4.17 ECONOMICS

Transportation improvement projects provide long term economic benefits in the form of congestion relief, which benefits both freight mobility and commute time improvements as well as enhanced connectivity for adjacent communities. However, they can also create impacts, especially during construction, for businesses that depend on local and highway traffic, by changing the flow of customers that provide business revenues. There are several communities adjacent to I-5 In the North Study Area. Most of the land adjacent to I-5 in the North Study Area is associated with Joint Base Lewis McChord and Camp Murray. Pockets of privately owned residential areas and the Tacoma Country & Golf Club occupy land near the Gravelly Lake Drive (Exit 124), Thorne Lane (Exit 123) and Berkeley Street (Exit 122) interchanges.

The largest business area adjacent to I-5 in the North Study Area is located in the Tillicum neighborhood of Lakewood. Because of Tillicum's landlocked position between I-5, American Lake, the Tacoma Country & Golf Club and Camp Murray, businesses in the neighborhood could be impacted during construction of the proposed reconfigured interchanges at Thorne Lane and Berkeley Street. These two interchanges currently provide the only access into and out of Tillicum.

Feedback received during public meetings regarding the Project included concern about how construction of the Build Alternative might impact Tillicum businesses. Tillicum business owners and community members who attended the meetings expressed concern that traffic congestion, changes in driving patterns, and changes to what is visible from I-5 following construction of the Build Alternative may result in decreased numbers of customers to Tillicum businesses. The concern arose out of changes to the configuration of the Thorne Lane and Berkeley Street interchanges and their connection into the local street network, as well as the increased height of the proposed new interchanges. The Build Alternative would reconstruct the Thorne Lane and Berkeley Street interchanges slightly south of their current locations. The new interchanges would be approximately 25 feet higher than the current ones where they will bridge over the railroad line. Due to the constrained space between the railroad right of way and I-5, the new southbound ramps would be constructed virtually on top of their current locations but at much higher elevations. These constraints would not likely allow for traffic to be maintained on these ramps while the new ramps are built. Temporary long term closures of the ramps (potentially three to six months) would likely be needed to accommodate construction. During construction of the ramps, the existing bridge structures over I-5 would remain open to allow traffic to cross over I-5 between Tillicum, Woodbrook, JBLM and Camp Murray. In response to the feedback received from the public meetings, a study was conducted to evaluate the potential economic impacts to Tillicum businesses that could result from the temporary long term ramp closures and the new configuration of the interchanges. The findings are summarized in the *Tillicum Area Economic Analysis*.

NOTE TO READER: *This EA provides a tiered environmental review. Chapter 4 evaluates the project specific environmental impacts associated with construction of the North Study Area Build Alternative (See Section 3.4 for description). Chapter 5 provides a corridor level discussion of the South Study Area (See Section 3.5). Specific project footprint improvements are not currently defined for the South Study Area.*

4.17.1 What Methods, Assumptions and Resources Were Considered in the Evaluation of Economics?

The economic analysis focused on Tillicum because it is most dependent on I-5 due to its landlocked location, and because the potential long duration closure of the southbound ramps at Thorne Lane and Berkeley Street could directly impact Tillicum businesses. Estimates of current economic activity in Tillicum were prepared by analyzing data aggregated by the Washington State Department of Revenue for gross business income and taxable retail sales. Data provided by the Washington State Employment Security Department for wage and employment totals in Tillicum businesses was also utilized.

In addition to data analysis, 11 business owners and managers in Tillicum were interviewed to better understand how local businesses anticipate the proposed construction would affect them. These interviewees provided valuable feedback regarding their revenues, employees, customer spending patterns, peak business hours, and I-5 construction related business concerns.

Access to businesses can be of vital importance to revenue numbers, so potential impacts connected with construction of the Build Alternative were evaluated. The construction impact analysis incorporated traffic modeling regarding travel times from the JBLM Logistics Gate, JBLM Madigan Gate, and Camp Murray Main Gate to the intersection of Union Avenue and Maple Street in the Tillicum commercial area. Travel times from the existing and proposed southbound off ramps at Thorne Lane and Berkeley Street to the intersection of Union Avenue and Maple Street were also calculated. Changes in congestion and travel times were used to estimate associated changes in revenue and business activity resulting from alterations in traffic flow to Tillicum businesses during temporary closure of southbound ramps at the Thorne Lane and Berkeley Street interchanges and the post construction access conditions.

4.17.2 What Are the Existing Economic Conditions in Tillicum?

The Tillicum neighborhood is composed of residential areas, commercial areas, a popular lakefront park, an elementary school and community center. Most of the housing in the neighborhood is not owner occupied and on average the area residents have lower annual incomes than those in surrounding communities. Its landlocked location makes Tillicum businesses and residents highly dependent on I-5 for access, and on the military installations of JBLM and Camp Murray for business customers. The commercial area is concentrated along Union Avenue which parallels I-5 and connects to Thorne Lane on the north end and Berkeley Street on the south.

Businesses in Tillicum cover three broad categories: retail, food services, and other services. Retail businesses in the area include military surplus stores, a 7-Eleven, a trophy shop, and a vaporizer store. Other service businesses include barber shops and nail salons, tattoo shops, laundromats and dry cleaning services, auto repair

Table 4.17-1 *Tillicum Business District Jobs, Wages, and Revenue by Business Type, 2015*

	Number of		Wages (Millions)	Revenue (Millions)	Revenue %
	Businesses	Jobs			
Food Services	17	194	$3.4	$15.5	53%
Other Services	30	47	$1.2	$9.9	34%
Retail	12	9	$0.1	$3.7	13%
Total	59	250	$4.7	$29.1	100%

shops, and graphic design services. The area's food service businesses include chain and franchise restaurants like Subway, McDonalds, Popeye's, Kentucky Fried Chicken, Starbucks and Taco Bell; locally owned businesses include Wok Inn, Pho Lewis, Wow Sushi, Gerties Grill, House of Teriyaki, and Happy Teriyaki. Out of the 59 businesses in Tillicum, 17 were identified as food services businesses, 12 as retail and 30 as other services. Together, all businesses in the area employed approximately 250 people in 2015 and paid total wages of $4.8 million and generated $29.1 million in revenue. Table 4.17-1 shows number of businesses, jobs, wages and revenue in Tillicum in 2015. Food services businesses made up the largest share of revenue at 53%. Other services businesses constituted 34% of total business revenues, and retail companies represented the remaining 13%.

4.17.3 What Economic Impacts Would Occur with the No Build Alternative?

In the No Build scenario, I-5 capacity would not be improved and current interchange configurations would remain the same. Amtrak plans to offer high-speed rail service on the existing rail line that runs parallel to I-5 in this corridor starting in 2017. Combined with anticipated increased future congestion on I-5, drivers that wish to cross I-5 at one of the rail crossings could encounter additional travel time associated with waiting for trains to pass at scheduled intervals. These conditions could result in fewer I-5 drivers traveling to or stopping in Tillicum to patronize local businesses, which could result in decreased revenues and employment in the area.

4.17.4 What Long-Term Economic Impacts Would Occur with the Build Alternative?

Following construction of the Build Alternative, economic activities dependent on I-5 such as movement of freight would experience improved conditions compared to the No Build Alternative. In Tillicum, following construction of the Build Alternative, drivers traveling to Union Avenue from I-5 using Exit 122 at Berkeley Street could expect slightly longer travel times. This is primarily due to the proposed new interchange configuration which would connect to the Tillicum local road network approximately one block west of the existing interchange. Drivers traveling to Tillicum via Thorne Lane (Exit 123) would also have a slightly longer route due to the interchange configuration. In general, drivers from JBLM who travel to Tillicum during the evening peak commute would experience slightly shorter travel times compared to the No Build Alternative. The new interchanges would enhance safety by incorporating roundabouts that reduce the likelihood of traffic accidents, and grade separating with the rail line to reduce the potential for vehicle queuing. Connectivity between Tillicum and the surrounding area would also be enhanced by the construction of the Gravelly-Thorne connector which would provide a southbound travel lane for vehicles as well as pedestrian and bicycle facilities. Overall, most local business owners interviewed indicated they expected the Project would have positive impacts on their businesses when completed.

4.17.5 What Would Be the Short-Term Impacts During Construction of the Build Alternative?

Under the Build Alternative the freeway would be widened to accommodate one additional general purpose lane both northbound and southbound, plus northbound auxiliary travel lanes between

the Berkeley Street and Thorne Lane interchanges and between the Thorne Lane and Gravelly Lake Drive interchanges. Widening I-5 would require both the Berkeley Street and Thorne Lane interchanges to be reconstructed to accommodate the additional travel lanes. New overpass structures are planned to be constructed first, followed by construction of ramps to connect the overpass to the freeway. During construction the existing bridges connecting Woodbrook and JBLM to Tillicum would remain open to traffic. However, maintaining traffic on the southbound ramps would not be feasible during much of the new ramp construction. It is expected that the new southbound ramps would be constructed first at one interchange and, once the interchange is complete and open to traffic, the construction of the southbound ramps at the second interchange would begin. On the northbound side, there is width available for construction of temporary ramps so extended northbound ramp closures are not anticipated.

For the purposes of economic analysis, the construction of southbound ramps (and the associated temporary ramp closures) at each interchange were considered separately. Each interchange was analyzed to understand potential economic impacts to the businesses in the Tillicum area associated with its closure. Construction of the southbound ramps is anticipated to require between three and six months at each location.

Construction of the Thorne Lane interchange may occur first. During construction of the Thorne Lane interchange, the Berkeley Street interchange and southbound ramps would remain fully operational.

During construction of the southbound ramps at the new Berkeley Street interchange, the new Thorne Lane interchange was assumed to be completed and open to traffic. The existing bridge structures over I-5 at Thorne Lane and Berkeley Street would remain open to traffic during much of the construction of the new interchanges, thus maintaining east-west traffic connectivity over I-5. There would likely be periodic nighttime and weekend closures of the bridges over I-5.

As a result of the staggered construction schedule for the southbound ramps and the availability of alternative routes, the forecasted impacts on local businesses are relatively low. Vehicles that would normally drive to Tillicum businesses would still be able to do so during construction of the southbound ramps, although travel routes would have to be adjusted for vehicles accessing Tillicum from I-5 due to the ramp closures. Increased traffic congestion may result from rerouting vehicles during construction, and is associated with a forecasted temporary decline in vehicles from I-5 that would stop in Tillicum.

Because the southbound ramps at both Thorne Lane and Berkeley Street are anticipated to be closed for three to six months each, the total potential economic impact duration analyzed was six to 12 months. Table 4.17-2 shows the estimated sales revenue during a six

Table 4.17-2 *Tillicum Business Baseline Revenue and Construction Period* Estimates, Millions of Dollars*

	Baseline Revenue		Construction Revenue		Net Impacts		% Change
Revenue Source	6 Months	12 Months	6 Months	12 Months	6 Months	12 Months	
Vehicles from I-5	$10.00	$20.01	$9.71	$19.42	$0.30	$0.59	-2.9%
Vehicles from JBLM and Camp Murray	$4.25	$9.04	$4.67	$9.35	$0.15	$0.31	3.4%
Total Revenue	$14.53	$29.05	$14.38	$28.77	$0.14	$0.29	-1.0%

** For southbound ramps at the Thorne Lane and Berkeley St. interchanges*

and 12 month period for Tillicum businesses generated by customers arriving to the area via 1-5 and those arriving on local roads from JBLM, Camp Murray, and the surrounding neighborhood.

Businesses are expected to experience a 1% decline in revenue overall during construction of the southbound ramps at the Thorne and Berkeley interchanges. This translates to a decrease of between $143,000 and $286,000 in total business revenue across 59 businesses depending on the duration of construction. For the purposes of this analysis, estimates were produced for both three-month construction and six-month construction durations per construction stage. This means that the low estimate, a decrease of $143,000 assumes that Thorne Lane southbound ramps would take three months to construct and Berkeley Street southbound ramps would take three months for a combined total of six months of construction for the new southbound ramps. The high estimate, a $286,000 decrease, assumes that Thorne Lane southbound ramps would take six months and Berkeley Street southbound ramps would take an additional six months for a combined 12 months of construction.

Revenue from vehicles that drive to Tillicum from JBLM is expected to increase slightly during construction. This is because increased I-5 travel time may discourage drivers from traveling to businesses outside Tillicum from JBLM. Revenue from vehicles that drive to Tillicum from I-5, on the other hand, is forecasted to decline during construction.

4.17.6 How Can the Economic Impacts of the Build Alternative Be Minimized or Mitigated?

The staged construction of the proposed new southbound ramps at the Thorne Lane and Berkeley Street interchanges is intended to minimize impacts to Tillicum. Closing only one southbound ramp location at a time would ensure that vehicles traveling I-5 have continual access to the neighborhood and its businesses. Southbound drivers would be notified of access changes to Tillicum using variable message signs adjacent to I-5 during construction. A Traffic Management Plan that documents these mitigation measures, as well as others that may be identified during the design of the proposed improvements, would be prepared. This plan would set forth the requirements regarding traffic that the contractor must implement during construction.

4.17.7 Would There Be Any Unavoidable Adverse Economic Impacts from the Build Alternative?

There will be no unavoidable adverse economic impacts as a result of the Build Alternative. No businesses in Tillicum, or elsewhere within the North Study Area, will be displaced as a result of the Build Alternative. Economic analysis indicates there may be some impacts associated with construction of the Build Alternative. Temporary impacts associated with construction of the proposed Project may result in loss of revenue from customers that use I-5 to access and patronize Tillicum businesses, but an increase in customers coming from JBLM and Camp Murray. The increase in customers from JBLM and Camp Murray is attributable these customers electing to visit local businesses during construction instead of using I-5 to patronize businesses outside of Tillicum.

The longer travel times associated with the new interchange connections to the local street network are relatively minor (under one minute of travel time) and not anticipated to create long term impacts to the Tillicum customer base. Most business owners and managers interviewed anticipate that, while some drivers would experience slightly longer travel times following completion of the Build Alternative, the reduced congestion resulting from the new interchange configurations and added capacity on I-5 would have a positive impact to Tillicum businesses.