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Economic Impacts of Renewable Fuels Facility in Columbia County, Oregon



Prepared for:

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Table of Contents

Executive Summary.....	ii
1. Overview	1
1.1. Objectives of the Study	1
1.2. Structure of the Report.....	1
2. Regional Economies of Columbia County, Oregon and Cowlitz County, Washington.....	2
3. Economic Impacts	5
3.1. Methodology.....	5
3.2. Project-Specific Information	7
3.3. Short-Term Construction Impacts.....	7
3.4. Long Term Operations Impacts.....	9
References	11

Executive Summary

NEXT Renewable Fuels Oregon, LLC is planning to build and operate a renewable green diesel fuel processing facility located at the Port Westward Industrial Park near Clatskanie in Columbia County, Oregon. The facility will be capable of processing 50,000 barrels per day of renewable biomass feedstock and supply renewable diesel fuel to West Coast markets. The construction and operation of the proposed facility will stimulate the local economy through employment, income to workers and proprietors, and an increase in output in the regional economy. Additionally, taxes and other local public revenue will be realized as a result of the project. This study estimates the immediate and ongoing impacts of this development to the regional economy in terms of employment, personal income, total output, and state and local public revenue. A regional economic impact assessment software system called IMPLAN was used to estimate the impacts for Columbia County in Oregon and Cowlitz County in Washington combined, which make up the local community or Region.

Regional economic impacts are reported in terms of the direct impacts, which are expenditures directly tied to the construction and operation of the facility, plus indirect impacts that derive from increased demand in the Region for industries that supply goods and services to the facility, plus induced impacts, which occur when incomes in the region improve and people and households have more to spend. Table ES-1 presents a summary of the results of the analysis. More detailed results are documented in Chapter 3 of this report. The construction of the facility will bring an additional \$1.13 billion directly into the Regional economy over the two-year construction period, with a total impact of about \$1.63 billion when the indirect and induced impacts are tallied. A total of 5,023 jobs will also be added during the two-year construction period. The total annual labor income as a result of the project is estimated at \$364 million per year, or \$729 million in total over the two-year construction period. Total annual state and local tax impacts from the project during the construction period is \$32.9 million, resulting in total taxes of \$65.8 million over the full two-year construction period. Further, NEXT will be paying the Port of Columbia County about \$1.4 million in option fees and lease payments each year during construction of the facility, for a two-year total of \$2.8 million.

During the operation of the facility, the total employment impact, including direct, indirect, and induced employment, is 832. This is an increase in employment of 1.5 percent over the 2019 total regional employment. Due to the pandemic, the 2020 employment numbers are not representative of typical employment in the Region. Of the total 832 jobs, 233 jobs are the direct employment associated with the facility operations. The associated total estimated annual labor income is \$39 million, with \$19 million of that attributed employment directly at the facility. The total annual output impact (direct, indirect, and induced) associated with long-term operations could reach more than \$1.71 billion, representing about a 12 percent increase in output for the region over output in 2019. About \$1.29 billion of this is the direct output impact of the facility operations. Annual state and local taxes attributable to the development during long-term operations is estimated at \$45.5 million.

Table ES-1. Direct, Indirect, and Induced Impacts

Impact	Employment	Labor Income	Output	Tax Revenue
	<i>(Jobs)</i>	<i>(2021 U.S. Millions)</i>		
Short-Term Construction Impacts (Two-Year Total)				
Direct	3,513	\$592	\$1,129	
Indirect	513	\$55	\$200	
Induced	997	\$82	\$297	
Total	5,023	\$729	\$1,626	\$65.8
Annual Impacts during Operating Years				
Direct	233	\$19	\$1,287	
Indirect	466	\$16	\$357	
Induced	133	\$4	\$68	
Total Annual	832	\$39	\$1,712	\$45.5

1. Overview

NEXT Renewable Fuels Oregon, LLC (NEXT) is proposing to build a renewable green diesel fuel processing facility (Facility) to supply West Coast markets with renewable diesel. The Facility will be located at Port Westward, near Clatskanie, Columbia County, Oregon. The proposed site for the Facility is located at the Port of Columbia County within the Port's existing Port Westward Industrial Park. The Facility will be capable of processing 50,000 barrels per day (BPD) of renewable biomass feedstock, such as used cooking oil, animal tallow, and inedible corn oil. The Facility will produce a renewable drop-in fuel¹ which can directly replace up to 100 percent of petroleum-based diesels.

The Facility will use liquid biomass feedstocks. Feedstocks will arrive via vessel and barge at the existing Port of Columbia County-owned dock at Port Westward. These will be imported via barge and oceangoing vessels to Port Westward and delivered to the proposed Facility by a terminalling provider² through a pipeline to the Facility. Clay will be shipped to the Facility via railcar to pretreat the feedstock, with the spent clay shipped back out via railcar. The feedstock will be refined, and the refined product will then be transported through a pipeline to the terminalling provider and shipped to West Coast vendors via ocean-going vessels. Construction of the Facility is anticipated to impact jurisdictional wetlands and waterways, with a proposed permittee-responsible mitigation to offset these impacts.

The Facility is expected to provide local employment, labor income, and output to the regional economy, as well as taxes and other local public revenue. It will utilize existing and otherwise underutilized infrastructure and have a broad impact on the local community. Additional benefits to the community are currently being evaluated, the results of which will be provided in a companion future report.

1.1. Objectives of the Study

As outlined above, the construction and operation of the proposed Facility will impact employment, personal income, and the overall economy of the Region. The main objective of this study is to estimate the immediate and ongoing impacts to the regional economy, for each of the different economic measures.

1.2. Structure of the Report

The remainder of this report is divided into two sections. Section 2 provides a brief introduction to the regional economy (Columbia County Oregon and Cowlitz County Washington combined), focusing on the employment, personal income, and output in major economic sectors of the Region. Section 3 analyzes the short-term and long-term regional economic impacts estimated using input-output modeling. A list of references used for the analysis is provided at the end of the report.

¹ Drop in fuels may be used in engines and other infrastructures with are functionally equivalent to petroleum fuels.

² A terminalling provider will accept the product at the terminal for the account of the customer, provide interim storage of the product at the terminal, maintain the product quality, and redeliver the product via the marine dock, at the terminal into customer-designated marine vessels, for the account of customer, together with all necessary record keeping.

2. Regional Economies of Columbia County, Oregon and Cowlitz County, Washington

For the purpose of this analysis, Columbia County in Oregon and Cowlitz County in Washington are combined to assess the regional economy (Region). The two counties are separated by the Columbia River and function as a common economy. The 2019 data for these two counties are analyzed through IMPLAN, which is an economic impact assessment software system that uses current data from multiple sources to determine the regional economic impacts due to the construction and operation of the Facility.

The largest economic sectors in the Region are different depending on whether output or employment are considered as key measures. Based on total output, the five largest industries include Paper Mills, Petrochemical Manufacturing, Paperboard Mills, Sawmills, and Aircraft Manufacturing (see Table 2-1). However, when based on employment, the top five industries are Limited-Service Restaurants, Religious Organizations, Full-Service Restaurants, Paper Mills, and Retail (see Table 2-2). While there are no overlaps between the top five industries based on either employment or total output, there are several that are common to both lists when we look at the full lists of the thirteen largest sectors under each definition. Paper Mills, Sawmills, Hospitals, and Scenic Transportation are the four sectors that generate both a significant amount of output and high employment. The Scenic Transportation sector is strong primarily in Cowlitz County, where there are a large number of helicopter tours to view Mt. St. Helens, and charter fishing businesses on many of the local rivers including the Columbia and the Cowlitz rivers.

The total output in the Region in 2019 was greater than \$14.6 billion, with over one-third of that (\$5.6 billion) stemming from the largest industry sectors (see Table 2-1). Total Regional wage and salary employment in 2019 was over 55,000 people, with almost one-third of those in the largest industry sectors (see Table 2-2). Total Regional employment compensation was over \$3.4 billion, indicating an average income of about \$61,000. Over one-quarter of that (\$934 million) is attributable to the largest employment industry sectors identified in Table 2-2. The December 2020 unemployment rate was 7.7 percent in Cowlitz County and 6.5 percent in Columbia County.³ Both counties weigh heavily on natural resource and manufacturing economies. Output from all manufacturing sectors totals nearly \$5.5 billion, with total employment of over 7,300 jobs. Total output from the agricultural sectors is over \$39.7 million, employing almost 500 persons in the region. The recreation sectors employ more than 300 persons in the region, with more than \$38.7 million in output from the recreation sectors.⁴

³ FRED Economic Data, 2021. Economic Research Federal Reserve Bank of St. Louis, available at: <https://fred.stlouisfed.org/series/ORCOLU9URN> and <https://fred.stlouisfed.org/series/WACOWL5URN>, accessed February 15.

⁴ IMPLAN, 2019

Table 2-1. Largest Industries in the Region based on Total Output

Industry Code	Industry Description	Total Output (\$ Million)	Employment
145	Paper mills	\$1,254	1,596
159	Petrochemical manufacturing	\$1,177	168
146	Paperboard mills	\$579	636
132	Sawmills	\$408	1,071
354	Aircraft manufacturing	\$314	322
447	Other real estate	\$312	305
441	Monetary authorities and depository credit intermediation	\$281	778
490	Hospitals	\$265	1,190
420	Scenic and sightseeing transportation and support activities for transportation	\$226	934
399	Wholesale - Petroleum and petroleum products	\$222	84
89	Animal, except poultry, slaughtering	\$197	303
510	Limited-service restaurants	\$184	2,145
163	Other basic organic chemical manufacturing	\$184	105

Source: IMPLAN.com

Table 2-2. Largest Industries in the Region based on Employment

Industry Code	Description	Employment	Total Output (\$ Million)
510	Limited-service restaurants	2,145	\$184
521	Religious organizations	2,018	\$143
509	Full-service restaurants	1,628	\$118
145	Paper mills	1,596	\$1,254
411	Retail - General merchandise stores	1,561	\$130
493	Individual and family services	1,292	\$49
490	Hospitals	1,190	\$265
491	Nursing and community care facilities	1,126	\$85
511	All other food and drinking places	1,075	\$72
132	Sawmills	1,071	\$408
472	Employment services	996	\$86
406	Retail - Food and beverage stores	974	\$78
420	Scenic and sightseeing transportation and support activities for transportation	934	\$226

Source: IMPLAN.com

The region covers almost 1,800 square miles in northwest Oregon and southwest Washington. The population is 162,947, with 63,511 households.⁵ The racial composition of both counties is predominantly white, with both counties greater than 91 percent white, followed by “two or more races” at just under four percent. American Indian and Alaska Natives make up 1.5 percent of Columbia County population and 2.1 percent of the Cowlitz County population. Black or African American, Asian, and Native Hawaiian and Other Pacific Islanders each are under two percent in both counties. The share of population that is Hispanic or Latino is 5.6 percent in Columbia County and 9.3 percent in Cowlitz County.⁶

⁵ IMPLAN, 2019

⁶ United States Census, 2019. QuickFacts Columbia County, Oregon and QuickFacts Cowlitz County, Washington. Available at <https://www.census.gov/quickfacts/fact/table/columbiacountyoregon/PST045219> and <https://www.census.gov/quickfacts/fact/table/cowlitzcountywashington/PST045219>, accessed March 11, 2021.

3. Economic Impacts

It is anticipated that the construction and operation of the proposed Facility will create regional economic impacts to the two-county region. These impacts are different for the short-term (construction) phase, which lasts for two years, and the long-term (ongoing operations) phase, which will last through the life of the Facility. Results for each phase are presented below (Sections 3.3 and 3.4), following an overview of the methodology (Section 3.1) and additional project-specific information (Section 3.2).

3.1. Methodology

The anticipated regional economic impacts of the proposed Facility are estimated using an input-output model for the defined Region (Columbia County, Oregon and Cowlitz County, Washington). An input-output model is a technique that quantifies the interactions between industries in an economy. Input-output models yield multipliers that are used to calculate the total direct, indirect, and induced impact on jobs, income, and output resulting from a dollar of spending on goods and services in a specified geography. The model used to estimate economic impacts for this study is IMPLAN, developed by the United States government and the University of Minnesota (available from the Minnesota IMPLAN Group, Inc.). IMPLAN was selected to carry out this analysis because it uses regional data, which have been compiled from multiple sources and include hundreds of industrial sectors. In addition to being widely used in regional economic analysis, the model and its methodology have been extensively reviewed in professional and economic journals.

IMPLAN data come from various sources. Employment and wage and salary income data at the state and county levels are from the Bureau of Labor Statistics. Data for national-, state-, and county-level proprietors, proprietor income, and the relationship between employee compensation and wage and salary income (to infer benefits) are from the Bureau of Economic Analysis. Data from the U.S. Census Bureau include the number of firms by size at the national, state, county, and zip-code levels.

IMPLAN reports economic contributions at three levels: (1) direct effects, (2) indirect effects, and (3) induced effects. These impacts represent different, yet related responses to the operation of the Facility. The sum of the three different impacts represents the total “ripple effect” from the relevant industry in the Region and indicates the degree to which spending in one sector of a regional economy creates additional employment, income, and output in other sectors. Each of the three types of impacts is described briefly below.

- **Direct impacts** measure the total amount of economic activity in terms of the monetary value and employment that are brought into the local economy directly from the activity in one sector. These impacts indicate the additional expenditures due to the project. Both short- and long-term phases will have direct impacts, with the short-term construction phase showing spending in all construction sectors of the economy and the long-term phase attributed specifically to the sector called, “Other basic organic chemical manufacturing.”
- **Indirect impacts** measure the response of local industries to the increased demand from the direct impacts. The indirect impacts come from local industries that increase their economic activity due to increased demand generated from the construction and operation of the Facility. For example, demand for truck transportation and non-durable wholesale goods in the region are both expected to experience increased demand during operation of the Facility. Wholesale machinery and equipment are expected to see some of the largest indirect impacts during construction.
- **Induced impacts** measure the response of local industries to the increased expenditures resulting from new household income generated from direct and indirect effects.

Government revenues are also available in the IMPLAN modeling system. Taxes and fiscal impacts associated with the Facility were also developed based on all three types of impacts.

This study analyzes the regional economic impacts for both the short-term construction phase and the long-term operations phase. All results are annual impacts, with short-term impacts lasting two years, while long-term impacts will occur over the life of the Facility.

The costs of construction used to determine direct expenditures for the short-term impacts were developed by NEXT. Local purchases during construction are assumed to take place in specific sectors and were assigned to IMPLAN sectors in coordination with NEXT personnel. The local additional purchases and employment during the short-term construction phase are assumed to take place in the sectors shown in Table 3-1. The long-term annual operational impacts will occur in IMPLAN sector 163, "Other basic organic chemical manufacturing," which includes NAICS code 325199, "Biodiesel fuels not made in petroleum refineries and not blended with petroleum," which covers the NEXT Facility.

Table 3-1. Construction Sectors

Industry Code	Description
29	Sand and gravel mining
51	Construction of new manufacturing structures
54	Construction of new highways and streets
155	Asphalt paving mixture and block manufacturing
204	Ready-mix concrete manufacturing
216	Iron, steel pipe and tube manufacturing from purchased steel
217	Rolled steel shape manufacturing
236	Fabricated structural metal manufacturing
239	Sheet metal work manufacturing
242	Metal tank (heavy gauge) manufacturing
247	Machine shops
252	Valve and fittings, other than plumbing, manufacturing
258	Fabricated pipe and pipe fitting manufacturing
395	Wholesale - Machinery, equipment, and supplies
455	Legal Services
457	Architectural, engineering, and related services
458	Specialized design services
462	Management consulting services
463	Environmental and other technical consulting services
465	Advertising, public relations, and related services
471	Facilities support services
472	Employment services
473	Business support services
477	Landscape and horticultural services
478	Other support services

3.2. Project-Specific Information

This study analyzes the short-term and long-term regional economic impacts using the sectors and dollar amounts presented in Table 3-2. The short-term construction phase is anticipated to involve spending of over \$800 million over the two years. In addition to the local spending on goods and services, NEXT anticipates construction will include employment of construction workers from several local labor unions. These will include general laborers, millwrights, carpenters, operating engineers, electricians, cement masons, ironworkers, boilermakers, and pipefitters, totaling an estimated \$287 million in wages over the two-year construction period.

The long-term operational model inputs are shown in Table 3-3, which represent an increase of 233 jobs (including corporate and plant management; plant operations; processing; health, environmental, safety, and security; and maintenance), with associated labor income of \$18.94 million and nearly \$1.3 billion in facility product output that will occur on an annual basis.

3.3. Short-Term Construction Impacts

The short-term economic impacts of the project include jobs, labor income (in dollars), and output (in dollars) related to the construction of the Facility. Inputs to the IMPLAN model occur through an injection of additional funds as output or demand in dollars, as well as employment and associated labor income identified in Table 3-2. The annual construction impacts to employment, income, and demand for each of the two years of construction are shown in Table 3-4, along with total annual state and local taxes.

The construction of the Facility will inject an additional total \$1.13 billion directly into the two-county economy over the two-year construction period, with a total impact to demand of about \$1.63 billion. These additional expenditures due to the Facility construction will add a total of 5,023 jobs during the two-year construction period. Of these, direct employment makes up 3,513 jobs, while 513 and 997 jobs are attributed to indirect and induced employment, respectively. The annual labor income as a result of the project is estimated at \$364 million, or \$729 million in total over the two-year period. Of this, \$592 million is the direct labor income. Total annual state and local tax impacts from the project during the construction period is \$32.90 million, resulting in total taxes of \$65.8 million over the full two-year construction period. Further, NEXT will be paying the Port of Columbia County about \$1.4 million in option fees and lease payments each year during construction of the Facility, for a two-year total of \$2.8 million.

Table 3-2 IMPLAN Model Inputs for Short-Term Construction

	Expenditures
Annual (for each of the 2 years)	
51-Construction of new manufacturing structures ⁷	\$170,136,393
29- Sand and gravel mining	\$10,386,943
54-Construction of new highways and streets	\$6,517,224
155-Asphalt paving mixture and block manufacturing	\$2,623,814
204-Ready-mix concrete manufacturing	\$3,442,362
216-Iron, steel pipe and tube manufacturing from purchased steel	\$42,537,453
217-Rolled steel shape manufacturing	\$10,400,269
236-Fabricated structural metal manufacturing	\$22,923,624
239-Sheet metal work manufacturing	\$2,905,634
242-Metal tank (heavy gauge) manufacturing	\$15,590,742
247-Machine shops	\$7,089,575
252-Valve and fittings, other than plumbing, manufacturing	\$10,634,363
258-Fabricated pipe and pipe fitting manufacturing	\$10,634,363
395-Wholesale - Machinery, equipment, and supplies	\$41,819,433
455-Legal Services	\$2,172,128
457-Architectural, engineering, and related services	\$3,898,800
458-Specialized design services	\$3,898,800
462-Management consulting services	\$1,500,000
463-Environmental and other technical consulting services	\$12,966,013
465-Advertising, public relations, and related services	\$600,000
471-Facilities support services	\$5,198,400
472-Employment services	\$750,000
473-Business support services	\$5,250,000
477-Landscape and horticultural services	\$3,249,000
478-Other support services	\$5,100,000
Annual Short-Term Construction Expenditure	\$402,225,336
2-Year Short-Term Construction Expenditure	\$804,450,671

⁷ The expenditures for Sector 51-Construction of new manufacturing structures include \$143,711,398 as annual labor income and \$26,424,995 as annual output in the IMPLAN model inputs. All other sectors' expenditures only include output as IMPLAN model inputs.

Table 3-3. IMPLAN Model Inputs for Long-Term Operations

	Employment	Labor Income	Output
163-Other basic organic chemical manufacturing	233	\$18,941,360	\$1,287,093,806

Table 3-4. Economic Impact from Short-Term Construction

Impact	Employment	Labor Income	Output	Tax Revenue
	<i>(Jobs)</i>	<i>(2021 U.S. Millions)</i>		
Annual Impacts Each of Two Years				
Direct	3,513	\$296	\$565	
Indirect	513	\$27	\$100	
Induced	997	\$41	\$148	
Total Annual	5,023	\$364	\$813	\$32.9
Two-Year Total				
Direct	3,513	\$592	\$1,129	
Indirect	513	\$55	\$200	
Induced	997	\$82	\$297	
Two-Year Grand Total	5,023	\$729	\$1,626	\$65.8

3.4. Long Term Operations Impacts

The long-term economic impacts of the project are those related to the ongoing operations of the NEXT Facility once construction is complete. The IMPLAN model measures the additional employment, income, and output in the “Other basic organic chemical manufacturing” sector that will occur from annual Facility operations.

In Table 3-5 below, the impacts are presented as the number of jobs, labor income (in millions of dollars), and output (in millions of dollars) for annual operations of the NEXT Facility. Annual state and local taxes are also estimated through the IMPLAN model.

Table 3-5. Annual Economic Impacts from Operations

Impact	Employment	Labor Income	Output	Tax Revenue
	<i>(Jobs)</i>	<i>(2021 U.S. Millions)</i>		
Annual Impacts During Operating Years				
Direct	233	\$19	\$1,287	
Indirect	466	\$16	\$357	
Induced	453	\$4	\$68	
Total Annual	832	\$39	\$1,712	\$45.5

During the operation of the Facility, the total employment impact, including direct, indirect, and induced employment, is 832. This is an increase of 1.5 percent over the 2019 total regional employment. Of this, 233 jobs are estimated as the direct employment associated with the Facility operation. The total increase in employment due to the facility, could potentially reduce the regional unemployment rate by over one percent. For example, if all additional employment went to persons living in Columbia County, the unemployment rate from December 2020 would be reduced to between 5.0 and 5.5 percent. If perhaps one-half of those jobs went to persons living in Cowlitz County, that unemployment rate could be reduced to 7.0 percent, with Columbia County unemployment reduced to around 5.8 percent. The associated total estimated annual labor income is \$39 million, with \$19 million attributed to the direct employment. The total output impact (direct, indirect, and induced) associated with long-term operations could reach more than \$1.71 billion. About \$1.29 billion of this is the direct output impact of the Facility operations. Annual state and local taxes attributable to the NEXT development during long-term operations is estimated at \$45.50 million. Further, NEXT will be paying the Port of Columbia County between \$4.33 and \$8.35 million in option fees and lease payments each year between 2024 and 2033.

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