



*While Washington State Environmental Policy Act (SEPA) policies and procedures do not normally require an analysis of economic impacts of a project be included in an environmental impact statement (EIS), both SEPA and the Skagit County Code 16.12.140 allow for inclusion of such an analysis when it would describe a part of the existing environment that would be impacted.*

**STUDY AREA AND METHODOLOGY**

The study area for economics includes the Washington State economy and the Skagit County economy. Construction impacts are measured at the state level. Operational impacts are measured at the county level where most of the facility operations and expenditures would occur. The cumulative impacts study area for economics is the same as described for direct and indirect impacts.

Select laws, regulations, and guidance applicable to economics are summarized in Table 3.14-1.

Table 3.14-1 Laws, Regulations, and Guidance for Project-Related Economics

Laws, Regulations, and Guidance	Description
<b>State</b>	
State Environmental Policy Act (SEPA) (RCW 43.21c; WAC 197-11)	Helps state and local agencies in Washington identify possible environmental impacts that could result from a proposed action, alternatives to the proposed action, and potential impact minimization and mitigation measures. Information learned through the review process can be used to change a proposal to reduce likely impacts and inform permitting decisions at the state and local levels.
<b>Local</b>	
Skagit County Code (Section 16.12.140)	Allows for the inclusion of an economic analysis when it would describe a part of the existing environment that would be impacted, but does not add to the criteria for threshold determination.

The economic impact analysis framework evaluates effects resulting from the construction and operation of the proposed project. Construction impacts are short term and would only occur during the construction phase. Impacts from the operation and maintenance of the proposed project would occur over the operational life of the facility. The following were considered in the economic impacts analysis:

Short-term impacts:

- State-sourced construction expenditures for materials, equipment, and fuel.
- Employment of construction workers from within the state.
- Increases in the household consumption by the state workforce.

Long-term impacts:

- Annual expenditures for materials, equipment, and fuel during the operational phase.
- Employment of operation workers from within the county.
- Increases in the household consumption by the county workforce.

The economic impacts analysis for the Shell Puget Sound Refinery (PSR) considered potential increases in economic output, employment, and employee compensation. Economic output is best described as sales of all goods produced by industries. The economic analysis included three types of impacts: direct, indirect, and induced.

- Direct impacts would be the primary rounds of economic activity that would create the initial increases in economic output and employment directly attributable to expenditures by the Shell PSR.
- Indirect impacts would be the secondary rounds of economic activity that would begin when the suppliers who contributed to the construction or operation of the proposed project spent their dollars. This secondary phase generates additional rounds of spending that cycle through the economy (known as the multiplier effect).
- Induced impacts would be the third round of economic activity that the multiplier effect would generate from changes in household income. Additional employment by the Shell PSR and its suppliers may increase household expenditures in the region. These changes then affect related industries.



### What are input output models?

Input-output models create an accounting framework for a regional economy that describes flows of outputs to and from industries and institutions. In the model, economics sectors can:

- Purchase outputs of other sectors.
- Sell to other sectors.
- Sell outside the local economy.
- Buy outside the local economy.

This accounting framework allows the user to predict how a change in the level of economic activity will affect the local economy.

The IMPLAN Model is considered the industry standard for this type of economic analysis. IMPLAN was developed by MIG, Inc., formerly Minnesota IMPLAN Group, Inc. (MIG), Software and Data, [www.implan.com](http://www.implan.com).

Impacts to economic output, employment, employee compensation, and value added were evaluated using the IMPLAN Pro 3.0 software. IMPLAN is a widely used computer simulation tool that employs an *input-output model* to measure regional impacts.

IMPLAN uses proprietary datasets that are based on the Bureau of Economic Analysis National Income and Product Accounts (NIPA) datasets. Datasets are available down to the county and state levels. The IMPLAN model generates indirect and induced impacts by applying regional multipliers to direct impacts. The multipliers are influenced by the size of the study area, the timeframe of the datasets being used in the model, and the level of economic activity being evaluated. Both county and state level datasets were employed in this analysis.

## AFFECTED ENVIRONMENT

This section presents the regional economic conditions that could be affected by construction and operation of the proposed project. The economic conditions include population, employment, and income dynamics in Skagit County and Washington State. Data presented is the most recent 10-year period where available.

### Proposed Project

#### Regional Population

The Skagit County population was estimated to be 120,365 in 2014 (Table 3.14-2). The county's population expanded 17 percent from 2000 to 2014. This was lower than the statewide population growth rate of 20 percent over the same period. The three largest cities by population in Skagit County are Mount Vernon, Anacortes, and Burlington.



Table 3.14-2 Population, Labor Force, Median Household Income, Unemployment Rate, and Poverty Rate for Washington State and Skagit County (2000 and 2014)

Statistic	Units	WASHINGTON STATE			SKAGIT COUNTY		
		2000	2014	Percent Change	2000	2014	Percent Change
Population	Number of persons	5,894,121	7,061,530	20%	102,979	120,365	17%
Labor force	Number of persons	2,979,824	3,476,885	17%	49,129	56,001	14%
Median household income	Dollars	45,776	59,478	30%	42,381	55,925	32%
Unemployment rate	Percent	6.2%	9.4%	3.2%	6.9%	9.8%	2.9%
Poverty rate	Percent	10.6%	13.4%	2.8%	11.1%	15.7%	4.6%

Source: U.S. Census Bureau 2016

### Regional income, Poverty, and Unemployment

As shown in the Table 3.14-2, **Skagit County's civilian labor force averaged 56,001 in 2014.** Of that, 50,520 people were employed and 5,481 were estimated to be unemployed and actively seeking work. This tracks similarly with population growth in the county over the same period.

As with other counties in Washington State, unemployment and poverty have increased in recent years because of the economic recession in 2009–2010 (reflected in the increases at statewide levels). The average unemployment rate in 2014 was 9.8 percent. This is up from 2000, at which time the pre-recession (pre-2008) unemployment average was 6.9 percent. Overall, unemployment is down from the peak of 12.9 percent in Skagit County observed in January 2010 (yearly average of 10.9 percent). However, unemployment has not yet returned to pre-2008 levels.

In 2014, Skagit County was ranked 11th highest in Washington State on both median household income and per-capita income. Median household income grew at a rate higher than the state average between 2000 and 2014, while the overall level (\$55,925) remained just below the statewide average (\$59,478). Per-capita income has grown by approximately 29 percent per year over the period 2005 to 2014 (3). However, income growth was halted during the recession. The trends in income growth closely match the state average.



Table 3.14-3 Per-Capita Income in Washington State and Skagit County (2005 to 2014)

Year	Washington State	Skagit County
2005	\$37,754	\$33,268
2006	\$40,204	\$35,800
2007	\$42,954	\$37,841
2008	\$44,460	\$38,672
2009	\$42,248	\$37,771
2010	\$42,821	\$37,321
2011	\$44,800	\$38,841
2012	\$47,344	\$40,701
2013	\$47,468	\$40,904
2014	\$49,610	\$42,829
Percent Change 2005 to 2014	31%	29%

Source: U.S. Bureau of Economic Analysis, 2016

### Regional Employment and Wages

As shown in Table 3.14-3, between 2005 and 2014, the state industries that experienced the greatest increases in statewide employment levels were mining, professional scientific and technical services, management of companies and enterprises, educational services, health care and social assistance, and information. Only one industry—construction—declined during the same period.

As shown in Table 3.14-4, in Skagit County, the industries that experienced the greatest increases in employment between 2005 and 2014 were mining, wholesale trade, finance and insurance, management of companies and enterprises, administrative and waste management/remediation, and educational services. The industries in which employment declined were farm, forestry, construction, retail trade, information, civilian federal government, and military.

Skagit County's manufacturing employment declined significantly between 2005 and 2010 (15.5 percent) (BEA 2016). From 2010 to 2014, the manufacturing sector rebounded, resulting in a net increase in the total sector employment. Although the recovery from the recession has taken several years, Skagit County has developed a diverse manufacturing base that has played an instrumental role in its overall economic upturn.



Table 3.14-4 Employment by Place of Work in Washington State and Skagit County by Industry (2005 and 2014)

Sector	WASHINGTON STATE			SKAGIT COUNTY		
	2005	2014	Percent Change	2005	2014	Percent Change
Farm employment	73,700	85,664	16%	2,759	2,650	-4%
Forestry, fishing, and related activities	36,918	43,693	18%	1,277	1,192	-7%
Mining, quarrying, and oil and gas extraction	5,527	9,368	69%	132	173	31%
Utilities	4,774	5,237	10%	181	196	8%
Construction	222,345	214,531	-4%	4,559	4,340	-5%
Manufacturing	278,284	310,931	12%	5,532	6,370	15%
Wholesale trade	131,126	142,543	9%	1,085	1,521	40%
Retail trade	388,509	418,122	8%	8,715	8,405	-4%
Transportation and warehousing	105,577	122,605	16%	1,414	1,660	17%
Information	101,509	121,769	20%	638	470	-26%
Finance and insurance	144,319	161,000	12%	1,867	2,532	36%
Real estate, rental, and leasing	148,659	172,691	16%	2,395	2,794	17%
Professional, scientific, and technical services	234,766	295,460	26%	2,681	3,028	13%
Management of companies and enterprises	34,139	42,206	24%	173	246	42%
Administrative and support and waste management and remediation services	178,653	199,937	12%	1,830	2,300	26%
Educational services	60,899	77,795	28%	585	889	52%
Health care and social assistance	331,131	454,163	37%	5,385	6,258	16%
Arts, entertainment, and recreation	82,135	94,255	15%	1,291	1,395	8%
Accommodation and food services	228,241	269,882	18%	4,358	4,521	4%



Sector	WASHINGTON STATE			SKAGIT COUNTY		
	2005	2014	Percent Change	2005	2014	Percent Change
Other services (except public administration)	196,251	215,069	10%	3,593	3,723	4%
Federal, civilian	69,936	71,470	2%	420	368	-12%
Military	76,030	76,552	1%	381	328	-14%
State government	143,384	144,370	1%	1,498	1,413	-6%

Source: U.S. Bureau of Economic Analysis, 2016

Average wages in Skagit County are significantly less than the statewide average, and have increased more slowly between 2005 and 2014 compared with statewide figures (Table 3.14-5).

Table 3.14-5 Average Weekly Wages for Washington State and Skagit County (2005 and 2014)

Year	Washington State	Skagit County
2005	783	604
2014	1,058	795
Percent Change	35.1%	31.6%

Source: U.S. Bureau of Labor Statistics, 2016

## ENVIRONMENTAL IMPACTS

### No Action Alternative

Because no construction or operation would take place under the no action alternative, there would be no impacts to economics. Existing economic trends would continue unless affected by other projects in the future.

### Proposed Project

#### Direct Impacts

##### Construction

Construction of the proposed project would create a short-term stimulus for the Washington State economy through purchases of materials, supplies, equipment, and services; labor wages for construction workers; and associated impacts. As described in Chapter 2 – Proposed Project and Alternatives, construction of the proposed project is anticipated to begin as early as 2017,



and take about two years to complete. The total construction cost is estimated at \$95 million and would employ approximately 200 workers (Table 3.14-6). After accounting for the portion of the project that could be spent outside of Washington State, the direct economic impact would be \$60 million. This amount accounts for adjustments from taxes, equipment purchases outside the state, specialized nonlocal labor, and other construction services that may not be sourced from within the state.

Total construction wage estimates were not available from the Shell PSR. However, a recently completed economic impact analysis for the Westway Expansion Project provided a breakdown of construction expenditures including wage estimates (Ecology 2014). Average annual construction wages for that project were \$129,900 per worker when adjusted to 2015 dollars. Combining this estimate with the number of construction workers, total construction wages for the proposed project are estimated to be \$25,681,000.

Table 3.14-6 Estimated Direct Impacts of the Proposed Project (2015 Dollars)

Impact	Total Value	Direct Impact to Regional Economy
<b>Construction (Washington State)</b>		
Total Outlays <sup>1</sup>	\$95,000,000	\$60,080,000
Estimated Total Employment <sup>1</sup>	200	200
Estimated Total Construction Wages <sup>2</sup>	25,681,000	25,681,000
<b>Operations (Skagit County)</b>		
Average Annual Employment <sup>1</sup>	35	35
Average Annual Employee Income <sup>3</sup>	\$4,546,000	\$4,546,000

Notes:

1. Source: Shell PSR Response to Data Request – January 20, 2016.
2. Assumed average annual construction wage of \$125,000.
3. Assumed average annual employee income of \$129,900.

### Operation

The proposed project would not alter the annual economic output of the Shell PSR. Instead, the improvements would ensure consistent, incoming supplies of crude oil that are necessary to maintain current levels of production. The operational analysis does not include any change in gross output in oil products generated by the Shell PSR.

After the proposed project becomes operational, the facility would result in a change in net employment and payroll at the Shell PSR, as well as some general operational expenditures, such as energy and office supplies. The Shell PSR would employ additional workers and increase its payroll to operate the rail unloading facility and the pipelines to the storage tanks. Additionally, **the improvements would require power to operate the rail unloading facility, pipelines, and**



operations building. Further expenditures, such as tools and various equipment, may be necessary over the course of the operational life of the facility. At the time of this EIS, the Shell PSR had estimated the number of future workers necessary to operate the proposed project would be 30 to 40. Therefore, the scope of this economic analysis is limited to the impact of payroll (worker spending) on the Skagit County economy.

The Shell PSR indicated that annual wages could range from \$110,000 to \$140,000 per worker. Two recent studies, “Economic Impacts of the Refineries in Skagit County” and “The Economic Contribution of Washington State’s Petroleum Refining Industry in 2013,” state that average wages for refinery workers are likely to be \$129,900 in 2015 dollars (CEBR 2015; Washington Research Council 2014). The average value from these studies is used in the analysis as a middle value in the range provided by the Shell PSR.

**Indirect and Induced Impacts**

**Construction**

The direct, indirect, induced, and total economic impacts from construction of the proposed project are listed in Table 3.14-7. The impacts show how construction spending creates additional economic output, and how that output can be translated into full-time jobs and labor income.

Table 3.14-7 Estimated Economic Impacts from Construction in Washington State – Proposed Project (2015 dollars)

Impact	Employment (jobs)	Labor Income	Economic Output
Direct	200	\$25,681,000	\$ 60,080,000
Indirect	128	\$ 7,427,000	\$ 23,399,000
Induced	153	\$ 7,409,000	\$ 23,251,000
Total	481	\$40,517,000	\$106,730,000

Source: IMPLAN 3.0 Model Estimates.

Approximately \$60 million in direct construction impacts would produce positive, short-term economic benefits to the state. The proposed project would generate approximately \$47 million in indirect economic output (indirect plus induced). The total impact of the project would be nearly \$107 million over the course of the 25 months of construction. Indirect employment associated with the project (approximately 281 jobs) would have average annual incomes of \$52,800 (indirect plus induced).

The \$60 million in direct construction impacts would produce positive, short-term economic benefits to the state. The proposed project would generate approximately \$47 million in indirect economic output (indirect plus induced).



In addition to these economic impacts, the construction of the proposed project is estimated to generate approximately \$3.38 million in increased property and sales taxes (Table 3.14-8).

Table 3.14-8 Estimated Tax Revenues from Construction in Washington State – Proposed Project (2015 dollars)

Property Tax	Sales Tax	Total
\$1,106,000	\$2,277,000	\$3,383,000

Source: IMPLAN 3.0 Model Estimates

### Operation

Operational impacts represent the steady stream of economic benefits that may accrue in the county following construction of the proposed project. These impacts would begin in late 2019 and occur annually over the operational life of the project. The direct impacts are the result of increased employment and payroll at the Shell PSR. The additional 35 workers on site would spend dollars from their incomes in the Skagit County economy, thus creating additional indirect impacts. The Shell PSR workers' incomes would help contribute approximately \$3 million in indirect economic output (Table 3.14-9). Household spending would help to support seven additional jobs with an average income of \$32,700.

Table 3.14-9 Estimated Economic Impacts in Skagit County from Operations – Proposed Project (2015 dollars)

Impact	Employment (jobs)	Labor Income	Economic Output
Direct	35	\$4,546,000	NA
Indirect	4	\$ 128,000	\$2,725,647
Induced	3	\$ 101,000	\$ 355,000
Total	42	\$4,775,000	\$3,080,647

Source: IMPLAN 3.0 Model Estimates.

In addition to these economic impacts, the operation of the proposed project is estimated to generate approximately \$224,000 in increased property and sales taxes (Table 3.14-10).

**Table 3.14-10 Estimated Tax Revenues in Skagit County from Operations**  
– Proposed Project (2015 dollars)

Property Taxes	Sales Taxes	Total
\$73,000	\$151,000	\$224,000

Source: IMPLAN 3.0 Model Estimates.



### Cumulative Impacts

Construction of the proposed project and reasonably foreseeable future projects would create a short-term stimulus for the Washington State economy through purchases of materials, supplies, equipment, and services, and labor wages for construction workers. During operation, the proposed project and reasonably foreseeable future projects would create cumulative economic benefits for local economies in Washington State through the creation of jobs and operational expenditures, and generate additional property and sales taxes.

## MITIGATION MEASURES

### Avoidance and Minimization

No avoidance or minimization measures are proposed.

### Mitigation

No mitigation measures are proposed.



*This page intentionally left blank*

