

BP Cherry Point Cogeneration Project  
Executive Summary

## 1. PROJECT AND SITE DESCRIPTION

BP West Coast Products, LLC (BP) is proposing to build a 720-megawatt (MW) natural gas-fired combined-cycle combustion turbine cogeneration facility (Cogeneration Project) on 33 acres of land adjacent to the BP Cherry Point Refinery (Refinery). The Cogeneration Project site, laydown areas, and access roads total about 69 acres of land. This land is owned by BP and represents less than 3% of the approximately 2500 acres BP owns at Cherry Point.

The Project site is located in an area zoned by Whatcom County as Heavy Impact Industrial on Cherry Point, approximately 15 miles north of Bellingham and 7 miles south of Blaine, Washington. Grandview Road (SR 548) provides the main vehicle access to the Cogeneration Project site and the Refinery. Grandview Road intersects Interstate-5 (I-5) approximately 5 miles to the east of the site. A Burlington Northern-Santa Fe (BNSF) railway line borders the eastern edge of the Refinery property.

The Project site is relatively flat with no dominant topographical features. The most notable features in the vicinity of the project include Terrell Creek, Point Whitehorn, and Birch Bay. To the north of the site, Terrell Creek flows through a wooded area and creates a narrow ravine as it drains westerly into Birch Bay. Point Whitehorn is a high bluff to the west of the site that overlooks Birch Bay, which is part of the coastline along the Strait of Georgia.

A new 230-kilovolt (kV) transmission line will connect the Cogeneration Project to the existing Bonneville Power Administration (BPA) 230-kV transmission line located about 0.8 miles east of the Refinery. This new transmission line will be located entirely on BP property. Another new transmission line will be constructed across BP property to connect the Cogeneration Project to the Refinery.

Natural gas will be delivered to the Cogeneration Project through a proprietary natural gas pipeline that currently provides gas to the Refinery. A gas compressor station will be constructed at the Project site to increase pipeline delivery pressure. If needed, additional gas will be obtained from other third-party pipelines. All other infrastructure is available at the Refinery, including water supply and a wastewater treatment system. Stormwater will be directed from the site to [a retention area detention ponds on the project site north of Grandview Road](#), and then dispersed into a wetland mitigation area that will provide habitat for aquatic and terrestrial resources.

The entire Project, including the new transmission line, will be located on BP-owned property, and will be entirely contained in a Major Industrial Urban Growth Area/Port Industrial as defined in the Whatcom County Comprehensive Plan, issued May 20, 1997. The entire area is zoned Heavy Impact Industrial.

## 2. PROJECT OBJECTIVES, PURPOSE AND NEED

The purpose and need for the proposed Cogeneration Project includes:

1. To provide reliable, efficient and cost-effective steam and electrical power to the Refinery.
2. To provide efficient and cost-effective electrical power to the region.
3. To minimize the Refinery's reliance on outside sources for electricity.
4. To minimize impacts to the environment.

The Cogeneration Project will produce steam and electricity for the Refinery and additional electricity for the regional market. The Refinery uses both steam and electricity in its refining operations, and ~~it~~ needs a reliable source of steam and electricity to maintain operations. Steam and electricity must be supplied efficiently and cost-effectively, in order to ensure economic operations at the Refinery.

The Pacific Northwest also needs additional electrical generating capacity. During 2000 and 2001, the region experienced highly volatile electricity prices as well as supply curtailments. Current forecasts indicate the potential for future electricity shortages and concerns about system reliability. Extraordinary short-term actions during 2001 helped to significantly reduce electricity demand. In particular, the shutdown of aluminum smelters reduced demand by approximately ~~2,500~~ 3,150 MW and helped alleviate the critical near term shortage in the Northwest. However, the construction of additional generation capacity is still needed to address long term demand for additional power. Electricity demand in the Western Electricity Coordinating Council (WECC) and Northwest Power Pool (NWPP) has grown more than 50% and 43%, respectively over the period 1982-1998. While demand can fluctuate from year to year, WECC and NWPP electricity demand growth is expected to continue over the 2002-2011 time frame. The Cherry Point Cogeneration Project can help meet this demand more efficiently than the most efficient stand-alone combined-cycle power plants.

### 3. COGENERATION AND REFINERY INTEGRATION

The Cogeneration Project will be integrated with the Refinery to maximize the efficiency of power production and to take advantage of existing infrastructure available at the Refinery.

Of the 720 MW of electricity produced by the Cogeneration Project, approximately 85 MW will be delivered to the Refinery, leaving approximately 635 MW available for the northwest electrical grid. By providing electricity to the Refinery, the Cogeneration Project will enable the Refinery to eliminate its reliance on third-party sources of electricity, and to avoid the operation of temporary natural gas-fired electrical generators. The Cogeneration Project will also provide steam to the Refinery for use in its operations. This steam will allow the Refinery to decommission several boilers that are currently used to generate steam.

Cogeneration offers major economic and environmental benefits because it uses natural gas more efficiently. The increased efficiency results from the use of residual steam that would otherwise be discarded, or not used as efficiently. The Cogeneration Project will eliminate the need to burn additional fuels at the Refinery for the sole purpose of providing steam. This will reduce the overall costs of producing electricity and heat, produce fewer overall emissions, and conserve natural gas.

The location of the Project minimizes the potential impact on land resources. Key features of the Cogeneration Project are highlighted below:

- The Project site is zoned for Heavy Impact Industrial use, consistent with Whatcom County Land Use plans;
- The Project is located entirely on BP-owned property, and BP owns property for at least 0.5-miles in all directions. Nearest neighbors are the Chemco wood treating plant and Praxair industrial gas plant;
- There will be a large vegetated buffer zone between the project site and public roads, thereby minimizing potential visual and noise impacts; and
- Transmission line access exists within 0.8 miles of the Cogeneration Project site, ~~is~~ located entirely within BP-owned property. A single contingency analysis study performed by Bonneville Power Administration shows that upon the loss of one of the two 230 kV transmission lines from the Custer substation, assuming certain combinations of loads and generation and assuming the ambient temperature exceeds 68° F, the remaining 230 kV transmission line would exceed BPA's operating limit of 100° C by up to 8%. One option to address this contingency is to implement a remedial action scheme to shed load or generation. BP prefers this course, as ~~No~~ no new high voltage transmission lines are required across public lands or private property to provide for this contingency situation.

Significant efforts to protect the environment have also been incorporated into the overall design of the Project, including:

- An agreement with the Whatcom PUD, Alcoa and BP to supply the once-through cooling water that Alcoa currently discharges to BP for use in the Cogeneration Project and the Refinery. This has enabled the Cogeneration Project to alter the design from an air-cooled condenser configuration to a water-cooled condenser without requiring additional fresh water to be withdrawn from the Nooksack

~~River. In fact, the use of recycled water will reduce the need to withdraw water from the Nooksack River by an average of 484 to 556 gpm. Selection of air-cooling technology, rather than a water-cooling technology. Although the air-cooling technology costs approximately \$20 million more to construct than a comparable water-cooled power plant, it will significantly reduce fresh water consumption, and wastewater discharge. Combined with the proposed water reuse at the Refinery, the Cogeneration Project will only result in a 40 gpm (average) increase in fresh water consumption.~~

- Wetland mitigation and enhancement opportunities exist on BP-owned property north of Grandview Road within the same watershed and ecosystem. A mitigation plan ~~has been~~ will be carefully designed to provide a net benefit to wetlands functions and values by providing highly productive and diverse habitats for aquatic and terrestrial resources.
- The stormwater management system will retain the surface water in the same watershed and will use the existing drainage system.
- Use of highly efficient turbines with the most recent combustion control technology and emission control equipment will minimize air emissions. Modifications at the Refinery will result in offsetting reductions in air emissions. As a result, BP expects overall emissions of criteria air pollutants from the Cherry Point site will be reduced.

#### 4. PROJECT SCHEDULE

Development, engineering and construction of the Cogeneration Project, including making the necessary changes to the Refinery to accommodate the power and steam from the facility, will be accomplished over approximately 5 years. Engineering and design of the facility began in the summer of 2001 with the preliminary engineering for the Application for Site Certification (ASC).

The schedule is based on the following key milestones:

- Development engineering ~~was~~ initiated in July 2001
- ASC ~~will be~~ submitted in June 2002
- ~~Site Certification granted by Washington State by the end of 2002~~
- ~~Final engineering design completed and plans submitted to EFSEC for approval during Spring 2003.~~
- Construction initiated after issuance of the building permit ~~in Summer 2003~~
- Construction will take approximately 27 months, with commissioning starting approximately 22 months after start of construction
- Operation commences ~~in early 2006 by end of fourth quarter 2005~~

~~If the Site Certification is delayed until after the end of the first quarter of 2003, then the construction schedule would have to be adjusted accordingly.~~

## **5. BP'S COMMITMENT TO ENVIRONMENTAL AND COMMUNITY STEWARDSHIP WITHIN THE STATE OF WASHINGTON**

BP is actively involved in the Whatcom County community and encourages community involvement and corporate environmental stewardship. The Refinery is the largest taxpayer and has been one of the largest employers in Whatcom County for the past 31 years (since 1971). BP also has a proven track record of responsible operations that safeguard employees and the environment, and actively participates in the surrounding community.

Among others, for example, BP has dedicated, sponsored, and/or supported the following initiatives and programs:

- Voluntary fish habitat improvement initiatives, including removal of invasive weed species and riparian planting with native tree and shrub species, within the Terrell Creek watershed as part of the Nooksack Salmon Enhancement Project;
- [Wetland enhancement projects north of Grandview Road;](#)
- Designation of the 180-acre Terrell Creek Conservation Easement on BP-owned land to protect a blue heron colony near Birch Bay State Park, and which BP monitors annually to evaluate and report on the health of the heron colonies;
- Construction of waterfowl habitat and food plots on BP-owned property north of Grandview Road in association with Ducks Unlimited;
- Designation of an interpretative site off of Jackson Road containing a diverse assortment of native trees and shrubs, which BP maintains in association with the Bellingham School District;
- Participation in a partnership with the Whatcom County PUD for the supply and installation of solar panels on soccer fields in Bellingham;
- Construction of houses for low-income and under-privileged families in Ferndale; through the "Habitat for Humanity" program;
- Participation in partnership programs with county school districts, including donation of video and learning series science programs, and music and art education programs for the Whatcom Symphony Middle School Outreach Program; and
- Sponsoring athletic scholarships at Western Washington University.

In addition to these initiatives and programs, BP is also an active member in the Whatcom County community for promoting fund raising events through such organizations as the United Way, Red Cross, Literacy Council, and rotary clubs. These and other activities will continue during the construction and operation of the Cogeneration Project.

## 6. ENVIRONMENTAL CONDITIONS AND POTENTIAL ENVIRONMENTAL IMPACTS

### 6.1 Earth

An evaluation of geological conditions in the vicinity of the Cogeneration Project indicates that the site is well suited for the construction of a large industrial facility and that there would be no significant impacts related to the geology of the site. The onsite soils will not require unusual construction methods or require extraordinary measures to control erosion and sedimentation. No significant topographic features are present at the Cogeneration Project site.

### 6.2 Air

The Cogeneration Project site is located in an area with good air quality. EPA has designated Whatcom County as an "attainment area," which means that ambient air concentrations are below established National and Washington Ambient Air Quality Standards (NAAQS and WAAQS). Air quality in neighboring areas of British Columbia is also considered to be good the vast majority of the time, with occasional days rating "fair" according to the Greater Vancouver Regional District's air quality index.

The Cogeneration Project will enable BP to implement modifications at the Refinery that are expected to will result in a net reduction in total criteria pollutants from the BP Cherry Point site. Air quality modeling indicates that emissions from the Cogeneration Project will not significantly affect ambient air quality or visibility.

### 6.3 Water

Water resources in the vicinity of the project include Terrell Creek, approximately 0.5 miles to the north of the Project site and the Straits of Georgia approximately 2 miles to the southwest. The Cogeneration Project will not directly impact these or other surface or ground waters in the vicinity of the project. The proposed Cogeneration Project site is located outside of the 5-year, 50-year, 100-year and 500-year floodplains.

Stormwater runoff from the Project site would drain to Terrell Creek much the way it does today. Runoff from the Project site would discharge into detention ponds onsite and then be routed under Grandview Road, then discharged into wetland mitigation areas. drain to the west and north where it would collect in a ditch along Grandview Road. An existing culvert would allow the water to flow below Grandview road and would follow the natural topography to eventually enter Terrell Creek. During operation, the Cogeneration Project stormwater will flow into grassy swales around the perimeter of the site prior to discharging into a detention basin and then into a wetland mitigation area. Stormwater quality from the site is anticipated to be equal to, or better than, that which is currently being discharged from the site.

Water used for industrial purposes within the Cogeneration Project would be supplied by Whatcom County Public Utility District (PUD) from recycled non-contact cooling water used at the Alcoa aluminum smelter located near the BP Refinery. On average, the Cogeneration Project would require 2,244 to 2,316 gpm of industrial water and 2,780 gpm of recycled water will be available. The result would be an average reduction of 484 to 556 gpm of fresh water needed to be withdrawn from the Nooksack River. The Cogeneration Project will result in an increase of only approximately 40 gpm (average)

~~in the fresh water used by BP. This amount can be obtained under BP's existing agreement with the Whatcom County Public Utility District (PUD). The Cogeneration Project will not require any new water intake structures.~~

The Cogeneration Project will use ~~between 1 and 5 approximately 1-2~~ gpm of potable water. Birch Bay Water & Sewer District will provide potable water through the existing connection with the Refinery system.

#### **6.4 Wetlands and Vegetation**

BP has conducted extensive wetland investigations to minimize impacts on wetland soils and vegetation. Nevertheless, the Cogeneration Project site, access roads and laydown areas will impact approximately 33 acres of low-value wetlands. BP will ~~design and~~ implement a wetland mitigation plan to compensate for these impacts. ~~In consultation with the Corps of Engineers and the Washington Department of Ecology,~~ In consultation with the Corps of Engineers and the Washington Department of Ecology, ~~t~~The wetland mitigation plan ~~will be has been~~ designed to result in a net improvement in wetland value and functions in the area.

#### **6.5 Wildlife**

The Cogeneration Project will be constructed on industrial lands that are not used significantly by wildlife. No threatened or endangered species utilize the Project site. The Project has been sited to avoid forested areas and to minimize impacts on wetland areas. Wetland mitigation and other habitat improvements to BP property north of Grandview Road are expected to significantly enhance overall wildlife habitat.

#### **6.6 Fisheries**

Chinook and Coho salmon, winter steelhead, and sea-run cutthroat trout, are found in the Strait of Georgia to the west of the Cogeneration Project site and some of these fish may use downstream reaches of Terrell Creek. The Cogeneration Project is not likely to affect these fish species because the Project will not discharge wastewater into Terrell Creek and the small amount of wastewater generated by the facility will be treated by the Refinery wastewater treatment system before being discharged into the Strait of Georgia.

#### **6.7 Noise**

The area surrounding the Cogeneration Project site is relatively quiet. Background monitoring conducted at 15 locations around the site indicated that steady-state noise is quite low. The background noise levels, which were monitored from locations on public property, primarily adjacent to roads, were dominated by transient noise, particularly noise from vehicles. Modeling indicates that the Cogeneration Project will comply with all local and state regulations and noise from the Project will rarely be perceptible.

#### **6.8 Land Use**

The proposed Cogeneration Project is located on land zoned by Whatcom County for Heavy Impact Industrial Use, and is located within the Cherry Point Major Industrial Urban Growth Area/ Port Industrial Zone as defined in the Whatcom County

Comprehensive Plan. The proposed Cogeneration Project, including all associated facilities, is compatible with existing land uses.

## 6.9 Visual, Light and Glare

The Cogeneration Project is being constructed in an industrial area, and adjacent to the existing Refinery, which is a much larger facility. Potential impacts associated with visual, light and glare during construction and operation of the facility will be incremental to existing industrial operations. The Project site will be set back from Grandview Road by more than 300 feet to provide space for planting trees and shrubs that will provide visual screening.

## 6.10 Population, Housing and Economics

Construction and operation of the Cogeneration Project will result in significant social and economic benefits to Whatcom County, Skagit County, and the State of Washington. During the ~~23-month~~ construction period of approximately 27 months, the Cogeneration Project will employ an average of approximately 350 people. The work force is expected to peak at approximately 705 people. The operational facility will add provide 30 new family-wage jobs to the region. Construction and operation of the Project are expected to result in substantial indirect economic benefits as construction materials are purchased and wages are spent in region. Construction and operation of the Cogeneration Project will also result in significant increases in local and state tax revenue.

## 6.11 Public Utilities and Infrastructure

The Refinery administers and maintains a highly organized and sophisticated emergency service infrastructure consisting of full time, trained on-site security, fire preparedness and response, and emergency medical services personnel. The personnel, equipment, communication systems, and other resources associated with this infrastructure currently supporting the Refinery will be supplemented as necessary to provide security, fire protection, and medical services during construction and operation of the Cogeneration Project. In addition, BP will work with the local fire district to ensure that back-up assistance, support and resources are available if needed, including development of response protocols.

## 6.12 Traffic and Transportation

The Cogeneration Project site is located along SR 548, approximately 6 miles west of Interstate Highway I-5. Traffic associated with operations at the Refinery and other nearby industrial facilities currently utilize SR 548 and other nearby roads. Traffic counts indicate that these roads operate at acceptable levels of service. Modeling indicates that Project-related traffic may adversely affect traffic flow during peak construction periods. BP has considered possible measures to mitigate these impacts and ~~will be has been~~ meeting with the Washington State Department of Transportation to decide upon appropriate mitigation measures. The operation of the Cogeneration Project is not expected to affect traffic near the facility.

## **7. CONCLUSIONS**

With the implementation of the proposed mitigation measures, construction and operation of the Cogeneration Project will not result in significant environmental or community impacts. In fact, several of the mitigation measures will result in an overall improvement to existing biophysical conditions and land uses.