

3.6 Energy and Natural Resources

The availability and conservation of energy and nonrenewable natural resources¹ are important factors to consider when implementing a large project, such as the proposed action. Construction, operations, and transportation to and from the project site would require the consumption of electricity, natural gas, fuel, and other natural resources. General information related to sources and consumption of crude oil is addressed in Chapter 5, *Extended Rail and Vessel Transport*.

This section describes energy and natural resources in the study area, including electricity, natural gas, fuel, and nonrenewable construction materials. It then describes impacts on energy and natural resources that could result under the no-action alternative or as a result of the construction and routine operation² of the proposed action. Finally, this section presents any measures identified to mitigate impacts of the proposed action and any remaining unavoidable and significant adverse impacts.

3.6.1 What is the study area for energy and natural resources?

The study area for energy and natural resources consists of the energy provider service areas that encompass the project site and sources or providers of natural resources that could be affected by energy and natural resource consumption resulting from construction and routine operation at the project site. The study area also includes energy and natural resources used during routine rail transport along the Puget Sound & Pacific Railroad (PS&P)³ rail line and vessel transport through Grays Harbor out to 3 nautical miles from the mouth of the harbor.

3.6.2 What laws and regulations apply to energy and natural resources?

No federal, state, or local laws or regulations pertaining to the use of energy and natural resources apply to the proposed action or industrial facilities. The Washington State Energy Code (Chapter 51-11C, Washington State Administrative Code [WAC]), adopted pursuant to Chapter 19.27A.020, requires a minimum level of energy efficiency but allows flexibility in building, design, construction, and heating equipment efficiencies for commercial and residential buildings.

3.6.3 How were impacts on energy and natural resources evaluated?

This section describes the sources of information and methods used to evaluate impacts.

¹ Resources that, once consumed, cannot be replaced.

² Chapter 4, *Environmental Health and Safety*, addresses the potential impacts from increased risk of accidents (e.g., storage tank failure, train derailments, vessel collisions) and related consequences (e.g., release of crude oil or other proposed bulk liquids).

³ The PS&P rail line refers to the rail line between Centralia and the project site.

3.6.3.1 Information Sources

The following sources provided information on existing energy resources and consumption.

- | Grays Harbor Public Utility District (PUD)
- | Grays Harbor County
- | Imperium Terminal Services
- | U.S. Energy Information Administration

3.6.3.2 Impact Analysis

Energy Consumption

Energy consumption was evaluated quantitatively. Potential impacts on energy were evaluated based on the estimated energy consumed during construction and onsite operation of the proposed action and the estimated change in fuel consumption from rail and vessel transport in the study area. Estimated hours of operation and types of fuel consumed were used to quantify energy consumption. The energy estimates presented for the proposed action assume implementation of the energy efficiency measures described in Chapter 2, Section 2.1.3.1, *Proposed Facilities*.

Baseline energy usage was estimated using data provided by the applicant for the highest-volume production year (2013) of the existing facility and is considered to be a conservative estimate of average annual energy usage (Drennan pers. comm.).

Natural Resource Consumption

Nonrenewable natural resource consumption was evaluated qualitatively. Potential impacts on nonrenewable natural resources were estimated based on their proposed consumption during construction of the proposed action. It was assumed that heavy construction materials, such as gravel, sand, concrete, and timber would be sourced locally to the extent possible; that quantities adequate to support the needs of the proposed action are readily available; and that long-distance transport of these materials would be undesirable due to associated transportation costs. The analysis assumed that steel used in construction would be available from a combination of local and regional sources.

3.6.4 What energy and natural resources are in the study area?

This section describes the current provision and use of energy and natural resources in the study area that could be affected by construction and routine operation of the proposed action. This section addresses energy and natural resources at the project site, along the PS&P rail line, and in and along the shoreline of Grays Harbor.

3.6.4.1 Project Site

The supply of electricity and gas to the project site, types and sources of fuel used for employee trips and maintenance vehicles, and sources and availability of natural resources that would be required for construction of the proposed action are described below.

Electricity

The project site is located in the Grays Harbor PUD electrical service area, which encompasses all of Grays Harbor County and small, adjacent areas of Jefferson, Thurston, Lewis, and Pacific Counties.

Grays Harbor PUD obtains the majority of its electricity from hydroelectric power; however, additional sources include a mix of wind, gas, biomass, and nuclear generation resources (Grays Harbor Public Utility District 2014). In 2012, Grays Harbor PUD sold 975,944 megawatt hours to 41,413 customers (U.S. Energy Information Administration 2015). Industrial customers accounted for 18% (176,342 megawatt hours) of the electricity consumption in the Grays Harbor PUD electrical service area in 2012 (U.S. Energy Information Administration 2015). Under existing conditions, the Imperium Terminal Services facility uses approximately 7,230 megawatt hours of electricity annually (Drennan pers. comm.); this represents 4% of electricity supplied by Grays Harbor PUD to industrial customers in the service area.

Grays Harbor PUD is expected to supply enough energy so that demand is balanced by supply on an average annual basis through 2034 (Grays Harbor Public Utility District 2014). The annual energy and summer peak forecasts are projected to grow at about 1% per year over the next 10 years. The utility has sufficient capacity to meet this demand because of current energy efficiency programs but will need to continue to incorporate conservation measures and new supplies to meet peak demand in the future (Pacific Northwest Utilities Conference Committee 2014).

Natural Gas

Natural gas is provided to the project site by Cascade Natural Gas. Cascade Natural Gas supplies residential, commercial, and industrial users throughout Grays Harbor County and beyond, with additional service areas throughout Washington and Oregon.

In 2013, Cascade Natural Gas supplied a total of 94.6 billion cubic feet of natural gas to residential, commercial, industrial, and electric power recipients in Washington State (U.S. Energy Information Administration 2015). Of that total, 45.3 billion cubic feet, or 47.9%, were consumed by industrial uses. Under existing conditions, the Imperium Terminal Services facility uses approximately 208,300 cubic feet of natural gas annually (Drennan pers. comm.); this represents 0.0001% of the natural gas supplied by Cascade Natural Gas to industrial users in 2013.

Fuel

Existing fuel use at the project site primarily consists of employee vehicle trips to and from the project site. Employees of the existing facility use gasoline, petroleum diesel, and biodiesel fuels for their personal vehicles (Drennan pers. comm.). The applicant uses four maintenance vehicles on site that use blends of biodiesel and diesel fuels. All types of fuels used at the project site are readily available throughout the Grays Harbor vicinity.

Natural Resources

Nonrenewable natural resources in Grays Harbor County consist primarily of sand, gravel, and timber extracted from local sources. The primary consumption of these resources is likely related to construction activities, including the use of sand, gravel, and other mineral resources in support of the manufacturing of steel, aluminum, concrete, and other building materials.

Sand and gravel suppliers in the county include Northwest Rock, Inc. and Bayview Redi Mix, which are located in Aberdeen and provide crushed rock materials to customers throughout western Washington. Similarly, numerous lumber suppliers are located in the Grays Harbor vicinity, with many more in the region.

Steel and metal suppliers in Grays Harbor include Western Steel and Supply located in Aberdeen. These suppliers provide steel products to manufacturers, contractors, and other businesses locally and throughout western Washington. The nearest foundries are located in Chehalis and Tacoma, Washington, approximately 57 and 78 miles from the project site, respectively.

3.6.4.2 PS&P Rail Line

Along the PS&P rail line, freight locomotives are primarily powered by diesel fuel. As of 2013, 88.22 million gallons of diesel fuel were sold annually to railroad-related uses in Washington State (U.S. Energy Information Administration 2015). This represents approximately 9% of total diesel sales for all uses in the state.

3.6.4.3 Grays Harbor

Tank vessels (tankers and tank barges) transiting through Grays Harbor primarily use marine distillate fuel oil. In 2013, sales volume of marine distillate fuel oil was 60.87 million gallons for Washington State (U.S. Energy Information Administration 2015).

3.6.5 What are the potential impacts on energy and natural resources?

This section describes the use of energy and natural resources that could occur in the study area. Potential impacts of the no-action alternative are described first, followed by the potential impacts of the proposed action.

3.6.5.1 No-Action Alternative

Under the no-action alternative, impacts on energy and natural resource use related to construction of the proposed action would not occur. The applicant would continue to operate its existing facility as described in Chapter 2, Section 2.1.2.2, *Existing Operations*. Annual onsite energy use under the no-action alternative would remain similar to existing energy use in the study area, described in Section 3.6.4.1, *Project Site*. Offsite transport, including transport of bulk liquids (e.g., vegetable oil, methanol, biodiesel, and glycerin) also would be similar to transport described for existing operations (Chapter 2, Section 2.1.2.2, *Existing Operations*), although the mode of offsite transport would depend on market conditions and would vary from year to year. Although the proposed action would not occur, it is assumed that growth in the region would continue under the no-action alternative, which could lead to development of another industrial use at the project site within the 20-year analysis period (2017 to 2037). Such development could result in energy and natural resource use similar to what is described for the proposed action.

3.6.5.2 Proposed Action

This section describes the impacts that could occur in the study area as a result of construction and routine operation of the proposed action. First, this section describes impacts from construction of

the proposed action. It then describes impacts of routine operation at the project site and of routine rail and vessel transport to and from the project site.

Construction

The proposed action would be constructed of manufactured materials that require energy and natural resources to produce. Energy also would be consumed transporting these materials to the project site. Further, energy would be used to operate onsite construction equipment. The proposed action's energy consumption during construction would be primarily in the forms of electricity, natural gas, and fuel.

Energy

During construction of the proposed action, electricity would be consumed to provide temporary construction site lighting, to heat buildings, and to power tools and equipment. Consumption of natural gas is not anticipated. A temporary increase in fuel usage would result from the transport of employees and materials to the project site and for the operation of construction equipment. During construction, total running time of construction equipment using biodiesel is estimated to be 20,457 hours, while total running time of equipment using gasoline is estimated to be 120 hours. Diesel fuel is not anticipated to be used for the construction equipment. Biodiesel consumed during construction would be supplied on site by Imperium Terminal Services, while the demand for gasoline needed to fuel construction equipment is anticipated to be met by existing local supply.

Natural Resources

Nonrenewable natural resources consumed during the construction of the proposed action would include sand, aggregates, and gravel for concrete in the construction of storage tank and rail loading/unloading containment areas and building foundations. Aggregates and gravel would also be used as general fill material and in asphalt to pave surfaces. Steel would be used in the construction of storage tanks, pipelines, new buildings, the marine vapor combustion unit, and rail spurs. Timber and concrete would be used for buildings and for railroad ballasts on the rail spurs.

Estimates for the construction materials required to construct the proposed action are not available at this stage; however, the quantities are anticipated to be met by existing regional supply, as described for natural resources in Section 3.6.4.1, *Project Site*.

Operations

This section describes impacts that would occur as a result of routine operations at the project site, rail transport along the PS&P rail line, and vessel transport through Grays Harbor.

Onsite

Electricity

Operation of the proposed action would contribute to the existing electrical consumption at the project site to heat and light indoor and outdoor areas and to power pumps, equipment, control systems, and storage tank heaters. Peak power consumption is expected to occur during vessel loading and would be less than 1 megawatt per loading event (Drennan pers. comm).

Estimated annual electricity usage related to onsite operation of the proposed action would be approximately 2,500 megawatt hours, an increase of approximately 35% more than existing usage (Drennan pers. comm.). This amount represents approximately 1.4% of the total electricity supplied to industrial users in the Grays Harbor PUD service area based on 2012 data. The demand is anticipated to be met by existing regional supply, as described in Section 3.6.4.1, *Project Site*.

Natural Gas

During operation, natural gas would be used to power the marine vapor combustion unit, which would be used to incinerate hydrocarbon vapors displaced during loading of tank vessels. The amount of natural gas that would be needed to operate the unit would vary depending on the loading rate and volatility/energy content of the material being loaded. Less natural gas would be needed when loading liquids with high vapor pressures, such as light crude oil, than would be needed for those with low vapor pressures, such as methanol.

At maximum throughput, the marine vapor combustion unit would use approximately 121 million cubic feet of natural gas⁴ annually, 0.27% of the total natural gas supplied by Cascade Natural Gas to industrial users in 2013. Natural gas usage under the proposed action is expected to be met by forecast regional supply.

Fuel

During operations, two additional maintenance vehicles using blends of biodiesel and diesel would be needed under the proposed action at maximum throughput (Drennan pers. comm.). In addition, annual employee vehicle round trips would increase by 6,100 to 8,600 round trips, for a total of 16,425 to 18,250 round trips under the proposed action (Drennan pers. comm.). The increase in fuel consumption associated with the incremental increase in vehicle trips under the proposed action is anticipated to be met by existing local fuel supply.

Rail

At full capacity, the proposed action would result in a maximum of 730 unit train trips⁵ per year, representing a diesel fuel consumption of 321,711 gallons per year. This estimated annual consumption represents less than 1% of total diesel fuel sales to railroad-related uses in Washington State during 2013. The demand for diesel under the proposed action is anticipated to be within regional planning assumptions, as described in Section 3.6.4.2, *PS&P Rail Line*, and would be met by regional supply.

Vessel

Under the proposed action, all tank vessels would likely use marine distillate fuel with less than 1,000 parts per million of sulfur (40 Code of Federal Regulations [CFR] 80.1). At full capacity, the proposed action would result in a maximum of 400 tank vessel trips⁶ per year, representing marine distillate fuel consumption of approximately 167,138 gallons per year. This estimated annual

⁴ Calculated based on continuous operation of two pilots (at 2 cubic feet per minute) and combustion unit operation of 2,000 hours per year (1,003 cubic feet per minute natural gas) (Olympic Region Clean Air Agency 2013).

⁵ A trip represents one-way travel; in other words, an inbound trip and an outbound trip represent two trips.

⁶ A trip represents one-way travel.

consumption represents approximately 0.27% of the total marine distillate fuels sales in Washington State during 2013. The demand for marine distillate fuel under the proposed action is anticipated to be within regional planning assumptions, as described in Section 3.6.4.3, *Grays Harbor*, and would be met by regional supply.

3.6.6 What required permits and plans apply to energy and natural resources?

No required permits or plans apply to energy and natural resources.

3.6.7 What mitigation measures would reduce impacts on energy and natural resources?

This section describes voluntary measures, design features, and applicant mitigation that would reduce impacts on energy and natural resources from construction and routine operation of the proposed action.

3.6.7.1 Voluntary Measures and Design Features

The following voluntary measures and design features would reduce impacts on energy and natural resources.

- | To minimize energy use, the applicant will employ the most energy-efficient systems for all pumps, motors, electrical equipment, and process technology equipment as practicable.
- | To minimize energy use, the applicant will apply U.S. Green Building Council Leadership in Energy and Environmental Design (LEED) Silver Standards to the design of new buildings.

3.6.7.2 Applicant Mitigation

Impacts resulting from the proposed action are considered low and would not necessitate mitigation that exceeds the minimum requirements specified by applicable laws and regulations.

3.6.8 Would the proposed action have unavoidable and significant adverse impacts on energy and natural resources?

Implementation of the voluntary measures and design features described above would reduce impacts on energy and natural resources. There would be no unavoidable and significant adverse impacts.