

Chapter 1

Summary

1.1 Introduction

In June 2001, the Washington State Energy Facility Site Evaluation Council (EFSEC or Council) received a Second Revised Application for Site Certification (ASC) from Sumas Energy 2, Inc. (SE2) to construct and operate a 660-megawatt combined-cycle combustion turbine facility, the Sumas Energy 2 Generation Facility (S2GF), in the city of Sumas, Whatcom County, Washington. This Supplemental Environmental Impact Statement (SEIS) discusses the changes made to the proposed project as a result of the Second Revised ASC since the Final Environmental Impact Statement (FEIS) was issued by EFSEC on February 7, 2001. The Washington State Energy Facility Site Evaluation Council (EFSEC) has jurisdiction over the evaluation of major energy facilities such as Wallula Power Project in the State of Washington and the resulting recommendation to the Governor regarding approval or denial of their siting.

The EFSEC State Environmental Policy Act (SEPA) official determined that some of the proposed changes could have a significant adverse environmental impact and that an SEIS would be required. Therefore, this SEIS consists of a description of the changes to the proposed project; a discussion of the affected environment; an evaluation of the potential direct, indirect, and cumulative impacts that result from significant project changes; and an identification of suitable mitigation measures associated with the construction and operation of components (and connected actions) of the proposed project changes that are analyzed in this SEIS.

This SEIS does not reevaluate issues that were analyzed in the FEIS. In evaluating potential impacts from construction and operation of these components and from connected actions, this SEIS (Chapter 3) addresses the following elements of the natural and built environment:

- Air Quality (Greenhouse Gases)
- Groundwater Quality
- Groundwater Quantity
- Low-Frequency Noise
- Wetlands
- Flooding Potential
- Faulting and Seismicity

Other project changes and impacts that were not deemed sufficiently significant to require additional analysis in the limited scope of this SEIS are discussed in Chapter 2.

1.2 Purpose and Need for Project

The following purpose and need discussion is based on the applicant's presentation in the Second Revised ASC. It is followed by a comment related to purpose and need by the lead agency, EFSEC.

Prior to the wholesale restructuring of the power industry, public authorities needed to undertake detailed energy planning to ensure the availability of adequate power supplies, and to avoid construction of unnecessary energy facilities. However, in recent years industry restructuring has resulted in the development of a market-based wholesale power market in the western United States and Canada. This market is expected to encourage the development of efficient power facilities to satisfy increasing power demands and to discourage the development of inefficient and unnecessary facilities. In this market, project developers are expected to move forward with construction of projects only when convinced demand exists for the power the facilities would produce. Likewise, project financing depends on a demonstration of demand and economic benefit.

Demand for power continues to grow in the Pacific Northwest. The 1999 Biennial Energy Report: Challenges and Opportunities for Washington's Energy Future prepared by the Washington State Department of Community, Trade and Economic Development (CTED) reports growing electric power demands in Washington State. The Bonneville Power Administration (BPA) also predicts capacity deficits in the Pacific Northwest during the next 10 years in its 1998 Pacific Northwest Loads and Resources Study: The White Book.

The Washington State Electricity System Study submitted by CTED in December 1998 to the Washington State Legislature states that:

Washington's electric power system is unique. The state relies heavily on hydropower and federally owned generation and transmission facilities. The majority of retail electricity service is provided by consumer-owner utilities, with only about one-third of retail sales accounted for by investor-owned utilities regulated by the Washington Utilities and Transportation Commission (UTC). (p. 1)

The likelihood of supply and capacity shortages in the Northwest in the winter is growing. These shortages may occur under adverse hydropower conditions, due to power demands that exceed the region's combined capability to generate and import power. The prospect of shortfalls is exacerbated by market uncertainty. Utilities may be increasingly reluctant to develop and execute plans to meet future loads reliably when those loads may be served by other power suppliers. (p. 3)

Recent analyses of the Northwest power system loads and resources indicate that in some months, the demand for electricity could exceed the region's current ability to generate and import power to meet regional loads. (p. 2-12)

Without actions to prevent such shortfalls, the likelihood of deficits increases over time. (p. 3-14)

The Pacific Northwest and western U.S. have a need for future power resources. In a highly volatile market, various new energy resources are being proposed to meet this need. However, history has shown that there is not a direct connection between permitted resources and the need for power. For example, recent energy shortages which caused BPA to ask direct service industries to shut down, and to pay farmers to defer consumption of irrigation water to create power and conserve fish, occurred when more than 2,000 megawatts (MW) of energy facilities were fully permitted, with no planned construction.

Nevertheless, there are dozens of sizeable gas-fired power plants being proposed or under construction in the region at the present time. Ranging from 248 MW to well over 1,000 MW, plants are being proposed or are under construction in Hermiston, Oregon; Everett; Grays Harbor County; Goldendale; Wallula; Chehalis; Centralia; Cherry Point; Creston; Boardman, Oregon; and other locations. The combined output potential of all proposed facilities far exceeds any forecast demand. Based on recent history, it is anticipated that market forces will have as much influence on when many of these plants are built as licensing decisions will.

In making its decision to recommend approval or denial of a proposed facility, EFSEC must balance the statutory requirements to provide abundant energy at a reasonable cost with the preservation and protection of the quality of the environment. With the broad interest of the public in mind, EFSEC assesses the appropriateness of locating a facility at the proposed site based on the specific characteristics of the proposal at hand.

1.3 Changes in Project Description

Changes to the project and new information are discussed in this SEIS. The No Action Alternative is discussed in the FEIS and is not repeated here.

1.3.1 Proposed Action

Most of the following components were addressed in the February 2001 FEIS and as a result, will not be reanalyzed in this SEIS. The following brief summary of the proposal is included to help the reader.

The Proposed Action is the construction and operation of a 660-MW combined-cycle combustion turbine electrical generation facility and associated components in Sumas, Whatcom County, Washington (Figure 2-1). The generation plant component of the project would occupy 19.2 acres of a 37-acre site within the industrial area of Sumas, just north of the Sumas Cogeneration Company LP No. 1 Generation Facility (SCCLP) 125-MW power generation facility.

The facilities, equipment, and features to be installed on the generation plant site include (Figure 2-2):

- Two combustion turbines and their associated electrical generators
- Two heat recovery steam generators and their associated 180-foot-high exhaust stacks
- One steam turbine and its associated electrical generator
- One steam condensing system consisting of a dry-cooled condenser, a water-cooled condenser, and a cooling tower
- One substation, consisting of main electrical transformers and their associated switch gear
- A stormwater detention system sized to discharge stormwater at rates equal to or less than the peak discharge rates of the undeveloped site
- Access driveways and parking areas (the construction parking and laydown area is now adjacent to the site)
- Landscaping, including mature tree plantings, along the south, east, and north edge of the generation plant site

In addition to the above generation plant site facilities, equipment, and features, other components making up the project include the following:

- A 4.5-mile-long, 16-inch-diameter pipeline constructed from the Canadian border to the plant site to supply 112 million cubic feet of natural gas per day. The new pipeline would be constructed within the right-of-way (ROW) of an existing natural gas pipeline serving the SCCLP facility to the south. A new ROW would be required for approximately 0.25 mile of the line, the last portion of line extending from the existing power plant north across State Route 9 to the proposed plant (Figure 2-3).
- A 230-kilovolt (kV) U.S./Canadian electrical transmission line extending north from the site approximately 0.5 mile to the U.S./Canada border. The transmission line would then follow the Canadian Pacific Railroad line for approximately 5.3 miles to BC Hydro's Clayburn Station (Figure 2-3). This 5.3-mile section is under the jurisdiction of Canadian regulatory authorities and is not evaluated in this SEIS.
- A process/potable water supply pipeline from the city of Sumas water system to supply a maximum of approximately 802 gallons per minute (gpm) required by the S2GF. Delivery of this water would require that the city upgrade a 1,000-foot portion of an existing city supply line from a 6-inch-diameter to a 10-inch-diameter line, extend the new 10-inch-diameter line to the plant site, construct an intertie between the potable and industrial water main systems, install control valves to balance system flows and pressures between these two systems, and drill one or two additional wells at the city's May Road well field site (Figure 2-3).

- A wastewater discharge pipeline from the plant to the city of Sumas wastewater collection system at the plant site boundary, and then through existing lines for treatment in Canada (under contractual agreement between the city of Sumas and the Joint Abbotsford Mission Environmental System [JAMES] wastewater treatment plant), to accommodate approximately 49,000 gallons per day (gpd) of combined blowdown and domestic wastewater from the S2GF, and a maximum of 80,000 gpd total combined blowdown and domestic wastewater from S2GF and SCCLP (Figure 2-3).

As a result of the Proposed Action, 9.45 acres of wetlands will be filled. To compensate for this fill, 22.56 acres are proposed for mitigation (3.73 acres of created wetlands, 9.03 acres of enhanced farmed and emergent wetlands, 8.8 acres of enhanced and preserved forested/scrub-shrub wetland, and 1.0 acre of upland forest buffer creation).

1.3.2 No Action Alternative

Under the No Action Alternative, the proposed S2GF, natural gas supply pipeline, water supply pipeline, wastewater collection pipeline, and transmission lines would not be built. Utilities would continue to use other or new power sources to meet the needs of their customers.

1.4 Public Involvement Since Issuance of the FEIS

1.4.1 Public Review

In February 2001, EFSEC issued an FEIS for the S2GF. A public meeting and open house were held from 3-9 p.m. at the Nooksack Middle School in Everson, Washington on August 14, 2001.

In September 2001, the Draft SEIS was issued for public comment. The public was invited to submit written comments on the Draft SEIS during a 30-day public comment period as required by Washington Administration Code (WAC) 197-11-502(5)(b). The public comment period concluded on October 19, 2001. In addition, the public had the opportunity to comment on the Draft SEIS at a public hearing conducted on October 16, 2001 in Everson, Washington.

Appendix B of this Final SEIS includes copies of written comments received by the October 19 deadline and a copy of the transcript of testimony received at the October 16, 2001 public hearing. Responses to public comments are also provided in Appendix B.

EFSEC also held formal adjudicative hearings in November 2001 on the changes to the proposed project to allow the applicant and other interveners in the case to present information to the Council. Additional public comment was also solicited through formal public witness testimony sessions scheduled in parallel with the adjudicative hearings.

Further evidence relevant to environmental impacts or mitigation presented to the Council through these proceedings has been incorporated into the Final SEIS. The Council will consider the Final SEIS in its deliberations.

1.4.2 Role of EFSEC

EFSEC is the single nonfederal authority for reviewing applications for licensing of major energy facilities in the state of Washington and for making a siting recommendation to the Governor of Washington State. Federal agency approvals are also needed. If a project is approved by the Governor, EFSEC specifies the conditions of construction and operation, issues a Site Certification Agreement (SCA) in lieu of any other individual state or local agency authority, and manages the environmental and safety oversight program of project operations, subsequent facility decommissioning, and site restoration. As part of EFSEC's permitting process, SE2 submitted an ASC in January 1999, a Revised ASC on January 10, 2000, and a Second Revised ASC on June 29, 2001. For informational purposes, Table 1-1 lists the major state and local permit requirements preempted by EFSEC, as well as federal requirements.

Table 1-1. Overview of Permit, Approval, and Consultation Requirements for the S2GF Project

Agency	Permit/Authority
Federal Government	
Advisory Council for Historic Preservation	Consultation under Section 106/National Historic Preservation Act
U.S. Army Corps of Engineers (Corps)	Cooperating agency
	Section 404(b)(1) individual permit/Clean Water Act
	Section 10 permit/Rivers and Harbors Act of 1899
	Department of Army dredge and fill permit(s)
Department of Energy, Office of Fossil Energy (DOE/OFE)	National Environmental Policy Act (NEPA) lead agency
	Historic preservation/landmark review
	Presidential permit for power transmission line border crossing
	Power export authorization
	Self certification re: alternative fuel capability
U.S. Department of Transportation, Office of Pipeline Safety	Natural gas import authorization
	Gas pipeline safety approval

Agency	Permit/Authority
Department of Energy, Federal Energy Regulatory Commission (FERC)	Presidential permit for gas pipeline border crossing facility
U.S. Section, International Boundary Commission	Construction authorization for international boundary
State Government (EFSEC has single permit authority over all state and local permits)	
State of Washington, Energy Facilities Site Evaluation Council (EFSEC)	Lead agency and Site Certification Agreement EFSEC's responsibilities derive from the Revised Code of Washington (RCW) 80.50, and include siting large natural gas and oil pipelines, electric power plants above 350 MW and their dedicated transmission lines, new oil refineries or large expansions of existing facilities, and underground natural gas storage fields. EFSEC has been delegated authority by the U.S. Environmental Protection Agency to issue permits under the Federal Water Pollution Control Act and the Federal Clean Air Act for facilities under its jurisdiction. No other state or local permits apply.
	Section 309/ Clean Air Act
	National Pollutant Discharge Elimination System (NPDES) permits
Northwest Air Pollution Authority (NWAPA)	Notice of construction approval (NOC)
	Prevention of Significant Deterioration (PSD) permit
	Air operating permit
	Acid rain permit
Washington Department of Fish and Wildlife (WDFW)	Hydraulic Project Approval (HPA)
Department of Ecology, Shorelands and Wetlands Program	Water quality certification
	Coastal zone management program consistency certification
Department of Ecology, Water Quality Program	NPDES and state waste discharge baseline general permit for stormwater discharge associated with construction and industrial activities
	Industrial waste discharge permit for wastewater discharges to Sumas sewer system
Department of Ecology, Water Resources Program	Water right permitting and review
Department of Transportation	Franchise/encroachment permit (boring gas pipeline)
Washington Utilities and Transportation Commission	Natural gas pipeline construction approval
Department of Labor & Industries	Electrical construction permit

Agency	Permit/Authority
Local Government– Whatcom County (Gas Pipeline Only)	
Whatcom County Engineer	Accommodation of utilities on ROW and utility construction approval (ROW/easement)
	Road approach construction permit
Whatcom County Transportation Services	Encroachment permit
Whatcom County Building Official	Building permit
Whatcom County Planning Department	Critical areas ordinance
Local Government– City of Sumas	
City of Sumas	Comprehensive land use plan and zoning compliance
	Compliance with city of Sumas wetland protection ordinance
	Shoreline substantial development permit
	Building permits
	Certificate of water and sewer availability
City of Sumas Fire Marshall	Fire marshal permit
Sumas City Utilities Superintendent	Flood risk zone permit and/or flood hazard development permit
City of Sumas Police Department	Compliance with noise regulations

1.5 Significant Areas of Controversy or Uncertainty and Issues to be Resolved

This SEIS process responds to the issues that were not resolved in the FEIS and/or were raised in the Second Revised ASC. It is the intent of this document to resolve all issues either through analysis and conclusion, or through additional mitigation. These issues include: air quality (greenhouse gases); groundwater quality; groundwater quantity; low-frequency noise; wetlands; flooding potential; and faulting and seismicity.

1.6 Summary of Potential Impacts, Mitigation Measures, and Significant Unavoidable Adverse Impacts

Potential environmental impacts resulting from changes to the Proposed Action are described in detail in Chapter 3 of this SEIS.

Measures to reduce adverse environmental impacts inherent in project design were discussed in the FEIS (Section 2.4). Operational best management practices (BMPs) and mitigation measures are presented within each section of Chapter 3 (air quality;

groundwater quality; groundwater quantity; low-frequency noise; wetlands; flooding potential; and faulting and seismicity). Table 1-2 summarizes potential impacts and mitigation measures as a result of the changes to the Proposed Action.

Table 1-2. Summary of Potential Impacts Resulting from Changes to the S2GF Project and Mitigation

Potential Impact	Mitigation
Air Quality – Greenhouse Gas Mitigation	
<p><i>Operation</i></p> <ul style="list-style-type: none"> ▪ S2GF would emit approximately 2.4 million tons per year of CO₂ (greenhouse gases) that contribute to global warming. 	<ul style="list-style-type: none"> ▪ Applicant proposes to participate in the “monetary path” offset payment program totaling as much as \$8.04 million, depending upon actual emissions. SE2’s fee payment would provide funds to offset an estimated 2-5% of greenhouse gas emitted by the plant over a 30-year operating period. (Previously, SE2 proposed a voluntary investment of \$100,000 per year in greenhouse gas research, offsets, or management projects for 10 years.)
Groundwater Quality	
<p><i>Operation</i></p> <ul style="list-style-type: none"> ▪ The increase in pumping from the municipal wells potentially could result in drawing nitrate-contaminated water from the Sumas-Abbotsford aquifer into the city wells at higher concentrations than are currently present. This could compromise the quality of the potable water available to the city of Sumas, resulting in a significant adverse impact on the potable water supply. 	<ul style="list-style-type: none"> ▪ Through its Water System Comprehensive Plan, the city of Sumas has developed contingency mitigation measures that it would employ in the event that one or more of the wells in the Municipal well field were to become unusable for potable water. ▪ SE2 has agreed to provide the city of Sumas with \$25,000 per year for every year of operation to fund aquifer protection efforts and water rights acquisition. The applicant has also agreed to reimburse the city for the purchase and installation of a treatment system to remove nitrates from the potable water supply at any time during project operation if nitrate levels exceed any applicable federal, state, or local water quality criteria.

Potential Impact	Mitigation
Groundwater Quantity	
<p>Operation</p> <ul style="list-style-type: none"> ▪ S2GF would extract a maximum of 802 gpm, with a total annual usage of 1,025 acre-feet, which would no longer be available for wells and surface water discharge. Because of the current limitations of the city of Sumas water rights, this use would preclude other new commercial, municipal, or industrial water users from being able to obtain large quantities of water from the city, unless the city was able to obtain an additional source of water. 	<ul style="list-style-type: none"> ▪ At least 12 months prior to operation, SE2 would install monitoring wells for the city of Sumas municipal and May Road well fields and conduct a controlled aquifer test to better evaluate the zone of potential drawdown in nearby wells. ▪ At least 12 months prior to operation, SE2 would perform a baseline survey of all wells within the potential zone of interference, including those in British Columbia. ▪ SE2 would provide an interim report to EFSEC at the end of 60 days, which would evaluate any short-term impacts to wells. At the end of the first operational year, SE2 would submit a report of monitoring results to EFSEC. If a well is identified as adversely affected by the city's increased water withdrawals, SE2 would submit for Council approval a mitigation plan to replace lost well production capacity and prevent further loss. SE2 would immediately evaluate and mitigate any serious adverse effects on private wells. ▪ After the initial year of operation, monitoring would be performed semi-annually except for any areas of concern noted in the initial annual summary would be monitored more frequently. ▪ The city of Sumas anticipates adding one or two additional wells within the May Road well field to maximize the city's water right.

Potential Impact	Mitigation
Noise	
<p>Operation</p> <ul style="list-style-type: none"> ▪ The S2GF includes many large mechanical devices that if not properly designed, could cause excessive noise at nearby dwellings. Potential noise impacts could include broad-band noise, low-frequency noise, and tones. SE2 has not initiated detailed design of the plant, so it cannot specify the engineering measures that will be used to minimize noise impacts. 	<ul style="list-style-type: none"> ▪ The SCA would specify allowable noise limits for low-frequency noise and tones. ▪ The S2GF would include design features to reduce low-frequency noise and tones. The use of the heat recovery steam generator (HRSG) downstream of the combustion turbine serves as a silencer for low-frequency noise that might otherwise be associated with a turbine used in a single-cycle configuration. ▪ SE2 would monitor sound levels before construction and after operation of the S2GF, including low-frequency sound and tones. ▪ Post operational noise measurements would be completed within 2 months of startup. If monitoring indicates that the plant is not in compliance, SE2 would investigate the source of the noise and immediately implement noise mitigation.
Wetlands	
<p>Construction</p> <ul style="list-style-type: none"> ▪ Wetland impacts include 9.45 acres of permanent fill, including farmed wetland pasture (FWP), prior converted cropland (PCC), and a wetland ditch. ▪ Construction of the generation plant would result in a reduction of the on-site wetlands' ability to retain stormwater and associated pollutants. 	<ul style="list-style-type: none"> ▪ Applicant proposes 22.56 acres for mitigation: 3.73 acres of created wetlands, 9.03 acres of enhanced farmed and emergent wetlands, 8.8 acres of enhanced and preserved forested/scrub-shrub wetland, and 1.0 acre of upland forest buffer creation. ▪ A 10-year monitoring period would be implemented. ▪ A two-celled stormwater detention facility would be constructed to capture the proposed site's runoff and provide water quality treatment before being discharged into the mitigation wetlands. ▪ Hydrologic functions of the wetland ditch on the plant site would be maintained by relocating the ditch as a wetland swale in the west and east mitigation sites. ▪ Additional mitigation requirements are discussed in this SEIS for 401 water quality certification, of which a technical memorandum is presented in Appendix A.

Potential Impact	Mitigation
Flooding Potential	
<p>Construction</p> <ul style="list-style-type: none"> ▪ Raising the generation plant site grade has a potential to raise the 100-year floodplain elevation on adjacent properties. If completely built out, the entire industrial area may increase flood levels up to 1 foot. The proposed S2GF would contribute incrementally to this increase. 	<ul style="list-style-type: none"> ▪ SE2 proposes to perform unsteady-state modeling of the site for the 10-, 25-, 50-, and 100-year flood events, and evaluate potential adverse off-site impacts. This modeling should provide more reliable results than have been obtained to date on flood routing and potential adverse impacts associated with the project, and would be used to evaluate potential mitigation measures if appropriate. ▪ The Second Revised ASC also indicates that at least 6 months prior to construction, SE2 would submit for Council approval a report of the unsteady-state modeling results and recommendations for reasonable mitigation of any adverse off-site flooding impacts. SE2 has indicated that if no increase in floodplain elevation is allowed from development of this site, mitigation measures might include excavating nearby floodplain areas not directly associated with surface water bodies to increase the hydraulic capacity of the remaining floodplain area. No impact analysis or mitigation has been conducted or proposed to address land that would be disturbed or excavated to provide additional hydraulic capacity.

Potential Impact	Mitigation
Seismicity	
<p>Construction</p> <ul style="list-style-type: none"> ▪ Preliminary results suggest that young faults capable of generating earthquakes may bound the Sumas River Valley a short distance from the project site. ▪ A distant great earthquake or a local moderate to large earthquake could have a significant impact on the project because of the potential for strong ground motions to damage the facility or pipeline. ▪ Although only limited subsurface investigations have been performed at the site, it is likely that earthquake-induced liquefaction and associated lateral spreading and ground failures constitute a significant potential hazard at the site. 	<ul style="list-style-type: none"> ▪ SE2 has committed to performing additional geologic and seismic analyses prior to construction and to using the results of those analyses in the final design of the facility. ▪ Although recent studies have inferred seismic activity along two postulated nearby faults, the inferred surface traces of these faults do not underlie any of the proposed project facilities. Moreover, the presence of the closer of these two faults is uncertain, and there is no known surface rupture along either fault. ▪ A detailed geotechnical investigation would be conducted prior to final design. ▪ Prior to final design, SE2 would perform a probabilistic seismic hazard analysis (PSHA) based on historical seismicity and site-specific geologic conditions. ▪ As part of the final design, SE2 would develop site-specific seismic design criteria for the S2GF for foundation and major equipment design based on the results of the geotechnical investigation, the fault study, and the PSHA. At a minimum, the design criteria for all earthquake-sensitive structures associated with the facility would comply with Seismic Zone 3 standards of the Uniform Building Code (UBC) or other national or state of Washington seismic design standards that supercede the UBC standards. ▪ Based on the results of a detailed geotechnical investigation and the ground motion estimates developed from the PSHA, site-specific design criteria would be developed prior to final design to address the risk of liquefaction.