Q. Please state your name and business address.
A. Mark Moore. BP Cherry Point Refinery, 4519 Grandview Road, Blaine, Washington.

Q. What is your position at BP?
A. I am the Project Manager for the BP Cherry Point Cogeneration Project.
Q. What topics will you address in your testimony?
A. My testimony will address the following issues:

First, I will provide some background about the Applicant, BP West Coast Products LLC,

Second, I will discuss my own background and experience.

Third, I will describe the proposed project, and its relationship to BP's existing Cherry Point refinery.

Fourth, I will describe our reasons for seeking site certification for this project.

Fifth, I will describe BP's environmental commitment.

Sixth, I will describe some of the benefits we feel that Washington and Whatcom County will gain from this project.

The Applicant – BP

Q. Please tell us a little about the Applicant, BP West Coast Products, LLC?
A. BP p.l.c. is the holding company for one of the world's largest petroleum and petrochemical groups. BP is a publicly held corporation with its stock traded on the on the New York Stock Exchange. BP's corporate offices are located in London, England.

BP West Coast Products, LLC is a wholly owned subsidiary of BP p.l.c. that manufactures and markets petroleum products in the Western United States. This subsidiary owns two refineries, one in Cherry Point, Washington and another in Carson, California and owns marketing assets including roughly 1700 ARCO am/pm
service stations in 5 states. BP West Coast Products, LLC has about 7000 employees.

BP is one of the largest petroleum and petrochemical groups in the world, serving more than 10 million customers worldwide. BP produces 1.9 million barrels of crude oil and 8.6 billion cubic feet of natural gas a day, and has reserves of more than 16.3 billion barrels of oil and gas equivalent. BP is the largest producer of natural gas in North America, and one of the largest gasoline retailers in the country, with more than 15,000 service stations. BP has large refining and chemicals operations as well. BP Solar is one of the largest producers of photovoltaic solar panels in the world, shipping over 65 MW of solar products annually. BP also researches and develops a variety of innovative energy technologies, such as the hydrogen fuel cell car. BP has approximately 44,000 employees in the United States.

Q. What operations does BP have in Washington State?

A. BP purchased ARCO in 2000, whose assets included the Cherry Point refinery and retail marketing assets in Washington State. The Cherry Point refinery is the third largest refinery on the West Coast. It supplies gasoline, jet and diesel fuel to the Pacific Northwest, Canada and California. The refinery supplies about 80% of the jet fuel used at SeaTac airport and much of the military jet fuel used in Washington. The refinery is Whatcom County’s largest taxpayer and employs 550 people as full time BP employees, another 350 contractors full time, and numerous other contractors on a part time or periodic basis.
Q. **Does BP have other electrical generating facilities?**

A. BP has almost 4,000 megawatts (MW) of generating facilities at its sites worldwide, including the following cogeneration projects:

- 1200 MW project at Hull, Scotland
- 525 MW at Baglan Bay, Wales
- 760 MW at Decatur, Alabama
- 550 MW and 165 MW units at Texas City, Texas
- 400 MW at Carson, California
- 590 MW at Whiting, Indiana

Q. **A company called TransCanada Pipelines, Ltd. or "TCPL" has also been mentioned regarding this project. Can you explain their involvement in the Cherry Point Cogeneration Project?**

A. TransCanada is a leading Canadian energy company headquartered in Calgary, Alberta and is the largest operator of natural gas pipelines in North America. TCPL's pipeline network of over 24,000 miles transports most of Western Canada's natural gas production to markets in both Canada and the United States. TCPL is also a major power developer, with 4,500 MW of projects in the United States and Canada. TCPL has developed many cogeneration projects for industrial hosts.

BP and TCPL are in the process of negotiating a business deal under the terms of which TCPL would own and construct the Cogeneration Project at the Cherry Point refinery. While negotiations continue, both companies are cooperating to develop
and permit the project. BP is hopeful that a satisfactory arrangement will be reached with TCPL, but these negotiations will take time to complete. BP is still the applicant for the Project, and BP understands that if the project were sold, the buyer would have to follow EFSEC regulations regarding the transfer of the site certification agreement.

Q. If TCPL bought the project, what role would BP have following the acquisition?
A. BP would be the anchor tenant for the cogeneration project, taking 510,000 lbs/hr of steam and 85 MW of power from the facility. BP would also provide wastewater treatment and returned condensate for the project, and could provide other services to the project.

Background and Experience

Q. What does your role as Project Manager for the Cogeneration Project entail?
A. I joined the Cherry Point project team in January 2001. I am responsible for overall development of the project and coordination of project activities. In that capacity, I have been involved in the financial and technical assessments of the project, commercial negotiations with TCPL, and meetings with federal, state and local regulators, Canadian government officials and various stakeholder groups. Although I have oversight of the development of the Application for Site Certification and BP's participation in the EFSEC process, Mike Torpey, the project's environmental manager, has led the permitting process.
Q. Can you describe your background?

A. I have a B.S. in Mechanical Engineering from University of Illinois. I’ve worked in the petroleum industry for 24 years and have held a number of positions for Amoco Oil and then BP in refinery operations, maintenance and engineering. Those positions included engineering supervisor, energy superintendent, maintenance and operations superintendent positions, reliability manager, cogeneration project manager, as well as special assignment positions for business improvement efforts.

Q. Have you worked on any other electric generating projects in your experience?

A. Before I became the project manager on the Cherry Point project, I was project manager for the 550 MW Texas City cogeneration project. This project involved replacing an existing plant built in 1963 to provide steam and power for BP’s Texas City refinery. The project is currently completing construction and is due to achieve Commercialization in February 2004.

The Cogeneration Project and its Relationship to the Refinery

Q. Can you briefly describe the proposed project?

A. The BP Cherry Point Cogeneration Project is a proposed 720 MW cogeneration facility to be located adjacent to BP’s existing refinery at Cherry Point in Whatcom County. A map showing the proposed location is provided as Exhibit 20.1 (MSM-1).
The facility utilizes combined-cycle combustion turbine technology in a 3x1 configuration, which means that there will be 3 combustion turbine generators and 1 steam turbine generator. A site layout diagram is provided as Exhibit 20.2 (MSM-2). The facility will be fueled exclusively by natural gas. It will generate a maximum of 720 MW of electricity and up to 770,000 lb/hr of steam for use at the Refinery.

Q. What does it mean to say that the project is a "cogeneration" facility?
A. A cogeneration unit provides 2 products, steam or other useful thermal energy, and electricity. The Cherry Point refinery uses steam to heat oil and to provide motive energy for steam turbine-driven pumps. By directly utilizing some of the steam produced by the cogeneration facility, the energy in the steam is recovered more fully than it would be in a stand-alone combined cycle power plant. As a result, the cogeneration project will operate at about 63% efficiency, compared to 53% for a stand-alone facility using a similar combined cycle design, and compared to 37% for a similar facility using combustion turbines in a simple cycle design.

Q. Will the Cogeneration Project be integrated with the Refinery in any other way?
A. Yes. The Cogeneration Project takes advantage of a lot of the infrastructure that is already available at the Cherry Point Refinery, including the natural gas pipeline, the water supply pipelines, and the waste water treatment system. During construction, the Project will also use portions of the Refinery property for equipment laydown areas.
Q. Let's talk about some basic components of the facility design. First, the power block. What kind of equipment will you be using?

A. The power block will consist of three General Electric 7FA gas-fired combustion turbines, three associated heat recovery steam generators (HRSGs) equipped with supplemental duct-firing capability, and one steam turbine. Each of these four turbines would drive a generator to create electricity.

Water Supply

Q. How much water will the facility use?

A. Non-potable industrial water will be used to produce steam, and for cooling purposes. The cogeneration project will use 2,244 to 2,316 gallons per minute (gpm) on average; 90% of this amount will be used for cooling in the evaporative cooling tower. The cogeneration unit employees will also use 1-5 gpm of potable water.

Q. Where will this water come from?

A. Non-potable industrial water will be provided by Whatcom County Public Utility District No.1 (PUD). The PUD has water rights authorizing the withdrawal of industrial water from the Nooksack River, which it currently provides to the BP Refinery, the Alcoa Intalco Aluminum Smelter and other users in Whatcom County. The Cogeneration Project has agreed to fund the installation of equipment that would allow industrial water that is currently used for non-contact once-through cooling at the Alcoa smelter to be returned to the PUD and reused by the Cogeneration Project and the Refinery. An average of 2,780 gpm of recycled industrial water will be
available from Alcoa. Since this is more than the average requirement of the
Cogeneration Project, there will be an average reduction of 484 to 556 gpm in the
amount of water that the PUD needs to withdraw from the Nooksack River.

Q. Where would the Cogeneration Project get water if the Alcoa smelter shut
down?
A. The Cogeneration Project would still get industrial water from the PUD, and the
amount of water used by the Cogeneration Project would still average 484 to 556
gpm less than the amount of water the PUD currently provides to Alcoa for once-
through cooling.

Waste Water

Q. What waste water will be generated by the facility?
A. The Cogeneration Project will generate an average of 190 gpm of additional waste
water. Most of this waste water comes from the cooling tower. As water is cycled
through the cooling towers, evaporation concentrates the minerals naturally found in
the cooling water. In order to maintain optimum water quality in the cooling tower,
a portion of the concentrated water or "blowdown" is discharged. Wastewater would
also be generated from the water treatment system used create boiler feedwater, and
storm water collected in curbed areas, as well as a small volume of sanitary
wastewater.
Q. What will be done with this waste water?

A. The industrial waste water would be discharged to the Refinery's existing advanced wastewater treatment facility, where it will be mixed with Refinery wastewater and treated. After treatment at this facility, the water would flow to Straits of Georgia through the existing outfall from the refinery system. The cogeneration unit would increase existing refinery wastewater flows by about 8%. Mike Torpey and Bill Martin will address wastewater issues in greater detail in their testimony. Sanitary waste water will be discharged to the Birch Bay Water and Sewer District.

Fuel Supply

Q. What fuel will the facility use?

A. The Cogeneration Project would use only natural gas to fuel the combustion turbines and duct-firing units. BP does not propose to use any "back-up" fuel.

A small diesel-powered emergency generator and firewater pump would also be on site to keep critical systems operating in the event of power or natural gas failure.

Q. How will this natural gas be transported to the Cogeneration Project?

A. The gas would flow through the existing pipeline owned by BP and Alcoa that runs from Sumas to Cherry Point, and is commonly known as the Ferndale Pipeline. The Westcoast and Northwest pipeline systems deliver gas to Sumas.
Electricity Transmission

Q. How will the electricity generated at the Cogeneration Project be transmitted?

A. Approximately 85 MW of the electricity generated by the Cogeneration Project will be transmitted to the BP Refinery through a substation built on refinery property. Ultimately this power would be fed to the three existing refinery 12.5kV substations. The remainder of the electricity will be transmitted along a new 0.8-mile 230 kV line to be constructed across BP property from the Cogeneration Project to the existing BPA 230 kV transmission lines. From there, the electricity will be transmitted to the Custer substation and onto the regional transmission grid.

Q. Will BPA need to build any other transmission lines in order to accommodate the Cogeneration Project electricity on the grid?

A. BPA’s power flow studies show that no transmission lines would have to be constructed to provide capacity for the Cogeneration Project over the BPA system, however completion of a series of projects called the “Northern Intertie” projects would be required to provide this transmission capacity. These projects are needed for other purposes as well and are currently under construction.

BPA performed a single contingency analysis as part of its study to interconnect the Cogeneration Project to the local BPA 230kV lines that run between the Intalco and Custer substations. Under warm weather conditions, if one of the two lines failed, the remaining line would not have enough capacity to (i) serve the refinery and Alcoa Intalco Works maximum loads if the Cogeneration unit were down, or (ii) serve the full export of the Cogeneration unit if the smelter and refinery were both
down. BP's preferred approach in addressing this issue is a "remedial action scheme," which is essentially an agreement between BPA, BP and Alcoa that either load or generation would be reduced in these circumstances. The alternative would be to double-circuit the existing the 230kV line between the Cogeneration Project and the Custer substation.

**Decommissioning & Site Restoration**

**Q.** What is BP's plan with respect to decommissioning the facility at the end of its useful life?

**A.** The Cogeneration Project would be removed and the land reserved for future industrial development.

**Q.** In connection with some other projects, EFSEC has required the owner of the project to provide a corporate guarantee or post a bond to secure site restoration. Have you proposed to provide a corporate guarantee or bond?

**A.** No. These bonds or guarantees have been required to ensure that funds will be available to restore the project site upon decommissioning. As I understand it, in instances when EFSEC has required a corporate guarantee or bond, the applicant has typically been a single purpose corporate entity with no assets of its own other than the energy project. It has just acquired the property for the project site and has no further plans for its use once the proposed project is decommissioned. In those circumstances, it is not surprising that EFSEC wanted the applicant's corporate parent to guarantee funding for the decommissioning work.
BP West Coast Products is a corporation with substantial assets other than this project. It has been a long-term owner of the project site and is interested in maintaining its property for the future. I believe that these factors make a corporate guarantee or bond unnecessary for this project.

**Purpose of the Project**

**Q. Why is BP proposing to construct and operate the Cogeneration Project?**

**A.** BP has two primary reasons for proposing the Cogeneration Project.

The first reason for the project is to ensure a reliable and cost-effective source of electricity and steam for the Cherry Point Refinery. The refinery requires approximately 85 MW of electricity for its operations. During the electricity shortages of 2000-2002, BP became acutely aware of how volatile electricity prices could affect the refinery. During that period, BP spent $112 million more than it has historically paid for electricity to operate the refinery. The refinery also uses an average of 510,000 lbs/hr of steam. Although the refinery currently generates that steam with utility boilers, the Cogeneration Project will be able to generate it more efficiently.

The second reason for the project is to make highly efficient gas-generated power available to the regional electric market. Demand for electricity continues to grow in the Northwest and the regional electricity supply/demand balance places gas-fired generation on the margin for much of the year. Because the Cogeneration Project is more efficient than even the state-of-the-art combined cycle facilities being built, it can compete effectively against those and other less efficient power plants.
Q. If the Refinery only uses about 85 MW of electricity, why is BP proposing a 720 MW Cogeneration Facility?

A. BP studied several different project configurations and sizes in developing the Cogeneration Project. It decided upon the proposed size based on the consideration of several criteria, including the following:

- Environmental Performance – We wanted to design a project that would provide sufficient steam to result in a net reduction in expected criteria pollutant emissions, and not require a material increase in water drawn from Nooksack River

- Steam Reliability – A reliable supply of steam is essential for refinery operations. Therefore, BP insisted on double-redundancy, which necessitated a three-turbine configuration. With three turbines, if one is down for maintenance, and another breaks down unexpectedly, the third is still available to provide steam to the refinery.

- Power Efficiency and Competitiveness– The purpose of the project requires that electricity can be produced more efficiently than electricity available in the regional market, so that the refinery can obtain cost-effective power and the Project is able to compete to sell its power.

- Steam Efficiency – The purpose of the project also requires that steam can be produced more efficiently than it could be with stand-alone boilers at the refinery. These efficiency concerns favored use of the GE 7FA turbines over other smaller models.
• Infrastructure – The Project must be sized to take advantage of existing infrastructure.

• Capital Risk – The mechanical and electrical connections to the refinery increase the capital cost of the project. The project must have sufficient economy of scale to absorb this extra cost and still produce a market return for investors. The efficiency of the project reduces the cost of production and provides some of this offset, but the overall capital cost per kW must be at most on par with that of other gas fired power plants.

A different facility configuration may be fit one or two of the above criteria better, but the proposed configuration best fit the entire set of criteria.

Q. Do you believe that there is a demand for the power from the Cogeneration Project?

A. Yes. BP commissioned market studies by two leading industry consultants. These study results indicated the need for additional generation in the region, and were similar to those done by the NWPPC and BPA. As a practical matter, we understand that TCPL prefers to sell up to 75% of the project forward in long term power contracts (i.e., five years or longer) before beginning construction. A response from the market will be the best indication that demand exists for the project.

Q. Could Washington increase conservation or renewable energy usage instead of constructing more generating facilities fueled by natural gas?

A. Conservation can always play a role in decreasing electricity demand. Renewables such as wind, solar, and renewable fuel thermal plants can play a limited role, as
these sources are not available often enough or cannot be installed on suitable scale to meet increasing electricity demand. Gas-fired generation provides the availability needed by consumers with the smallest environmental impact of thermal power plants.

Q. Is BP going to sell the power from this facility to utilities or customers in Washington?

A. TCPL and BP have offered to sell power to utilities and customers in Washington. These customers are at various stages of resource planning for the 2006 timeframe. Some are waiting to see whether the Cherry Point project moves ahead with its development.

BP's Environmental Commitment

Q. Can you tell us about BP's environmental commitment as a company?

A. BP’s overall health, safety and environment goal contained in our policy is to have "No accidents, no harm to people and no damage to the environment." BP has a continuing program to reduce the impact of pollution from its products by developing cleaner fuels. For many years another focus for BP has been to reduce pollution from its operations.

BP requires all major sites to manage environmental performance against the ISO 14001 international standard and to publish periodically externally verified statements describing their environmental impacts. A variety of inspection
companies such as Lloyds Register, Det Norske Veritas and AEA Technology are used to ensure that these verifications are genuinely independent.

Q. **How has that commitment manifested itself in connection with this Cogeneration Project?**

A. From the very beginning, BP has tried to design the Cogeneration Project in a way that is neutral to the environment and in some ways is actually beneficial to the environment. This effort is reflected in many aspects of the project, including the following:

- As a gas-fired cogeneration facility, the Project will generate electricity more efficiently than other facilities currently used to serve electricity demand in the region. That means that the Cogeneration Project can be used to meet this demand by burning less natural gas, and producing fewer emissions of regulated pollutants and greenhouse gases.

- The Project incorporates the best available technology to reduce the facility's emissions. By providing steam to the refinery, the project will also enable emission reductions at the refinery. We expect the net result will be a reduction in the total emissions of criteria pollutants, and a reduction in particulate matter in the airshed.

- The Project is funding a water reuse project that will result in a net reduction in the average amount of water that the PUD needs to withdraw from the Nooksack River.

- The Project is proposing a 110-acre wetland enhancement and restoration plan that will result in a net improvement in wetland functions in the project area.
Other witnesses will talk about these and other environmental aspects of the project in greater detail.

Q. Let me ask you about global warming in particular. As a company, what is BP's position regarding global warming and greenhouse gas emissions?

A. In 1997, BP became the first member of the oil and gas industry to acknowledge that precautionary action to address global climate change was just justified in the face of evolving scientific understanding. In 1998, BP made a voluntary commitment to reduce the greenhouse gas emissions from its operations by 10% compared to the 1990 baseline, and to achieve that reduction by the year 2010.

In order to meet that commitment, BP set annual internal emission reductions targets for its various operations worldwide and established an internal credit trading system to facilitate efficient emission reductions. As a result of these efforts, BP achieved its stated goal of a 10% reduction from its 1990 baseline in 2001, nine years ahead of schedule.

BP has made a further commitment in 2002. BP estimates that the company's planned business growth from 2002-2012 could result in a 50 million tonne increase in current greenhouse gas emissions. BP has set a new target to sustain the emissions reduction already achieved at 10% below the 1990 baseline for the next decade while achieving this business growth.
Q. What effect will the facility have on greenhouse gas emissions?

A. The cogeneration facility itself would emit about 2.1 million metric tons per year of CO₂, if it is operating at 85% capacity. However, the operation of the Cogeneration Project should actually result in a decrease in GHG emissions compared to alternatives that would otherwise be used to supply electricity to the region. As a practical matter, when the Cogeneration Project is operating, it will displace less efficient gas fired power plants, leading to lower greenhouse gas emissions than if Cherry Point were not built.

This Project would not displace hydroelectric, nuclear or coal fired power plants. Those plants have the lowest variable cost of production. Gas fired plants such as the Cogeneration Project dispatch when power demand exceeds the capacity of those lower cost resources. Given demand growth and the capacity of these hydroelectric, nuclear and coal resources, that can be the case in the Pacific Northwest a majority of the time.

Among the gas-fueled plants competing to supply this demand, new combined-cycle plants are generally the most efficient projects and therefore have the lowest GHG emission rates. The Cogeneration Project is even more efficient that the newest stand-alone combined cycle plant, which means it will result in lower GHG emissions than even the new combined cycle plants. For instance, the thermal efficiency of the Cherry Point cogen project is 63% compared with 53% for state of the art stand alone plants and the 34% national average for power plants.
Q. Does BP propose to offset or "mitigate" its CO₂ emissions in some way?

A. Yes. Section 3.2.5.2 of the Application for Site Certification outlines our mitigation proposal as follows: As long as BP has an ownership interest in the Cogeneration Project, BP's equity share of the Project's emissions would be a part of BP's new GHG objective and the Project's emissions would be offset by GHG emission reductions within BP's worldwide operations.

If, at some point in the future, BP did not own the Cogeneration Project, mitigation would be provided as follows:

1. The proposed CO₂ emission standard will be 0.675 lbs CO₂/kWh calculated on the basis of Cogeneration Project Fuel Charged to Power in Btu/kWh.
   
   a. Fuel Charged to Power is Total Fuel Consumed by the Cogeneration Unit less Fuel Charged to Steam, and divided by net kWh generated.

   b. Fuel Charged to Steam is equal to steam energy used by the Refinery divided by a conversion factor of 0.901 (LHV/HHV).

2. Emissions in excess of the emission standard would be mitigated either by

   a. An annual payment to a qualifying organization such as the Climate Trust of $0.85 per ton of CO₂ to be mitigated, or

   b. GHG reductions obtained by the Cogeneration Project owner, or

   c. A combination of the above.

3. Mitigation would be satisfied annually for 30 years, which is the assumed economic life of the project. Mitigation would be reported to EFSEC annually.
Q. You've outlined two alternatives that would apply depending upon whether or not BP owns the facility. If BP is willing to fully offset the project's emissions, why shouldn’t EFSEC require any future purchaser of the project to do the same?

A. BP’s corporate policy would require the Cogeneration project’s GHG emissions to be offset from BP’s worldwide operations. Requiring a purchaser that does not have the same type of policy to fully offset this project’s emissions would disadvantage this project in the marketplace and discourage its continued development. That would be counterproductive from a GHG reduction perspective. If this project is not constructed, then other less efficient plants will continue to operate, or will be built instead, resulting in higher levels of GHG emissions.

**Project Benefits**

Q. Will Washington State benefit from certifying this Project?

A. Washington State will benefit in many ways.

- The Project will provide power to satisfy growing regional demand more efficiently and with less impact to the environment than the generating facilities that would otherwise be used to satisfy this demand.
- The Project will provide a generating facility on the west side of the Cascade Mountains near the load centers of Seattle and Vancouver that will help alleviate south-to-north transmission constraints.
- The Project will help protect the Cherry Point Refinery from volatility in the electricity market, preserving an important employer and producer of key transportation fuels for the Pacific Northwest.
- Provide needed investment, economic activity and tax revenues.

**Q. Will Whatcom County benefit from this project?**

**A.** Yes. BP is proud to be a part of the Whatcom County community, and has an excellent reputation in the community for safe, reliable operation. We believe the Cogeneration Project will also provide significant local economic benefits.

Construction will employ more than 300 people on average for over 24 months, with employment peaking at about 670 people. Once in operation, the Project will provide 30 full time jobs. Construction will generate significant local sales tax revenues, and the project will add about 4% to the County's property tax base.

**END OF TESTIMONY**