Summary

Bonneville Power Administration (BPA) is a Federal power marketing agency in the U.S. Department of Energy. BPA is considering whether to transmit (wheel) electrical power from a proposed privately-owned, gas-fired combustion turbine power generation plant in Morrow County, Oregon. The proposed power plant would have two combustion turbines that would generate 440 average megawatts (aMW) of energy when completed. The proposed plant would be built in phases. The first combustion turbine would be built as quickly as possible. Timing for the second combustion turbine is uncertain. As a Federal agency subject to the Nation Environmental Policy Act, BPA must complete a review of environmental impacts before it makes a decision on any action that may affect the environment. This Final Environmental Impact Statement (FEIS) addresses the potential impacts from both combustion turbines, a proposed natural gas pipeline, and integrating transmission facilities.

Portland General Electric Company (PGE), an investor-owned utility, has asked BPA to transmit power for Phase 1 (220 aMW) of its proposed Coyote Springs Cogeneration Plant over BPA's transmission system to PGE's customers in Portland, Oregon. PGE plans to build the cogeneration plant in eastern Oregon, just east of the City of Boardman. Cogeneration plants generate electricity in combination with a heat-producing process. The Coyote Springs Cogeneration Plant would burn natural gas to produce electricity and steam.

A 2.4 kilometer (km)* (1.5 mile), 500-kilovolt (kV) transmission line would be built to interconnect the plant with a nearby BPA transmission line. Pacific Gas Transmission Company (PGT) would build a pipeline extension from a point on their existing pipeline northeast of Ione, Oregon, to the plant site. The proposed cogeneration plant, transmission line, and natural gas pipeline are parts of a single project.

S.1 Purpose and Need

BPA's transmission lines are used by both public and private electric utilities to transmit and market power. Under Federal law, if BPA has excess capacity on its transmission system, it can be made available to utilities or independent power producers for their power deliveries.

BPA's Need - BPA must make a decision whether to provide wheeling services to PGE from PGE's proposed Coyote Springs Cogeneration Plant over BPA's McNary-Slatt 500-kV transmission line. BPA evaluated power loadings on the McNary-Slatt transmission line and determined that under most operating conditions sufficient capacity is available on this line to wheel power from Phase I of the Coyote Springs Plant to the Portland, Oregon area.

** BPA uses metric measurements to comply with Public Law 100-418. See metric conversion chart on the inside of the back cover.*

Wheeling power from PGE's proposed power plant would fulfill BPA's obligation under Federal law. A decision to provide wheeling services would require amending or revising an existing transmission service agreement BPA has with PGE. PGE would pay BPA for the wheeling services.

PGE's Need - PGE's need for the proposed power plant is separate from BPA's. PGE needs to replace power lost now that PGE's Trojan Nuclear Plant (Trojan) has ceased operation. The Coyote Springs Plant would replace a significant portion of power lost from Trojan.

Purposes - Making a decision to provide wheeling services to PGE for the power produced at the proposed plant must accomplish the following purposes:

- Meet Federal, State, and local environmental requirements;
- Balance environmental impacts with economic costs;
- Assure consistency with BPA's statutory responsibilities; and
- Provide electrical system reliability that meets BPA's reliability criteria.

S.2 Proposed Action

BPA proposes to revise its general transmission agreement with PGE to establish Coyote Springs as a point of interconnection for wheeling services. To connect the proposed plant to BPA's main transmission grid, BPA would build a special structure, called a tap, next to its McNary-Slatt transmission line. BPA would also install microwave communication facilities to connect the plant with BPA's existing network, which operates the transmission system.

PGE proposes to build a 440 aMW cogeneration plant on a site within the Port of Morrow Industrial Park near the City of Boardman, Oregon. Associated facilities include an electrical substation, water storage tanks, cooling towers, workshop, warehouse and administrative offices. PGE also proposes to build a double-circuit 500-kV transmission loop line from the tap on BPA's transmission line to the proposed plant, a distance of about 2.4 km (1.5 miles).

PGT proposes to construct a 29.8-km (18.5-mile) pipeline from PGT's main natural gas transmission pipeline, which runs from the Canadian/Idaho border to Malin, Oregon.

When the project is complete, power from the proposed plant would flow into BPA's system to one or more points of delivery in PGE's service area. PGE will pay BPA for this service.

S.3 No Action Alternative

Under the No Action alternative, BPA would not wheel the energy output from the proposed plant.

S.4 Affected Environment

The proposed Coyote Springs Plant would be in the Port of Morrow Industrial Park near the City of Boardman, in Morrow County. The proposed plant would be on an 9-hectare (22-acre) site in an unincorporated portion of Morrow County. The site is outside the City of Boardman, but within its urban growth boundary. Surrounding land uses are industrial.

The primary land use in the area near the proposed plant is related to gravel extraction and agriculture. This part of eastern Oregon is arid, and most crops require irrigation.

The proposed right-of-way for the transmission line is along existing utility corridors or lands zoned for industrial use.

Land Use

The proposed plant site is a former gravel quarry that is now vacant. The surrounding land uses are industrial. The current land uses within the transmission line corridor include vacant lands, a public right-of-way, a concrete batch plant, a portion of the City of Boardman's sewage treatment facility, and an irrigated agricultural field.

Recreation Resources

Recreation opportunities near the proposed plant site include facilities for hunting, fishing, picnicking, swimming, sailboarding, boating, nature observation, and hiking. There are no recreation facilities and limited opportunities for recreation within the proposed right-of-way for the transmission line or at the cogeneration plant site.

Messner Pond, in the Port of Morrow near the proposed plant site, is occasionally fished for warm water species, primarily bass and walleye. Messner Pond is also used by Morrow County residents and passing tourists for birdwatching and wildlife viewing.

Because there are many existing recreation facilities nearby, no new recreation facilities or opportunities are planned because of the proposed plant or its workforce.

Natural Resources

Soils and Geology - The proposed plant site is on excessively drained loamy fine sand deposits near the Columbia River, underlain by rocks of the Columbia River Plateau Basalt Group and the Dalles Formation.

Water Resources - Three surface water systems occur within or adjacent to the plant site: the Columbia River; Messner Pond; and gravel mining ponds.

Groundwater in the area is almost fully allocated for municipal, industrial, domestic and irrigation uses with the Columbia Plateau. Use of groundwater has lowered the water level in some portions of the regional deep aquifer. Water quality in shallow alluvial wells is generally poor; water from these wells is generally used for irrigation.

The Port of Morrow uses the shallow alluvial aquifer and the deep basalt aquifer for water.

Wetlands - A wetland borders Messner Pond and is near the plant site and transmission line route.

Vegetation - Plants found at the proposed site are common in the Boardman-Umatilla, Oregon area and are characteristic of disturbed communities of the shrub-steppe vegetation zone in the Columbia Basin. Vegetation is primarily adapted to a dry environment and is not native.

Messner Pond is surrounded by emergent wetlands grading into forested wetlands.

No Federally-listed threatened or endangered plant species are known to occur within the project area. Three species of concern, Thompson's sandwort (*Arenaria franklinii* var. *thompsonii*), Lawrence's milkvetch (*Astragalus collinus* var. *laurentii*), and Columbia cress (*Rorippa columbiae*), may be found in the project area. These species are listed as "sensitive" by the Oregon Natural Heritage Data Base. A survey for these plants in 1993 found none on or near the plant site, the transmission line route or the pipeline route.

Fish and Wildlife - The proposed plant site is outside of any wilderness study, research, natural, wildlife, or other similarly designated area. However, many wildlife and fish species are found within the vicinity. Several designated wildlife refuges and other natural areas are nearby.

Wildlife use of the site is limited by poor quality habitat plus ongoing industrial activities and adjacent development. Some small mammals and birds may be found in the area. Small ponds also provide some limited aquatic habitat for waterfowl, shorebirds and amphibians.

No Federally-listed endangered or threatened animal species were recorded during a field survey, but three state sensitive species and one Federal candidate species were noted in the vicinity. Identified species are considered typical of regional fauna within existing habitats.

Wildlife use of the transmission line route is likely restricted to those species associated with industrial sites or disturbed shrub-steppe habitat.

Listed fish species noted by the National Marine Fisheries Service include Snake River spring/summer chinook salmon (threatened), Snake River fall chinook salmon (threatened), and Snake River sockeye salmon (endangered). The project will not affect these species, however the species migrate through the Columbia River.

Air Quality

Morrow County is designated by EPA as an unclassified/attainment area for regulated air pollutants. The Wallula area in Washington (northeast of the proposed facility) has been determined by EPA to be a moderate nonattainment area for particulate matter. Benton County, Washington, also north of the proposed plant, is being considered for classification as a moderate nonattainment area for particulate matter. Class I airsheds within 200 km (120 miles) of the proposed facility are the Mt. Hood Wilderness Area, the Eagle Cap Wilderness, and the Strawberry Mountains Wilderness. Visibility impacts to the Columbia Gorge Scenic Area were also evaluated.

Socioeconomics

Social and economic characteristics that identify the northern portion of Morrow and Umatilla counties include a sparsely settled rural area of eastern Oregon with an economy primarily based on agriculture. The area is served by a well-developed transportation system, including Interstate 84, the Union Pacific Railroad and the Columbia River.

Public Health and Safety

Noise - Noise levels were measured at six noise-sensitive locations. Existing noise levels within and adjacent to the Port of Morrow Industrial Park are quite high. Noise levels at two of the noise measurement sites presently exceed Oregon noise standards.

Electric and Magnetic Fields (EMF) - Electric wiring, household appliances, and electrical equipment produce electric and magnetic fields. The project area is vacant, but surrounded by existing industrial land uses. Existing agricultural processing plants, other development, and electric power lines produce electric and magnetic fields in the project area. Scientific evidence has not established a cause-and-effect relationship between electric or magnetic fields and adverse health effects, so specific health risks are unknown.

Visual Resources

The project area is located on low plateau land forms near the Blue Mountains and adjacent to the Columbia River. The project visual impact area is characterized by interspersed irrigated agricultural lands; natural areas consisting of lakes, ponds, reservoirs, wetlands and stands of Russian olive, willows, and cottonwoods; and commercial, residential and industrial development found on surrounding Port of Morrow and City of Boardman lands. A gravel quarry, cranes, potato processing plants, wood chipping company, etc. developed at the Port have established a strong industrial character to the immediate area surrounding the site. The adjacent Columbia River (Lake Umatilla), Messner Pond, Coyote Springs Wildlife Refuge and the Umatilla Wildlife

Refuge add a dominant natural character to the areas surrounding Port land on the north and east sides. The large Boardman Coal Plant and stack also add a strong industrial visual element in the area. There are over 25 locations in the visual impact area where activities with viewing sensitivity occur such as wildlife observation, hiking, golfing, sailboarding, picnicking, fishing, and hunting.

Cultural Resources

The project site is within the Southern Columbia Plateau culture area, which contains prehistoric sites dating from 11,000 to 200 years before present (B.P.). Lewis and Clark visited the area in 1805-06. Umatilla, the largest town in the area, was founded during the gold rush of 1860. As the mining boom slowed in the 1870s, agriculture became increasingly important. Today, agriculture is still a significant portion of the area's economy and culture.

S.5 Environmental Consequences

BPA analyzed potential environmental effects of the proposed Coyote Springs Plant, its related facilities, and the No Action alternative by living and non-living resource type (e.g., geology, water resources, etc.). The environmental analysis also considers Federal, state, and local regulations. Tables 5-1, 5-9 and 5-10 summarize major impacts that would be created by the plant, transmission line, and pipeline, and proposed mitigation.

Land Use Impacts

The proposed plant, transmission line, and other related facilities would be consistent with the industrial character of the surrounding area. Land uses would be converted from vacant, gravel extraction and agricultural lands to an industrial use. The land use change for the proposed plant would be consistent with existing land use plans and current zoning. The transmission line in the proposed corridor would require a variance from Morrow County.

Recreation Resource Impacts

Construction would create short-term noise impacts that could disturb recreation opportunities. No other recreation impacts are expected.

Natural Resource Impacts

Soils and Geology - Minimal impacts to soils are expected. Disturbed areas will be revegetated to avoid wind erosion.

Water Resources - No direct impacts to the Columbia River or the deep water habitat of Messner Pond are expected. Impacts are not expected to occur to forested wetlands adjacent to

the pond. The impacts to the existing irrigation pond during plant construction would be direct and long term. The impact would be caused by filling part of the pond for the plant's foundation.

Wetlands -No impacts to wetland plant communities are expected from construction or operation of the plant, transmission line or pipeline.

Fish and Wildlife - Filling the gravel pond at the plant site would eliminate low-quality fish habitat. No impacts on water quality or to fish habitat would occur in the Columbia River or Messner Pond from construction or operation of the proposed project.

About 9 ha (22 acres) of wildlife habitat of varying quality would be permanently lost from construction of buildings and other project facilities at the plant site. Some direct mortality of wildlife could occur during project construction.

Wildlife use of Messner Pond and surrounding habitat could be disturbed temporarily during construction. Seasonal bald eagle use of Messner Pond could be inhibited during construction by disturbances created by construction activities. Visual disturbances during plant operation are not expected as eagles are likely to become acclimated to stationary buildings in the area.

No bald eagle habitat would be lost due to project implementation. Although four species of concern were documented to occur in the project area, only the bank swallow colony near the plant site could be impacted by the proposed plant. Measures to prevent impact to the bank swallows have been established and are contained in the Application for Site Certificate. Electrocution of raptors is unlikely as the distance between electrical conductors on 500-kV transmission towers greatly exceeds the wingspan of raptors.

The Coyote Springs Cogeneration Project will have not directly effect threatened or endangered fish species. Groundwater withdrawals for the project will indirectly reduce Columbia River flows, but by such a small amount that there will be no adverse impact to the survival of listed Snake River salmon species.

Air Quality Impacts

Air emissions from the proposed Coyote Springs Plant will meet air quality standards. The Oregon Department of Environmental Quality issued an Air Contaminant Discharge Permit for the Coyote Springs Cogeneration Project in April 1994. The plant is not expected to emit odors. The plant will emit 1.4 million tonnes (1.6 million short-tons) per year of the unregulated greenhouse gas carbon dioxide. The facility will minimize carbon dioxide emissions by using natural gas to fire the combustion turbines, offsetting emissions from the local food processors that acquire steam from the facility and by using advanced technology to achieve high efficiency. Oxides of nitrogen (NO_x) emissions will be controlled by best available control technology. The facility is not expected to significantly contribute to downwind acid rain. Photochemical pollutants (smog) are not expected to accumulate near the plant due to existing air, wind and sun radiation conditions in the area.

Socioeconomic Impacts

The proposed plant and related facilities should increase the assessed value of Morrow County by 20-40 percent, depending on whether PGE builds one combustion turbine or two. Operation of the cogeneration plant will provide full-time employment for 20-30 people. Overall, the proposed project should have a positive influence on the local economy over the expected life of the facility.

Project water withdrawals from Port of Morrow wells has been conservatively calculated to reduce flows in the Columbia River by a maximum of 0.17 cubic meters per second (m^3/s) (6 cubic feet per second [cfs]). If this water were to all pass through the turbines of dams downstream, the economic value of the electricity would range from $60-75,000 annually. On the other hand BPA will receive wheeling revenues from PGE, based on the Priority Firm (PF) rate, ranging from $3-4 million annually for each phase of the Coyote Springs Plant. Thus, the net economic impact of the project to BPA ratepayers will be positive, but not large enough to alter BPA's rate structure.

Public Health and Safety Impacts

Air Quality - No health impacts are anticipated from the low amounts of toxic air substances released by the plant.

EMF - Workers in the Coyote Springs Plant and occupants of buildings closer than 150 m (500 ft.) may be exposed to EMF. Scientific evidence relating to EMF has not yet established a cause-and-effect relationship between electric or magnetic fields and adverse health effects. BPA is unable to predict specific health risks, or specific potential levels of disease from exposure to EMF.

Noise - The proposed plant may create short-term noise increases of up to 10 decibels on the A-scale (dBA) during certain atmospheric conditions. Transmission lines also create noise through a process called corona activity. No significant noise impacts are expected. Noise from the plant and the transmission line will meet Oregon noise standards.

Visual Resources

The project would have visual impacts varying from low to high on 13 sensitive viewer observation areas (25 total) found in the visual impact area. The only visual impact rated high would be to travelers on I-84 where over 9,450 vehicles a day would be exposed to views of the project at less than 2.4 km (1.5 miles). Tall stacks, steam emissions and transmission towers are elements of the project that would be the most visible.

Cultural Resources

A site-specific survey for cultural resources was completed. The proposed plant would not be on or within the immediate vicinity of any known historic, cultural, and/or archeological resources.

No Action Alternative Impacts

The No Action alternative would remove the potential impacts from the Coyote Springs Plant at the proposed site. PGE would not meet its need to find replacement power for the loss of the Trojan Nuclear Plant. Because PGE needs to find replacement power, PGE would likely build a similar plant at a different location or purchase power from independent power producers. The surplus capacity available on the transmission system could be used by other utilities or independent power producers.

S.6 Consultation, Permits and Review

Several Federal laws and administrative procedures must be met by the proposed action. Details of how the proposed action complies with these requirements is given in Section 6.

S.7 Cumulative Impacts

Cumulative impacts are created over time when minor individual actions combine with past, present, and reasonably foreseeable future actions to cause significant actions. Within this context, several cumulative impacts are foreseeable.

Global Warming - The Coyote Springs Plant would release greenhouse gases. Greenhouse gasses reflect infrared radiation back to earth thus preventing heat loss to outer space. Because of this reflective capability greenhouse gases may contribute to global warming.

The proposed Coyote Springs plant, together with PGE's existing Boardman Coal Plant and the two proposed cogeneration plants near Hermiston, Oregon would cumulatively emit approximately 15 percent of Oregon's 1990, or 0.04 percent of global human-caused 1990 CO_2 emissions. In spite of these facilities' comparatively large CO_2 emissions, it is important to realize that the CO_2 emissions per thousand kilowatt hours (kWh) from new efficient natural gas combustion turbines such as Coyote Springs and the proposed plants near Hermiston are 40-50 percent of those from coal-fired plants.

One mitigating action that could be taken to offset CO_2 emissions is planting trees that use airborne CO_2 to grow. PGE has decided to not undertake CO_2 offset mitigation at this time.

Reduced Transmission Capacity - Integrating the Coyote Springs Plant over BPA's transmission system will diminish surplus capacity on BPA's McNary-Slatt 500-kV transmission line. If both phases of the Coyote Springs Plant and the two other proposed plants near Hermiston are built, existing transmission demands will exceed BPA's capability over this transmission line. Using projected completion dates for these units, BPA would need to install additional transmission capacity by the year 2000. This increased capability would most likely be achieved by building a new transmission line within or adjacent to existing lines in the area.

Groundwater - The Coyote Springs Plant, together with the other proposed power plants and industrial developments in the Columbia Basin, could impact groundwater resources. The cumulative impact of the proposed generation plants coupled with industrial developments that use process steam could cause future requests for groundwater rights to be restricted in favor of parties holding senior water rights.

Plans to supply water to the Coyote Springs Plant have changed since the DEIS was published. Existing Port of Morrow wells will now provide all the water required to serve the Coyote Springs Plant. Most of the plant's water needs will be withdrawn from three shallow aquifer wells. As the shallow aquifers are hydrologically connected to the Columbia River, water withdrawals to supply the Coyote Springs Plant will reduce water flows in the Columbia River.

A question has been asked regarding whether the cumulative effect of the Coyote Springs Plant together with other water consumptive developments in the Columbia Basin might not affect recovery plans for threatened or endangered Snake River salmon populations. To answer this question, existing commercial, agricultural, and industrial water withdrawal permits near the Coyote Springs Plant were inventoried using Oregon Department of Water Resources records (see Table 5-11).

Existing water withdrawals from the alluvial aquifer within 1.6 km (one mile) of the Coyote Springs Project total 0.75 m^3/s (26.45 cfs) and are assumed to currently reduce Columbia River flows by an equivalent amount. The Coyote Springs Project will use water from Carlson Sumps 1 and 2 and Port Well 3, which are included in the 0.75 m^3/s (26.45 cfs). Coyote Springs will thus not directly decrease flows in the Columbia River. However, withdrawals from other alluvial wells might be used to make up for Coyote Springs water demands. To account for this potential, the Coyote Springs water demand, 0.17 m^3/s (6 cfs), was assumed to impact Columbia River flows.

Contrasted to average flows of 7400-9700 m^3/s (260,000-343,000 cfs) during the juvenile migration season, neither existing withdrawals, nor increased groundwater withdrawals for Coyote Springs significantly impact Columbia River flows. Existing water withdrawals and withdrawals for the Coyote Springs Plant together represent a very small percentage, less than (0.0001 percent) of flow in the Columbia River during fish migration.

Furthermore, research on the factors that effect survival of Snake River salmon (Sims and Ossiander, 1981) has established no relationship between flows in the John Day pool and salmon survival. Testimony by John Pizzimenti of Harza Northwest, testifying in support of PGE's request for an Oregon Siting Certificate, suggests that spill rather than flow is the primary determinant of salmon survival, especially in the John Day pool. It thus appears reasonable to conclude that the cumulative impact of existing water uses, together with water used for Coyote Springs would not adversely impact the survival of Snake River salmon.

Decisions about future water allocations will be made by the Oregon Water Resources Board. Estimating future water use allocations would be speculative; however, the Water Resources Board has suspended action on new water use requests pending completion of the Snake River salmon recovery plan.

Regional Energy Resource Needs - The Coyote Springs Plant, together with the two combustion turbine generation projects proposed near Hermiston, if completed, would provide over 1500 aMW of energy. BPA's *1992 Pacific Northwest Loads and Resources Study* projects a 3,425 MW deficit in 2003 based on the medium load forecast. These plants, in combination, would satisfy a significant portion of the Northwest's forecast energy needs.

Tax Revenue - Construction of the Coyote Springs Plant in Morrow County and two additional plants near Hermiston could offset tax reduction measures for local governments mandated by Oregon's Measure 5. The state could also benefit, in that the state, under Measure 5, has the responsibility of providing funding for the local school districts beyond the maximum of $5/$1000 of valuation that can be collected for tax year 1995/96 and beyond.

Temporary Housing Shortage - A shortage of temporary housing facilities in the area could result if all three cogeneration projects' peak construction periods occur concurrently. Construction of large-scale cogeneration plants, such as the proposed projects, normally take place over an 18 to 24-month period. At peak construction, the Coyote Springs Project would require about 200 workers on-site (PGE, 1993). At peak construction, the other proposed projects would require about 700 workers on-site. The present construction schedules for these projects are not coincident thus this potential impact is unlikely.

Natural Gas Supply - The source of natural gas for the proposed cogeneration plant is from actively producing gas fields in Alberta and British Columbia, Canada. The number of natural gas wells that would be needed to supply PGE requirements was estimated by PGT. The average total yield of Canadian natural gas wells was divided into the total requirements of the Coyote Springs Plant (41 billion BTUs per day). Using this method, the output of 16 gas wells would be used each year by the Coyote Springs Plant (PGT, 1993). For perspective, 4,000 Canadian gas wells were drilled in 1991 and the total number of wells in Canada number in the hundreds of thousands (PGT, 1992). Thus, the Coyote Springs Plant would use only a small amount of gas compared to that available in Canada. The world's proven reserves are expected to last about 58 years at the present consumption rate (*Inside Energy/with Federal Lands, 1993*).

To Chapter 1