Final Economic Impact Analysis of the Proposed Kalama Manufacturing & Marine Export Facility

December 18, 2015

Prepared for:

NW Innovation Works

ECONorthwest
ECONOMICS • FINANCE • PLANNING

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Introduction

Background

Northwest Innovation Works, LLC (NWIW) engaged ECONorthwest for an economic impact analysis. NWIW proposes the development and operations a methanol production plant in Kalama—a city of 2,344 in Cowlitz County, Washington.

The plant is named the Kalama Manufacturing and Marine Export Facility (KMMEF). It will occupy a 90-acre site on land owned by the Port of Kalama. The site is along the Columbia River, 35 miles north of the City of Portland, Oregon, and three miles from Northwest Pipeline—the primary artery for natural gas transmission to the Pacific Northwest.

The KMMEF will convert natural gas into methanol—a liquid also known as methyl alcohol. The methanol will be stored on-site and then transferred onto oceangoing vessels for export to Asia. The methanol will then be made into synthetic fibers and compounds widely use by consumers and industries.

Impact Analysis Parameters

ECONorthwest divides the impact analysis into two parts. The first covers the impacts of plant construction on the 90-acre site at the Port of Kalama. The second analysis measures the impacts of an average year of plant operations.

Construction will span three years, beginning September 2016 and concluding October 2018. ECONorthwest estimated the economic impacts of construction by year and in total. The direct impacts encompass construction at the 90-acre site by NWIW and its contractors.

Operations commence late in 2018. At full capacity, the plant could produce 3.65 million metric tonnes in a year. However, in practice the plant should average 92 percent of capacity over a full year. At that rate, KMMEF would export 3.358 million metric tonnes of methanol requiring about sixty vessel calls a year. This is the anticipated activity in an average operating year that ECONorthwest assumed in the economic impact analysis.

NWIW gave ECONorthwest plant construction costs and operating expenses expressed in 2018 dollars.[1] That is the year production starts. For consistency, ECONorthwest reports all economic impacts and construction costs in 2018 dollars.

Affected Region

By definition, the direct impacts of plant construction and operations occur at the plant site. The direct impacts trigger subsequent indirect and induced impacts throughout the regional economy.

ECONorthwest defines the regional economy as Southwest Washington and the Portland-Vancouver-Hillsboro metropolitan statistical area (MSA). This area covers the major towns and cities within less than a 90-minute driving radius. Thus, it describes the appropriate geography of businesses and potential workers impacted by KMMEF. The area consists of the following twelve counties:

- Cowlitz County, Washington
- Clackamas County, Oregon
- Clark County, Washington
- Columbia County, Oregon
- Lewis County, Washington
- Multnomah County, Oregon
- Pacific County, Washington
- Skamania County, Washington
- Thurston County, Washington
- Wahkiakum County, Washington
- Washington County, Oregon
- Yamhill County, Oregon

The twelve-county (local) region has a deep labor market of more over 1.4 million workers.[2] ECONorthwest expects and assumes in the impact analysis that all the workers at the plant in a typical operating year would be residents in the region. This expectation is based on an analysis of U.S. Census data, which shows that 98.7 percent of commuters working in Cowlitz County live in the defined region. [3].

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[1] ECONorthwest used its own forecast, which shows about 6.4 percent inflation from 2015 to 2018, which is equivalent to a 2.09 percent annual inflation rate.

[2] US Bureau of Labor Statistics. Local area unemployment statistics. Data extracted June 15, 2015 for the year 2014.

[3] Calculated by ECONorthwest using Census data from "Residence County to Workplace County Flows for the United States and Puerto Rico Sorted by Workplace Geography: 2006-2010."

Economic Impacts from Construction

Construction projects stimulate economic impacts. They do so by spending money on goods and services, and by providing jobs. ECONorthwest calculated the economic impacts of the KMMEF construction project on the twelve-county region. The first step in this analysis is determining how much the construction project would cost and how much of that would go to local businesses and workers.

Construction Value and Local Content

Methanol plant construction is a major undertaking. KMMEF would be the first methanol plant on the West Coast. As such, much of the equipment and engineering work necessary will come from outside the local region.

NWIW will ship some major components into Kalama. This includes air separation units and distillation columns. Local labor will unload them from ships and install them at the jobsite, but the work going into building these large components will be done elsewhere. This type of equipment is not locally available.

Other aspects of constructing the methanol plant are readily available from local sources. Steel, concrete, piping, fabricated metal products, and industrial pumps are ample and manufactured in the region. Heavy industry is a dominant sector. The region ranks 17th nationally in manufacturing employment versus other metropolitan areas.[4]

[4] Helper, S., T. Krueger, and H. Wial. "Location of American Manufacturing: Trends in the Geography of Production" Brookings Metropolitan Program. (2012).

Total Construction Costs

NWIW anticipates spending $1.8 billion (in 2018 $) to construct the plant. ECONorthwest estimated the portion of total construction costs subject to the 7.7 percent retail sales tax in Kalama in accordance to Washington law.[5] Since it is a manufacturing facility in an official high unemployment county, the state exempts some construction components, notably new machinery and equipment, from sales tax.[6] Considering this, ECONorthwest estimates the retail sales tax would be about $47.5 million out of the $1.8 billion total as shown in Table 1.

Table 1: KMMEF Total Construction Cost, Millions of 2018 $

Construction Costs (Mn. 2018 $)	Project Total	Local Spending
Engineering & related professional fees	$ 60.0	$ 3.0
EPC excluding equipment installation	369.2	280.0
EPC equipment installation	200.0	200.0
Air separation units	400.0	-
Methanol storage tanks	100.0	10.0
Control system	12.0	-
Equipment rental, cranage	36.9	30.0
Loading arm	3.0	-
Emergency shutdown system	3.0	-
Civil engineering work including pilings	92.7	70.0
Distillation columns, other equipment	400.0	-
Sales tax on construction*	47.5	-
Miscellaneous consumables	75.7	67.0
Total Construction Costs	$ 1,800.0	$ 660.0

Sources: NWIW with adjustments by ECONorthwest for sales tax.
** Impact analysis excludes taxes in the calculation of economic impacts.*

Relevant to economic impact analysis are the purchases of goods, services, and labor from the local region. That is locally sourced direct impacts. These affect the local economy causing indirect impacts on businesses and induced impacts on households. ECONorthwest estimates about $660 million of total construction labor, goods, and services spending will come from the local area.

[5] WAC 458-20-170(4)(a)

[6] Washington designates Cowlitz County as having high unemployment because its unemployment rate has been at least 20 percent above the state average for at least three calendar years.

Local Labor Market

The region around Kalama has a large labor market. According to the US Bureau of Labor Statistics (BLS), the twelve-county region has a labor force exceeding 1.4 million workers and an unemployment rate of 6.6 percent. Cowlitz County has an 8.4 percent unemployment rate, which suggests greater slack in the labor market near Kalama.

Table 2: Labor Force Size and Unemployment Rate by County in the Local Region, 2014 Annual Averages, BLS

County/State	Labor Force	Unemployment Rate
Cowlitz, WA	44,048	8.4%
Lewis, WA	31,011	9.2%
Thurston, WA	123,119	6.6%
Pacific, WA	8,056	10.1%
Wahkiakum, WA	1,359	9.9%
Clark, WA	208,909	7.9%
Skamania, WA	4,978	8.7%
Columbia, OR	22,639	8.4%
Multnomah, OR	420,520	6.1%
Washington, OR	293,632	5.7%
Clackamas, OR	200,522	6.3%
Yamhill, OR	50,300	6.6%
12-County Region	1,409,093	6.6%

Source: US Bureau of Labor Statistics

While the size of the labor market is large, BLS data also reflect the depth of skills. Table 3 is a list of the non-supervisory workers at the KMMEF construction jobsite by BLS occupation code. The data compare the numbers of each occupation needed at KMMEF to the most recent number working in the twelve-county region.[7] In all cases, the number working in each occupation exceeds what is needed at the Kalama methanol construction site by seven times or more.

[7] Source: BLS Occupational Employment Statistics for Portland-Vancouver-Hillsboro MSA, Cowlitz and Thurston Counties, Washington and Non-Metropolitan SW Washington. Data exclude engineers, managers, and longshoremen.

Table 3: Construction Labor Occupations Needed for KMMEF Versus Working in the Region in May 2014, BLS

Construction Workers	Needed at KMMEF	Working in the Region	Occupation Code
Expeditor / Materials Clerk	16	5,900	43-5071
Equipment Operator	40	2,800	47-2073
Millwright	60	1,050	49-9044
Iron Workers	35	940	47-2221
Riggers	25	170	49-9096
Pipefitter	200	3,910	47-2152
Welder	200	3,690	51-4121
Electrical / Control	85	6,350	47-2111
Carpenter	25	8,060	47-2031
Mason	30	400	47-2021
Apprentices	100	1,040	47-3011-19
Laborer	60	7,610	47-2061
	876	41,920	

Sources: NWIW and the US Bureau of Labor Statistics

According to NWIW, the project will last 26 months, starting with 55 workers in September 2016. Employment rises to a peak of 1,000 in the months of August, September, and October 2017. Employment at the jobsite declines to 100 in October 2019, when construction ends.

Impact analyses use a simple measure of employment called job years. A job year is twelve months of work. There are no adjustments for overtime or part-time work. Some jobs will last more than two years, while others will last for only a few months.

Table 4 lists each month of construction and the number of jobs at the KMMEF jobsite. By adding the number of jobs in each month in each year, and dividing by 12 months, the annualized employment in job years is determined. For the entire 26-month period, construction requires 1,122 job years in Kalama. This includes all types of jobs—construction trades, longshoremen, engineers, project managers, laborers, supervisors, and administrative support personnel. Note that some equipment installation employment is not included, as workers are provided by equipment manufacturers and are not direct hires of the construction company.

Table 4: Jobs by Month at the Construction Site of KMMEF

Year/Month	Jobs in Month	Job Years
2016:		
September	55	
October	110	
November	150	
December	250	
2016 Subtotal	565	47
2017:		
January	250	
February	350	
March	400	
April	600	
May	700	
June	800	
July	800	
August	1,000	
September	1,000	
October	1,000	
November	900	
December	800	
2017 Subtotal	8,600	717
2018:		
January	800	
February	700	
March	650	
April	600	
May	450	
June	350	
July	300	
August	200	
September	150	
October	100	
2018 Subtotal	4,300	358
Project Total	13,465	1,122

Sources: NWIW and calculations by ECONorthwest

Local and Non-Local Construction Labor

Both locally hired and non-local labor brought into the region to construct a plant cause economic impacts. Knowing the share of non-local construction workers is important. Local hires have decidedly greater impacts than non-locals because their households spend most of their income inside the region. Non-local hires are transient. They spend a little locally for temporary living expenses, but remit the bulk of their money back to their hometowns where it gets spent far from the area around the construction site.

Fortunately, federal government data tracks the residencies of construction workers. ECONorthwest used the most recent information (2013). ECONorthwest found 89.2 percent of construction industry workers employed in Cowlitz County reside in the twelve-county region.[8] NWIW should draw a similar proportion of local workers. The wages and benefits earned by them from the project would raise the incomes of construction worker and management households, thus, inducing economic impacts in the region.

Non-locals are 10.8 percent of the total construction workforce. These workers would temporarily reside in the region and send their earnings back to the households outside of the twelve-county region. Thus, their wages and benefits have no impact on the regional economy.

However, as is customary, such transient workers receive modest *per diem*, which pay for local temporary housing, meals, and incidentals; they are a cost of construction. ECONorthwest classifies them as a labor cost and estimates approximately $3.6 million in *per diem* over the 26-month project.

The expectation that 89.2 percent of construction workers are available locally is supported by the experience of other large, complex industrial projects. For example, the $6 billion Intel campus 47 miles from Kalama, employed thousands of local construction workers. That project will end later in 2015, freeing up ironworkers, electricians, welders, and other skilled tradespeople some of whom would work at the KMMEF jobsite when it starts in late 2016.[9]

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[8] U.S. Census Bureau, Center for Economic Studies, Longitudinal-Employer Household Dynamics Program. 2013. OnTheMap Application. Retrieved June 15, 2015 from http://onthemap.ces.census.gov/

[9] Rogoway, M. "Intel filings provide glimpse of site's future. The Oregonian. February 20, 2015.

Table 5 recasts the costs of the construction project between labor, sales taxes, and other inputs. From the $1.8 billion total, $625.9 million effectively impact the local economy and are modeled as such in this analysis. It is this local spending on goods, services, and labor that trigger subsequent indirect and induced impacts throughout the local economy.

Table 5: Construction Project Total Versus Direct Regional Inputs

KMMEF Construction Costs (Mn. 2018 $) & Job Years of Labor	Total	Local Direct Impact
Materials, equipment, fuel, fees & services	$ 1,574.9	$ 467.0
Local labor, wages & benefits	173.8	155.0
Labor per diems for transient workers	3.9	3.9
Sales tax*	47.5	-
Total Construction	$ 1,800.0	$ 625.9
Labor (job years)	1,122	1,001

** By convention, direct economic impacts exclude sales tax.*

ECONorthwest isolated the local impacts by counting only jobs held by residents of the twelve-county region as direct. Technically all jobs are considered direct. By excluding non-local jobholders from direct impacts, the economic impact analysis is more accurate and avoids overstating household spending.

Results of Economic Impact Analysis of Construction

ECONorthwest used the 2013 version of IMPLAN and built an economic impact model for the twelve-county region. ECONorthwest made the appropriate adjustments for inflation and reports the impacts in 2018 dollars, which is the standard NWIW used in its construction budgeting.

The analysis shows that the $1.8 billion project, of which $625.9 million is spent on local labor, goods, fees, and services, will affect over $1 billion in economic output in the twelve-county region through the indirect impacts (spending by businesses and governments) and induced impacts (spending by persons).

Table 6: Local Economic Impacts of KMMEF Plant Construction

Impacts	Total Project Costs and Employment	Local Direct Impacts	Local Indirect Impacts	Local Induced Impacts	Total Local Impacts
Output (Mn. 2018 $)	$ 1,800.0	$ 625.9	$ 203.4	$ 188.1	$ 1,017.3
Labor Income (Mn. 2018 $)	177.7	158.9	65.6	65.0	289.5
Employment (Job-Years)	1,122	1,001	1,129	1,389	3,519

Note: Direct local employment excludes jobs held by non-residents.

As is typical of major industrial construction projects in the Portland/Southwest Washington region, labor impacts are large. For every one job-year held by a local at the construction project, there would be over 3.5 jobs in the local economy. In total, locally $289.5 million in wages, salaries, and benefits would be traced back to the $158.9 in labor income at the KMMEF jobsite earned over the 26-month construction period. About 60 percent of the labor income comes in the form of wages and 40 percent as benefits, including payroll taxes.

Economic Impacts from Operations

KMMEF begins production in late 2018. Operations involve local purchases and employment, which in turn cause economic impacts. For purposes of calculating these impacts, ECONorthwest used operating estimates from NWIW for an average year. As with the construction analysis, for consistency values are expressed in 2018 dollars.

Operating Parameters and Employment

The economic impact model ECONorthwest built for KMMEF operations runs off of the payroll and good and services forecast from NWIW. As with construction, only plant expenditures going to local workers and businesses count as having effects on the twelve-county regional economy.

Value of Output

The most basic parameter for operations is the value of output. ECONorthwest calculated this value using an economic model. In most impact studies, output drives the economic impact forecast. However, that is not the case for this analysis.

Since there are no comparable methanol plants in the region, or the entire West Coast, ECONorthwest ran its analysis using NWIW's payroll and operating costs forecast. The value of direct output completed the analysis, but has no effect on determining other local economic impacts.

The methanol plant has a capacity of 3.65 million metric tonnes per year and, because of routine maintenance, repairs, and scheduling, will operate at an average rate of 92 percent of capacity. Thus, the economic impact analysis assumes KMMEF would produce 3.358 million metric tonnes of methanol for export a year.

The US export price for methanol is about $365 a metric tonne.[10] In 2018 dollars, it would be approximately $383. At that price and expected volume, KMMEF would have a direct output of $1.286 billion.

[10] US Census trade statistics, US exports of methanol Jan-Mar 2015 converted to $/MT

Methanol is a commodity. Its export price and demand fluctuate. The value of the plant's output will vary. What is shown in this analysis is illustrative of the operation's size, but the local impacts are not contingent upon that value.

Direct Operating Labor

NWIW will employ 192 full-time workers, including executive and administrative staff, at its plant. Payroll, which includes all benefits, taxes, wages, salaries, and other similar expenses, will be about $21 million a year.

Given that the twelve-county region is defined as encompassing a 90-minute or less driving range from KMMEF, ECONorthwest expects all 192 employees to live within commuting distance of Kalama.

Because the local area has a large manufacturing base, there is ample labor skilled in the occupations needed. ECONorthwest compared the occupations of the 192 future employees at the plant with the number working in each occupation within the local economy currently. In all occupations, as shown on Table 7, there is an ample labor pool.

Table 7: Occupations and Employees for Plant Operations at KMMEF Versus Local Availability in May 2014, BLS

Plant Operations Employees	Needed at KMMEF	Working in the Region	Occupation Code	BLS Occupation Title
Administration				
General Manager	1	18,460	11-1021	General & Operations Managers
HR Manager	1	150	11-3121	Human Resources Managers
Procurement	2	3,100	13-1023	Purchasing Agents, Except Wholesale, Retail, & Farm Products
Sales Manager	1	4,440	11-2022	Sales Managers
Manager	1	2,320	11-3011	Administrative Services Managers
Accounting	4	8,700	13-2011	Accountants & Auditors
IT Manager	2	3,750	11-3021	Computer & Information Systems Managers
Specialist	5	10,740	13-1199	Business Operations Specialists, All Other
Assistant	3	5,580	43-6011	Executive Secretaries & Executive Administrative Assistants
Clerical/Office support	12	21,510	43-9061	Office Clerks, General
Technical Management				
Plant Manager	1	1,970	11-3051	Industrial Production Managers
Production Manager	1	5,210	11-9199	Managers, All Other
Maintenance Manager	1	5,210	11-9199	Managers, All Other
HSE Manager	1	170	17-2111	Health & Safety Engineers, Except Mining Safety Engineers & Inspectors
Technical Staff				
Process Engineer	2	3,370	17-2112	Industrial Engineers
Laboratory Supervisor	1	320	19-2031	Chemists
Laboratory	11	650	19-4099	Life, Physical, & Social Science Technicians, All Other
Production Staff				
Shift Supervisor	4	4,780	51-1011	First-Line Supervisors of Production & Operating Workers
Control Room Operator	12	120	51-8091	Chemical Plant & System Operators
Process Operator U&O	20	130	51-8093	Petroleum Pump System Operators, Refinery Operators, & Gaugers
Operator	16	5,210	51-9199	Production Workers, All Other
Security Guard	8	6,210	33-9032	Security Guards
Maintenance Staff				
Mechanical Engineer	2	2,560	17-2141	Mechanical Engineers
E&I Engineer	2	1,550	17-2071	Electrical Engineers
Draftsperson/Planner	2	590	17-3013	Mechanical Drafters
Workshop Foreperson	4	370	49-9069	Precision Instrument & Equipment Repairers, All Other
Mechanic	30	3,360	49-9041	Industrial Machinery Mechanics
Welder	7	3,690	51-4121	Welders, Cutters, Solderers, & Brazers
E&I Technical Foreperson	9	250	49-9012	Control & Valve Installers & Repairers, Except Mechanical Door
Electrical Foreperson	1	800	49-2094	Electrical & Electronics Repairers, Commercial & Industrial Equipment
Instrumentation	18	1,300	49-9099	Installation, Maintenance, & Repair Workers, All Other
Logistics				
Store Supervisor	1	790	43-5011	Cargo & Freight Agents
Store Person	6	5,900	43-5071	Shipping, Receiving, & Traffic Clerks
Total	192	133,260		

Sources: NWIW and the US Bureau of Labor Statistics

Operating Expenses

The largest operating expense for a methanol plant will is natural gas. All of the natural gas used in Kalama is produced outside of the region. The second largest expense is ocean shipping; this too is not local. Therefore, the two largest inputs have no local economic impacts. Most of the other goods and services that KMMEF will need each year are available locally in whole or part.

In whole, electricity and water utility services are entirely local purchases. So are the Port of Kalama services of dock fees and land leases, which collectively total almost $4.9 million.[11]

[11] Land lease is on a sliding scale as the project develops. ECONorthwest used $1,540,143 per year for the impact analysis. This lease rate is reached in month 61 and continues thereafter.

Partially supplied from the local economy are machinery, maintenance, and overhead costs, which total about $32.3 million a year. Other large expenses that come from a mix of local and non-local sources include insurance, office expenses, administrative services, and sales costs.

Catalysts, absorbents, and other materials used to manufacture methanol are made primarily outside the local economy. There are some local impacts, however, because local wholesalers and shippers in the supply chain may be involved. The economic impact model estimates these local inputs and they contribute indirect impacts.

Vessel Calls

Based on the probable size of oceangoing vessels and the production volume at KMMEF, the Port of Kalama will see an estimated 60 vessel calls a year. Each vessel call stimulates local spending.

ECONorthwest contacted the Port of Kalama, Pacific Ship Supply, the Fort Vancouver Seafarers Center, and unions and determined the amount of spending in the local economy from vessel calls.

In total, because of vessel calls, in the local economy about $3.3 million would be spent annually employing nearly 24 workers. Most of the spending would be for river and bar pilot services. Other major spending impacts are dockage fees, longshoremen, berthing, ship supplies, and on-shore personal spending by ship crewmembers.

Spending from vessels calls is an indirect impact, which in turn stimulates additional indirect and induced spending in the local economy. ECONorthwest added these impacts to the plant's operating impacts.

Results of Economic Impact Analysis of Operations

Table 8 summarizes the total economic impacts anticipated annually from KMMEF on the twelve-county economy. Direct output is large ($1.286 billion) because of the high value of exports. Indirect output, at $42.6 million, is comparatively small since most of the inputs used for making methanol originate outside of the regional economy and the impact analysis only measures spending effects within the twelve counties.

Table 8: Annual Local Economic Impacts of KMMEF Operations

Impacts	Direct	Indirect	Induced	Total
Output (Mn. 2018 $)	$ 1,286.3	$ 42.6	$ 30.3	$ 1,359.2
Labor Income (Mn. 2018 $)	21.0	16.1	10.7	47.8
Employment (Job-Years)	192	258	218	668

In total, 668 jobs a year are linked to the KMMEF operations. This total includes the 192 at the plant itself, jobs tied directly to vessel calls, and all the indirect and induced jobs elsewhere in the economy of the twelve-county region.

Living Wage

With 192 employees and total compensation of $21 million, the average job would see $109,437 in wages and benefits at the plant in 2018. ECONorthwest estimates wages and salaries would average $71,353.[12] That is nearly $5,000 higher than the living wage for a family of four living near the Kalama plant in the neighboring city of Longview, Washington. When brought to 2018 dollars, KMMEF pay is also respectively about $10,000 above the County's median family income and $24,000 higher than the median annual wage in the county.

Table 9: Compensation at KMMEF and Living Wages, 2018 $

Income 2018 $	Direct
Per KMMEF employee:	
Wages & salaries	$ 71,353
Benefits & payroll taxes	38,084
Total compensation	$ 109,437
Living wage, Longview*	66,837
Median family income**	61,447
Average wage in county***	47,226

** Economic Policy Institute family budget calculator for a family of four in Longview, Washington in 2014 $ recast in 2018 $*

*** 2013 US Census, Cowlitz County median family income recast in 2018 $.*

*** US Bureau of Labor Statistics Cowlitz County median annual wage Occupational Employment Statistics.*

[12] Calculated by applying the 34.8 percent benefit load on total compensation of private sector manufacturing workers in the United States as reported by the US Bureau of Labor Statistics Employer Costs for Employee Compensation survey June 2015.

Fiscal Impacts

As noted in the operations analysis, the Port of Kalama will receive about $4.9 million a year in dockage fees and land lease payments. The large value of KMMEF results in other sizable fiscal impacts for state and local governments.

State and Local Tax Revenues

In this section, ECONorthwest calculates three streams of government revenues: business & occupation taxes, sales tax, and property tax. Actual taxes paid may differ from what is calculated here because of changing tax rates, tax laws, and accounting. Therefore, the figures provided here are approximate.

Business & Occupation Tax

Washington imposes a gross receipts tax on businesses, which is known as the business & occupation (B&O) tax. The tax rate is applied to the gross proceeds of sales or gross income. Rates vary by type industry and there are some exemptions.

Construction companies pay a 0.471 percent B&O tax based on the value of construction less sales taxes. Sometimes engineering and architectural services are exempt.[13] If not taxed at the construction contractor level, such service businesses pay their own 1.50 percent B&O tax. ECONorthwest uses this rate for this analysis.

ECONorthwest calculated that the 0.471 percent B&O tax rate would apply to $1.692 billion in construction and, therefore, the state would get $7.97 million in B&O tax revenue from construction. In addition, the state would impose a 1.5 percent B&O tax on $60 million in engineering and related professional fees for a total cost of $900,000.

Washington imposes a B&O tax on methanol plant production. The basic tax rate for methanol is 0.484 percent of the wholesale value of production. There may be adjustments based on how much output is subject to the tax in any given year. ECONorthwest estimates the annual B&O tax will fall between $4.98 million and $6.23 million.

[13] RCW 82.04.051(4)

Sales & Use Tax

Washington imposes a 6.5 percent sales & use tax. Cowlitz County has a 1.2 percent sales & use tax. KMMEF is exempt from collecting taxes on the methanol it exports. Washington does not impose sales & use taxes on goods manufactured in the state and exported to other states or countries.[14]

However, NWIW will have to pay sales & use tax on the construction of KMMEF. The tax applies to the value of the construction after some exemptions, such as the value of reused goods and concrete forming lumber. Because Washington recognizes Cowlitz County as a high unemployment county, qualified machinery, equipment, and buildings are also exempt.

ECONorthwest estimates taxable, non-exempt construction sales would be about $616 million. Therefore, the total sales and use tax is $47.5 million with approximately $7.4 million going to Cowlitz County and the remainder ($40.1 million) to Washington. ECONorthwest notes, however, that final sales taxes depend on what the actual taxable construction costs. They are subject to future conditions and available exemptions.

Not included in the NWIW taxable construction spending is $20,583,885 on dock construction paid by the Port of Kalama. That amount includes $1,471,640 in sales tax.

Once operating, the plant will pay sales and use taxes for supplies, fuel (notably natural gas consumed at the plant for energy), and maintenance services. ECONorthwest estimates annual sales and use taxes paid by the operations of $1.18 million to Cowlitz County and $6.41 million to Washington for a total of $7.59 million.

Leasehold and Hazardous Substance Taxes

Since KMMEF will lease land from the Port of Kalama, it would not have to pay property taxes on that land. However, there is a 12.84 percent leasehold excise tax in lieu of property tax when a lessee leases from a government owner. That tax would be $197,754 a year, about half of which ($98,877) goes to local government, starting in year five when lease payments level off at $1,540,143.

[14] WAC 458-20-193(6)(a)

In addition, Washington imposes a 0.7 percent hazardous substance tax on the value of methanol production, which ECONorthwest estimates would be $1.286 billion in 2018. Thus, the tax would be about $9 million a year.

Property Tax

Washington law requires county assessors to appraise industrial properties at 100 percent of their true and fair market value.[15] Machinery and equipment affixed to real property is considered real property. If it is not affixed, it is counted as personal property. Assessors then use a trending guide, which accounts for remaining useful life, in determining true market value. As for the land, NWIW will lease, not own the property on which the plant would be erected, so there is no property tax on the land itself.

Assessing real estate, particularly industrial property, is complex and beyond the scope of this analysis. However, for the purpose of estimating property tax on KMMEF, ECONorthwest uses the cost to construct ($1.8 billion). The assessor may determine a different value depending on what is included and excluded. However, $1.8 billion is a reasonable estimate for the historical cost.

From the historical cost, the true and fair market value is calculated. It is the historical value times the percent good factor, which is provided annually by the Washington Department of Revenue.

Taxes paid are based on the fair market value times the mill levy rates (property tax rates).

Property Tax Assuming no Change in Mill Levy Rates

ECONorthwest used the current levy rates in tax code area 715, which is the location of KMMEF. Should rates be the same in the year after the plant is constructed, property taxes assed on it would be nearly $16.5 million, as shown in the column for the first year on Table 10. However, levy rates are subject to changes and industrial plant values decline as they depreciate over time

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Table 10: Property Tax Estimate Using 2015 Levy Rates

Tax Authority	2015 Mill Levy Rate	KMMEF 1st Year Property Tax	KMMEF 10th Year Property Tax
State Schools	2.28240	$ 3,759,118	$ 2,119,896
Cowlitz County Current Expense	2.10418	3,465,583	1,954,361
State Veterans Relief	0.11250	185,288	104,490
Human Services Mental Health	0.02500	41,175	23,220
County Road	1.60716	2,646,986	1,492,726
Kalama School District #402	2.31208	3,807,999	2,147,462
Kalama Fire District #5	1.47132	2,423,261	1,366,560
Rose Valley Cemetery Dist. #6	0.08501	140,016	78,960
Total Property Tax	9.99965	$ 16,469,425	$ 9,287,676

Note: This analysis assumes 2015 levy rates apply to the methanol plant.

In later years, the plant's assessed value falls in accordance to Washington Department of Revenue schedules. Plant and equipment additions and replacements will add to the taxable property, but the degree that they would is uncertain and, thus, not included. In the tenth year, the plant's taxable value drops to about $928 million and property taxes, if levy rates stay the same as they were in 2015, total $9.3 million.

A more likely scenario is that some tax rates decline. The addition of the methanol plant on taxable assessed property values in Cowlitz County equals about an 18 percent increase in 2018. The school district levy rate, which is voted on by the public, may decline. That would lower the amount of property tax paid by NWIW, but also lower taxes for other taxable property holders.

Property Tax Assuming School Levy Rates Fall

Table 11 shows what would happen if school budgets remain the same and are spread over the pool of taxable assessed values made larger by the inclusion of the methanol plant. School mill levy rates would decline. The plant would pay $8.2 million in property taxes in its tenth year. But all other taxpayers would see their school property taxes decline.

Table 11: Tenth-Year Property Tax Estimate Assuming School Tax Levy Rates Fall

Tax Authority	No Change in 2015 Mill Levy Rates		Lower School Mill Levy Rates	
	Mill Levy Rate	Property Tax	Mill Levy Rate	Property Tax
State Schools	2.28240	$ 2,119,896	2.27962	$ 2,117,314
Cowlitz County Current Expense	2.10418	1,954,361	2.10418	1,954,361
State Veterans Relief	0.11250	104,490	0.11250	104,490
Human Services Mental Health	0.02500	23,220	0.02500	23,220
County Road	1.60716	1,492,726	1.60716	1,492,726
Kalama School District #402	2.31208	2,147,462	1.14016	1,058,980
Kalama Fire District #5	1.47132	1,366,560	1.47132	1,366,560
Rose Valley Cemetery Dist. #6	0.08501	78,960	0.08501	78,960
Total Property Tax	9.99965	$ 9,287,676	8.82495	$ 8,196,612

For example, the mill levy rate for the Kalama School District would fall from $2.31208 per thousand dollars of assessed value to $1.14016. Thus, having the plant lowers taxes paid by all taxable property holders while holding school district revenues unchanged. The State Schools levy would also decline, but by a small amount because it is determined statewide. The methanol plant adds only about 0.12 percent to the state total taxable assessed value subject to the State School levy.

While ECONorthwest can estimate the impact of the plant on taxable assessed values, it cannot predict levy rates. Doing so requires knowing how the budgets of the Kalama School District, Cowlitz County, and other local jurisdictions would change. Those are budgetary decisions. However, it is clear that having a new, large taxpaying property does offer the community more leeway for setting higher budgets without raising tax rates for existing homeowners and businesses.