address many Port of Tacoma Road access, traffic congestion, and safety issues.



**Figure 2. Proposed Improvements**

The proposed improvements would 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.”

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.

Improvements will also include

- Realigning 34th Avenue East
- Reconstructing the pavement to provide structural capacity for heavy truck traffic
- Widening the pavement to provide 12.5-foot lanes
- Adding drainage facilities to improve the water quality of stormwater runoff
- Adding planter strips with street trees
- Upgrading illumination, sidewalks, and pedestrian signals

#### **1.4 Project Benefits**

The Port of Tacoma interchange is the main access to the Port and provides access to the city of Fife north business district. It truly is the “last mile” for products grown and manufactured in the Pacific Northwest 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 cannot be overemphasized. Specifically, the interchange provides the following:

1. The Interchange supports two roadways 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 that handle slightly under 1.7 million twenty-foot equivalent units of

containerized cargo and over 185,000 automobile imports; these facilities generate \$1.86 billion in business revenue and support over 7,000 direct jobs.

3. The Interchange serves as the primary truck route connecting Joint Base Lewis-McChord – the largest power projection platform west of the Rocky Mountains – and the Port of Tacoma, a U.S. Department of Defense-designated strategic port.

The 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 2012, the Port handled \$46 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.

In fact, 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 of wages, salaries, and consumption expenditures.

The operational benefits provided by the project are summarized below. Additional specific operational and economic benefits of the project are described in more detail in the response to the selection criteria.

- Improves the freeway level of service and will facilitate freight mobility to and from the Port, which in turn, improves access to local and area businesses.
- Reduces AM travel time on I-5 between SR 18 and I-705 in 2040 by 3 minutes. 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.
- Provides 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.
- Comprises significantly fewer conflict points and simpler signal phasing than the existing interchange, which will lower accident rates.

## **2.0 PROJECT PARTNERS AND FUNDING**

The project is included in the Washington State Six-Year Transportation Improvement Plan. It 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 Washington State Department of Transportation (WSDOT) State Highway System Plan. Regional plans include the Puget Sound Regional Council (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.

More importantly, the preliminary design and selection of the preferred alternative was completed with oversight from a technical advisory committee that included WSDOT, the Port, the cities of Tacoma and Fife, and SSA Marine and other representatives of the industry supported by the transportation network in the immediate vicinity of the project. Additional project stakeholders who support the project and who have provided \$515,000 of funding for the Tideflats Area Transportation Study—an important planning document for agencies affected by the proposed project—included the following: the Port, the City of Tacoma, Pierce County, SSA Marine, and Marine View Ventures.

The overall project is a strategic and cost-effective investment in transportation infrastructure because its purpose is to remedy currently deficient infrastructure while promoting the continuing development of the Port and the other businesses in the area. The Port's recognition of the significance of the project to port growth has also been demonstrated through its participation funding the completion of the project's Interchange Justification Report (IJR) and National Environmental Policy Act (NEPA) evaluation.

Committed funding for the project represents a partnership of local, state, and federal government agencies that currently include the following.

1. \$2.7 million from the City.
2. \$1.25 million in property for wetland mitigation by the City.
3. \$11.11 million in Federal Highway Administration (FHWA) funds as allocated through PRSC and administered by WSDOT; \$4.1 million is for design and right-of-way, \$7.01 million is for construction.
4. \$1.5 million from the Port.
5. \$2.5 million from the Freight Mobility and Strategic Investment Board (FMSIB.)
6. \$22.3 million from the state of Washington's "Connecting Washington" transportation funding.
7. \$0.5 million from the Puyallup Tribe.

8. \$0.7 million in discretionary interstate maintenance funding administered by WSDOT.

Therefore, it is anticipated that \$21 million in Transportation Investment Generating Economic Recovery (TIGER) grant program funding would, in addition to PRSC, the state, FMSIB, the Port, and the City, constitute the sixth major funding partner. WSDOT will contribute in-kind engineering and planning support throughout the entire project.

A summary of project costs and the proposed funding scenario for design and construction of the project are summarized in Table 1, Table 2, and Table 3. The local match for this scenario is estimated at 48.38 percent.

**Table 1. Project Costs & Estimated Cost to Complete**

<b>Project Costs (\$M)</b>	
<b>Construction Costs</b>	
Project	\$ 38.36
Utility Relocations	\$ 1.50
Wetland Mitigation	\$ 3.70
<b>Subtotal Construction</b>	<b>\$ 43.56</b>
<b>Non-Construction Costs</b>	
Right of Way	\$ 4.30
Design and Permitting	\$ 5.23
Construction Administration	\$ 7.85
City of Fife Project Administration	\$ 2.62
<b>Subtotal Non-Construction</b>	<b>\$ 20.00</b>
<b>Total Cost</b>	<b>\$ 63.56</b>
<b>Work Completed w/Existing Funds</b>	
Wetland Mitigation Property (City)	\$ 1.25
Wetland Mitigation Construction (FMSIB)	\$ 2.50
Wetland Mitigation Construction (City)	\$ 1.20
Right-of-Way (City)	\$ 0.43
Right-of-Way (Federal)	\$ 2.57
Design & Permitting (City)	\$ 0.24
Design & Permitting (Federal)	\$ 1.53
<b>Subtotal Funded Project Costs</b>	<b>\$ 9.72</b>
<b>Cost to Complete</b>	<b>\$ 53.84</b>

**Table 2. Funding Required to Complete**

<b>Project Funding to Complete (\$M)</b>	
<b>Non-Federal Funding</b>	
City of Fife	\$ 0.83
Puyallup Tribe	\$ 0.50
Port of Tacoma	\$ 1.50
Connecting Washington	\$ 22.30
<b>Total Non-Federal Funding</b>	<b>\$ 25.13</b>
<b>Federal Funding</b>	
SAFETEA- LU	\$ 0.34
SAFETEA- LU	\$ 0.36
STPUL-9927	\$ 7.01
<b>Subtotal Current Federal Funding</b>	<b>\$ 7.71</b>
<b>Project Cost to Complete</b>	<b>\$ 53.84</b>
<b>Total Current Funding Remaining</b>	<b>\$ 32.84</b>
<b>Current Funding Shortfall</b>	<b>\$ 21.00</b>

SAFETEA-LU Safe Accountable Flexible Efficient Transportation Equity Act –  
A Legacy for Users

**Table 3. Proposed Project Funding & Local Match**

<b>Total Project Funding (\$M)</b>		
<b>Non-Federal Funding</b>	<b>Total</b>	<b>% Match Total</b>
City of Fife	\$ 2.70	
Mitigation Site from City	\$ 1.25	
Puyallup Tribe	\$ 0.50	
Port of Tacoma	\$ 1.50	
FMSIB	\$ 2.50	
Connecting Washington	\$ 22.30	
<b>Total Non-Federal Funding</b>	<b>\$ 30.75</b>	<b>48.38%</b>
<b>Federal Funding</b>		
SAFETEA- LU	\$ 0.34	
SAFETEA- LU	\$ 0.36	
STP	\$ 4.10	
STPUL-9927	\$ 7.01	
<b>Subtotal Current Federal Funding</b>	<b>\$ 11.81</b>	
<b>Proposed TIGER Request</b>	<b>\$ 21.00</b>	
<b>Total Proposed Federal Funding</b>	<b>\$ 32.81</b>	<b>51.62%</b>
<b>Total Project Cost</b>	<b>\$ 63.56</b>	
<b>Total Proposed Funding</b>	<b>\$ 63.56</b>	

FMSIB Freight Mobility and Strategic Investment Board

### **3.0 PRIMARY SELECTION CRITERIA**

#### **3.1 Long-Term Outcomes for the Region**

##### **3.1.1 Safety**

Looking at the history of accidents around the project site, I-5 southbound off-ramp to Port of Tacoma Road alone contributes 28 accidents per million vehicle miles. Traffic volume is expected to increase by 300 percent in 2040 and likely increase the accidents by 300 percent or more. The main reason for the accidents is the current geometry.

The proposed improvement would create four intersections made up of two one-way approaches. Each of these intersections would have simple geometry and phasing, with only 5 conflict points and two signal phases per intersection. In comparison, the existing configuration has 11 conflict points and five signal phases for the southbound ramps intersection and 6 conflict points for the northbound ramps. Generally, an intersection with fewer conflict points and simpler signal phasing will have lower accident rates. Therefore, the proposed improvement is expected to have a lower accident rate overall than the existing configuration.

##### **3.1.2 State of Good Repair**

*Is the project part of or consistent with state, local, regional efforts to maintain transportation facilities or systems in a state of good repair?*

Yes, the project will reduce pavement stress, consistent with such efforts. The existing interchange is characterized by closely spaced intersections with the surrounding roadway network that serves as access to the Port, Washington's second largest port. Truck traffic experiences delay as it enters and exits the Port. 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 will if truck traffic is more evenly distributed on the new configuration.

*Is it an aim of the project to reconstruct or upgrade surface transportation projects that threaten future economic growth and stability due to their poor condition?*

Yes, the project will upgrade an existing interchange that is a vital link to the Port. Existing conditions inhibit economic growth because of poor access to and from the container terminals at the Port and the associated local economic benefits generated by the operations at the Port. The proposed project will significantly upgrade the performance characteristics of this interchange, which is functionally obsolete now and has no capacity for any future growth.

*Is the project appropriately capitalized up front and uses asset management approaches that optimize its long-term cost structure?*

Yes, if TIGER funds are obtained, the project will be constructed, and reconstructed local streets located within the City's right-of-way will be maintained in accordance with the City's pavement management system. A significant portion of the project is 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.

*Is a sustainable source of revenue available for long-term operations and maintenance for the project?*

Yes, as noted above, major portions of the project will be owned and operated by WSDOT, whose funding for preservation is currently under review by the State Legislature. The project generates very little new infrastructure for the City, and the City is committed to maintaining these new roadway improvements.

*How will the project improve the system's ability to withstand probable occurrence or recurrence of an emergency or major disaster or other impacts to climate change?*

The Puyallup River lies to the east of the interchange. 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 Nisqually River is more likely. The interchange is, therefore, an evacuation route because it lies generally north of the river.

### **3.1.3 Economic Competitiveness**

The project will provide significant national economic benefits as Puget Sound is the third largest gateway in North America for containerized cargo. Specifically, the Port is one of the largest container ports in North America and one of the top 50 in the world. The Port handles \$46 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. In fact, Washington is the most trade-dependent state in the nation, with an estimated 40 percent of jobs connected to international trade. The Port indirectly accounts for more than intern jobs in Washington State.

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, improving the Port's competitiveness with these Canadian ports.

The Port of Tacoma interchange also provides access to the City's north business district. Improved access to I-5 and Pacific Highway East 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.

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 project is not constructed. 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 billion of wages, salaries, and consumption expenditures. Improving freight mobility to the Port is a necessary step in providing more efficient access to jobs, services, and centers of trade throughout the Puget Sound region.

#### **3.1.4 Quality of Life**

With close proximity to major freeways and big cities, a growing parks and trails system, and year-round community activities, Fife has become an excellent 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 and associated traffic congestion create a less than ideal situation for the residents of the City. 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. It is also anticipated to improve air quality as described below.

#### **3.1.5 Environmental Sustainability**

This project will alleviate congestion and thus, reduce air quality environmental impacts within the project vicinity. Improvements to the existing storm systems will enhance overall water quality.

The area ordinarily is choked by traffic attempting to maneuver through it. The proposed 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 (VHD) 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 project also will reduce the vehicle miles traveled by 5,500 daily, thus

improving air quality, lowering fuel consumption, and reducing greenhouse gas emissions.

In the latest Environmental Protection Agency-approved emission estimation model for Washington (WASIST 1.0), modeled CO levels were well below the National Ambient Air Quality Standard for both the build and no-build in all the analysis years (existing, year of opening, and design years). In the five intersections modeled for the existing, year of opening build and no build, and design year build and no-build, CO levels went down slightly from the existing year (2010) to the year of opening (2020), and down slightly more to the design year (2040) with the highest CO levels being seen in the “No-Build 2040.”

## **4.0 SECONDARY SELECTION CRITERIA**

### **4.1 Innovation**

The selected proposed 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. The 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.

### **4.2 Partnership**

The project is included in the Washington State Six-Year Transportation Improvement Plan. It 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.

More importantly, the preliminary design and selection of the preferred alternative was completed with oversight from a Technical Advisory Committee that included WSDOT, the Port, the cities of Tacoma and Fife, SSA Marine, and other representatives of the industry supported by the transportation network in the immediate vicinity of the project. Additional project stakeholders who support the project and who have provided \$515,000 of funding for the Tideflats Area Transportation Study—an important planning document for agencies affected by the proposed project—included the following: Port, City of Tacoma, Pierce County, SSA Marine, and Marine View Ventures.

The overall project is a strategic and cost-effective investment in transportation infrastructure because its purpose is to remedy currently deficient infrastructure while promoting the continuing development of the Port and the other businesses in the area. The Port’s recognition of the significance of the project to port growth has also been

demonstrated through its participation funding the completion of the project's IJR and NEPA evaluation.

## 5.0 PROJECT READINESS AND SCHEDULE

As noted above, the project was planned in consultation with WSDOT, FHWA, the City of Tacoma, the Port of Tacoma, and the City of Fife. The project was originally planned to be completed in phases as funding was secured. The current phasing plan is illustrated in Figure 3. There is some flexibility regarding the scope of each phase. Phase 1 as shown, is the minimum required to provide independent utility and could be expanded if additional funding is secured. Phase 1 will address many, but not all, of the deficient existing and future operational characteristics of the interchange.



**Figure 3. Proposed Project Phasing**

The State Legislature recently authorized a \$15 billion transportation funding package called "Connecting Washington." The Port of Tacoma Road Interchanges project was awarded \$22.3 million in this program. Therefore, the total project funding now available exceeds the amount required to complete Phase 1 of the project as shown in Figure 3. The City is currently evaluating what portions of Phase 2 may be moved into Phase 1.

A schedule for the project is attached. As currently programmed, the improvements would be constructed as two separate construction contracts. The Phase 1 project schedule is currently being driven by the need to acquire right-of-way from a local business and relocate the business. Right-of-way plans are complete, and it is anticipated the acquisition of the required right-of-way and relocation of the affected business will take approximately 12 months, allowing construction of Phase 1 of the project to begin in 2017. It will take 12 to 18 months to construct Phase 1 of the project.

As noted above, the City now has sufficient funds to expand the scope of the Phase 1 project to include a new overpass of I-5. The overpass can be constructed without the need for additional right-of-way. The remainder of Phase 2 improvements, as shown in Figure 2, will require additional right-of-way. Assuming sufficient funding is available to construct Phase 2, the schedule for Phase 2 will most likely be driven by the need to complete the construction of Phase 1 in order to avoid conflicts between the two construction contracts. Alternatively, if the project is awarded a \$21 million TIGER grant, the City may elect to build the entire project under one construction contract. A combined contract would delay the start of construction approximately one year, but would result in some cost savings by avoiding the need to construct temporary connections.

## **6.0 REQUIRED APPROVALS**

The project's stakeholders have stated that the purpose of the project is "to provide efficient movement of traffic into and out of the Port of Tacoma and surrounding areas (especially for trucks); and to improve safety and reliability of access to local and area businesses; while balancing effects to the natural and community environments."

The project was planned in consultation with WSDOT, FHWA, the City of Tacoma, the Port, and the City of Fife. An 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 at the City's website.

The project impacts wetlands. Property required for construction of a wetland mitigation site was secured, and the wetland mitigation design was completed and constructed (see Appendix A - As-Built Report – Oxbow Mitigation Site, I-5/Port of Tacoma Road Interchange Improvements Project).

## **7.0 RISKS AND RISK MITIGATION STRATEGIES**

The project faces two principal risks, obtaining right-of-way by spring 2017 and the possibility that the anticipated local funding required cannot be secured. These risks are mitigated as described below.

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

The project requires the City to modify the access to a property currently occupied by a restaurant franchise. The acquisition is procedurally complicated because the property owner has separate agreements with the restaurant franchise. It is possible that in order to satisfy the rights of all parties, the City may need to acquire the property and facilitate the relocation of the restaurant franchise in accordance with federal relocation procedures. The City has been proactive about this and is working with the property owner and restaurant. If this property needs to be acquired, the City does not foresee insurmountable hurdles to obtaining the right-of-way within the next 12 to 18 months.

## **7.2 Mitigation of Local Funding Shortfall Risks**

If the City is awarded a \$21 million TIGER grant, it would allow both phases of the project to be constructed. In the unlikely event that a local funding shortfall were to materialize, or if project construction costs are higher than anticipated, unsecured funding of \$6 million from the TIB, and/or additional funding from the FMSIB, is almost certain to be authorized to allow the project to be completed.

## **8.0 RESULTS OF COST BENEFIT ANALYSIS**

The 2016 BCA Resource Guide, which is a supplement to the Benefit-Cost Analyses Guidance for Applicants, was used for this portion of the grant application. The resource guide provides the technical information and recommendations for monetizing benefits as well as guidance on methodology. This analysis provides evidence that the expected benefits of the project justify the costs with detailed assumptions and calculations in a way that is “transparent and reproducible,” for reviewers.

The full memorandum is attached as Appendix B and the analysis spreadsheet is provided as a supplement to this application and can be found at:

<http://cityoffife.org/city-departments/public-works/current-projects#indesign>

The specific project details describing the project and what it changes are provided at the beginning of this application in Section 1.0. In addition, the full cost of the project, including federal, state, local, and other funding, is provided in Section 2.0.

This application measures costs and benefits of the entire proposed project against a baseline (no-build case) to horizon year 2050. Project costs used for the analysis include the total cost of project implementation (including work completed with existing funds) as well as project life cycle operation and maintenance (O&M) costs. For the purposes of the analysis, work completed with existing funds was accounted for in the 2016 base year. The remaining cost of implementation was allocated in equal quantities to years 2017, 2018, and 2019. These installments would approximately account for remaining non-construction costs, such as right-of-way and design in 2017 and the costs of construction during 2018 and 2019. After project completion, life cycle O&M costs would begin to accumulate in 2020.

The benefit/cost analysis (BCA) estimates the project's expected benefits with respect to three of the five long-term outcomes that the USDOT specified in Selection Criteria. The three long-term outcomes are economic competitiveness (travel-time savings), safety (prevented accidents), and environmental sustainability (reduced emissions). A project matrix framing the changes and benefits described in the BCA is provided in Table 4.

**Table 4. Summary of Anticipated Project Benefits**

<b>Current Baseline and Problem to Address</b>	<b>Change to Baseline</b>	<b>Type of Impacts</b>	<b>Population Affected by Impacts</b>	<b>Economic Benefits</b>	<b>Summary of Results</b>	<b>Page of Reference in BCA</b>
Closely spaced intersections, geometrically deficient freeway ramps, and heavy interchange congestion result in excess delay and collisions for local traffic and Port trucks	Interchange reconfiguration with ramp realignments and conversion of the Port of Tacoma Road corridor into a high-capacity one-way couplet with improved traffic signalization	Reduce vehicle delay and collisions at the main access point to one of the region's most active trade centers	Port trucks, commuters, and local traffic that use the Port of Tacoma Road interchange	Monetized travel time savings, collision reductions, and emissions reductions	\$68.6 million in discounted benefits from travel time, collision, and emissions reductions	pp. 3-11

A summary of undiscounted, monetized benefits with respect to travel time savings, prevented accidents, and reduced emissions are shown by year in Table 5. Also shown are project costs, including those for full project implementation and life cycle O&M. The total benefits from Table 5 were then adjusted by real discount rates of 3 and 7 percent, following guidance from the Office of Management and Budget's Circulars A-4 and A-94. Table 6 summarizes the application of these discounted rates. As shown, the benefit/cost ratio of the proposed project would be 2.64 under the 3 percent discount and 1.18 under the 7 percent discount.

**Table 5. Benefit-Cost Analysis Summary**

Calendar Year	Project Year	Total Costs	Benefits				Benefits Subtotal
			Travel Time Savings	Prevented Accidents	Emissions other than CO2	CO2 Emissions	
2016	0	(\$9,720,000)	\$0	\$0	\$0	\$0	\$0
2017	0	(\$17,950,000)	\$0	\$0	\$0	\$0	\$0
2018	0	(\$17,950,000)	(\$5,791,957)	\$0	(\$11,806)	(\$62,813)	(\$5,866,577)
2019	0	(\$17,940,000)	(\$6,025,358)	\$0	(\$12,282)	(\$66,797)	(\$6,104,437)
2020	1	(\$117,610)	\$268,462	\$1,539,126	\$547	\$3,041	\$1,811,176
2021	2	(\$117,610)	\$980,085	\$1,539,126	\$1,998	\$11,101	\$2,532,310
2022	3	(\$117,610)	\$1,691,708	\$1,539,126	\$3,448	\$19,570	\$3,253,852
2023	4	(\$117,610)	\$2,403,332	\$1,539,126	\$4,899	\$28,960	\$3,976,317
2024	5	(\$117,610)	\$3,114,955	\$1,539,126	\$6,349	\$38,286	\$4,698,716
2025	6	(\$117,610)	\$3,826,578	\$1,539,126	\$7,800	\$47,954	\$5,421,459
2026	7	(\$117,610)	\$4,538,202	\$1,543,326	\$9,251	\$57,966	\$6,148,744
2027	8	(\$117,610)	\$5,249,825	\$1,543,326	\$10,701	\$68,321	\$6,872,173
2028	9	(\$117,610)	\$5,961,448	\$1,543,326	\$12,152	\$79,019	\$7,595,945
2029	10	(\$117,610)	\$6,673,072	\$1,547,525	\$13,602	\$88,451	\$8,322,651
2030	11	(\$117,610)	\$7,384,695	\$1,547,525	\$15,053	\$99,663	\$9,046,937
2031	12	(\$117,610)	\$8,096,318	\$1,547,525	\$16,503	\$113,170	\$9,773,517
2032	13	(\$117,610)	\$8,807,942	\$1,547,525	\$17,954	\$125,240	\$10,498,661
2033	14	(\$117,610)	\$9,519,565	\$1,547,525	\$19,404	\$137,652	\$11,224,147
2034	15	(\$117,610)	\$10,231,189	\$1,547,525	\$20,855	\$150,408	\$11,949,977
2035	16	(\$117,610)	\$10,942,812	\$1,547,525	\$22,305	\$163,507	\$12,676,150
2036	17	(\$117,610)	\$11,654,435	\$1,547,525	\$23,756	\$176,949	\$13,402,665
2037	18	(\$117,610)	\$12,366,059	\$1,547,525	\$25,207	\$190,733	\$14,129,524
2038	19	(\$117,610)	\$13,077,682	\$1,547,525	\$26,657	\$204,861	\$14,856,726
2039	20	(\$117,610)	\$13,789,305	\$1,547,525	\$28,108	\$222,655	\$15,587,593
2040	21	(\$117,610)	\$14,500,929	\$1,547,525	\$29,558	\$237,640	\$16,315,653
2041	22	(\$117,610)	\$14,645,938	\$1,547,525	\$29,854	\$243,546	\$16,466,864
2042	23	(\$117,610)	\$14,792,397	\$1,547,525	\$30,152	\$245,982	\$16,616,057
2043	24	(\$117,610)	\$14,940,321	\$1,547,525	\$30,454	\$252,042	\$16,770,343
2044	25	(\$117,610)	\$15,089,725	\$1,547,525	\$30,758	\$258,199	\$16,926,208
2045	26	(\$117,610)	\$15,240,622	\$1,547,525	\$31,066	\$264,454	\$17,083,667
2046	27	(\$117,610)	\$15,393,028	\$1,547,525	\$31,377	\$270,808	\$17,242,739
2047	28	(\$117,610)	\$15,546,958	\$1,547,525	\$31,690	\$277,263	\$17,403,437
2048	29	(\$117,610)	\$15,702,428	\$1,547,525	\$32,007	\$287,604	\$17,569,565
2049	30	(\$117,610)	\$15,859,452	\$1,547,525	\$32,327	\$294,303	\$17,733,608
2050	31	(\$117,610)	\$16,018,047	\$1,547,525	\$32,651	\$301,106	\$17,899,329
<b>Total</b>		<b>(\$67,205,910)</b>	<b>\$296,490,199</b>	<b>\$47,910,295</b>	<b>\$604,356</b>	<b>\$4,830,844</b>	<b>\$349,835,694</b>

**Table 6. Discounted Benefit-Cost Analysis**

Calendar Year	Project Year	Project Costs (undiscounted)	Project Benefits	
			Discounted at 3%	Discounted at 7%
2016	0	(\$9,720,000)	\$0	\$0
2017	0	(\$17,950,000)	\$0	\$0
2018	0	(\$17,950,000)	(\$5,528,087)	(\$5,126,715)
2019	0	(\$17,940,000)	(\$5,584,644)	(\$4,987,861)
2020	1	(\$117,610)	\$1,609,128	\$1,382,041
2021	2	(\$117,610)	\$2,184,114	\$1,806,884
2022	3	(\$117,610)	\$2,724,573	\$2,171,051
2023	4	(\$117,610)	\$3,232,423	\$2,481,077
2024	5	(\$117,610)	\$3,708,330	\$2,741,756
2025	6	(\$117,610)	\$4,154,026	\$2,958,513
2026	7	(\$117,610)	\$4,573,987	\$3,138,119
2027	8	(\$117,610)	\$4,963,166	\$3,280,380
2028	9	(\$117,610)	\$5,326,028	\$3,391,413
2029	10	(\$117,610)	\$5,665,566	\$3,475,377
2030	11	(\$117,610)	\$5,979,172	\$3,533,877
2031	12	(\$117,610)	\$6,271,133	\$3,571,878
2032	13	(\$117,610)	\$6,540,145	\$3,589,609
2033	14	(\$117,610)	\$6,788,368	\$3,590,557
2034	15	(\$117,610)	\$7,016,779	\$3,576,842
2035	16	(\$117,610)	\$7,226,315	\$3,550,380
2036	17	(\$117,610)	\$7,417,877	\$3,512,895
2037	18	(\$117,610)	\$7,592,329	\$3,465,943
2038	19	(\$117,610)	\$7,750,500	\$3,410,920
2039	20	(\$117,610)	\$7,894,819	\$3,350,717
2040	21	(\$117,610)	\$8,022,815	\$3,283,224
2041	22	(\$117,610)	\$7,861,278	\$3,102,064
2042	23	(\$117,610)	\$7,701,456	\$2,929,591
2043	24	(\$117,610)	\$7,546,520	\$2,768,458
2044	25	(\$117,610)	\$7,394,765	\$2,616,471
2045	26	(\$117,610)	\$7,246,124	\$2,473,108
2046	27	(\$117,610)	\$7,100,530	\$2,337,873
2047	28	(\$117,610)	\$6,957,921	\$2,210,303
2048	29	(\$117,610)	\$6,819,660	\$2,091,386
2049	30	(\$117,610)	\$6,682,804	\$1,977,827
2050	31	(\$117,610)	\$6,548,748	\$1,870,690
<b>Total</b>		<b>(\$67,205,910)</b>	<b>\$177,388,668</b>	<b>\$79,526,648</b>
<b>Cost/Benefit Ratio</b>			<b>2.64</b>	<b>1.18</b>

**9.0 FEDERAL WAGE RATE CERTIFICATION**

The City of Fife certifies that it intends to comply with the requirements contained in subchapter IV of Chapter 31 of Title 40, United States Code (federal wage rate requirements), as required by the FY 2016 Continuing Appropriations Act.

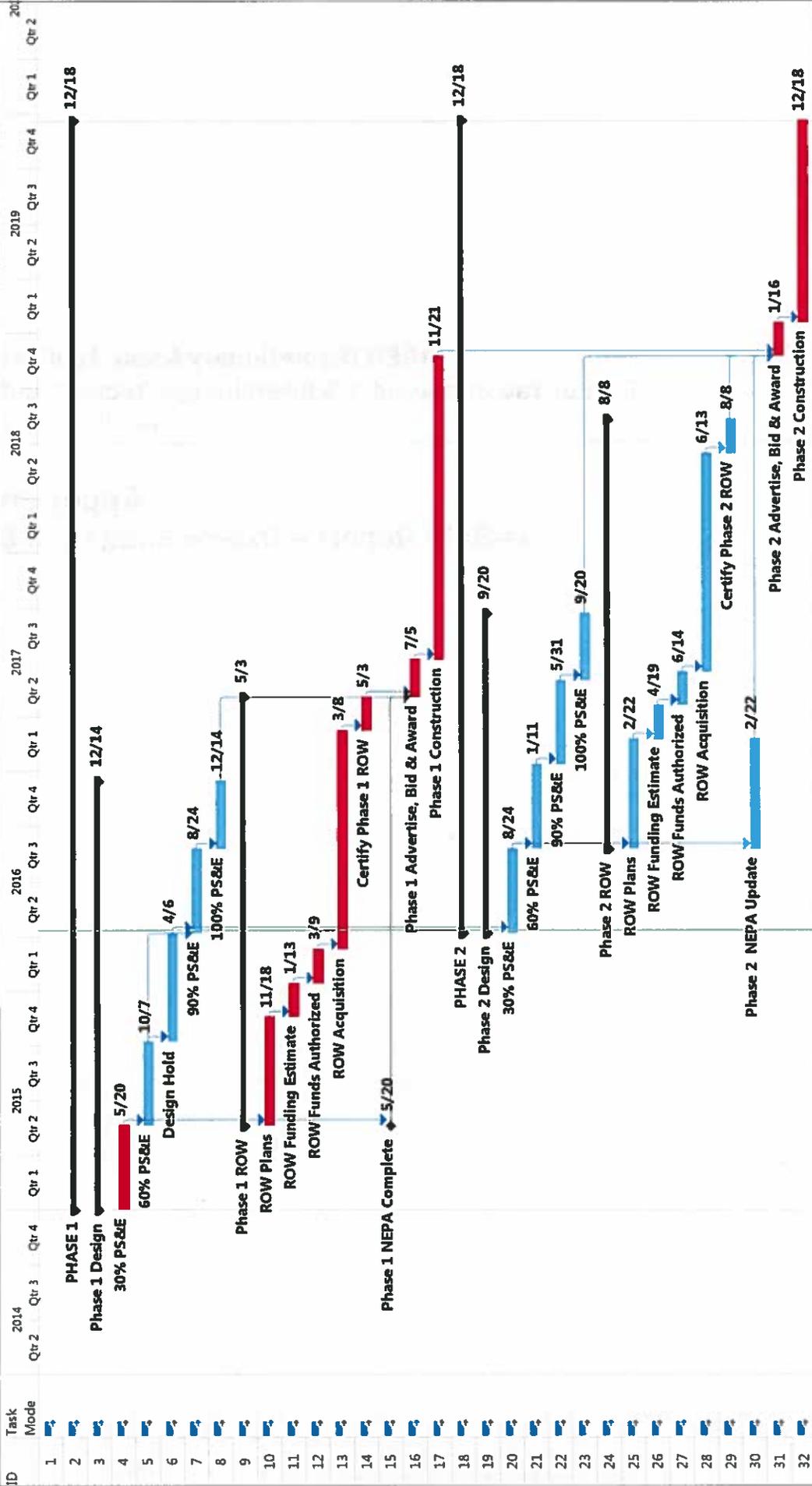


Russ Blount, Public Works Director  
City of Fife



Date

# PORT OF TACOMA ROAD INTERCHANGE IMPROVEMENTS



**TIGER Discretionary Grant Application  
Port of Tacoma Road/I-5 Interchange Reconstruction  
Fife, Washington**

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**Appendix A  
As-Built Report – Oxbow Mitigation Site**

**TIGER Discretionary Grant Application  
Port of Tacoma Road/I-5 Interchange Reconstruction  
Fife, Washington**

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**Appendix B  
Benefit-Cost Analysis Technical Memorandum  
(dated 14 April 2016)**

