

Appendix N

Socioeconomic Tables

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LIST OF TABLES

		Page
Table N-1.	Historic Population in the Study Area, 1990–2012.....	N-1
Table N-2.	Projected Population Growth in the Study Area, 2012–2030	N-2
Table N-3.	Race, Ethnic, and Poverty Characteristics for the Proposed Facility.....	N-4
Table N-4.	Housing Characteristics, 2013	N-5
Table N-5.	Study Area Unemployment, 2003–2013	N-6
Table N-6.	Proposed Action Full- and Part-Time Employment by Industry, 2013	N-7
Table N-7.	Study Area Income, 2013.....	N-8
Table N-8.	Study Area Property Value	N-9
Table N-9.	Race, Ethnic, and Poverty Characteristics for the Rail Corridor.....	N-11
Table N-10.	Rail Corridor Full- and Part-Time Employment by Industry, 2013.....	N-17
Table N-11.	Underlying Costs of Rail Crossing Delays	N-19
Table N-12.	Race, Ethnic, and Poverty Characteristics for the Vessel Corridor.....	N-20
Table N-13.	Vessel Corridor Full- and Part-Time Employment by Industry, 2013.....	N-22
Table N-14.	Economic Impact of Proposed Facility Construction on Study Area	N-24
Table N-15.	Economic Impact of Proposed Facility Operations on Study Area.....	N-24
Table N-16.	Portland-Vancouver MSA and Project Occupational Employment, 2014.....	N-25
Table N-17.	Summary of Proposed Action Tax Impacts	N-26
Table N-18.	Oregon State Income Tax Estimates	N-26
Table N-19.	Estimates of Percent Change in Single-Family Residential Property Values from Assumed Incremental Project Traffic (Four Trains per Day) Based on Futch (2011).....	N-27
Table N-20.	Estimates of Percent Change in Single-Family Residential Property Values from Assumed Incremental Project Traffic (Four Trains per Day) Based on Simons and El Jaouhari (2004).....	N-27
Table N-21.	Estimated Delay Costs Associated with Increased Rail Traffic, 2014 Dollars	N-28
Table N-22.	Economic Impact of Indirect and Induced Employment during Construction – Phase I.....	N-34
Table N-23.	Economic Impact of Indirect and Induced Employment during Construction – Phase II.....	N-35
Table N-24.	Economic Impact of Indirect and Induced Employment during Startup Operations	N-37
Table N-25.	Economic Impact of Indirect and Induced Employment during Full Operations	N-38

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Table N-1. Historic Population in the Study Area, 1990–2012

State/County	1990 Population	2000 Population	Percent Change 1990–2000	2012 Population	Percent Change 2000–2012	Percent Change 1990–2012
PROPOSED ACTION						
Washington						
Clark	238,053	345,238	45.0%	437,871	26.8%	83.9%
Cowlitz	82,119	92,948	13.2%	101,827	9.6%	24.0%
Skamania	8,289	9,872	19.1%	11,187	13.3%	35.0%
Oregon						
Clackamas	278,850	338,391	21.4%	383,628	13.4%	37.6%
Columbia	37,557	43,560	16.0%	49,233	13.0%	31.1%
Hood River	16,903	20,411	20.8%	22,597	10.7%	33.7%
Marion	228,483	284,834	24.7%	321,397	12.8%	40.7%
Multnomah	583,887	660,486	13.1%	758,932	14.9%	30.0%
Washington	311,554	445,342	42.9%	547,543	22.9%	75.7%
Yamhill	65,551	84,992	29.7%	100,644	18.4%	53.5%
TOTAL	1,851,246	2,326,074	25.6%	2,734,859	17.6%	47.7%
RAIL CORRIDOR						
Washington						
Adams	13,603	16,428	20.8%	18,934	15.3%	39.2%
Benton	112,560	142,475	26.6%	182,383	28.0%	62.0%
Clark	238,053	345,238	45.0%	437,871	26.8%	83.9%
Franklin	37,473	49,347	31.7%	85,777	73.8%	128.9%
Klickitat	16,616	19,161	15.3%	20,629	7.7%	24.2%
Lincoln	8,864	10,184	14.9%	10,455	2.7%	17.9%
Skamania	8,289	9,872	19.1%	11,187	13.3%	35.0%
Spokane	361,364	417,939	15.7%	475,957	13.9%	31.7%
Walla Walla	48,439	55,180	13.9%	59,400	7.6%	22.6%
Oregon						
Gilliam	1,717	1,915	11.5%	1,948	1.7%	13.5%
Hood River	16,903	20,411	20.8%	22,597	10.7%	33.7%
Morrow	7,625	10,995	44.2%	11,259	2.4%	47.7%
Multnomah	583,887	660,486	13.1%	758,932	14.9%	30.0%
Sherman	1,918	1,934	0.8%	1,739	-10.1%	-9.3%
Umatilla	59,249	70,548	19.1%	76,882	9.0%	29.8%
Wasco	21,683	23,791	9.7%	25,470	7.1%	17.5%
TOTAL	1,538,243	1,855,904	20.7%	2,201,420	18.6%	43.1%

State/County	1990 Population	2000 Population	Percent Change 1990–2000	2012 Population	Percent Change 2000–2012	Percent Change 1990–2012
VESSEL CORRIDOR						
Washington						
Clark	238,053	345,238	45.0%	437,871	26.8%	83.9%
Cowlitz	82,119	92,948	13.2%	101,827	9.6%	24.0%
Pacific	18,882	20,984	11.1%	20,591	-1.9%	9.1%
Wahkiakum	3,327	3,824	14.9%	3,997	4.5%	20.1%
Oregon						
Clatsop	33,301	35,630	7.0%	37,339	4.8%	12.1%
Columbia	37,557	43,560	16.0%	49,233	13.0%	31.1%
Multnomah	583,887	660,486	13.1%	758,932	14.9%	30.0%
TOTAL	997,126	1,202,670	20.6%	1,409,790	17.2%	41.4%

Sources:

US Census Bureau. 1990 Census. Website (<http://www.census.gov/main/www/cen1990.html>) accessed January 26, 2015.

US Census Bureau. 2000 Census. Website (<http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml>) accessed January 26, 2015.

US Census Bureau. 2010 Census. Website (<http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml>) accessed January 26, 2015.

US Census Bureau. 2014. Table PEPANNRES: Annual Estimates of the Resident Population April 1, 2010 to July 1, 2013.

Table N-2. Projected Population Growth in the Study Area, 2012–2030

State/County	2012 Population	2020 Projected Population	Percent Change 2012–2020	2030 Projected Population	Percent Change 2012–2030
PROPOSED ACTION					
Washington					
Clark	437,871	513,010	17.2%	579,768	32.4%
Cowlitz	101,827	126,676	24.4%	144,531	41.9%
Skamania	11,187	12,332	10.2%	13,426	20.0%
Oregon					
Clackamas	383,628	422,576	10.2%	485,054	26.4%
Columbia	49,233	54,517	10.7%	61,273	24.5%
Hood River	22,597	25,628	13.4%	29,979	32.7%
Marion	321,397	355,189	10.5%	406,612	26.5%
Multnomah	758,932	807,198	6.4%	879,987	16.0%
Washington	547,543	622,368	13.7%	731,125	33.5%
Yamhill	100,644	113,611	12.9%	133,907	33.1%
TOTAL	2,734,859	3,053,105	11.6%	3,465,662	26.7%

State/County	2012 Population	2020 Projected Population	Percent Change 2012–2020	2030 Projected Population	Percent Change 2012–2030
RAIL CORRIDOR					
Washington					
Adams	18,934	20,761	9.6%	22,926	21.1%
Benton	182,383	184,704	1.3%	198,528	8.9%
Clark	437,871	513,010	17.2%	579,768	32.4%
Franklin	85,777	90,654	5.7%	109,861	28.1%
Klickitat	20,629	24,470	18.6%	27,049	31.1%
Lincoln	10,455	11,907	13.9%	13,601	30.1%
Skamania	11,187	12,332	10.2%	13,426	20.0%
Spokane	475,957	529,451	11.2%	589,623	23.9%
Walla Walla	59,400	65,593	10.4%	69,828	17.6%
Oregon					
Gilliam	1,948	2,062	5.9%	2,280	17.0%
Hood River	22,597	25,628	13.4%	29,979	32.7%
Morrow	11,259	12,307	9.3%	13,726	21.9%
Multnomah	758,932	807,198	6.4%	879,987	16.0%
Sherman	1,739	1,716	-1.4%	1,731	-0.5%
Umatilla	76,882	83,359	8.4%	93,673	21.8%
Wasco	25,470	27,388	7.5%	30,186	18.5%
TOTAL	2,201,420	2,412,540	9.6%	2,676,170	21.6%
VESSEL CORRIDOR					
Washington					
Clark	437,871	513,010	17.2%	579,768	32.4%
Cowlitz	101,827	126,676	24.4%	144,531	41.9%
Pacific	20,591	22,207	7.8%	22,985	11.6%
Wahkiakum	3,997	4,740	18.6%	5,366	34.3%
Oregon					
Clatsop	37,339	38,461	3.0%	40,072	7.3%
Columbia	49,233	54,517	10.7%	61,273	24.5%
Multnomah	758,932	807,198	6.4%	879,987	16.0%
TOTAL	1,409,790	1,566,809	11.1%	1,733,982	23.0%

Sources:

Washington Office of Financial Management. 2007. Washington State Growth Management Population Projections for Counties: 2000 to 2030, 2007 County Projections. Website (<http://www.ofm.wa.gov/pop/gma/projections07.asp>) accessed January 26, 2015.

Oregon Office of Economic Analysis. 2013. Long-Term Oregon State's County Population Forecast, 2010–2050. Website (<http://www.oregon.gov/DAS/oea/Pages/demographic.aspx>) accessed January 30, 2015.

Table N-3. Race, Ethnic, and Poverty Characteristics for the Proposed Facility

Location	Race							Hispanic or Latino	Population Below Two Times the Poverty Level
	White	Black or African American	American Indian and Alaska Native	Asian	Hawaiian and Pacific Islander	Other Race	Two or More Races		
Washington	78.7%	3.5%	1.4%	7.2%	0.6%	4.0%	4.6%	11.2%	29.3%
Washington Threshold Criteria ¹	na	4.2%	1.7%	8.6%	0.7%	4.8%	5.5%	13.4%	29.3%
Clark County	86.1%	2.0%	0.6%	4.0%	0.6%	2.4%	4.2%	7.6%	29.5%*
CT 410.05	67.8%	3.3%	0.8%	0.0%	0.0%	23.9%*	4.2%	30.6%*	60.8%*
Oregon	85.3%	1.8%	1.4%	3.7%	0.4%	3.8%	3.7%	11.7%	35.4%
Oregon Threshold Criteria ¹		2.2%	1.7%	4.4%	0.5%	4.6%	4.4%	14.0%	35.4%
Multnomah County	78.5%	5.7%*	1.0%	6.6%*	0.6%*	3.4%	4.1%	10.8%	35.6%*
CT 72.01	93.3%	1.4%	0.0%	0.0%	0.0%	0.6%	4.7%*	2.3%	37.7%*
Total (CTs)	79.5%	2.4%	0.4%	0.0%	0.0%	13.2%	4.4%	17.6%	50.3%

Sources:

US Census Bureau. 2013. Table DP05: ACS Demographic and Housing Estimates 2008–2012 5-Year Estimates. Website (<http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>) accessed January 27, 2015.

US Census Bureau. 2013. Table DP03, Select Economic Characteristics 2008–2012 5-Year Estimates. Website (<http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>) accessed January 27, 2015.

US Census Bureau. 2013. ACS 2008–2012 5-Year Data, Table C17002: Ratio of Income to Poverty Level in the Past 12 Months. Website (http://www.census.gov/acs/www/data_documentation/summary_file/) accessed March 11, 2015.

Notes:

- 1 Statewide exceedance criteria percentages are 1.2 times the actual Environmental Justice group population percentages for each state.
- 2 The low-income exceedance criterion is the state percentage of persons in households with incomes below 2 times the poverty income level. For example, Washington has 1.94 million people in households with incomes lower than 2 times the poverty income levels established by the US Census Bureau. This amount comprises 29.3 percent of the total state population for whom poverty status has been determined (6.61 million people). Therefore, the low-income exceedance criteria for study area CTs located within Washington is 29.3 percent.

* Denotes minority and low-income populations that are meaningfully greater than the corresponding minority or low-income population at the state level in the relevant racial/ethnic or low-income category.

Table N-4. Housing Characteristics, 2013

State/County	Total Housing Units	Occupied Housing Units	Vacant Housing Units	Homeowner Vacancy Rate	Rental Vacancy Rate
Proposed Action					
Washington	2,899,538	2,629,126	270,412	2.0%	5.3%
Clark	168,178	158,855	9,323	5.5%	4.5%
Cowlitz	43,356	39,602	3,754	8.7%	5.2%
Skamania	5,614	4,452	1,162	20.7%	11.3%
Oregon	1,677,363	1,516,456	160,907	2.0%	5.1%
Clackamas	157,541	146,527	11,014	7.0%	4.8%
Columbia	20,614	19,069	1,545	7.5%	4.6%
Hood River	9,314	8,144	1,170	12.6%	5.7%
Marion	121,245	113,285	7,960	6.6%	5.1%
Multnomah	325,163	305,939	19,224	5.9%	3.6%
Washington	213,520	201,771	11,749	5.5%	4.5%
Yamhill	37,137	34,138	2,999	8.1%	7.7%
Study Area Total	1,101,682	1,031,782	69,900		
Rail Corridor					
Washington	2,899,538	2,629,126	270,412	2.0%	5.3%
Adams	6,232	5,738	494	7.9%	1.6%
Benton	69,638	65,675	3,963	5.7%	6.9%
Clark	168,178	158,855	9,323	5.5%	4.5%
Franklin	25,063	23,445	1,618	6.5%	1.7%
Klickitat	9,797	8,019	1,778	18.1%	10.1%
Lincoln	5,775	4,457	1,318	22.8%	5.0%
Skamania	5,614	4,452	1,162	20.7%	11.3%
Spokane	202,568	187,572	14,996	7.4%	6.3%
Walla Walla	23,518	21,677	1,841	7.8%	4.5%
Oregon	1,677,363	1,516,456	160,907	2.0%	5.1%
Gilliam	1,122	883	239	21.3%	8.7%
Hood River	9,314	8,144	1,170	12.6%	5.7%
Morrow	4,426	3,741	685	15.5%	9.9%
Multnomah	325,163	305,939	19,224	5.9%	3.6%
Sherman	938	827	111	11.8%	4.0%
Umatilla	29,638	26,744	2,894	9.8%	5.3%
Wasco	11,438	9,612	1,826	16.0%	8.1%
Study Area Total	898,422	835,780	62,642		

State/County	Total Housing Units	Occupied Housing Units	Vacant Housing Units	Homeowner Vacancy Rate	Rental Vacancy Rate
Vessel Corridor					
Washington	2,899,538	2,629,126	270,412	2.0%	5.3%
Clark	168,178	158,855	9,323	5.5%	4.5%
Cowlitz	43,356	39,602	3,754	8.7%	5.2%
Pacific	15,575	9,366	6,209	39.9%	5.4%
Wahkiakum	2,008	1,715	293	14.6%	2.1%
Oregon	1,677,363	1,516,456	160,907	2.0%	5.1%
Clatsop	21,601	15,749	5,852	27.1%	9.8%
Columbia	20,614	19,069	1,545	7.5%	4.6%
Multnomah	325,163	305,939	19,224	5.9%	3.6%
Study Area Total	596,495	550,295	46,200		

Source:

US Census Bureau. 2014e. Table DP04, 2009–2013 Selected Housing Characteristics. Website (<http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>) accessed January 26, 2015.

Table N-5. Study Area Unemployment, 2003–2013

State/Study Area	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Washington	7.4%	6.2%	5.5%	4.9%	4.6%	5.4%	9.3%	9.9%	9.2%	8.1%	7.0%
Oregon	8.1%	7.3%	6.2%	5.3%	5.2%	6.5%	11.1%	10.8%	9.7%	8.8%	7.7%
Proposed Action ¹	8.3%	7.1%	6.0%	5.2%	5.0%	6.1%	10.8%	10.7%	9.5%	8.5%	7.5%
Rail Corridor ²	8.4%	7.1%	6.2%	5.4%	5.1%	6.0%	10.2%	10.4%	9.5%	8.7%	7.9%
Vessel Corridor ³	8.9%	7.5%	6.3%	5.5%	5.3%	6.4%	11.6%	11.5%	10.1%	8.9%	8.0%

Source: Bureau of Labor Statistics. 2014. Labor Force Data by County. 2013 Annual Averages. Website (<http://www.bls.gov/lau/>) accessed January 28, 2015.

Notes:

- Proposed Action includes Clark, Cowlitz, and Skamania counties in Washington and Clackamas, Columbia, Hood River, Marion, Multnomah, Washington, and Yamhill counties in Oregon.
- Rail Corridor includes Adams, Benton, Clark, Franklin, Klickitat, Lincoln, Skamania, Spokane, and Walla Walla counties in Washington, and Gilliam, Hood River, Morrow, Multnomah, Sherman, Umatilla, and Wasco counties in Oregon.
- Vessel Corridor includes Clark, Cowlitz, Pacific, and Wahkiakum counties in Washington, and Clatsop, Columbia and Multnomah counties in Oregon.

Table N-6. Proposed Action Full- and Part-Time Employment by Industry, 2013

	Clark	Cowlitz	Skamania	Clackamas	Columbia	Hood River	Marion	Multnomah	Washington	Yamhill
Total employment	195,000	45,200	3,200	222,400	15,670	16,190	172,200	597,800	309,300	45,690
Farm employment	2,100	600	140	8,300	900	1,790	8,500	1,500	4,300	4,410
Nonfarm employment	192,800	44,600	3,060	214,000	14,760	14,410	163,700	596,300	305,000	41,280
Private nonfarm employment	167,700	38,700	2,390	198,000	12,830	13,140	130,000	524,000	282,900	36,880
Forestry and fishing	(D)	1,100	(D)	1,900	400	490	3,400	(D)	1,400	(D)
Mining	(D)	200	(D)	500	170	30	500	(D)	400	(D)
Utilities	(D)	100	0	400	120	40	(D)	1,400	(D)	40
Construction	13,200	2,800	150	14,100	840	570	8,600	25,500	15,500	1,930
Manufacturing	12,800	6,500	280	20,100	1,600	1,520	9,900	36,900	45,500	7,010
Wholesale trade	7,400	1,500	(D)	12,600	220	560	3,900	25,300	14,300	780
Retail trade	21,300	5,300	210	24,200	1,910	1,560	19,100	49,300	33,000	4,290
Transportation and warehousing	(D)	1,700	(D)	6,000	560	290	(D)	23,500	(D)	880
Information	3,400	400	30	3,100	120	190	1,500	14,200	8,400	300
Finance and insurance	8,900	1,400	70	12,000	560	270	6,700	29,100	16,000	1,410
Real estate and rental and leasing	10,600	1,300	90	13,900	830	650	6,800	26,400	8,800	1,560
Professional services	13,300	1,400	170	16,100	(D)	1,190	7,200	55,300	19,000	1,740
Management of companies	2,200	100	0	1,800	(D)	(D)	1,200	16,500	11,900	240
Administrative and waste management	10,700	1,600	50	11,800	630	(D)	8,400	28,800	26,300	1,490
Educational services	2,700	500	(D)	4,600	180	160	4,300	23,000	8,700	2,580
Health care and social assistance	25,500	6,300	(D)	23,600	1,500	2,130	21,600	69,200	30,100	5,180
Arts, entertainment, and recreation	4,800	800	80	5,900	(D)	840	3,000	18,900	5,700	870
Accommodation and food services	11,700	3,000	590	13,100	(D)	1,560	11,100	48,400	18,800	2,990
Other services	11,500	2,800	220	12,400	1,070	720	8,400	30,900	14,100	2,170
Government	25,200	5,900	670	16,000	1,930	1,260	33,700	72,400	22,100	4,400

Source: Bureau of Economic Analysis 2014. Regional Economic Accounts, Total full-time and part-time employment by NAICS industry for 2012. Website (<http://www.bea.gov/regional/>) accessed January 28, 2015.

Note:

(D) Not shown to avoid disclosure of confidential information, but the estimates for this item are included in the totals.

Table N-7. Study Area Income, 2013

State/County	Median Household Income	Per Capita Income
Proposed Action		
Washington	\$59,480	\$30,740
Clark	\$58,230	\$27,680
Cowlitz	\$47,600	\$23,560
Skamania	\$53,710	\$28,450
Oregon	\$50,230	\$26,810
Clackamas	\$64,350	\$32,780
Columbia	\$54,970	\$26,270
Hood River	\$56,730	\$25,180
Marion	\$46,890	\$22,000
Multnomah	\$52,510	\$30,480
Washington	\$64,180	\$31,080
Yamhill	\$54,540	\$24,290
Rail Corridor		
Washington	\$59,480	\$30,740
Adams	\$43,930	\$16,940
Benton	\$60,490	\$28,580
Clark	\$58,230	\$27,680
Franklin	\$55,180	\$19,500
Klickitat	\$41,690	\$22,230
Lincoln	\$47,200	\$25,820
Skamania	\$53,710	\$28,450
Spokane	\$49,230	\$25,660
Walla Walla	\$46,600	\$23,810
Oregon	\$50,230	\$26,810
Gilliam	\$44,740	\$25,320
Hood River	\$56,730	\$25,180
Morrow	\$49,940	\$20,660
Multnomah	\$52,510	\$30,480
Sherman	\$42,640	\$24,310
Umatilla	\$48,390	\$20,840
Wasco	\$43,770	\$22,840
Vessel Corridor		
Washington	\$59,480	\$30,740
Clark	\$58,230	\$27,680

State/County	Median Household Income	Per Capita Income
Cowlitz	\$47,600	\$23,560
Pacific	\$39,830	\$23,890
Wahkiakum	\$41,820	\$22,330
Oregon	\$50,230	\$26,810
Clatsop	\$44,680	\$25,680
Columbia	\$54,970	\$26,270
Multnomah	\$52,510	\$30,480

Source: US Census Bureau. 2013c. Table DP03 Select Economic Characteristics 2008–2012 5-Year Estimates. Website (<http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>) accessed January 27, 2015.

Table N-8. Study Area Property Value

State/County	Median Value of Owner-Occupied Homes (2013)	Average Assessed Value of Residential Property (2012)	Average Assessed Value of Real Property (2012)
Proposed Action			
Washington	\$262,100	\$217,300	\$236,100
Clark	\$232,500	\$186,700	\$213,500
Cowlitz	\$181,500	\$126,800	\$135,200
Skamania	\$248,200	\$175,200	\$148,000
Oregon	\$238,000	\$168,500	\$176,000
Clackamas	\$300,600	\$229,400	\$248,200
Columbia	\$213,200	\$136,400	\$138,600
Hood River	\$321,700	\$168,000	\$172,900
Marion	\$192,200	\$142,500	\$174,500
Multnomah	\$271,600	\$168,800	\$212,600
Washington	\$282,400	\$208,900	\$271,600
Yamhill	\$224,900	\$155,900	\$175,200
Study Area Total		\$182,700	\$215,300
Rail Corridor			
Washington	\$262,100	\$217,300	\$236,100
Adams	\$133,600	\$94,300	\$105,100
Benton	\$176,700	\$156,200	\$202,100
Clark	\$232,500	\$186,700	\$213,500
Franklin	\$161,600	\$137,400	\$171,200
Klickitat	\$194,700	\$149,400	\$101,300
Lincoln	\$155,700	\$61,800	\$56,800
Skamania	\$248,200	\$175,200	\$148,000

State/County	Median Value of Owner-Occupied Homes (2013)	Average Assessed Value of Residential Property (2012)	Average Assessed Value of Real Property (2012)
Spokane	\$184,700	\$153,100	\$170,500
Walla Walla	\$195,200	\$174,400	\$159,900
Oregon	\$238,000	\$168,500	\$176,000
Gilliam	\$116,400	\$52,800	\$94,500
Hood River	\$321,700	\$168,000	\$172,900
Morrow	\$119,800	\$64,600	\$138,900
Multnomah	\$271,600	\$168,800	\$212,600
Sherman	\$135,400	\$37,700	\$55,700
Umatilla	\$142,700	\$97,900	\$101,800
Wasco	\$181,600	\$117,600	\$113,300
Study Area Total		\$162,700	\$184,000
Vessel Corridor			
Washington	\$262,100	\$217,300	\$236,100
Clark	\$232,500	\$186,700	\$213,500
Cowlitz	\$181,500	\$126,800	\$135,200
Pacific	\$162,000	\$99,100	\$66,600
Wahkiakum	\$195,600	\$140,100	\$88,500
Oregon	\$238,000	\$168,500	\$176,000
Clatsop	\$256,500	\$186,800	\$163,500
Columbia	\$213,200	\$136,400	\$138,600
Multnomah	\$271,600	\$168,800	\$212,600
Study Area Total		\$167,900	\$190,900

Sources: US Census Bureau. 2014e. Table DP04, 2009–2013 Selected Housing Characteristics. Website (<http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>) accessed January 26, 2015.

Washington Department of Revenue. 2013. Property Tax Statistics 2013. September. Website (http://dor.wa.gov/docs/reports/2013/Property_Tax_Statistics_2013/PropTx2013.pdf) accessed February 4, 2015.

Oregon Department of Revenue. 2015b. Personal Income Tax. Website (http://www.oregon.gov/dori/PERTAX/Pages/faq-qa_forms.aspx) accessed February 10, 2015.

Table N-9. Race, Ethnic, and Poverty Characteristics for the Rail Corridor

Location	Race							Hispanic or Latino	Population Below Two Times the Poverty Level
	White	Black or African American	American Indian and Alaska Native	Asian	Hawaiian and Pacific Islander	Other Race	Two or More Races		
Washington	78.7%	3.5%	1.4%	7.2%	0.6%	4.0%	4.6%	11.2%	29.3%
Washington Threshold Criteria ¹	na	4.2%	1.7%	8.6%	0.7%	4.8%	5.5%	13.4%	29.3%
Adams County	62.6%	0.1%	0.9%	0.7%	0.1%	31.9%*	3.7%	59.2%*	54.1%*
CT 9501	94.7%	0.5%	0.4%	0.2%	0.0%	1.6%	2.4%	4.5%	38.7%*
CT 9502	85.5%	0.0%	0.5%	0.4%	0.4%	10.8%*	2.3%	12.8%	44.1%*
Benton County	81.9%	1.4%	1.0%	2.7%	0.1%	9.8%*	3.1%	18.5%*	29.5%*
CT 113	63.5%	2.3%	1.1%	0.4%	0.5%	29.1%*	3.2%	46.9%*	56.0%*
CT 114.01	78.9%	1.3%	0.9%	0.0%	0.0%	16.9%*	1.9%	29.0%*	46.2%*
CT 115.01	77.1%	0.8%	1.4%	0.3%	0.0%	16.5%*	4.0%	28.9%*	32.0%*
CT 116	51.2%	0.0%	19.2%*	0.0%	0.0%	29.6%*	0.0%	34.6%*	64.4%*
Clark County	86.1%	2.0%	0.6%	4.0%	0.6%	2.4%	4.2%	7.6%	29.5%*
CT 405.07	89.8%	0.0%	1.3%	0.3%	0.0%	7.3%*	1.2%	10.1%	40.6%*
CT 405.08	93.6%	0.7%	0.8%	2.1%	0.4%	0.3%	2.1%	2.9%	21.4%
CT 405.09	93.2%	0.0%	0.9%	0.0%	0.0%	0.6%	5.4%	8.0%	48.4%*
CT 405.10	96.3%	0.0%	0.4%	1.4%	0.0%	0.2%	1.7%	0.8%	8.4%
CT 406.05	93.9%	1.4%	0.0%	2.0%	0.7%*	0.0%	2.1%	2.6%	14.0%
CT 406.09	80.2%	0.0%	0.3%	11.1%*	0.4%	3.9%	4.0%	5.2%	2.7%
CT 410.05	67.8%	3.3%	0.8%	0.0%	0.0%	23.9%*	4.2%	30.6%*	60.8%*
CT 412.01	79.9%	6.7%*	0.2%	4.4%	0.0%	2.5%	6.3%*	5.4%	27.0%
CT 413.09	87.7%	1.8%	0.3%	4.8%	0.2%	0.5%	4.7%	11.0%	24.5%
CT 413.10	84.2%	3.4%	1.0%	5.3%	0.0%	2.5%	3.6%	6.1%	14.4%
CT 413.25	76.0%	2.4%	0.3%	16.7%*	0.0%	1.0%	3.6%	6.5%	13.9%

Location	Race						Hispanic or Latino	Population Below Two Times the Poverty Level	
	White	Black or African American	American Indian and Alaska Native	Asian	Hawaiian and Pacific Islander	Other Race			Two or More Races
CT 414	93.4%	1.1%	0.8%	1.9%	0.2%	0.0%	2.5%	3.9%	23.7%
CT 415	95.6%	0.0%	0.5%	1.3%	0.0%	0.1%	2.5%	3.6%	39.8%*
CT 421	80.4%	2.8%	0.8%	3.7%	0.7%*	1.2%	10.4%*	12.9%	39.6%*
CT 423	87.4%	4.1%	0.0%	4.0%	0.0%	0.6%	3.9%	8.9%	48.2%*
CT 424	82.6%	5.2%*	1.2%	1.6%	0.3%	0.7%	8.3%*	8.6%	40.8%*
CT 425	86.3%	10.6%*	0.0%	1.0%	0.0%	0.0%	2.1%	3.2%	39.0%*
CT 426	88.7%	1.9%	0.6%	1.7%	1.5%*	2.0%	3.6%	4.4%	50.2%*
CT 428	94.0%	2.6%	0.0%	1.0%	0.0%	1.2%	1.3%	6.1%	29.0%
CT 429	79.8%	0.7%	0.0%	11.0%*	0.0%	0.0%	8.4%*	6.2%	33.7%*
CT 430	80.0%	6.3%*	0.7%	1.3%	0.0%	4.8%*	6.9%*	6.6%	37.9%*
CT 431	89.4%	1.0%	0.4%	4.1%	0.0%	2.5%	2.7%	6.1%	25.2%
Franklin County	58.5%	1.9%	0.8%	2.0%	0.0%	33.9%*	3.0%	51.0%*	45.5%*
CT 201	35.1%	2.4%	0.4%	0.0%	0.1%	58.3%*	3.6%	83.9%*	65.7%*
CT 202	39.5%	1.0%	0.0%	4.1%	0.0%	53.4%*	2.0%	76.8%*	77.5%*
CT 203	44.5%	1.0%	0.7%	1.7%	0.0%	51.7%*	0.3%	76.5%*	55.6%*
CT 204	35.1%	3.4%	0.8%	0.2%	0.0%	59.5%*	0.9%	76.6%*	70.3%*
CT 206.01	87.3%	0.6%	0.3%	3.5%	0.0%	7.0%*	1.3%	20.7%*	24.4%
CT 207	83.6%	0.0%	6.7%*	0.3%	0.0%	2.7%	6.6%*	9.0%	32.1%*
CT 208	50.1%	2.2%	1.1%	2.1%	0.1%	43.1%*	1.3%	53.1%*	52.2%*
CT 9801	-	-	-	-	-	-	-	-	-
Klickitat County	91.7%	0.5%	2.8%*	0.7%	0.3%	2.3%	1.8%	10.8%	44.7%*
CT 9501	88.3%	1.0%	5.1%*	0.3%	0.6%	2.9%	1.8%	9.3%	52.6%*
CT 9502	95.3%	0.2%	1.1%	0.5%	0.0%	0.4%	2.4%	3.3%	42.6%*

Location	Race							Hispanic or Latino	Population Below Two Times the Poverty Level
	White	Black or African American	American Indian and Alaska Native	Asian	Hawaiian and Pacific Islander	Other Race	Two or More Races		
CT 9503	94.0%	0.0%	0.6%	1.3%	0.0%	2.6%	1.5%	17.6%*	35.3%*
Lincoln County	94.1%	0.3%	1.7%*	0.4%	0.0%	0.9%	2.6%	2.4%	34.5%*
CT 9604	91.9%	0.0%	1.3%	0.8%	0.1%	1.5%	4.4%	3.9%	37.6%*
Skamania County	92.7%	0.1%	2.2%*	1.0%	0.4%	2.0%	1.6%	5.2%	26.6%
CT 9502	93.7%	0.1%	1.5%	1.1%	0.8%*	1.2%	1.7%	1.9%	22.7%
CT 9503	87.8%	0.4%	0.8%	1.1%	0.0%	6.5%*	3.4%	8.3%	32.0%*
CT 9504	96.6%	0.0%	1.2%	0.5%	0.0%	0.5%	1.1%	7.2%	28.0%
CT 9505	90.3%	0.0%	6.0%*	1.5%	0.2%	1.4%	0.6%	8.0%	29.8%*
Spokane County	89.4%	1.8%	1.3%	2.3%	0.4%	1.1%	3.7%	4.5%	33.5%*
CT 23	88.2%	2.3%	6.1%*	0.6%	0.0%	1.0%	1.8%	3.9%	64.3%*
CT 24	82.8%	4.0%	5.2%*	0.9%	0.0%	0.7%	6.3%*	8.5%	70.3%*
CT 25	83.0%	1.8%	0.6%	6.1%	0.1%	2.8%	5.6%*	7.3%	64.4%*
CT 26	77.1%	5.1%*	4.7%*	5.0%	0.0%	0.7%	7.4%*	12.0%	66.6%*
CT 30	69.6%	11.7%*	1.7%*	7.1%	0.4%	5.7%*	3.9%	12.7%	74.3%*
CT 31	83.4%	3.2%	0.2%	5.2%	0.0%	0.2%	7.9%*	6.1%	46.6%*
CT 32	89.8%	0.3%	1.3%	2.9%	0.0%	1.6%	4.1%	3.3%	51.4%*
CT 35	90.2%	2.9%	3.9%*	1.3%	0.0%	0.5%	1.1%	5.5%	68.2%*
CT 36	90.9%	1.9%	1.2%	1.9%	0.0%	1.3%	2.7%	2.7%	55.4%*
CT 38	88.6%	0.0%	0.0%	4.4%	0.0%	2.6%	4.4%	4.5%	35.8%*
CT 39	93.6%	0.8%	0.4%	1.2%	0.0%	0.0%	4.1%	2.2%	22.9%
CT 40	89.5%	3.4%	1.7%*	1.4%	0.0%	1.4%	2.6%	4.4%	49.7%*
CT 42	93.7%	0.0%	0.5%	3.0%	0.0%	0.0%	2.8%	2.3%	10.7%
CT 43	88.2%	1.0%	6.5%*	1.4%	0.0%	0.5%	2.3%	1.9%	19.9%

Location	Race							Hispanic or Latino	Population Below Two Times the Poverty Level
	White	Black or African American	American Indian and Alaska Native	Asian	Hawaiian and Pacific Islander	Other Race	Two or More Races		
CT 101	96.3%	0.0%	0.0%	1.0%	0.0%	0.0%	2.8%	1.7%	24.8%
CT 113	90.4%	0.6%	0.5%	4.0%	0.6%	0.5%	3.3%	3.7%	18.0%
CT 114	84.3%	1.1%	1.6%	2.1%	0.8%*	4.9%*	5.2%	8.0%	22.9%
CT 115	91.6%	0.3%	0.0%	0.7%	1.8%*	0.0%	5.6%*	4.1%	27.5%
CT 116	94.4%	1.3%	0.7%	1.9%	0.0%	0.0%	1.8%	2.5%	33.9%*
CT 117.01	90.4%	0.4%	0.7%	4.8%	0.0%	0.4%	3.3%	0.0%	36.3%*
CT 117.02	84.6%	2.8%	2.4%*	0.6%	0.0%	1.5%	8.1%*	10.2%	58.7%*
CT 120	94.5%	0.5%	0.4%	0.6%	0.0%	0.0%	4.0%	3.2%	31.0%*
CT 121	87.8%	1.2%	4.6%*	0.5%	0.0%	2.0%	3.9%	2.2%	49.7%*
CT 122	92.0%	0.3%	2.3%*	2.4%	0.0%	1.1%	1.9%	3.9%	47.7%*
CT 132.01	90.3%	0.0%	0.9%	2.2%	0.0%	0.8%	5.9%*	1.5%	26.9%
CT 135	93.2%	1.0%	0.9%	2.1%	0.0%	1.1%	1.6%	4.1%	12.4%
CT 136	83.6%	2.1%	3.6%*	3.3%	0.9%*	3.3%	3.3%	6.7%	34.2%*
CT 140.01	78.7%	4.4%*	0.4%	5.8%	1.8%*	3.6%	5.3%	6.5%	57.5%*
CT 140.02	91.7%	1.3%	2.7%*	0.9%	0.0%	1.2%	2.2%	3.8%	45.0%*
CT 141	95.7%	0.4%	1.5%	1.5%	0.0%	0.2%	0.7%	1.7%	25.3%
CT 142	97.0%	0.0%	0.0%	0.0%	0.0%	1.6%	1.3%	1.6%	18.4%
CT 145	83.2%	0.8%	1.7%*	0.4%	0.3%	4.9%*	8.8%*	5.9%	58.2%*
Walla Walla County	87.1%	1.7%	1.0%	1.3%	0.3%	6.0%*	2.6%	19.8%*	38.0%*
CT 9200	85.3%	1.0%	0.5%	0.5%	0.0%	10.0%*	2.6%	33.1%*	32.7%*
Oregon	85.3%	1.8%	1.4%	3.7%	0.4%	3.8%	3.7%	11.7%	35.4%
Oregon Threshold Criteria ¹		2.2%	1.7%	4.4%	0.5%	4.6%	4.4%	14.0%	35.4%

Location	Race						Hispanic or Latino	Population Below Two Times the Poverty Level	
	White	Black or African American	American Indian and Alaska Native	Asian	Hawaiian and Pacific Islander	Other Race			Two or More Races
Gilliam County	93.0%	0.8%	0.8%	0.0%	0.3%	3.4%	1.7%	6.3%	33.9%
CT 9601	93.0%	0.8%	0.8%	0.0%	0.3%	3.4%	1.7%	6.3%	33.9%
Hood River County	90.0%	0.5%	1.2%	1.4%	0.2%	4.5%	2.1%	29.5%*	33.0%
CT 9501	85.9%	1.5%	0.9%	0.2%	0.1%	6.3%*	5.2%*	25.1%*	35.2%
CT 9502	95.7%	0.6%	0.9%	2.4%	0.0%	0.4%	0.1%	14.9%*	21.1%
CT 9503	90.3%	0.0%	0.1%	1.1%	0.3%	6.1%*	2.2%	25.0%*	33.7%
CT 9504	85.7%	0.3%	3.2%*	1.4%	0.5%*	6.4%*	2.5%	54.1%*	44.8%*
Morrow County	89.7%	0.1%	0.5%	0.6%	0.1%	4.6%*	4.4%*	31.5%*	43.2%*
CT 9701	86.8%	0.2%	0.6%	0.6%	0.0%	6.2%*	5.6%*	42.9%*	46.1%*
Multnomah County	78.5%	5.7%*	1.0%	6.6%*	0.6%*	3.4%	4.1%	10.8%	35.6%*
CT 72.01	93.3%	1.4%	0.0%	0.0%	0.0%	0.6%	4.7%*	2.3%	37.7%*
CT 73	67.8%	15.6%*	3.3%*	3.3%	0.1%	3.0%	6.9%*	11.0%	51.0%*
CT 102	79.7%	3.8%*	0.5%	10.0%*	0.0%	0.0%	6.1%*	14.9%*	26.8%
CT 105	88.0%	0.7%	1.8%*	3.0%	0.2%	0.4%	5.9%*	8.5%	25.3%
Sherman County	94.6%	0.1%	1.3%	0.1%	0.0%	1.0%	2.9%	6.0%	38.7%
CT 9501	94.6%	0.1%	1.3%	0.1%	0.0%	1.0%	2.9%	6.0%	38.7%*
Umatilla County	87.9%	0.7%	2.1%*	0.9%	0.1%	3.8%	4.5%*	23.7%*	39.0%*
CT 9504	87.1%	1.4%	1.0%	2.3%	0.2%	0.3%	7.8%*	4.2%	29.5%
CT 9508	87.7%	1.0%	1.1%	0.5%	0.4%	3.9%	5.4%*	34.3%*	33.1%
CT 9509	90.7%	1.0%	0.6%	1.3%	0.0%	1.9%	4.5%*	38.4%*	49.8%*
Wasco County	85.2%	0.5%	4.9%*	1.0%	0.4%	6.5%*	1.6%	15.1%*	45.0%*
CT 9701	87.8%	0.2%	2.4%*	0.3%	1.3%*	7.1%*	0.8%	16.0%*	33.3%
CT 9702	92.2%	0.0%	3.1%*	0.0%	0.0%	0.0%	4.7%*	6.1%	52.7%*

Location	Race							Hispanic or Latino	Population Below Two Times the Poverty Level
	White	Black or African American	American Indian and Alaska Native	Asian	Hawaiian and Pacific Islander	Other Race	Two or More Races		
CT 9704	83.6%	0.5%	4.2%*	1.7%	0.0%	8.5%*	1.5%	23.9%*	52.7%*
CT 9705	96.0%	0.0%	1.4%	1.8%	0.0%	0.4%	0.4%	5.6%	44.6%*
CT 9706	92.5%	1.1%	1.5%	1.1%	0.0%	3.3%	0.5%	13.3%	34.4%
CT 9708	74.4%	0.3%	19.4%*	1.0%	1.1%*	1.3%	2.4%	5.3%	43.9%*
Total (CTs)	83.3%	1.5%	1.5%	2.3%	0.2%	7.8%	3.4%	18.0%	38.5%

Sources:

US Census Bureau. 2013. Table DP05: ACS Demographic and Housing Estimates 2008–2012 5-Year Estimates. Website (<http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>) accessed January 27, 2015.

US Census Bureau. 2013. Table DP03, Select Economic Characteristics 2008–2012 5-Year Estimates. Website (<http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>) accessed January 27, 2015.

US Census Bureau. 2013. ACS 2008–2012 5-Year Data, Table C17002: Ratio of Income to Poverty Level in the Past 12 Months. Website (http://www.census.gov/acs/www/data_documentation/summary_file/) accessed March 11, 2015.

Notes:

- 1 Statewide exceedance criteria percentages are 1.2 times the actual Environmental Justice group population percentages for each state.
- 2 The low-income exceedance criterion is the state percentage of persons in households with incomes below 2 times the poverty income level. For example, Washington has 1.94 million people in households with incomes lower than 2 times the poverty income levels established by the US Census Bureau. This amount comprises 29.3 percent of the total state population for whom poverty status has been determined (6.61 million people). Therefore, the low-income exceedance criteria for study area CTs located within Washington is 29.3 percent.

* Denotes minority and low-income populations that are meaningfully greater than the corresponding minority or low-income population at the state level in the relevant racial/ethnic or low-income category.

Table N-10. Rail Corridor Full- and Part-Time Employment by Industry, 2013

	Adams	Benton	Clark	Franklin	Lincoln	Skamania	Spokane	Walla Walla	Gilliam	Hood River	Morrow	Multnomah	Sherman	Umatilla	Wasco
Total employment	9,400	98,400	195,000	38,300	5,000	3,200	272,900	34,700	1,690	16,200	7,100	597,800	1,800	38,600	14,200
Farm employment	1,400	4,700	2,100	4,300	800	100	2,500	3,400	250	1,800	1,400	1,500	300	3,000	1,300
Nonfarm employment	7,900	93,700	192,800	34,000	4,200	3,100	270,300	31,300	1,440	14,400	5,700	596,300	1,500	35,600	12,900
Private nonfarm employment	6,300	80,700	167,700	27,800	2,900	2,400	231,200	25,600	1,210	13,100	4,900	524,000	1,200	28,700	10,900
Forestry and fishing	500	(D)	(D)	(D)	100	(D)	700	(D)	(D)	500	900	(D)	(D)	1,700	(D)
Mining	100	(D)	(D)	(D)	100	(D)	700	(D)	(D)	0	(D)	(D)	0	100	(D)
Utilities	(D)	200	(D)	(D)	(D)	0	700	130	(D)	0	200	1,400	(D)	200	0
Construction	200	5,600	13,200	2,200	300	100	14,000	1,300	70	600	200	25,500	(D)	1,400	500
Manufacturing	1,100	4,600	12,800	3,400	100	300	15,400	3,890	(D)	1,500	1,600	36,900	(D)	3,300	800
Wholesale trade	(D)	1,400	7,400	2,000	300	(D)	10,900	700	(D)	600	100	25,300	100	900	200
Retail trade	800	10,900	21,300	3,500	400	200	31,300	3,050	110	1,600	300	49,300	(D)	4,000	2,000
Transportation and warehousing	(D)	1,300	(D)	(D)	(D)	(D)	8,200	370	130	300	200	23,500	200	2,900	200
Information	0	900	3,400	200	0	0	3,700	450	20	200	100	14,200	0	200	200
Finance and insurance	200	3,100	8,900	700	100	100	16,000	1,250	(D)	300	200	29,100	(D)	900	400
Real estate	300	3,300	10,600	900	100	100	10,700	1,000	(D)	600	100	26,400	100	1,100	400
Professional services	200	11,400	13,300	900	200	200	15,200	1,200	(D)	1,200	(D)	55,300	(D)	1,000	400
Management of companies	0	400	2,200	0	0	0	3,300	(D)	(D)	(D)	(D)	16,500	0	100	100
Administrative and waste management	100	10,300	10,700	1,600	100	0	14,100	(D)	(D)	(D)	200	28,800	(D)	1,800	400
Educational services	(D)	900	2,700	800	(D)	(D)	6,600	1,550	(D)	200	0	23,000	0	100	200

	Adams	Benton	Clark	Franklin	Lincoln	Skamania	Spokane	Walla Walla	Gilliam	Hood River	Morrow	Multnomah	Sherman	Umatilla	Wasco
Health care and social assistance	(D)	11,200	25,500	3,400	(D)	(D)	42,300	5,050	90	2,100	300	69,200	0	4,200	2,400
Arts, entertainment, and recreation	(D)	2,200	4,800	500	100	100	5,000	610	(D)	800	0	18,900	(D)	500	300
Accommodation and food services	(D)	6,500	11,700	1,900	200	600	18,300	1,840	(D)	1,600	200	48,400	(D)	2,500	1,200
Other services	300	4,500	11,500	1,900	200	200	14,300	1,820	60	700	200	30,900	0	1,700	700
Government	1,600	13,000	25,200	6,300	1,300	700	39,200	5,660	230	1,300	800	72,400	300	7,000	2,000

Source: Bureau of Economic Analysis 2014. Regional Economic Accounts, Total full-time and part-time employment by NAICS industry for 2012. Website (<http://www.bea.gov/regional/>) accessed January 28, 2015.

Note:

(D) Not shown to avoid disclosure of confidential information, but the estimates for this item are included in the totals.

Table N-11. Underlying Costs of Rail Crossing Delays

Row ID	Length of Delay	Value/Estimate
A	Train length (feet) ¹	7,800
B	Average train speed (mph)	20
C	Gate downtime prior (sec) ¹	30
D	Gate downtime post (sec) ¹	12
E	Crossing time (min)	3.0
F	Total gate downtime (min)	5.13
G	Average length of delay (min)	2.57
Value of Lost Time		
H	Year modeled	2014
I	Passengers per vehicle	1
J	Hourly earning car - personal (\$/hr) ²	\$23.90
K	Hourly earning car - business (\$/hr) ²	\$22.90
L	Hourly earnings truck (\$/hr) ²	\$24.70
M	Personal % earnings with economic impact ²	50%
N	Business % earnings with economic impact ²	100%
O	Local % business travel vs. total travel ²	4.60%
P	Weighted value of car time (\$/hr)	\$12.50
Q	Business value of car time (\$/hr)	\$22.90
R	Value of truck time (\$/hr) ²	\$24.70
S	Cost of car delay time, total (\$/min)	\$0.21
T	Cost of car delay time, business only (\$/min)	\$0.38
U	Cost of truck delay time (\$/min)	\$0.41

Source: Adapted from Schatzki, Todd and Bruce Strombom. 2014. Assessment of Vancouver Energy Socioeconomic Impacts: Secondary Economic Impacts. September.

1 See Section 3.14 (Transportation) for additional information on train and crossing details.

2 USDOT 2011

For [G], it is assumed vehicles arrive at a crossing at a constant rate, so that each vehicle's wait time will be, on average, half of the total gate downtime waiting.

$$[E] = (([A] / (5,280 \text{ ft. per mile})) / [B]) * 60 \text{ min/h}$$

$$[F] = [E] + (([C] + [D]) / 60 \text{ s/min})$$

$$[G] = [F] / 2$$

$$[P] = ([J] * [M] * (1 - [O])) + ([K] * [N] * [O])$$

$$[Q] = [K] * [N]$$

$$[R] = [L]$$

$$[S] = [P] / 60$$

$$[T] = [Q] / 60$$

$$[U] = [R] / 60$$

Table N-12. Race, Ethnic, and Poverty Characteristics for the Vessel Corridor

Location	Race							Hispanic or Latino	Population Below Two Times the Poverty Level
	White	Black or African American	American Indian and Alaska Native	Asian	Hawaiian and Pacific Islander	Other Race	Two or More Races		
Washington	78.7%	3.5%	1.4%	7.2%	0.6%	4.0%	4.6%	11.2%	29.3%
Washington Threshold Criteria ¹	na	4.2%	1.7%	8.6%	0.7%	4.8%	5.5%	13.4%	29.3%
Clark County	86.1%	2.0%	0.6%	4.0%	0.6%	2.4%	4.2%	7.6%	29.5%*
CT 403.02	92.8%	0.0%	0.1%	3.2%	0.0%	0.7%	3.2%	5.3%	19.0%
CT 410.05	67.8%	3.3%	0.8%	0.0%	0.0%	23.9%*	4.2%	30.6%*	60.8%*
CT 424	82.6%	5.2%*	1.2%	1.6%	0.3%	0.7%	8.3%*	8.6%	40.8%*
Cowlitz County	90.5%	0.5%	1.7%*	1.3%	0.2%	1.6%	4.2%	7.7%	39.6%*
CT 3	95.0%	0.0%	0.5%	0.0%	0.0%	0.0%	4.5%	15.5%*	83.9%*
CT 15.02	85.5%	0.2%	6.4%*	1.4%	0.0%	4.9%*	1.6%	21.9%*	38.6%*
CT 16	94.2%	0.1%	0.5%	1.7%	0.9%*	0.3%	2.1%	4.7%	27.9%
CT 17	93.5%	0.0%	1.2%	0.2%	0.0%	0.1%	4.9%	3.5%	31.9%*
CT 19	97.8%	0.3%	0.4%	0.5%	0.0%	0.0%	1.1%	1.8%	27.3%
Pacific County	87.7%	0.5%	1.6%	2.0%	0.1%	4.1%	4.0%	8.1%	39.4%*
CT 9504	95.8%	0.4%	1.6%	0.0%	0.2%	0.9%	1.1%	2.9%	30.7%*
CT 9505	92.7%	0.5%	0.0%	0.0%	0.0%	1.3%	5.5%*	5.6%	42.3%*
Wahkiakum County	94.7%	0.2%	0.9%	0.8%	0.0%	0.0%	3.4%	3.8%	28.0%
CT 9501	94.7%	0.2%	0.9%	0.8%	0.0%	0.0%	3.4%	3.8%	28.0%
Oregon	85.3%	1.8%	1.4%	3.7%	0.4%	3.8%	3.7%	11.7%	35.4%
Oregon Threshold Criteria ¹		2.2%	1.7%	4.4%	0.5%	4.6%	4.4%	14.0%	35.4%
Clatsop County	91.6%	0.6%	0.4%	1.3%	0.1%	2.2%	3.9%	7.6%	37.6%*
CT 9501	81.3%	0.7%	0.5%	4.4%*	0.0%	4.4%	8.8%*	20.6%*	36.6%*
CT 9502	88.6%	1.0%	0.3%	3.0%	0.0%	1.6%	5.4%*	2.3%	44.8%*
CT 9503	86.2%	1.8%	0.4%	1.4%	0.3%	8.0%*	1.8%	17.4%*	50.8%*

Location	Race							Hispanic or Latino	Population Below Two Times the Poverty Level
	White	Black or African American	American Indian and Alaska Native	Asian	Hawaiian and Pacific Islander	Other Race	Two or More Races		
CT 9504	96.3%	0.2%	0.0%	0.0%	0.0%	0.0%	3.4%	5.6%	24.4%
CT 9505	93.8%	0.8%	0.5%	1.7%	0.6%*	0.0%	2.5%	2.3%	43.4%*
CT 9506	94.2%	0.0%	0.4%	0.0%	0.0%	0.0%	5.4%*	2.6%	35.0%
CT 9512	94.6%	0.0%	1.1%	0.0%	0.0%	2.2%	2.1%	5.4%	35.2%
CT 9900	-	-	-	-	-	-	-	-	-
Columbia County	93.3%	0.2%	1.4%	0.4%	0.0%	2.0%	2.6%	6.2%	30.0%
CT 9702	95.1%	0.0%	2.5%*	0.3%	0.0%	0.5%	1.7%	2.1%	35.0%
CT 9703	92.6%	1.7%	2.5%*	1.0%	0.0%	0.1%	2.0%	2.9%	38.0%*
CT 9704	93.6%	0.0%	3.1%*	0.0%	0.7%*	0.0%	2.6%	4.8%	22.0%
CT 9705	95.3%	0.1%	0.9%	1.0%	0.1%	0.2%	2.3%	4.2%	27.5%
CT 9707	85.4%	0.3%	2.5%*	0.7%	0.0%	8.0%*	3.2%	10.0%	46.6%*
CT 9709	91.0%	0.0%	2.0%*	2.8%	0.0%	0.6%	3.6%	6.4%	32.6%
Multnomah County	78.5%	5.7%*	1.0%	6.6%*	0.6%*	3.4%	4.1%	10.8%	35.6%*
CT 71	94.5%	0.0%	0.7%	0.0%	0.0%	0.8%	3.9%	6.7%	17.1%
CT 72.01	93.3%	1.4%	0.0%	0.0%	0.0%	0.6%	4.7%*	2.3%	37.7%*
CT 72.02	67.7%	11.0%*	5.6%*	9.6%*	0.4%	0.6%	5.1%*	6.6%	37.3%*
Total (CTs)	91.0%	0.8%	1.6%	1.3%	0.1%	2.0%	3.2%	7.2%	34.3%

Sources:

US Census Bureau. 2013. Table DP05: ACS Demographic and Housing Estimates 2008–2012 5-Year Estimates. Website (<http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>) accessed January 27, 2015.

US Census Bureau. 2013. Table DP03, Select Economic Characteristics 2008–2012 5-Year Estimates. Website (<http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>) accessed January 27, 2015.

US Census Bureau. 2013. ACS 2008–2012 5-Year Data, Table C17002: Ratio of Income to Poverty Level in the Past 12 Months. Website (http://www.census.gov/acs/www/data_documentation/summary_file/) accessed March 11, 2015.

Notes:

- 1 Statewide exceedance criteria percentages for minority populations are 1.2 times the actual Environmental Justice group population percentages for each state.
- 2 The low-income exceedance criterion is the state percentage of persons in households with incomes below 2 times the poverty income level. For example, Washington has 1.94 million people in households with incomes lower than 2 times the poverty income levels established by the US Census Bureau. This amount comprises 29.3 percent of the total state population for whom poverty status has been determined (6.61 million people). Therefore, the low-income exceedance criteria for study area CTs located within Washington is 29.3 percent.

* Denotes minority and low-income populations that are meaningfully greater than the corresponding minority or low-income population at the state level in the relevant racial/ethnic or low-income category.

Table N-13. Vessel Corridor Full- and Part-Time Employment by Industry, 2013

	Clark	Cowlitz	Pacific	Wahkiakum	Clatsop	Columbia	Multnomah
Total employment	195,000	45,200	9,700	1,730	23,700	15,700	597,800
Wage and salary employment	144,600	38,200	6,700	790	17,800	10,400	479,800
Proprietors employment	50,400	7,000	3,000	940	5,900	5,300	118,100
Farm employment	2,100	600	500	120	300	900	1,500
Nonfarm employment	192,800	44,600	9,200	1,610	23,400	14,800	596,300
Private nonfarm employment	167,700	38,700	7,300	1,350	20,300	12,800	524,000
Forestry, fishing, and related activities	(D)	1,100	(D)	270	(D)	400	(D)
Mining	(D)	200	(D)	30	(D)	200	(D)
Utilities	(D)	100	(D)	0	0	100	1,400
Construction	13,200	2,800	500	90	1,200	800	25,500
Manufacturing	12,800	6,500	900	180	2,400	1,600	36,900
Wholesale trade	7,400	1,500	100	(D)	300	200	25,300
Retail trade	21,300	5,300	900	(D)	3,100	1,900	49,300
Transportation and warehousing	(D)	1,700	(D)	(D)	400	600	23,500
Information	3,400	400	100	40	200	100	14,200
Finance and insurance	8,900	1,400	300	80	500	600	29,100
Real estate and rental and leasing	10,600	1,300	500	70	1,100	800	26,400
Professional, scientific, and technical services	13,300	1,400	300	70	(D)	(D)	55,300
Management of companies and enterprises	2,200	100	(D)	0	(D)	(D)	16,500
Administrative and waste management services	10,700	1,600	(D)	60	800	600	28,800
Educational services	2,700	500	(D)	(D)	100	200	23,000
Health care and social assistance	25,500	6,300	(D)	(D)	2,600	1,500	69,200

	Clark	Cowlitz	Pacific	Wahkiakum	Clatsop	Columbia	Multnomah
Arts, entertainment, and recreation	4,800	800	200	30	600	(D)	18,900
Accommodation and food services	11,700	3,000	900	70	4,000	(D)	48,400
Other services, except public administration	11,500	2,800	600	(D)	1,200	1,100	30,900
Government and government enterprises	25,200	5,900	1,900	270	3,100	1,900	72,400

Source:

Bureau of Economic Analysis 2014. Regional Economic Accounts, Total full-time and part-time employment by NAICS industry for 2012. Website (<http://www.bea.gov/regional/>) accessed January 28, 2015.

Note:

(D) Not shown to avoid disclosure of confidential information, but the estimates for this item are included in the totals.

Table N-14. Economic Impact of Proposed Facility Construction on Study Area

Impact Type	Employment (full-time)	Income (millions)
Direct	320	\$31.4
Indirect & Induced	1,109	\$55.4
Total	1,429	\$86.8

Source:

Schatzki, Todd and Bruce Strombom. 2014. Assessment of Vancouver Energy Socioeconomic Impacts: Primary Economic Impacts. July.

Note: Labor income is reported in nominal dollars. Employment estimates reflect job-years and are representative of full-time employment.

Table N-15. Economic Impact of Proposed Facility Operations on Study Area

Impact Type	Employment		Income	
	Startup (2016)	Full Buildout (2017–2030)	Startup (2016)	Full Buildout (2017–2030)
Direct	302	616	\$33.5	\$67 - \$88
Indirect & Induced	217	465	\$10.6	\$23 - \$30
Total	519	1,081	\$44.1	\$90 - \$118

Source:

Schatzki, Todd and Bruce Strombom. 2014. Assessment of Vancouver Energy Socioeconomic Impacts: Primary Economic Impacts. July.

Note:

Labor income is reported in nominal dollars. Employment estimates reflect job-years and are representative of full-time employment.

Table N-16. Portland-Vancouver MSA and Project Occupational Employment, 2014

Description	Project Employment ¹	Standard Occupational Classification Code & Description ²	Regional Employment (2014) ²	Project-Related Percent Increase
Construction (Phase I)				
Steel erecting	32	47-2221: Structural Iron & Steel Workers	262	12.2%
Laborers	63	47-2061: Construction Laborers	5,128	1.2%
Mechanical & piping	65	17-2141: Mechanical Engineers	2,227	2.9%
Equipment operators	29	47-2073: Operating Engineers & Construction Equipment Ops	2,073	1.4%
Tank erectors	50	51-2041: Structural Metal Fabricators & Fitters	819	6.1%
Electrical	45	47-2111: Electricians	5,375	0.8%
Concrete	45	47-2051: Cement Masons & Concrete Finishers	1,120	4.0%
Ground improvements/pilling	32	17-2051: Civil Engineers and 17-3022: Civil Engineering Technicians	4,233	0.8%
Dock seismic upgrades	30	17-2051: Civil Engineers and 17-3022: Civil Engineering Technicians	4,233	0.7%
Fire system installation	16	49-2098: Security & Fire Alarm Systems Installers	783	2.0%
Permitting and engineering support	35	19-2041: Environmental Scientists & Specialists	749	4.7%
Operations (onsite full buildout)				
Marine (dock, vessel securement, etc.)	19	53-1021: Transportation Helper/Labor & Material Mover and Supervisors	1,203	1.6%
Rail (engineers, switchmen, inspectors, etc.)	40	53-4031: Railroad Conductors, Yardmasters and 53-6051: Transportation Inspectors & 49-3043: Rail Car Repairers	431	9.3%
Transload (transloaders, tank farm, trainers, etc.)	79	53-7121: Tank Car, Truck & Ship Loaders 53-1031: Transportation & Material Moving Vehicle Operator Supervisors	1,702	4.6%
Safety health environment & maintenance (mechanics, maintenance, EHS, etc.)	13	29-9011: Occupational Health & Safety Specialists	521	2.5%
Office/management	25	43-1011: Office & Administrative Support Worker Supervisors	11,477	0.2%

Sources:

¹ Schatzki, Todd and Bruce Strombom. 2014. Assessment of Vancouver Energy Socioeconomic Impacts: Primary Economic Impacts. July.

² Washington State Employment Security Department. 2014. Occupational employment wage estimates-2014. September. Website (<https://fortress.wa.gov/esd/employmentdata/docs/occupational-reports/occupational-employment-wage-estimates-2014.pdf>) accessed April 9, 2015.

Note:

The Portland-Vancouver, OR-WA MSA includes Clark, Multnomah, Skamania, Columbia, Washington, Yamhill, and Clackamas counties. Therefore, the data presented do not represent all employment by occupation with respect to the 10-county Proposed Action study area.

Table N-17. Summary of Proposed Action Tax Impacts

Tax Classification	Construction (Phase I and II)	Annual Operations (Startup)	Annual Operations (Full Buildout)
Sales tax	\$17,640,000	\$1,498,000	\$3,225,000
B&O tax	\$989,000	\$0 ¹	\$0 ¹
Property tax (Facility)	\$0	\$2,318,000	\$2,318,000
Property tax (Nonfacility)	\$2,573,000	\$752,000	\$1,638,000
Income tax (Oregon) ²	\$334,400	\$86,500	\$332,900
Other taxes	\$947,000	\$314,000	\$682,000
Total	\$22,483,531	\$4,968,154	\$8,196,943

Sources: Unless noted, Schatzki, Todd and Bruce Strobom. 2014. Assessment of Vancouver Energy Socioeconomic Impacts: Primary Economic Impacts. July.

¹ Washington Research Council. 2010. B&O Tax Pyramiding in Petroleum Distribution. January 18. Website (<https://researchcouncil.files.wordpress.com/2013/08/botaxpyramidinginpetrodistrib.pdf>) accessed February 13, 2015.

² Port of Vancouver 2011. The Local and Regional Economic Impacts of the Vancouver Harbor. Prepared by Martin Associates. August 10. Website (<http://www.portvanusa.com/assets/POVMARINEIMPACTS2010.pdf>) accessed April 1, 2015.

Table N-18. Oregon State Income Tax Estimates

	Direct Onsite Full-time Employees ¹	Direct Onsite Workers ¹	Direct Onsite Oregon Resident Workers ²	Average Income per Direct Worker	Oregon Income Tax Liability (Per Person) ³	Oregon State Income Tax Revenue
Construction						
Phase I	149	298	58.4	\$52,700	\$4,600	\$268,900
Phase II	50	100	19.6	\$54,400	\$4,800	\$93,200
Total	199	398	78.0			\$362,100
Operations						
2016	91	91	17.8	\$55,500	\$4,900	\$86,500
2017	176	176	34.5	\$108,800	\$9,600	\$332,900
2030	176	176	34.5	\$142,900	\$12,900	\$444,200

Sources:

¹ Schatzki, Todd and Bruce Strobom. 2014. Assessment of Vancouver Energy Socioeconomic Impacts: Primary Economic Impacts. July.

² Adapted from: Port of Vancouver. 2011. The Local and Regional Economic Impacts of the Vancouver Harbor. Prepared by Martin Associates. August 10. Website (<http://www.portvanusa.com/assets/POVMARINEIMPACTS2010.pdf>) accessed April 1, 2015.

³ ORS § 316.037

Note:

Phase I Facility construction would result in 298 on-site positions, although it is assumed that only 50 percent would be employed at any given time. Consequently, on-site employment levels would be comparable to 149 full-time on-site positions. Similarly, Phase II is expected to result in 100 on-site workers, which would be comparable to 50 full-time employees (see Appendix M).

Average income per direct worker was based on information provided in Table 2-2, Table 2-3 and Table 2-5 (Proposed Action and Alternatives) and Appendix M, Table 4. For example, as provided in Appendix M, Table 4 it is estimated that Phase I direct construction employees will earn \$23.3 million of labor income, while it is estimated that there are a total of 442 workers (407 workers and 35 permitting/engineering employees) directly employed during Phase 1. This translates to an average income of \$52,000 for each direct worker employed during Phase 1.

Table N-19. Estimates of Percent Change in Single-Family Residential Property Values from Assumed Incremental Project Traffic (Four Trains per Day) Based on Futch (2011)

Distance from Corridor	Baseline	With Additional Explanatory Variables	Pre-"Market Crash" Sales Only	Average
0 - 1/3 mile	-0.85%	-0.93%	-1.49%	-1.09%
1/3 - 2/3 mile	-0.69%	-0.59%	-0.62%	-0.63%
2/3 - 1 mile	-0.37%	-0.34%	-0.67%	-0.46%

Source: Schatzki, Todd and Bruce Strombom. 2014. Assessment of Vancouver Energy Socioeconomic Impacts: Secondary Economic Impacts. September. Based on Futch, Michael. 2011. Examining the Spatial Distribution of Externalities: Freight Rail Track and Home Values in Los Angeles. November 11. Website (<http://www.coaltrainfacts.org/docs/Freight-Rail-Traffic-and-Home-Values-in-LA.pdf>) accessed February 13, 2015

Table N-20. Estimates of Percent Change in Single-Family Residential Property Values from Assumed Incremental Project Traffic (Four Trains per Day) Based on Simons and El Jaouhari (2004)

Distance from Rail Line	Property Size		
	Small	Medium	Large
Estimated Impact per Freight Trip (\$ per trip)			
Less than 250 feet	-194	-262	-264
250 to 500 feet	-85	-107	-4
500 to 750 feet	-94	-72	-1
Percent Change in Property Value per Train/Day			
Less than 250 feet	-0.21%	-0.27%	-0.19%
250 to 500 feet	-0.09%	-0.11%	0.00%
500 to 750 feet	-0.10%	-0.07%	0.00%
Mean Sale Price	91,007	97,851	138,510
Percent Change in Property Values from Terminal (4 trains/Day)			
Less than 250 feet	-0.85%	-1.07%	-0.76%
250 to 500 feet	-0.37%	-0.44%	-0.01%
500 to 750 feet	-0.41%	-0.29%	0.00%

Source:

Schatzki, Todd and Bruce Strombom. 2014. Assessment of Vancouver Energy Socioeconomic Impacts: Secondary Economic Impacts. September, based on Simons, R.A., and A. El Jaouhari, 2004. *The Appraisal Journal*. Website (<http://www.rasimons.com/documents/articles/the-effect-of-freight-railroad-tracks-and-train-activity.pdf>) accessed February 13, 2015.

Table N-21. Estimated Delay Costs Associated with Increased Rail Traffic, 2014 Dollars

Crossing	Intersection Characteristics			Volume per Delay		Annual Costs	
	Additional Trains	Average Annual Daily Traffic	Percent Truck	Cars	Trucks	All Vehicles	Business Travel
	1	2	3	4	5	6	7
077826D	4	100	4%	0.3	0.0	\$214	\$33
090072Y	4	342	1%	1.2	0.0	\$712	\$72
933743C	4	0	0%	0.0	0.0	\$0	\$0
925736W	4	0	0%	0.0	0.0	\$0	\$0
925735P	4	0	0%	0.0	0.0	\$0	\$0
925734H	4	0	0%	0.0	0.0	\$0	\$0
925733B	4	0	0%	0.0	0.0	\$0	\$0
925732U	4	0	0%	0.0	0.0	\$0	\$0
925730F	4	0	0%	0.0	0.0	\$0	\$0
925729L	4	0	0%	0.0	0.0	\$0	\$0
925728E	4	0	0%	0.0	0.0	\$0	\$0
925727X	4	0	0%	0.0	0.0	\$0	\$0
910082W	4	0	0%	0.0	0.0	\$0	\$0
101415M	4	0	0%	0.0	0.0	\$0	\$0
101390U	4	0	0%	0.0	0.0	\$0	\$0
101378M	4	0	0%	0.0	0.0	\$0	\$0
092280G	4	4,400	5%	14.9	0.8	\$9,505	\$1,603
092276S	4	1,000	5%	3.4	0.2	\$2,160	\$364
090186L	4	0	0%	0.0	0.0	\$0	\$0
090185E	4	0	0%	0.0	0.0	\$0	\$0
090184X	4	20	17%	0.1	0.0	\$48	\$17
090183R	4	50	7%	0.2	0.0	\$110	\$22
090179B	4	5	12%	0.0	0.0	\$11	\$3
090178U	4	0	0%	0.0	0.0	\$0	\$0
090175Y	4	0	0%	0.0	0.0	\$0	\$0
090171W	4	0	0%	0.0	0.0	\$0	\$0
090171W	4	0	0%	0.0	0.0	\$0	\$0
090169V	4	330	12%	1.0	0.1	\$758	\$209
090168N	4	850	12%	2.7	0.4	\$1,953	\$539
090164L	4	80	60%	0.1	0.2	\$259	\$199
090162X	4	0	0%	0.0	0.0	\$0	\$0
090161R	4	0	0%	0.0	0.0	\$0	\$0

Crossing	Intersection Characteristics			Volume per Delay		Annual Costs	
	Additional Trains	Average Annual Daily Traffic	Percent Truck	Cars	Trucks	All Vehicles	Business Travel
	1	2	3	4	5	6	7
090159P	4	70	5%	0.2	0.0	\$151	\$26
090158H	4	0	0%	0.0	0.0	\$0	\$0
090155M	4	50	4%	0.2	0.0	\$107	\$16
090154F	4	0	0%	0.0	0.0	\$0	\$0
090153Y	4	0	0%	0.0	0.0	\$0	\$0
090151K	4	10	1%	0.0	0.0	\$21	\$2
090148C	4	500	12%	1.6	0.2	\$1,149	\$317
090147V	4	0	0%	0.0	0.0	\$0	\$0
090147V	4	0	0%	0.0	0.0	\$0	\$0
090145G	4	25	12%	0.1	0.0	\$57	\$16
090139D	4	0	0%	0.0	0.0	\$0	\$0
090136H	4	0	0%	0.0	0.0	\$0	\$0
090135B	4	100	12%	0.3	0.0	\$230	\$63
090134U	4	100	12%	0.3	0.0	\$230	\$63
090133M	4	50	0%	0.2	0.0	\$103	\$9
090131Y	4	0	0%	0.0	0.0	\$0	\$0
090130S	4	0	0%	0.0	0.0	\$0	\$0
090129X	4	10	12%	0.0	0.0	\$23	\$6
090127J	4	0	0%	0.0	0.0	\$0	\$0
090126C	4	0	0%	0.0	0.0	\$0	\$0
090121T	4	0	0%	0.0	0.0	\$0	\$0
090120L	4	0	0%	0.0	0.0	\$0	\$0
090117D	4	12,629	8%	41.4	3.6	\$28,025	\$6,061
090115P	4	726	6%	2.4	0.2	\$1,583	\$292
090114H	4	1,200	7%	4.0	0.3	\$2,639	\$530
090112U	4	4,262	7%	14.1	1.1	\$9,374	\$1,881
090110F	4	2,651	7%	8.8	0.7	\$5,831	\$1,170
090108E	4	0	0%	0.0	0.0	\$0	\$0
090106R	4	1,954	10%	6.3	0.7	\$4,413	\$1,088
090102N	4	0	0%	0.0	0.0	\$0	\$0
090100A	4	0	0%	0.0	0.0	\$0	\$0
090099H	4	0	0%	0.0	0.0	\$0	\$0
090098B	4	0	0%	0.0	0.0	\$0	\$0

Crossing	Intersection Characteristics			Volume per Delay		Annual Costs	
	Additional Trains	Average Annual Daily Traffic	Percent Truck	Cars	Trucks	All Vehicles	Business Travel
	1	2	3	4	5	6	7
090097U	4	0	0%	0.0	0.0	\$0	\$0
090096M	4	0	0%	0.0	0.0	\$0	\$0
090095F	4	0	0%	0.0	0.0	\$0	\$0
090094Y	4	0	0%	0.0	0.0	\$0	\$0
090093S	4	300	1%	1.1	0.0	\$624	\$63
090092K	4	300	1%	1.1	0.0	\$624	\$63
090091D	4	33	0%	0.1	0.0	\$68	\$6
090090W	4	1,250	1%	4.4	0.0	\$2,602	\$263
090089C	4	0	0%	0.0	0.0	\$0	\$0
090088V	4	0	0%	0.0	0.0	\$0	\$0
090087N	4	0	0%	0.0	0.0	\$0	\$0
090086G	4	0	0%	0.0	0.0	\$0	\$0
090085A	4	0	0%	0.0	0.0	\$0	\$0
090084T	4	0	0%	0.0	0.0	\$0	\$0
090083L	4	0	0%	0.0	0.0	\$0	\$0
090081X	4	0	0%	0.0	0.0	\$0	\$0
090081X	4	0	0%	0.0	0.0	\$0	\$0
090080R	4	0	0%	0.0	0.0	\$0	\$0
090079W	4	0	0%	0.0	0.0	\$0	\$0
090078P	4	0	0%	0.0	0.0	\$0	\$0
090076B	4	0	0%	0.0	0.0	\$0	\$0
090074M	4	106	5%	0.4	0.0	\$229	\$39
090069R	4	5	17%	0.0	0.0	\$12	\$4
090067C	4	0	0%	0.0	0.0	\$0	\$0
090062T	4	10	9%	0.0	0.0	\$22	\$5
090061L	4	35	9%	0.1	0.0	\$78	\$18
090060E	4	0	0%	0.0	0.0	\$0	\$0
090058D	4	0	0%	0.0	0.0	\$0	\$0
090057W	4	5	17%	0.0	0.0	\$12	\$4
090056P	4	10	17%	0.0	0.0	\$24	\$8
090054B	4	0	0%	0.0	0.0	\$0	\$0
090052M	4	0	0%	0.0	0.0	\$0	\$0
090051F	4	10	17%	0.0	0.0	\$24	\$8

Crossing	Intersection Characteristics			Volume per Delay		Annual Costs	
	Additional Trains	Average Annual Daily Traffic	Percent Truck	Cars	Trucks	All Vehicles	Business Travel
	1	2	3	4	5	6	7
090040T	4	1,943	19%	5.6	1.3	\$4,731	\$1,756
090039Y	4	73	17%	0.2	0.0	\$175	\$60
090038S	4	1,515	17%	4.5	0.9	\$3,630	\$1,253
090037K	4	350	17%	1.0	0.2	\$839	\$289
090036D	4	440	17%	1.3	0.3	\$1,054	\$364
090035W	4	487	19%	1.4	0.3	\$1,186	\$440
090034P	4	100	17%	0.3	0.1	\$240	\$83
090031U	4	1,735	17%	5.1	1.1	\$4,157	\$1,435
AG-4	4	0	0%	0.0	0.0	\$0	\$0
AG-25	4	0	0%	0.0	0.0	\$0	\$0
AG-29	4	0	0%	0.0	0.0	\$0	\$0
AG-34	4	0	0%	0.0	0.0	\$0	\$0
AG-41	4	0	0%	0.0	0.0	\$0	\$0
AG-44	4	0	0%	0.0	0.0	\$0	\$0
AG-47	4	0	0%	0.0	0.0	\$0	\$0
AG-57	4	0	0%	0.0	0.0	\$0	\$0
AG-52	4	0	0%	0.0	0.0	\$0	\$0
AG-64	4	0	0%	0.0	0.0	\$0	\$0
AG-67	4	0	0%	0.0	0.0	\$0	\$0
AG-69	4	0	0%	0.0	0.0	\$0	\$0
AG-72	4	0	0%	0.0	0.0	\$0	\$0
095938A	4	0	0%	0.0	0.0	\$0	\$0
928233N	4	0	0%	0.0	0.0	\$0	\$0
925800T	4	0	0%	0.0	0.0	\$0	\$0
925799B	4	0	0%	0.0	0.0	\$0	\$0
925801A	4	0	0%	0.0	0.0	\$0	\$0
933597Y	4	0	0%	0.0	0.0	\$0	\$0
101351D	4	200	3%	0.7	0.0	\$424	\$57
089707D	4	3,500	12%	11.0	1.5	\$8,042	\$2,219
089702U	4	350	15%	1.1	0.2	\$825	\$262
089700F	4	260	15%	0.8	0.1	\$613	\$195
089699N	4	220	15%	0.7	0.1	\$518	\$165
089697A	4	230	15%	0.7	0.1	\$542	\$172

Crossing	Intersection Characteristics			Volume per Delay		Annual Costs	
	Additional Trains	Average Annual Daily Traffic	Percent Truck	Cars	Trucks	All Vehicles	Business Travel
	1	2	3	4	5	6	7
089696T	4	25	15%	0.1	0.0	\$59	\$19
089695L	4	320	30%	0.8	0.3	\$848	\$425
089694E	4	33	30%	0.1	0.0	\$87	\$44
089687U	4	660	26%	1.7	0.6	\$1,698	\$775
089686M	4	385	26%	1.0	0.4	\$990	\$452
089683S	4	50	16%	0.1	0.0	\$119	\$39
089682K	4	36	16%	0.1	0.0	\$86	\$28
089680W	4	120	14%	0.4	0.1	\$280	\$85
089679C	4	0	0%	0.0	0.0	\$0	\$0
089677N	4	60	14%	0.2	0.0	\$140	\$43
089676G	4	170	14%	0.5	0.1	\$397	\$121
089673L	4	344	19%	1.0	0.2	\$838	\$311
089672E	4	300	19%	0.9	0.2	\$731	\$271
089670R	4	190	14%	0.6	0.1	\$444	\$135
089670R	4	190	14%	0.6	0.1	\$444	\$135
089667H	4	25	20%	0.1	0.0	\$61	\$24
089665U	4	76	20%	0.2	0.1	\$187	\$72
089663F	4	70	20%	0.2	0.0	\$172	\$66
089660K	4	700	12%	2.2	0.3	\$1,608	\$444
089659R	4	1,900	12%	6.0	0.8	\$4,365	\$1,205
089658J	4	1,200	12%	3.8	0.5	\$2,757	\$761
089657C	4	300	12%	0.9	0.1	\$689	\$190
089656V	4	165	15%	0.5	0.1	\$389	\$124
089655N	4	16	15%	0.0	0.0	\$38	\$12
089654G	4	30	0%	0.1	0.0	\$62	\$5
089653A	4	25	15%	0.1	0.0	\$59	\$19
089652T	4	30	15%	0.1	0.0	\$71	\$22
089651L	4	300	15%	0.9	0.2	\$707	\$225
089650E	4	35	15%	0.1	0.0	\$82	\$26
089647W	4	30	15%	0.1	0.0	\$71	\$22
089646P	4	0	0%	0.0	0.0	\$0	\$0
089645H	4	211	16%	0.6	0.1	\$501	\$166
089644B	4	120	14%	0.4	0.1	\$280	\$85

Crossing	Intersection Characteristics			Volume per Delay		Annual Costs	
	Additional Trains	Average Annual Daily Traffic	Percent Truck	Cars	Trucks	All Vehicles	Business Travel
	1	2	3	4	5	6	7
089642M	4	130	14%	0.4	0.1	\$304	\$92
089640Y	4	150	14%	0.5	0.1	\$351	\$107
089638X	4	0	0%	0.0	0.0	\$0	\$0
089636J	4	136	16%	0.4	0.1	\$323	\$107
089635C	4	25	16%	0.1	0.0	\$59	\$20
089633N	4	25	16%	0.1	0.0	\$59	\$20
089632G	4	0	0%	0.0	0.0	\$0	\$0
089630T	4	25	5%	0.1	0.0	\$54	\$9
089629Y	4	0	0%	0.0	0.0	\$0	\$0
089628S	4	24	5%	0.1	0.0	\$52	\$9
089627K	4	71	5%	0.2	0.0	\$153	\$26
089625W	4	159	5%	0.5	0.0	\$343	\$58
089624P	4	255	5%	0.9	0.0	\$551	\$93
089545D	4	50	14%	0.2	0.0	\$117	\$36
089541B	4	2,250	14%	6.9	1.1	\$5,258	\$1,600
097206U	4	330	14%	1.0	0.2	\$771	\$235
066378S	4	6,682	9%	21.7	2.1	\$14,959	\$3,465
066377K	4	6,682	9%	21.7	2.1	\$14,959	\$3,465
066376D	4	2,185	9%	7.1	0.7	\$4,892	\$1,133
066375W	4	2,185	9%	7.1	0.7	\$4,892	\$1,133
066372B	4	2,662	9%	8.6	0.9	\$5,959	\$1,380
066371U	4	2,662	9%	8.6	0.9	\$5,959	\$1,380
066367E	4	11,000	7%	36.4	2.7	\$24,194	\$4,856
066315M	4	480	5%	1.6	0.1	\$1,037	\$175
066247N	4	1,258	9%	4.1	0.4	\$2,816	\$652
066245A	4	362	9%	1.2	0.1	\$810	\$188
066244T	4	1,258	9%	4.1	0.4	\$2,816	\$652
066240R	4	540	9%	1.8	0.2	\$1,209	\$280
066239W	4	127	9%	0.4	0.0	\$284	\$66
066236B	4	201	9%	0.7	0.1	\$450	\$104
065971T	4	670	5%	2.3	0.1	\$1,447	\$244
065970L	4	2,300	5%	7.8	0.4	\$4,968	\$838
065969S	4	90	11%	0.3	0.0	\$205	\$54

Crossing	Intersection Characteristics			Volume per Delay		Annual Costs	
	Additional Trains	Average Annual Daily Traffic	Percent Truck	Cars	Trucks	All Vehicles	Business Travel
	1	2	3	4	5	6	7
065968K	4	37	11%	0.1	0.0	\$84	\$22
065966W	4	45	11%	0.1	0.0	\$103	\$27
AG-81	4					\$0	\$0
Total						\$220,662	\$52,711

Sources: Adapted from Schatzki, Todd and Bruce Strombom. 2014. Assessment of the Socioeconomic Impacts of the Vancouver Energy Distribution Project: Secondary Impacts. September.

US Department of Transportation. 2011. Revised Departmental Guidance on Valuation of Travel Time in Economic Analysis. September 28. Website (http://www.dot.gov/sites/dot.dev/files/docs/vot_guidance_092811c.pdf) accessed February 5, 2015.

Federal Railroad Administration, Office of Safety Analysis. 2015. Crossing History. Website (<http://safetydata.fra.dot.gov/officeofsafety/publicsite/downloaddbf.aspx?itemno=7.02>) accessed February 5, 2015.

Notes: See Section 3.14, Transportation and Table N-11 for additional train and crossing details.

[2] & [3] = Sourced from Federal Railroad Administration, Office of Safety Analysis. 2015. Crossing History. Website (<http://safetydata.fra.dot.gov/officeofsafety/publicsite/downloaddbf.aspx?itemno=7.02>) accessed February 5, 2015.

[4] = $([2] * (([F]) / (24hr * 60 min))) * (1 - [3])$

[5] = $([2] * (([F]) / (24hr * 60 min))) * [3]$

[6] = $(1.016 * ([H] - 2011)) * ((([4] * [S]) + ([5] * [U])) * [G]) * [I] * [1] * 365 days$

[7] = $(1.016 * ([I] - 2011)) * ((([4] * [T]) * [O]) + ([5] * [U])) * [G]) * [I] * [1] * 365 days$

Table N-22. Economic Impact of Indirect and Induced Employment during Construction – Phase I

Industry/Sector	Jobs (FTEs) ¹			Labor Income (\$) ²		
	Indirect	Induced	Total	Indirect	Induced	Total
Architectural, engineering, and related services	186	1	187	\$9,418,096	\$49,493	\$9,467,589
Food services and drinking places	15	27	42	\$383,705	\$673,104	\$1,056,810
Employment services	32	3	36	\$819,787	\$86,883	\$906,671
Wholesale trade businesses	24	7	31	\$2,090,556	\$654,104	\$2,744,660
Services to buildings and dwellings	23	4	27	\$531,052	\$91,223	\$622,275
Accounting, tax preparation, bookkeeping, and payroll services	19	2	20	\$597,770	\$55,973	\$653,743
Automotive repair and maintenance, except car washes	17	3	20	\$887,485	\$144,059	\$1,031,544
Transport by truck	16	2	19	\$758,665	\$111,072	\$869,738
Offices of physicians, dentists, and other health practitioners	0	18	18	\$9	\$1,525,151	\$1,525,160
Monetary authorities and depository credit intermediation activities	12	4	16	\$1,129,697	\$361,342	\$1,491,039
Civic, social, professional, and similar organizations	11	5	16	\$425,432	\$176,431	\$601,863
Retail Stores - General merchandise	7	9	16	\$236,769	\$312,370	\$549,139

Industry/Sector	Jobs (FTEs) ¹			Labor Income (\$)²		
	Indirect	Induced	Total	Indirect	Induced	Total
Commercial and industrial machinery/equipment rental and leasing	15	0	15	\$1,102,041	\$8,320	\$1,110,361
Real estate establishments	8	6	14	\$244,995	\$208,392	\$453,387
Retail Stores - Food and beverage	6	8	14	\$210,979	\$269,059	\$480,037
Commercial and industrial machinery/equipment repair and maintenance	13	0	13	\$1,128,079	\$23,404	\$1,151,482
Legal services	11	2	13	\$412,207	\$74,416	\$486,623
Nursing and residential care facilities	0	11	11	\$0	\$418,309	\$418,309
Private hospitals	0	10	10	\$7	\$874,495	\$874,502
Computer systems design services	9	1	10	\$413,707	\$35,134	\$448,841
Business support services	8	1	10	\$308,846	\$50,007	\$358,853
Retail Stores - Miscellaneous	4	6	10	\$81,773	\$109,507	\$191,280
Maintenance and repair construction of nonresidential structures	8	2	9	\$487,967	\$99,598	\$587,564
Investigation and security services	7	2	8	\$168,064	\$43,536	\$211,600
Telecommunications	6	2	8	\$477,139	\$125,086	\$602,224
All other miscellaneous professional, scientific, and technical services	7	0	7	\$439,775	\$27,124	\$466,899
Other (less than 7 new FTEs per industry)	107	86	193	\$6,211,842	\$3,769,624	\$9,981,466
Total	571	221	792	\$28,966,445	\$10,377,214	\$39,343,659

Source: BergerABAM 2016

Notes:

1 FTE = Full-Time Equivalent. One full-time equivalent equals the hours worked by one employee on a full-time basis. Employment impacts include full-time and part-time positions, reflecting conversion of part-time positions into FTEs. For example, the hours worked by two half-time employees would equal 1 FTE.

2 Labor income is reported in 2015 dollars, consistent with the assumed construction in 2015.

Table N-23. Economic Impact of Indirect and Induced Employment during Construction – Phase II

Industry/Sector	Jobs (FTEs) ¹			Labor Income (\$)²		
	Indirect	Induced	Total	Indirect	Induced	Total
Architectural, engineering, and related services	74	0	75	\$3,845,133	\$20,206	\$3,865,339
Food services and drinking places	6	11	17	\$156,656	\$274,809	\$431,464
Employment services	13	1	14	\$334,695	\$35,472	\$370,167
Wholesale trade businesses	10	3	12	\$853,513	\$267,052	\$1,120,564
Services to buildings and dwellings	9	2	11	\$216,813	\$37,244	\$254,057

Industry/Sector	Jobs (FTEs) ¹			Labor Income (\$)²		
	Indirect	Induced	Total	Indirect	Induced	Total
Accounting, tax preparation, bookkeeping, and payroll services	7	1	8	\$244,052	\$22,852	\$266,904
Automotive repair and maintenance, except car washes	7	1	8	\$362,334	\$58,815	\$421,149
Transport by truck	7	1	7	\$309,741	\$45,348	\$355,088
Offices of physicians, dentists, and other health practitioners	0	7	7	\$4	\$622,674	\$622,678
Monetary authorities and depository credit intermediation activities	5	2	6	\$461,222	\$147,525	\$608,747
Civic, social, professional, and similar organizations	4	2	6	\$173,692	\$72,032	\$245,723
Retail Stores - General merchandise	3	4	6	\$96,666	\$127,531	\$224,197
Commercial and industrial machinery/equipment rental and leasing	6	0	6	\$449,931	\$3,397	\$453,328
Real estate establishments	3	3	6	\$100,024	\$85,080	\$185,105
Retail Stores - Food and beverage	2	3	5	\$86,136	\$109,849	\$195,985
Commercial and industrial machinery/equipment repair and maintenance	5	0	5	\$460,561	\$9,555	\$470,116
Legal services	4	1	5	\$168,292	\$30,382	\$198,674
Nursing and residential care facilities	0	4	4	\$0	\$170,783	\$170,783
Private hospitals	0	4	4	\$3	\$357,031	\$357,033
Computer systems design services	4	0	4	\$168,904	\$14,344	\$183,249
Business support services	3	1	4	\$126,093	\$20,416	\$146,509
Retail Stores - Miscellaneous	2	2	4	\$33,386	\$44,709	\$78,094
Maintenance and repair construction of nonresidential structures	3	1	4	\$199,222	\$40,663	\$239,885
Other (less than 4 new FTEs per sector)	52	37	88	\$2,979,078	\$1,618,944	\$4,598,022
Total	229	89	319	\$11,826,150	\$4,236,712	\$16,062,863

Source: BergerABAM 2016

Notes:

1 FTE = Full-Time Equivalent. One full-time equivalent equals the hours worked by one employee on a full-time basis. Employment impacts include full-time and part-time positions, reflecting conversion of part-time positions into FTEs. For example, the hours worked by two half-time employees would equal 1 FTE.

2 Labor income is reported in 2015 dollars, consistent with the assumed construction in 2015.

Table N-24. Economic Impact of Indirect and Induced Employment during Startup Operations

Industry/Sector	Jobs (FTEs)			Labor Income (\$)		
	Indirect	Induced	Total	Indirect	Induced	Total
Food services and drinking places	3	18	21	\$68,299	\$471,533	\$539,832
Architectural, engineering, and related services	14	1	15	\$727,022	\$35,155	\$762,177
Offices of physicians, dentists, and other health practitioners	0	13	13	\$2	\$1,066,330	\$1,066,332
Employment services	5	2	7	\$133,666	\$61,437	\$195,103
Wholesale trade businesses	2	5	7	\$205,239	\$460,446	\$665,685
Nursing and residential care facilities	0	7	7	\$0	\$292,610	\$292,610
Private hospitals	0	7	7	\$1	\$611,862	\$611,863
Retail Stores - General merchandise	1	6	7	\$20,811	\$218,367	\$239,178
Real estate establishments	2	5	6	\$45,098	\$152,196	\$197,294
Retail Stores - Food and beverage	1	5	6	\$18,915	\$188,060	\$206,975
Services to buildings and dwellings	3	3	5	\$63,637	\$64,140	\$127,777
Civic, social, professional, and similar organizations	1	3	4	\$43,074	\$123,446	\$166,521
Retail Stores - Miscellaneous	0	4	4	\$7,161	\$76,501	\$83,662
Monetary authorities and depository credit intermediation activities	1	3	4	\$131,953	\$253,062	\$385,015
Other (less than 4 new FTEs per industry)	32	71	103	\$1,836,974	\$3,224,907	\$5,061,881
Total	65	152	217	\$3,301,852	\$7,300,052	\$10,601,904

Source: BergerABAM 2016

Notes:

1 FTE = Full-Time Equivalent. One full-time equivalent equals the hours worked by one employee on a full-time basis. Employment impacts include full-time and part-time positions, reflecting conversion of part-time positions into FTEs. For example, the hours worked by two half-time employees would equal 1 FTE.

2 Labor income is reported in 2015 dollars, consistent with the assumed construction in 2015.

Table N-25. Economic Impact of Indirect and Induced Employment during Full Operations

Industry/Sector	Jobs (FTEs) ¹			Labor Income (\$)²		
	Indirect	Induced	Total	Indirect	Induced	Total
Food services and drinking places	6	37	43	\$157,637	\$971,797	\$1,129,434
Architectural, engineering, and related services	33	1	35	\$1,767,535	\$71,054	\$1,838,589
Offices of physicians, dentists, and other health practitioners	0	26	26	\$4	\$2,207,801	\$2,207,805
Employment services	12	5	16	\$313,291	\$124,722	\$438,013
Wholesale trade businesses	5	10	16	\$501,354	\$944,930	\$1,446,284
Nursing and residential care facilities	0	15	15	\$0	\$605,645	\$605,645
Private hospitals	0	14	14	\$3	\$1,265,205	\$1,265,208
Retail Stores - General merchandise	1	12	14	\$50,544	\$451,824	\$502,368
Real estate establishments	4	8	12	\$109,597	\$296,479	\$406,077
Retail Stores - Food and beverage	1	11	12	\$46,014	\$388,778	\$434,791
Services to buildings and dwellings	6	5	12	\$153,747	\$131,575	\$285,322
Civic, social, professional, and similar organizations	3	6	9	\$103,136	\$254,989	\$358,125
Monetary authorities and depository credit intermediation activities	3	5	9	\$340,649	\$521,427	\$862,076
Retail Stores - Miscellaneous	1	8	9	\$17,417	\$158,232	\$175,649
Other private educational services	0	8	8	\$4,366	\$151,255	\$155,621
Accounting, tax preparation, bookkeeping, and payroll services	5	2	8	\$179,949	\$80,494	\$260,444
Individual and family services	0	8	8	\$0	\$169,679	\$169,679
Maintenance and repair construction of nonresidential structures	5	2	7	\$339,612	\$142,628	\$482,239
Automotive repair and maintenance, except car washes	3	4	7	\$167,999	\$208,286	\$376,285
Transport by truck	4	3	7	\$174,598	\$160,036	\$334,634
Medical and diagnostic labs, outpatient and other ambulatory care services	0	7	7	\$170	\$629,343	\$629,513
Other (less than 7 new FTEs per industry)	65	108	173	\$3,732,808	\$5,022,343	\$8,755,151
Total	159	306	465	\$8,160,431	\$14,958,521	\$23,118,952

Source: BergerABAM 2016

Notes:

1 FTE = Full-Time Equivalent. One full-time equivalent equals the hours worked by one employee on a full-time basis. Employment impacts include full-time and part-time positions, reflecting conversion of part-time positions into FTEs. For example, the hours worked by two half-time employees would equal 1 FTE.

2 Labor income is reported in 2015 dollars, consistent with the assumed construction in 2015.