From: efilingmail@tylerhost.net
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Subject: Filing Accepted for Case: 08-2018-CV-02937; Environmental Law and Policy Center, et al. vs. North Dakota Public Service Commission, et al.; Envelope Number: 3293194
Date: Friday, February 01, 2019 8:53:56 AM

Filing Accepted

Envelope Number: 3293194
Case Number: 08-2018-CV-02937
Case Style: Environmental Law and Policy Center, et al. vs. North Dakota Public Service Commission, et al.

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Filing Details	
Court	Burleigh County - South Central District
Case Number	08-2018-CV-02937
Case Style	Environmental Law and Policy Center, et al. vs. North Dakota Public Service Commission, et al.
Date/Time Submitted	1/31/2019 6:11 PM CST
Date/Time Accepted	2/1/2019 8:53 AM CST
Accepted Comments	
Filing Type	Exhibit
Filing Description	CR Exhibit 25 Record Addition 3 County Permit Application part 9 of 10
Activity Requested	EFileAndServe
Filed By	John Hamre
Filing Attorney	Illona Jeffcoat-Sacco

Document Details	
Lead Document	CR Exhibit 25 Record Addition 3 County Permit Application part 9 of 10.pdf
Lead Document Page Count	12

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Exhibit K – Socioeconomic Impacts and Job Creation Report

The principal socio-economic impact from the Refinery will be the creation of up to 2,400 local jobs (up to 200 directly employed with a multiple of 12:1). Among other things, this increased level of employment will result in an increased demand for community services, and an offsetting level of tax revenues for state and local government.

The attached Economic Profile report published in December, 2014 by the ***Washington Research Council*** calculates the number of "indirect" and "induced" jobs created by each full time refinery worker in 2013. On page 2 of the report, Table 2.1 *Summary of Multipliers and Economic Impacts* indicates that the multiplier is 12.88 indirect and induced jobs created in the state of Washington in 2013 by each full time refinery worker.

Based upon this report, since the Davis Refinery is expected to employ between 150 and 200 full time refinery workers, it is anticipated that between 1900 and 2500 indirect and induced jobs can be created in the Billings County and Stark County area. On page 14 of the attached report, it is stated that indirect jobs are defined as including suppliers of crude oil and other materials, construction companies and contract workers used for maintenance and repair, and office product and equipment suppliers. The report also states that induced jobs will include employees of firms in industries that supply consumables such as food, dry cleaning, banking and other service industries.

Washington Research Council

Economic Profile

December 2014

THE ECONOMIC CONTRIBUTION OF WASHINGTON STATE'S PETROLEUM REFINING INDUSTRY IN 2013

ACKNOWLEDGEMENTS

Washington Research Council has produced this report with funding from the Western States Petroleum Association. Washington state's economy is simulated using the Washington Research Council-Regional Economic Models, Inc. (WRC-REMI) model, based on a detailed survey of the five oil refiners operating in Washington. The results of this analysis are the sole responsibility of the Washington Research Council, a nonprofit organization committed to objective analysis of economic and public policy issues in Washington state.

1. Report Overview

This report quantifies the impact of Washington's five major petroleum refiners on the state's economy in 2013.

In 2013, the refiners directly provided 2,024 full-time jobs, paying an annual average wage of $121,114. In addition, the refiners employed, at high wages, 2,727 contract workers on an average day, doing maintenance, capital repair and capital replacement. The refiners indirectly created additional Washington state jobs in industries from which they purchased goods and services, including transportation, construction, utilities and business services. Spending of the income earned in these direct and indirect jobs created even more jobs.

The sum of all these effects was more than 26,060 jobs and almost $1.8 billion in personal income for Washington state in 2013. From this activity, state and local governments received $53.4 million in sales and use taxes and $124.9 million in business and occupation taxes.

Also, downstream industries, which distributed refined petroleum products, paid $428 million in wages to 16,044 workers in 2013. Excise taxes collected by the state from these industries exceeded $236 million in 2013.

Because of Washington's unique tax structure, a Washington refinery's state and local tax burden in 2013 was almost three times higher than the state and local tax burden of a comparable refinery located in California.

The report updates the economic impact analyses of petroleum refining for 2003, 2005, 2007, 2009 and 2011 previously prepared by the Washington Research Council (WRC 2004, 2006, 2009, 2010 and 2012), drawing upon a survey of Washington refiners conducted by the Council in 2014 (Appendix A) and the WRC-REMI model of the Washington state economy (Appendix C).

2. Summary of Findings

Washington's five refineries provide 3.4 percent of the United States' refining capacity. In 2013 they processed 572,300 barrels of crude oil per day. Gasoline, diesel oil, and jet

Formatting fixed 12/29/14

Table 2.1: Summary of Multipliers and Economic Impacts

Refining Jobs	Multiplier	Indirect and Induced Economic Effect	Major Petroleum Refiners Total Economic Impact
2,024 jobs	12.88	24,036 jobs	26,060 jobs
	$880,142	$1,445,719,917 personal income	$1,781,406,866 personal income
	$26,324	$43,239,183 sales and use taxes	$53,380,261 sales and use taxes
	$61,696	$14,844,634 B&O taxes	$124,873,001 B&O taxes

Source: 2014 Re ner Survey, WRC-REMI Model

fuel are the largest finished product categories, representing 42 percent, 26 percent, and 14 percent, respectively, of total production, with gasoline production averaging 257,100 barrels per day.

According to the refiners survey, the five major refineries employed 2,024 workers in 2013, paying them an average annual wage of $121,114—more than twice the Washington state average.

As illustrated in Table 2.1, these jobs have a total employment multiplier of 12.88, meaning that each direct refining job generates an additional 11.88 jobs in the state, for a total employment impact of 26,060 jobs resulting from the five refineries.

Petroleum refining's extraordinarily high capital intensity, high wages and extensive use of highly paid contract labor are the major reasons for its high jobs multiplier. The WRC-REMI model, which is used here to determine the economic impact of the industry, calculates that each petroleum job adds $880,000 of state personal income, a total income contribution of nearly $1.8 billion to the state economy.

The industry is highly taxed and regulated, producing a bounty of tax and fee revenues for state and local government.

The five refiners paid $268.6 million in state and local taxes in 2013. This total included $110.0 million in business and occupation (B&O) tax, $116.7 million in hazardous substance tax, $24.3 million in property tax and $5.9 million in sales and use taxes (Table 7.2).

In addition, the refiners $12.7 million in regulatory fees in 2013 (Table 7.3).

Including the indirect and induced effects, the refining industry generated $53 million in sales and use and $125 million in B&O taxes (Table 2.1)

Calculations of state and local taxes paid by hypothetical 160,000 barrels-per-day refineries located in Washington and California indicate that the tax burden on refineries in Washington is almost three times greater than that in California (Table 8.1).

Finally, refiners contribute generously to the communities in which they are located. The five refiners and their employees contributed $1.7 million to various community causes in 2013. The firms themselves contributed about 47 percent of this, with the balance provided by firm-sponsored employee giving (Appendix A, Table A.11).

Table 3.1: Washington Refineries

Firm	Year Constructed	Location	Major Products	Capacity (barrels/day)
BP Cherry Point (formerly ARCO)	1971	Whatcom County, northwest of Ferndale	Gasoline, diesel oil, jet fuel, calcinated coke	234,000
Phillips 66 Ferndale (formerly ConocoPhillips Tosco, BP Oil and Mobil Oil)	Mid-1950s by General Petroleum (subsidiary of Socony-Mobil)	Whatcom County, west of Ferndale	Gasoline, diesel oil, jet fuel, liquid petroleum, residual fuel oil	107,500
Shell Oil (formerly Equilon Enterprises and Texaco)	1957	Skagit County, five miles east of Anacortes	Gasoline, diesel oil, jet fuel, propane, coke, sulfur	149,000
Tesoro (formerly Tesoro Northwest and Shell Oil)	1955	Skagit County, on March Point	Gasoline, diesel oil, turbine & jet fuel, liquid petroleum gas, residual fuel oil	125,000
U.S. Oil	1957	Pierce County, Tacoma Tideflats	Gasoline, diesel oil, jet fuel, marine fuel, gas oils, emulsified & road asphalt	42,000

3. Oil Refining in Washington State

Building and development of the industry. The oil refining industry in Washington state began in the mid-1950s with construction of refineries by Shell in Anacortes (Skagit County) and Mobil west of Ferndale on the Strait of Georgia (Whatcom County). Following closely in 1957, Texaco built in Anacortes, and U.S. Oil constructed its refinery on the Tacoma Tideflats. In the early 1970s, in anticipation of the crude oil that would begin flowing from Alaska's North Slope, Atlantic Richfield (Arco) built its refinery at Cherry Point. Now owned by BP, this plant remains one of the nation's newest refineries.

Ownership of all these facilities has been fluid over the years, but today Washington's refining activity is concentrated at the four major plants in Whatcom and Skagit counties and the U.S. Oil plant in Tacoma. (See Table 3.1.)

Federal restrictions. Oil companies invest tremendous sums in their facilities in order to maintain their assets, to increase refining capacities, and to remain viable in a highly competitive global industry. In the 1970s, Washington's older oil refineries embarked on major plant modifications in anticipation of the Alaskan crude. Plans for new port facilities on Puget Sound to receive su-

persized tankers and new pipelines to carry Alaskan oil on to the Midwest were debated. But in 1977, before these plans could be finalized, the Marine Mammal Protection Act came up for reauthorization in Congress. Washington's then-senior senator, Warren Magnuson, preempted these plans by attaching an amendment to the reauthorization bill prohibiting construction of new ports east of Port Angeles.

Geographic isolation. This decision sealed Washington's isolation from the rest of the country's petroleum supplies by preempting pipeline construction to the upper Midwest that would have provided the Northwest with easier access to Eastern and Midwestern distribution systems.

Today, Washington's five refineries make up 3.4 percent of the nation's total refining capacity (EIA 2014a).With this state accounting for 2.1 percent of national petroleum consumption, in-state refineries produce quantities more than sufficient for Washington's needs (EIA 2014b).

Dependence on in-state refining. Other areas of the country—the Midwest and the East—are connected to a larger distribution system that allows their short-term petroleum supply disruptions to be accommodated more easily than those in the West. which are not connected to the Gulf Coast and Midwest pipeline systems. West Coast consumers are supplied primarily from refineries in California and Washington.

Geographically, the three most important sources of crude oil for Washington refineries are Alaska's North Slope , the Canadian province of Alberta and the Bakken oil field of North Dakota.

Nationally, plant obsolescence and federal and state regulations requiring cleaner products and production processes have resulted in a reduction in the number of operable U.S. petroleum refineries from 301 in 1982 to 142 at the beginning of 2014. Those refineries that remain, however, are more efficient, with slightly more refining capacity available today than in 1982.

Over the decade prior to the 2001–03 recession, the increased demands of a growing population and economy and an increasing array of "boutique" fuels required by federal and state regulations strained capacities, with price effects felt throughout the country. The 2001–03 recession provided a respite, but capacity constraints returned at mid-decade as the economy recovered. The situation was exacerbated by hurricane damage to refineries along the Gulf Coast. During 2008–09, high crude oil prices followed by financial crisis induced demand reductions severely squeezed refinery margins. More recently, margins rebounded as increased crude oil production in the U.S. lowered refinery costs, while global product prices remained high.

The constrained supply-demand relationship combines with the West Coast's isolation to produce an economy in Washington that is unusually dependent on its in-state refining capacity. It is this industry and its relationship with the larger Washington state economy that are described in the sections that follow.

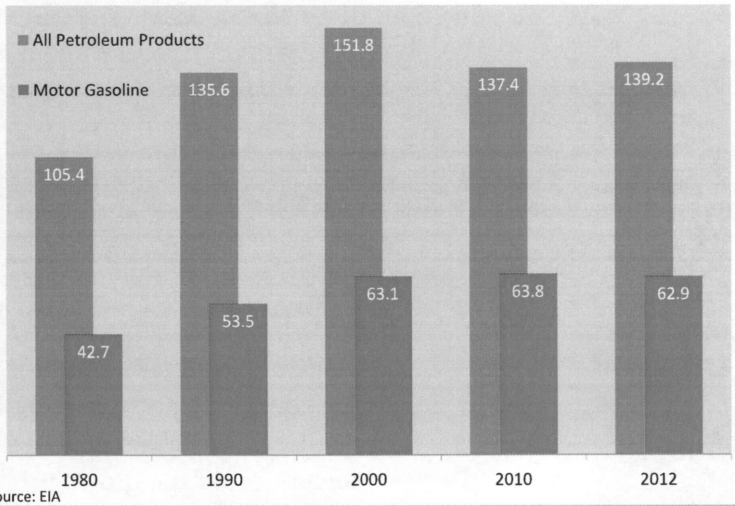
4. Industry Impact Analysis

To quantify the impact of Washington State's refineries on its economy, we use the WRC-REMI model to simulate a permanent increase in refin-

ery employment of roughly 8 percent and measure the resulting changes in total state employment, personal income, and gross product. Dividing these resulting changes by the change in refinery employment gives "multipliers" that are then applied to the industry's total employment to calculate total economic impact. For example, in 2013 the five refineries had 2,024 employees. With a multiplier of 12.88 the total impact of the refineries was 26,060 jobs. Similarly, the refinery activities resulted in $880,142 of state personal income for every direct job, or a total statewide $1.78 billion in personal income.

The economic impacts of petroleum refining in Washington, however, are broader than those of most other sectors of the economy. If petroleum prices go up, the effects are felt in the price of food and other essential consumer goods, the costs of commuting, and the cost of moving goods to market for businesses throughout the economy. And, unlike products from other sectors, alternative petroleum supplies or substitute products are not readily available in the case of an emergency. In order to fully appreciate the economic value of the petroleum refining industry in Washington, the dire economic consequences possible in a catastrophic scenario must be acknowledged. Foreign product would have to be imported, increased dock and terminal capability would be required, product prices would increase in response to diminished supply availability and stability, and these increases would be felt throughout the economy.

Figure 5.1: Washington State Petroleum Product Consumption
(millions of barrels)



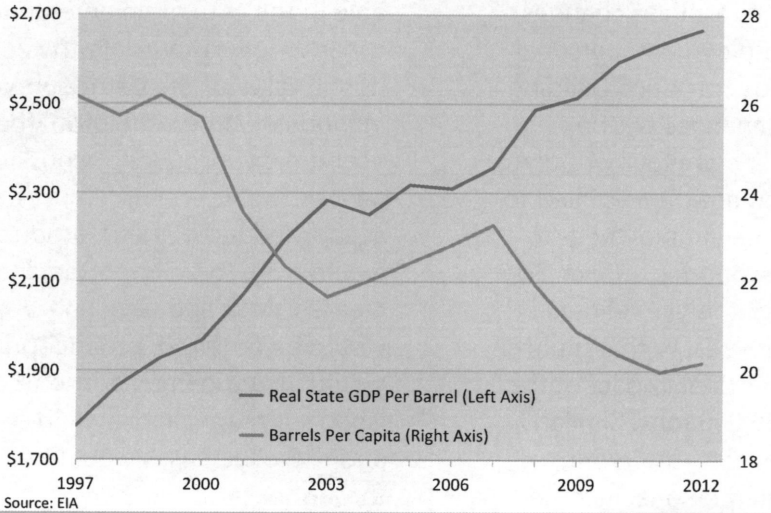
Source: EIA

In the sections that follow, Washington's petroleum refining industry is described under equilibrium conditions by summarizing consumption (Section 5), production (Section 6), and the direct purchases of the five major industry refiners (Section 7). Based on these data, the WRC-REMI model calculates the effect of the five refineries on jobs, income, retail sales and use, and B&O taxes statewide (Section 9).

Section 8 presents a comparison of taxes paid by hypothetical 160,000 barrels-per-day refineries located in Washington and California.

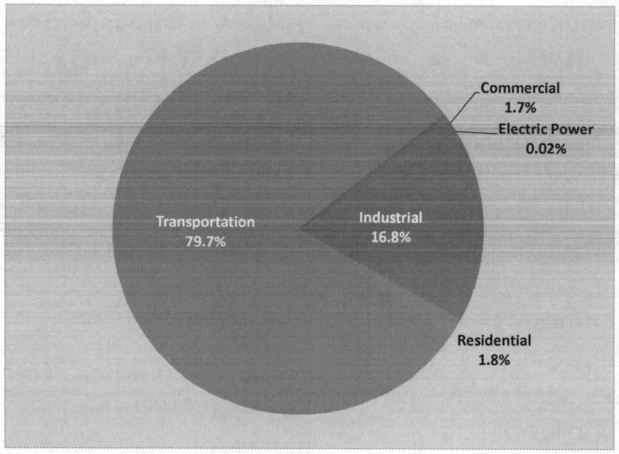
Finally, in Section 10 we provide employment, wage, and tax contribution information on the portions of the transportation, wholesaling, and retailing sectors that operate downstream of the refining process. These petroleum-related activities combine to assure that petroleum products get to their markets in Washington state and beyond. Although they would exist regardless of the presence of in-state refining, their inclusion here helps to give a complete picture of the petroleum industry in Washington state.

Figure 5.2: Washington Petroleum Consumption Trends



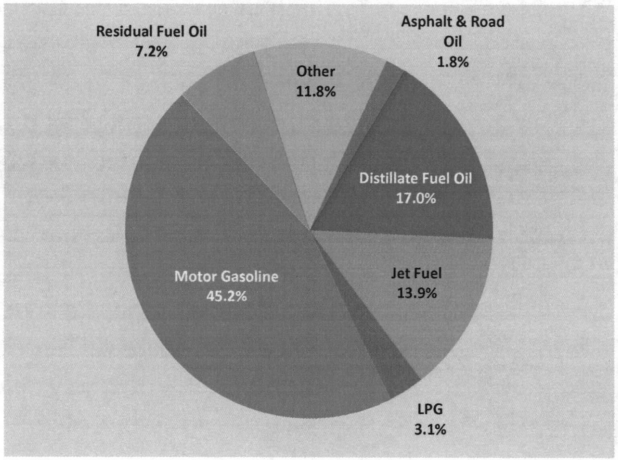
Source: EIA

Figure 5.3: 2012 Consumption By Sector



Source: EIA

Figure 5.4: 2012 Consumption By Product (Volume in Barrels)



Source: EIA

5. Petroleum Product Consumption in Washington

Washington households and businesses consumed a bit more than 139 million barrels of finished petroleum products in 2012, up 32 percent from 1980, according to the Energy Information Administration (EIA). (See Figure 5.1.) Washington's 2012 consumption was 2.1 percent of the U.S. total and about 15 percent of EIA's western Petroleum Administration for Defense (PAD) District V, which encompasses Washington, Oregon, California, Nevada, Alaska, and Hawaii. PAD District V represented 14 percent of total U.S. consumption in 2012 (EIA 2014b).

As a result of increasing fuel efficiency, petroleum product consumption in Washington declined by 6 percent from 1997 to 2012. Over the period the state's population grew by 22 percent and the output of the state economy (as measured by real gross state product) grew by 41 percent. As a result, per-capita consumption declined by 23 percent, while gross state product per barrel of petroleum increased by 50 percent. (See Figure 5.2)

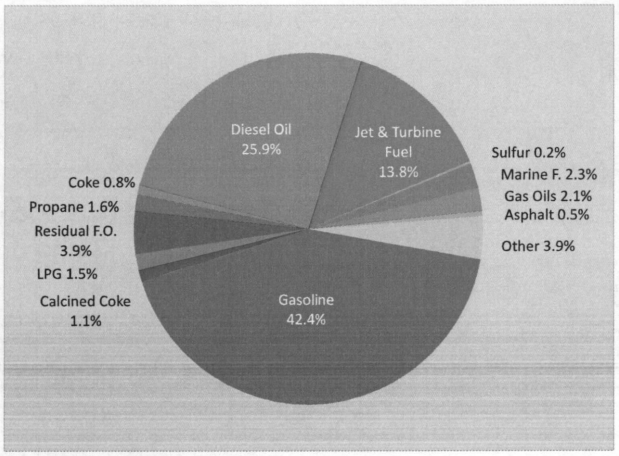
The several broad classes of customers who purchase petroleum products help to explain the state's consumption patterns. Demand for petroleum products from transportation, industrial and residential customers decreased over the fifteen-year period by 3 percent, 17 percent and 41 percent, respectively. Commercial customer demand increased by 33 percent over the period (EIA 2014b).

As shown in Figure 5.3, commercial customers accounted for less than 2 percent of Washington's total petro-

leum product consumption; transportation and industrial customers together accounted for more than 96 percent.

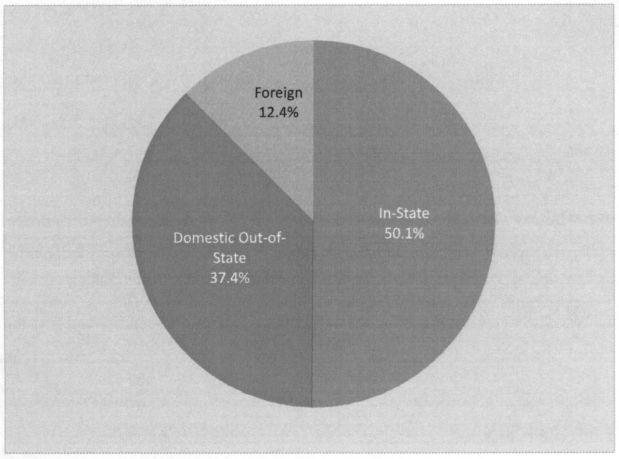
By far, motor gasoline was the largest category of product consumed, at 46.2 percent of the total. (See Figure 5.4)

Figure 6.1: 2013 Washington Production By Product (Volume in Barrels)



Source: 2014 Re ners Survey

Figure 6.2: 2013 Washington Production By Destination (Volume in Barrels)



Source: 2014 Re ners Survey

6. Refinery Production in Washington

The data that follow in Sections 6, 7, and 8, unless otherwise indicated, are the aggregated results of our survey of Washington's five major refiners (Appendix A).

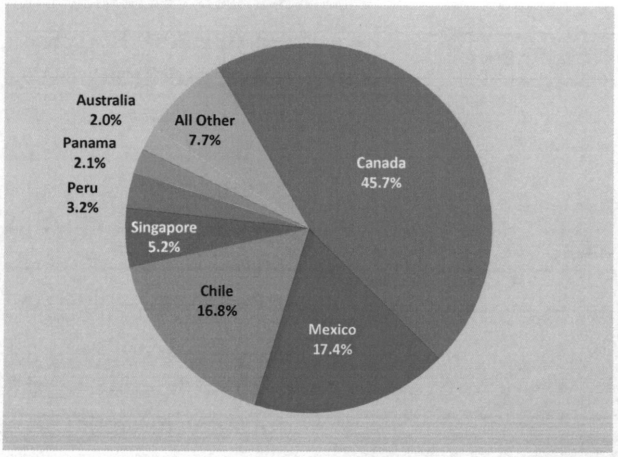
Finished products. Washington's refineries produced 606,200 barrels per day and more than a dozen different products in 2013. Gasoline, 257,100 barrels per day in 2013, is by far the largest product category, accounting for 42.4 percent of the total. Diesel oil and jet fuel are the next largest at 25.9 percent and 13.8 percent, respectively. (See Figure 6.1.)

Gasoline accounted for 45.0 percent of the refineries' total $25.1 billion in output value in 2013. Again, diesel oil and jet fuel are next, accounting for 28.6 percent and 15.1 percent, respectively.

Markets. In 2013, 50.1 percent of Washington refined product was sold within the state; 37.4 percent of total product was sold domestically outside Washington; and the remaining 12.4 percent was delivered to foreign buyers. (See Figure 6.2.)

The World Institute for Strategic Economic Research (WISER) provides data on the destination of foreign exports of petroleum products from Washington. In 2013, the $4.8 billion of petroleum products exported from the state amounted to 5.8 percent of Washington's foreign exports. Almost 46 percent of the dollar value of petroleum product exports went to Canada. Mexico was the second most important export market, followed by Chile, Singapore, Peru, Panama and Australia. (See Figure 6.3; Appendix B provides com-

Figure 6.3: Top Export Markets in 2013



Source: WISER

plete listings of export destinations for 2012 and 2013.)

Product transport. Finally, 47.8 percent of all products refined in Washington was shipped by pipeline in 2013, primarily to Seattle and Tacoma markets and on to Portland. Of the remaining product, 39.1 percent was shipped by water, to Portland and other destinations along the Columbia River as well as to foreign customers; 10.2 percent went by truck; and 2.9 percent went by rail.

7. Washington Refiners: Inputs

Washington refiners spent $23.5 billion on feedstocks and other inputs in 2013. This section describes their main areas of expenditure.

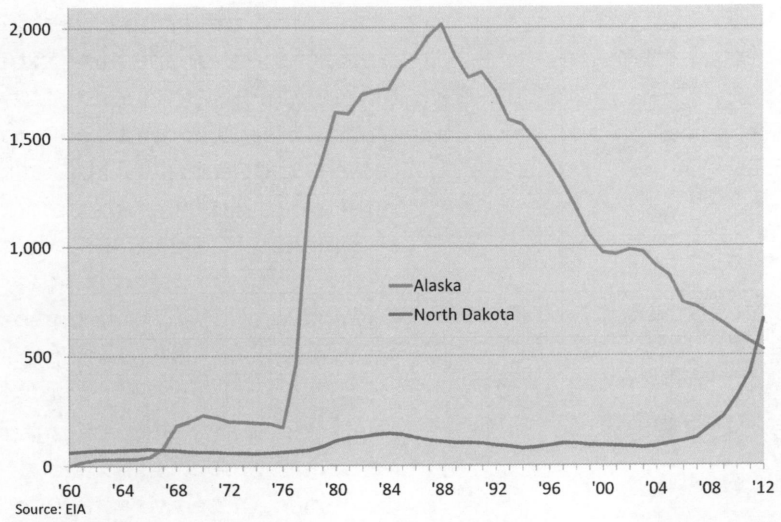
Feedstock. Washington's petroleum refineries received 591,300 barrels per day of crude oil and other feedstock inputs (e.g., butane, isobutene, and cat feed) in 2013. The total volume of feedstock in 2013 was 8.9 percent greater than 2012. The value of 2013 feedstocks was $22.5 billion, up 8.8 percent from 2012. (See Table 7.1.)

In 2013, 60.5 percent of crude oil came into the refineries by water, 27.2 percent came by pipeline; and 12.3 percent came by rail. Of the

Table 7.1: Quantity and Value of Feedstock Inputs

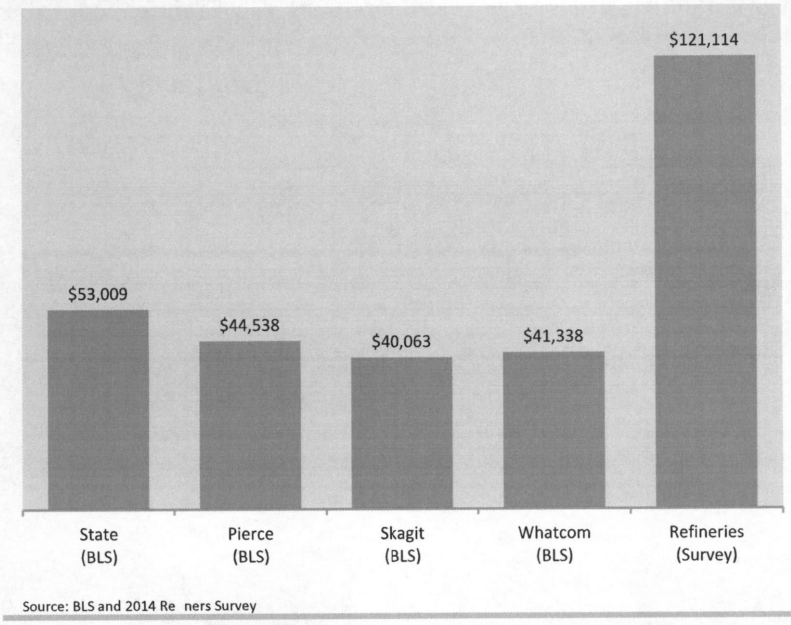
	2012	2013
Total Feedstock Inputs (thousands of barrels/day)	542.9	591.3
Crude Oil	528.4	572.3
Other	14.5	19.0
Total Value of Feedstock Inputs (millions of dollars)	20,673.0	22,494.4
Crude Oil	20,296.5	22,012.1
Other	376.5	482.3

Figure 7.1: Crude Oil Production, Alaska and North Dakota,(1,000 BBL/D)



crude oil, 46.2 percent was Alaskan, 18.4 percent was Canadian from conventional sources, 8.7 percent was Canadian from oil sands and 13.9 percent was from North Dakota. The remaining 12.8 percent came from a number of other places.

Figure 7.2: Average Annual wages



This represents a noteworthy change from 2003 when 90.4 percent of crude came by water from Alaska and no crude came to Washington by rail from North Dakota. Driving this change was the precipitous decline of crude oil production in Alaska and growth of production in North Dakota, as shown in Figure 7.1.

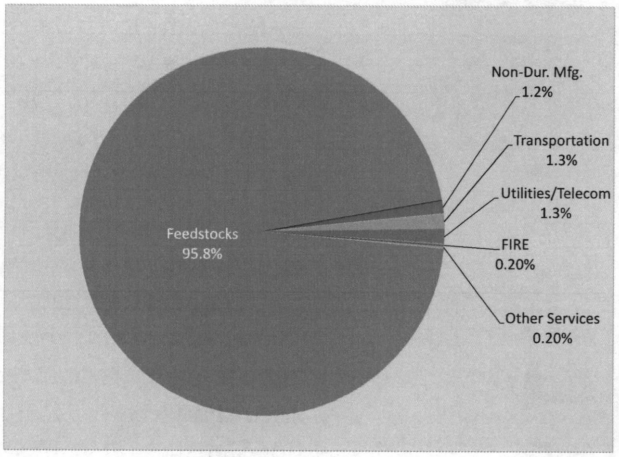
Labor. Washington's five oil refiners employed 2,024 workers in 2013 and paid them extraordinarily well. The refiner survey puts the 2013 average annual refinery wage at $121,114. According to the U.S, Bureau of Labor Statistics (BLS), the overall statewide average wage was $53,009 in 2013, less than half of the refinery average wage. (See Figure 7.2.)

This contrast is even more pronounced when comparing refining wages with average annual wages in Whatcom and Skagit counties where the four largest refineries are located. The average annual wage in Whatcom County in 2013 was $41,338 while in Skagit County it was $40,063 (BLS 2014).

Refinery payrolls totaled nearly a quarter of a billion dollars in 2013. Worker benefits totaled more than $90 million, and average total compensation per employee was $165,870.

Contract labor. Washington's petroleum refiners regularly rely on contract workers to clean and service various parts of their plant facilities and equipment, as well as to conduct scheduled major repairs and upgrades. The number of workers varies from year to year—2,843 in 2012 and 2,727 in 2013—and represents a significant part of the employment base, especially in Whatcom and Skagit counties.

Figure 7.3: 2013 Non-Labor Operating Expenses



Source: 2014 Re ners Survey

In 2013 refiners paid $412.9 million for contract workers, an average of $151,417 per worker.

Forty-one percent of contract workers in 2013 (1,128 workers) were engaged in capital repair and replacement, at a cost of $91.7 million. In addition to this contract labor, the refiners made $100.5 million in construction and other capital expenditures. Purposes included safety and environmental compliance, efficiency improvements and capacity expansion.

Non-labor operating expenditures. Non-labor operating expenditures are mostly for feedstocks—crude oil—and intermediate processed crude (which will be refined further into higher grade products) and chemicals and catalysts to be applied to the crude to produce various final products. These purchases show up in two categories: feedstocks and nondurable manufactured goods (primarily intermediate petroleum products and chemicals). Combined, these two categories account for more than 97 percent of all non-labor operating expenditures.

Significant amounts are also spent on utilities and transportation, which together accounted for $609.1 million in 2013. Utilities expenditures, including electricity, gas and communications, totaled $294.6 million in 2013, and transportation totaled $314.5 million. Transportation expenditures were primarily for waterborne transport of inbound and outbound product (Appendix A, Table A.7).

Taxes. The five refiners contributed $268.6 million in state and local taxes in 2013 (See Table 7.2).

Table 7.2: Taxes Paid by Refiners in 2013

	(Millions)	% of Total
Retail sales and use tax	$5.9	2.2%
Business and occupation tax	$110.0	41.0%
Property tax	$24.3	9.0%
Unemployment compensation tax (state only)	$1.1	0.4%
Hazardous substance tax	$116.7	43.5%
Oil spill tax	$8.3	3.1%
Petroleum Products Tax	-	-
Motor vehicle fuel tax	$0.5	0.2%
Other	$1.7	0.6%
Total	$268.6	

Source: 2014 Re ners Survey

Table 7.3: Regulatory Fees Paid by Refiners in 2012 (dollars)

Air operating registration and permit fees	2,061,000	16.4%
Waste disposal fees	1,330,000	10.6%
Wastewater discharge fees	820,600	6.5%
Building Inspection Fees	8,344,913	66.3%
Building permit fees	35,000	0.3%
Other	109,000	0.9%
Total	12,700,513	

Source: 2014 Re ners Survey

The state hazardous substance tax—$116.7 million—comprised the largest share of total taxes paid, 43.5 percent of the total. The rate on this tax is 0.7 percent of wholesale value. Petroleum products constitute a large portion of the products subject to the tax.

Ranking a close second was the business and occupation tax, $110.0 million, 41.0 percent of the total. Refineries are subject to this tax under either the manufacturing or wholesaling categories, at the rate of 0.484 percent.

Next in line was the property tax, $24.3 million and 9.0 percent of the total tax bill.

The fourth most costly tax in 2013, $8.3 million, was the oil spill tax. It is a tax of 5 cents per barrel on crude oil or petroleum products that are transported by ship or barge in Washington waters and offloaded at an in-state marine terminal. Of the proceeds, 4 cents are paid into the oil spill administration account and 1 cent into the oil spill response account. When (as is currently the case) the oil spill response account is fully funded, the 1 cent tax is suspended; when the account is short of funds, the tax is resumed. The 1 cent response tax was last collected during the 3-month period from January 1 to March 31, 2013. Through a credit, the tax is effectively eliminated for crude oil or petroleum products exported from the state.

The petroleum products tax is another tax unique to the petroleum industries. Revenues from this tax are dedicated to the pollution liability insurance program, which assists owners of underground storage tanks in obtaining insurance for upgrading and replacing tanks and preventing leaks. This tax is suspended when the pollution liability insurance program account balance exceeds a trigger value. The trust fund balance reached the trigger in the first quarter of 2010. The tax was suspended on April 1 of that year and remains suspended today.

The refineries reported paying $5.9 million in sales and use taxes in 2013. Currently the sales and use tax rate paid by the two Skagit County refineries and the two Whatcom County refineries is 8.5 percent, while the rate paid by the Tacoma refinery is 9.5 percent.

Fees. In addition, the refiners paid $12.7 million in regulatory fees in 2013. These included their air operating registration and permit fees ($2.1 million, 16.4 percent), waste disposal fees $1.3 million, 10.6 percent), and building inspection fees