Chapter 4 Cumulative and Indirect Impacts

Cumulative impacts are impacts that result from the incremental consequences of a project when added to other past or reasonably foreseeable future actions. The cumulative effects can result from individually minor, but collectively significant actions taking place over a period of time. Indirect impacts are those that are caused by the proposed project, but are later in time or farther removed in distance from direct impacts, but are still reasonably foreseeable. Examples are changes in land use and economic vitality (including induced new development, growth, and population), and transportation systems.

Reasonably foreseeable projects for which cumulative effects must be considered include actions being taken by the Port of Kalama that will go forward with or without PMEC. These actions include extending the dock, modifying the outfall at the dock, and completing the surface of the industrial area (requiring the filling of an onsite wetland). Additional industries are anticipated, but not yet proposed for the Port of Kalama. Attributing impacts to them at this stage would be speculative and not required under SEPA.

The Port of Longview, the Port of Vancouver, and Bradwood Landing, LLC have proposed activities that would increase the shipping activity in the Columbia River, spanning from the mouth upstream to RM 106.5. The Port of Longview proposes to construct a grain and wheat facility at the Port of Longview's Berth 9 site on the Columbia River (RM 67) in Cowlitz County, Washington. The Port of Vancouver proposes

to increase shipping to the terminal by approximately 300 ships per year. Although the terminal is upstream of the PMEC site, the ships would transit the Columbia River from the mouth past the PMEC site at RM 72. Bradwood Landing LLC has proposed a liquified natural gas facility at RM 38. This would increase shipping in the lower Columbia River by 125 ships per year. Already existing shipping traffic has included a varying average of about 1,500 to 2,000 ships per year over the last decade.

Other activities have cumulative effects that are difficult to connect with a major project, such as existing levels of shipping traffic, vehicle traffic, air pollutants, and population. Each of these may be susceptible of marked trends, typically increasing. Each may also be affected by outside variables that can change trends, such as regional economic swings and energy costs.

4.1 Geology and Soils

Since 1980, the proposed PMEC site has been filled with dredge soils generated from emergency dredging of the Columbia River from the sediment caused by the eruption of Mt. Saint Helens and from subsequent river maintenance dredging. In addition, the Port of Kalama has applied for permits to fill the northwest portion of the site to bring it above the 100-year flood level, regardless of whether PMEC is constructed. Therefore, there would be limited grading and filling directly associated with the PMEC project and it is not expected to contribute to any cumulative or indirect impacts related to topography, soils and geology.

4.2 Air Quality

The cumulative and indirect impacts to local and regional air quality from other existing or permitting regional projects have been included in the air quality impact analysis in Chapter 3. Future projects would need to include an analysis of the PMEC air quality impacts in their permitting analysis for air permits.

4.3 Water Resources

4.3.1 Groundwater Resources

Completion of non-PMEC facilities at the Port of Kalama will most likely result in incremental groundwater impacts.

Groundwater Supply

Given the general hydrogeologic conditions, the water resources of the Port of Kalama and PMEC site primarily consist of the annual rainfall and the Columbia River groundwater system. Construction on the property would affect the discharge fate of some portion of that water. Initially, this would be due to the loss of vegetative cover, which would make more water available for runoff. As impermeable cover of the property increases, due to the construction of paved areas and buildings, the water available for initial recharge would decrease and total runoff for the site would increase.

Groundwater Quality

Cumulative and secondary impacts to groundwater quality due to PMEC and non-PMEC facilities at the Port of Kalama are expected to be incremental. Proper materials and stormwater management should limit the exposure of soils and groundwater to potential pollutants. Implementation of such measures will be mandated through NPDES permits required for any future industrial uses at the Port of Kalama.

4.3.2 Surface Water Resources

Surface Water Quantity

Completion of non-PMEC facilities at the Port of Kalama would most likely result in incremental surface water quantity impacts. As more area at the Port is made impermeable through paving and building construction, stormwater runoff rates and volumes would increase. Thus, discharges to the Columbia River will increase. Because the flows in the Columbia River are so large, flow control is not required for new developments discharging increased stormwater flows to it (Ecology 2005a). Cumulative impacts on the flow in the Columbia River are therefore considered negligible.

Surface Water Quality

Completion of non-PMEC facilities at the Port of Kalama would most likely result in incremental surface water quality impacts. As more process wastewater is discharged at the Port of Kalama outfall, more pressure will be placed on the dilution factors available in the mixing zone. A point may be reached at which the maximum available dilution is insufficient to meet surface water quality criteria. This point has been reached for certain parameters in the PMEC discharge. Prospective industrial tenants would be required to analyze the impact of their process wastewater discharges on the mixing zone and provide sufficient treatment to meet surface water quality criteria, or to seek a new discharge point with a new mixing zone under a separate permit. Permits would control the changes allowed and mandate control measures. Taken together, actual changes in water quality in the Columbia River are not likely to be significant, because the permits would limit the level of change to that which the allowable mixing zone can accommodate without causing violations of the water quality standards.

Potential stormwater cumulative impacts to surface water quality due to non-PMEC development at the Port of Kalama would depend on the type of industrial development contemplated. In any event, such development would be subject to the requirements of an NPDES stormwater discharge permit, which would specify appropriate water quality control measures to limit pollutant discharges in stormwater. Therefore, cumulative impacts to water quality in the Columbia River, though not quantifiable at this time, would be expected to be within tolerable limits (i.e., would not cause violations of water quality standards).

4.4 Habitat and Wildlife

4.4.1 Wildlife Habitats and Vegetation

No cumulative or indirect impacts to habitats or vegetation are anticipated to occur if the PMEC would be constructed. The power plant site is already industrial fill, and the small amount of wetland fill would be mitigated. The enhancements at the

wetland mitigation site would contribute to an increase in available habitat and or habitat quality in the project vicinity.

4.4.2 Wetlands

The 2.1-acre Category I palustrine wetland lobe that composes a portion of the Columbia River freshwater tidal wetlands located along the north edge of the PMEC site is planned to be permanently filled by the Port of Kalama. As part of their long range development plans for the North Port Industrial Area, the Port of Kalama has applied to USACE, Ecology, WDNR, and Cowlitz County to permanently fill this 2.1-acre wetland lobe (Anchor Environmental 2006). The Port proposed to mitigate for the wetland fill by restoring and creating wetlands immediately to the northwest of the PMEC site.

There would not be a cumulative effect from the Port's filling of the 2.1-acre wetland in combination with the proposed filling of the 1.3-acre wetland for the railroad spur. This is because the loss of both wetland areas would be replaced through the proposed mitigation areas

Indirect impacts to wetlands from construction of the PMEC project are not likely to occur. There is limited expansion potential at or near the PMEC site and the natural gas pipeline and the railspur are dedicated resources for the PMEC. Rapid regional growth in Cowlitz County is already occurring. The PMEC project is expected to help meet some of the demand for power that accompanies the growth, but the service it provides is transportable, so it is not expected to attract activities that would cause more loss of wetlands.

4.4.3 Terrestrial Species

No cumulative or indirect impacts to listed terrestrial species are anticipated to occur if the PMEC would be constructed. Minor impacts would occur to non-listed terrestrial species as the industrial area becomes more intensively developed. The cumulative effect is also expected to be minor.

4.4.4 Fisheries and Aquatic Species

Aquatic species and their critical habitat may be affected by trends in runoff from residential developments, farmland and

timber harvest lands that could have water quality effects, including temperature increases. Farmland and the intensity of its use for agriculture in the region are decreasing. Timberland may also be decreasing generally. Residential, commercial, and industrial development is increasing. Therefore, impervious surfaces are increasing generally in the region, which is increasing the amount of stormwater runoff. However, regulations for detention and treatment of runoff are also increasing, helping to offset the trend. Because of the sheer volume of water in the Columbia River, it is not likely that either flow changes or water quality factors allowed by the stormwater regulations would lead to cumulative impacts from runoff that would reach the threshold of significance.

Because the PMEC project is new development, it must meet the higher standards of stormwater control and treatment. Therefore, while it would contribute cumulatively to the trend of increasing effects of stormwater runoff, that increment would be small and no new thresholds of impact are expected.

Shipping Activities

Increased shipping would occur from new development at the Port of Longview, the Port of Vancouver, and Bradwood Landing, LLC, spanning from the mouth upstream to RM 106.5.

Cumulative impacts resulting from these shipping activities likely include increased frequency of wake stranding events in the lower Columbia River, and a potentially increased frequency of marine mammal strikes in the offshore areas as the vessels of all types approach the entrance to the Columbia River.

The Proposed Action would result in an estimated maximum of 34 vessel trips per year to the North Port Pier. Those vessels are expected to be within the range of sizes to which both wake stranding of juvenile salmon and whale strikes has occurred, but not among the larger vessels that are the worst offenders. The shipping attributed to the PMEC project is such a small increment in the overall shipping that is not likely to cause any trend to exceed a threshold of significance.

4.5 Environmental Health

4.5.1 Noise

Cumulative impacts were inherently considered when assessing potential impacts of the operation of the project. One method of impact assessment requires a comparison of the measured existing noise levels with the future cumulative noise levels to ascertain potential increases in noise due to the PMEC. No significant adverse noise impacts were identified due to potential increases in the cumulative sound levels. Any additional development in the project area is likely to increase background (non-project) sound levels to some degree, which will reduce the relative noise impact from PMEC.

No additional sources of noise, such as indirect commercial or industrial development are expected to be constructed as a result of the project. Therefore, the proposed project would have no indirect significant impacts on noise.

4.5.2 Hazardous Materials

The project is not expected to contribute to any cumulative or indirect impacts related to hazardous materials. The waste material from the site is not considered to be hazardous.

4.5.3 Electric and Magnetic Fields

Replacing the existing 115 kV lines to 230 kV lines would cumulatively increase existing EMF levels along the power line corridor. As noted in Chapter 3, recent scientific studies are inconclusive as to the potential health effect.

4.6 Land Use, Recreation, and Visual Resources

4.6.1 Land Use

The Port of Kalama has no planned projects other than the proposed project; however, the Port is continuing to market its available industrial land to new potential industrial users. The proposed project would contribute to a further densification of industrial uses in this area of the Columbia River. However, the use is consistent with current industrial land uses and zoning within the site area.

4.6.2 Recreation

The project would not result in the addition or reduction of recreational resources. There may be cumulative or indirect impacts to recreational boaters on the Columbia from up to three ships per month delivering feedstock to the PMEC in combination with other planned industrial development on both sides of the Columbia River further up river.

4.6.3 Visual Resources

Development of the PMEC would contribute to an overall increase in lighting in the area, especially when viewed from across the Columbia River or from residential areas located on the hills to the east of the site.

4.7 Socioeconomics

The project would contribute beneficial cumulative and indirect impacts to the local economy through the indirect and induced generation of jobs and income. These benefits would be in addition to any impacts generated by other potentially overlapping projects in the region. The project would increase the existing demand for labor, goods, and services. However, in consideration of the region's current industrial base and economic and social infrastructure, the project would not present an adverse impact to existing resources.

4.8 Cultural Resources

It is not expected that cultural resources would be impacted as a result of the project. Therefore, there would be no cumulative or indirect impacts to cultural resources.

4.9 Traffic and Transportation

Operation of the PMEC would have minor contributions to cumulative or indirect impacts to traffic and transportation. The proposed site improvements and future I-5 corridor projects would be able to accommodate any additional traffic generated by this project and others in the region.

4.10 Public Services and Utilities

Impacts from PMEC would not be significant; however, a potentially significant secondary impact on public services and utilities could occur if additional daily or weekly population in

the region, due to construction workers on other projects, were to place a higher demand on service such as law enforcement, fire protection, and emergency services. At this time, however, the Port of Kalama has no planned projects other than the proposed project.