TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

S.0 SUMMARY

S.1 INTRODUCTION

The Bonneville Power Administration (BPA), a Federal power marketing agency in the U.S. Department of Energy, is considering whether to purchase electrical power from a proposed privately-owned gas-fired combustion turbine power generation plant in Pierce County, Washington. The proposed Tenaska Washington II Generation Project (Tenaska Washington II), which would generate 240 average megawatts (aMW) of energy, would be located about 19 kilometers (about 12 miles) southeast of downtown Tacoma, Washington, in the Frederickson Industrial Area. A regional map which includes the proposed project site is shown in Figure S-1. The site location is shown in more detail in Figure S-2.

S.2 PURPOSE OF AND NEED FOR ACTION

S.2.1 Need

BPA has statutory responsibilities to supply electrical power to its utility, industrial, and other customers in the Pacific Northwest. As BPA embarked on the competitive acquisition process for additional conservation and generation resources, an underlying

need for acquisition of new resources was to avoid electricity deficits caused by growing customer loads. In the time period since the Draft Environmental Impact Statement (Deis) was issued for comment, BPA has become involved in a major effort to reassess its role and need for resources through the Competitiveness Project. That process is still very much in a developmental stage; however, it has provided preliminary indications that BPA's load growth may not be as great as was predicted in the 1990 and 1992 Resource Programs. BPA has examined the Tenaska Washington II project in light of these tentative conclusions and finds that even if their preliminary projections become reality, the Tenaska Washington II project is still needed and justified. It meets a number of system requirements. Most important among these is to firm non-firm hydroelectric power so that it can be sold at higher value firm power. It also helps with power system stability problems associated with voltage collapse in the Puget Sound area (Puget Sound Area Electric Reliability Plan Feis, 1992).

Figure (Figure S-1 Reginal Map)

Figure (Figure S-2 Site Location)

S.2.2 Purpose

BPA's purpose for this action is to:

- Meet contractual obligations to supply requested, cost-effective electric power to BPA customers, having considered potential environmental impacts and mitigation measures in its decisions;
- Assure consistency with BPA's statutory responsibilities, including the Pacific Northwest Electric Power Planning and Conservation Act (Northwest Power Act), which requires consideration of the Pacific Northwest Power Planning Council's (Council) Conservation and Electric Power Plan and Fish and Wildlife Program; and
- Develop a competitive, long-term resource acquisition program based on experience gained from the pilot acquisition program that led to the Tenaska Washington II proposal.

S.3 BACKGROUND

Guided by the recommendations in BPA's 1990 Resource Program, BPA commenced a pilot resource acquisition process to test various approaches for acquiring a diverse portfolio of cost-effective, reliable, and environmentally sound resources. The Competitive Resource Acquisition Pilot Program is one of several methods that BPA is testing to acquire energy resources. The primary objective of the pilot program is to provide BPA with the ability to systematically solicit, evaluate, and select cost-effective resource proposals that are offered for purchase. A secondary objective is for BPA to assess the benefits and costs of using a competitive process for developing cost-effective new energy supplies.

BPA issued a Request for Proposals in 1991 for 300 aMW of firm energy. In response to this solicitation, BPA received 102 resource proposals totalling 5,209 aMW of generation and 116 aMW of conservation. BPA evaluated the proposals based on system cost, project feasibility (including project location) and environmental criteria and selected three generation projects - the Tenaska Washington II is one - and all cost-effective conservation projects for further consideration and review towards satisfying the 300 aMW target. Each of these projects is being evaluated independently because these projects are not alternatives to one another and they are not connected, cumulative, or similar actions under the National Environmental Policy Act (NEPA).

S.4 ALTERNATIVES INCLUDING THE PROPOSED ACTION

S.4.1 Proposed Action: The purchase by BPA of 240 aMW firm power generated at the Tenaska Washington II project.

The proposed project would have three components: the power plant; an electrical transmission interconnection line connecting the power plant to BPA's existing South Tacoma switching station; and modifications to the South Tacoma switching station converting it to a substation.

The proposed power plant would occupy about half of an approximately 6.4-hectare (16-acre) parcel and would consist of an approximately 1840-square meter (20,000-square foot) structure housing the electricity generators, a cooling tower, electrical switchyards, an oil storage tank, and several other tanks, pumps and connecting piping. The tallest structure on the site would be the exhaust stack which would extend about 30 meters (100 feet) above the ground surface. An artist's sketch of the plant is shown in Figure S-3 and a preliminary plan layout of major equipment and buildings is shown in Figure S-4.

Electricity would be produced using combined cycle technology. The heart of the Tenaska Washington II power plant would be a gas turbine. In a gas turbine, compressed air is mixed with natural gas and burned in combustion chambers. Rapidly expanding exhaust gases rotate a turbine as they exit the combustion chamber. The turbine drives the generator which produces electricity. Because the Tenaska Washington II power plant would use combined cycle technology, hot gases leaving the gas turbine would enter the heat recovery steam generator where much of the waste heat would be used to raise steam. This steam would then be used to rotate another turbine which would drive a second generator and produce more electricity. Cooled exhaust gases would be discharged to the atmosphere through an approximately 30-meter (100-foot) high stack.

The proposed power plant would be able to operate continuously but can be displaced (taken off-line) at BPA's request to help meet its varying operational requirements. A staff of 25 to 30 would work at the site. Fourteen of the staff, responsible for management, administration, engineering and maintenance, would work a regular 40-hour workweek. The remaining staff would be shift workers operating the proposed power plant around-the-clock. There would always be at least two operators at the proposed power plant at any given time.

Electricity generated at the power plant would be sold to BPA for marketing through the regional power grid (see Figure S-5). A new 230-kilovolt (kV) transmission interconnection line would be built to connect the proposed power plant to BPA's South Tacoma switching station which is located about 550 meters (about 1,800 feet) northwest of the power plant site. There are two alternative routes and configurations for the transmission line. One

Figure (Figure S-3 Artist`s sketch...)

Figure (Figure S-4 Plant of Majo...)

Figure (Figure S-5 Power Grid in...)

alternative, preferred by Tenaska, would be installed underground; the other would be installed above ground (see Figure S-6).

At the South Tacoma switching station, BPA would expand and modify existing facilities to accommodate electricity from the Tenaska Washington II power plant. New facilities would include circuit breakers, disconnect switches, control and protective relaying, communications equipment and a control house (see Figure S-7).

S.4.2 No Action

Under the No Action alternative, BPA would not acquire the energy output from the proposed Tenaska Washington II power plant, thereby foregoing the opportunity to assist in hydrofirming, regional voltage support and reduction of BPA's projected energy deficit with this particular project. In that event, it is unlikely that the proposed project would be implemented without a commitment from another party to acquire the energy output.

S.4.3 Other Actions

Since the proposed action would reduce, but not eliminate BPA's need for power, other resources will likely be considered independent of the proposed action and the pilot acquisition program. Other resource types potentially available to meet future loads include the following:

- Conservation (commercial, residential, and industrial)
- Renewables (hydropower, geothermal, wind, and solar)
- Cogeneration
- Combustion turbines
- Nuclear power
- Coal and clean coal

To comparatively evaluate these resource types, BPA has prepared a Resource Programs Environmental Impact Statement (eis). Every two years, BPA develops a resource program that explains how BPA proposes to meet its expected load obligations. The resource program examines alternatives composed of different combination of energy resource types. In developing a resource program, BPA prepares load forecasts jointly with the Council. A range of forecasts are prepared to reflect uncertainties about the future load growth. Next, a range of load resource balances is prepared by comparing the capability of the existing Federal system resources to the range of projected Federal system loads over the next 20 years. Concurrent with the process, BPA and the Council develop new resource supply forecasts to plan acquisitions of cost-effective resources as they are needed to meet growth. Under this approach, resources

Figure (Figure S-6 Plot Plant...)

Figure (Figure S-7 South Tacoma...)

other than the proposed action will be examined and evaluated in the future for their eligibility and ability to satisfy BPA's future needs.

S.5 AFFECTED ENVIRONMENT

The proposed Tenaska Washington II project would be located in the Frederickson Industrial Area of Pierce County. The proposed power plant would be built on a currently undeveloped site that has been used in the past for livestock grazing. The site is a dry, weedy upland area with a small stand of Douglas fir and a number of scattered oak trees. Wildlife habitat is generally degraded as a result of past agricultural use and current surrounding land uses.

The site is zoned for industrial use by Pierce County. Currently, land use in the Frederickson area is mixed, including some low-density residential housing and mobile homes, commercial use, light and heavy manufacturing and open space. A gas-fired power plant similar to the proposed Tenaska Washington II project is located about 600 meters (about 2,000 feet) south of the proposed power plant. To the northeast is a recently completed Boeing aircraft plant. It is expected that more industries will move into the area in the next two decades.

S.6 ENVIRONMENTAL CONSEQUENCES

Potential environmental effects of the proposed Tenaska Washington II project and the No Action alternative were analyzed by resource type (i.e., biology, geology, water quality, etc.). Analysis consisted primarily of comparing potential impacts with Federal, state and local regulations and identifying whether or not these impacts would comply with these regulations. In cases where no standards exist a more qualitative comparison of the with-project and without-project environments was made.

S.6.1 Environmental Impacts of Alternatives Including the Proposed Action

The analysis in BPA's Resource Programs eis indicated that natural gas-fired combustion turbines are a relatively benign energy generation technology from an environmental perspective. Gas-fired combustion turbines are relatively clean-burning in comparison with oil-fired and conventional coal plants. The Tenaska Washington II project includes features that would minimize the emission of air pollutants and the consumption of water.

The proposed project would be consistent with the industrial character of its surroundings. It would occupy an approximately 6.4-hectare (16-acre) parcel in an area with available utilities. Land use at the site would be converted from vacant and undeveloped to industrial. The land use change would be consistent with existing land use plans and policies. Land at the site has only modest wildlife habitat values and little utility for agriculture. No wetlands exist at the site. No state or Federally-listed rare, threatened, or endangered species were observed during field surveys.

The project would lie in an area that is designated as a nonattainment area with respect to ambient air quality standards for carbon monoxide and ozone. Air pollutant emissions from the proposed project include 82.7 metric tons per year (91.2 tons per year) of carbon monoxide and 33.6 metric tons per year (37.0 tons per year) of volatile organic compounds (an ozone precursor). The Puget Sound Air Pollution Control Agency has established significant impact threshold criteria for new air pollutant sources in areas that are out-of-compliance with ambient air quality standards. These criteria are 90.7 metric tons per year (100 tons per year) of carbon monoxide and 36.3 metric tons per year (40.0 tons per year) of volatile organic compounds. The proposed project would also be in compliance with all other applicable air pollutant emission and ambient air quality standards.

Operation of the proposed project would produce noise. The predicted noise level at the nearest residence would be 46 decibels (dBA) compared to an applicable standard of 50 dBA. The maximum predicted noise level at the neighboring property line in an industrial area would be 66 dBA compared to an applicable standard of 70 dBA.

Process, sanitary and cooling system wastewaters averaging about 378,500 liters per day (100,000 gallons per day) would be routed to the Pierce County sewage system. The wastewater stream from the proposed project would be lightly polluted and would not affect Pierce County's ability to meet its wastewater discharge standards.

Water supply needs would be met with the existing available resources from Tacoma Public Utilities (TPU). Water supply to the area would most likely be expanded as needed with the construction of an additional trunk line from a local reservoir and possibly from local wells.

The proposed Tenaska Washington II project already includes many features designed to reduce environmental impacts (see Section 5.14, Project Design Features for Reducing Environmental Impacts).

By incorporating environmental protection features into the project design and operation plan, some impacts would be prevented. Potential environmental impacts from both construction and operation of the Tenaska Washington II project are summarized in Table S-1. No significant or unavoidable adverse environmental impacts associated with the proposed project were identified.

The No Action alternative would have no environmental impacts. Other resource types were analyzed separately in the Resource Programs eis.

S.6.2 Areas of Controversy

No evidence has emerged during the preparation of this eis to suggest that the proposed action is controversial. During scoping, concerns were raised about the potential impacts of the proposed project on groundwater availability in the Frederickson area. The proposed action would have no direct effect on groundwater levels. The water supply would be obtained from the TPU. Depending on the results of a study currently in progress, TPU may choose to develop more wells in the Frederickson area to meet future water demand as the Frederickson Industrial Area develops. However, TPU does not plan to develop new groundwater wells specifically to meet demand imposed by the Tenaska Washington II project. Comments on the Deis indicated that water supply continued to be an area of public concern. Other issues raised during the Deis are disposition of wastewater, groundwater contamination, air quality, and related issues to public health. All of these concerns and mitigation measures as appropriate have been addressed in the Final eis.

S.6.3 Issues to be Resolved

No unresolved environmental issues pertaining to the proposed action have been identified.

S.6.4 Other Considerations

The proposed action would have some short-term impacts during construction. However it would be unlikely to damage the long-term productivity of the environment. Project construction would require the commitment of building materials, such as concrete, steel, and wood, for construction of the proposed generation facility and specific project equipment such as the turbines. Materials which could be re-used or recycled would be salvaged during decommissioning of the power plant. Project construction and operation would also require the use of fossil fuels, electrical energy, water, and other resources over the life of the proposed project. The amounts of these resources to be consumed cannot be accurately determined at this time and are considered irretrievable and irreversibly committed to the proposed project.

The Frederickson Industrial Area, as the name implies, is an area intended to be developed for industrial and manufacturing purposes. As additional industries choose to establish facilities in this area, cumulative environmental impacts will increase in the region. The largest anticipated growth from industry in this area will be from the Boeing expansion which is expected to employ over 11,000 people by the year 2010. In the future, it is expected that traffic and associated congestion problems will increase, biological resources (vegetation, wildlife, wetland, and other possible resources) will diminish, and that air quality and the noise environment will be degraded by increased vehicular traffic and industrial activity. In addition, impacts may occur to visual resources and ground water quality and quantity.

With respect to cumulative impacts on air quality, the emissions from the proposed project would not significantly affect the area's ability to meet air quality standards in the future. The area is only marginally in nonattainment for carbon monoxide and ozone. The Washington Department of Ecology is developing programs to reduce the emissions of nonattainment pollutants and their precursors. These programs focus on vehicular emissions as the dominant source of nonattainment pollutants.

TABLE S-1
SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS

RESOURCE	COMBUSTION TURBINE	TRANSMISSION LINES	SUBSTATION
Geology and soil Soils	Minor increase in soil erosion during construction.	Minor increase in soil erosion during construction.	Minor increase in soil erosion during construction.
Hydrology and Water Quality	Slight increase in runoff volume which would be contained on site.	None.	Slight increase in runoff volume.
Air Quality during	Power plant would emit air pollutants, but at levels in compliance with applicable air quality and visibility standards and air toxic acceptable levels. Emission of greenhouse gases (primarily CO2). Emission of dust and engine exhaust during construction.	Emission of dust and engine exhaust during construction.	Emission of dust and engine exhaust during construction.
Biology vegetation	Removal of some vegetation and already disturbed wildlife habitat at 6.4-hectare (16-acre) site. Aster curtus (a state-sensitive and Federal Candidate 2 plant species) would be transplanted.	Wildlife expected to migrate from disturbed area during construction and return thereafter.	Removal of from less than 0.1 hectares (0.2 acres). Wildlife expected to migrate from disturbed area.
Land Use and Community Character	None. Plant would be sited in area zoned for industrial use.	None.	None. Improvements would take place with an existing switching station.
History and Archaeology	None expected.	None expected.	None expected.
Socioeconomics and Local Services	Project would create 25 to 30 permanent jobs and 225 to 250 construction jobs.	None.	Project would create 10 to 15 construction jobs.
Public Health and Safety	Hazardous substances used during construction and/or operation could be spilled and released to environment. Mitigations and spill contingency plans are proposed by applicant.	Lines, particularly overhead, could pose electric shock hazard and increased electric and magnetic fields.	None.
Traffic and Transportation	Construction workers would generate an estimated 60 truck trips and 215 vehicular trips per day. Operation would generate roughly 30 vehicular trips per day.	Minor.	Minor.
Energy and Utilities	Plant would be serviced by existing utilities. Plant would produce 240 aMW of electrical energy.	None.	None.
Noise increase	Permanent increase in noise from project operation, but in compliance with applicable standards. Temporary noise increase	Temporary noise increase during construction.	Temporary noise during construction.

	during construction.		
Visual Quality	Alteration of visual quality, but appearance would be consistent with industrial surroundings.	Aboveground transmission line, if chosen, would have adverse effect on visual quality, but would be consistent with industrial surroundings.	Minor.