

Bonneville Power Administration Resource Contingency Program
Environmental Impact Statement

Supplement Analysis for the Chehalis Generation Facility

DOE/EIS-0230/SA-02

May 2001

1.0 Introduction

In November 1995, Bonneville Power Administration (BPA) completed a Final Environmental Impact Statement (EIS) on the Chehalis Generation Facility (CGF), one of three option energy projects in BPA's Resource Contingency Program (RCP). The RCP EIS described the RCP as a program that was designed to complete environmental review and licensing for several combustion turbines in advance of actual needs, so that BPA or another entity could more quickly acquire energy to meet future demands. The RCP EIS evaluated the environmental effects of constructing and operating two natural-gas-fired combined-cycle generating units, each with one combustion turbine and one steam turbine at the Chehalis site, and the effects of interconnecting the project to BPA's adjacent Paul/Allston 500-kilovolt (kV) No. 1 Line, at which point existing transmission facilities would be used to wheel the power to other delivery points. A Record of Decision (ROD) on the RCP EIS was not issued at that time as a decision to acquire the output of the projects was to be made later if/when BPA needed additional energy and thus chose to exercise its option.

Since the completion of the RCP EIS, the manner in which BPA makes decisions has changed. The Federal Energy Regulatory Commission (FERC) issued Order Nos. 888 and 889, requiring power marketers within FERC's jurisdiction to administratively separate their power marketing and transmission functions and to provide open access to their transmission systems. As a non-jurisdictional utility, BPA has voluntarily complied with the FERC orders by separating its power and transmission business lines. The Power Business Line (PBL) and the Transmission Business Line (TBL) now make independent decisions on power and transmission issues pursuant to BPA's Standards of Conduct filed with FERC (Docket No. NJ97-7-000). The decision on whether or not to acquire the output of CGF is now a PBL decision. The decision to integrate the output of CGF and deliver the energy over BPA's transmission system is now a TBL decision. BPA's environmental analysis staff is administratively separated from both the TBL and PBL and is a shared resource. BPA's environmental staff works separately with each of BPA's business lines and adheres to the above-mentioned standards of conduct in helping the business lines comply with their National Environmental Policy Act (NEPA) obligations. However, BPA's environmental staff is kept abreast of both PBL's and TBL's projects, in part to ensure BPA as a whole complies with NEPA, such as where the independent actions of the business lines could result in cumulative impacts.

Pursuant to BPA's Open Access Transmission Tariff, on June 9, 2000, Chehalis Power Generation, L.P. (Chehalis Power) came to BPA with a good-faith request for long-term firm transmission service to integrate the 520-megawatt (MW) output of the proposed CGF gas-fired power plant into the Federal Columbia River Transmission System (FCRTS). In complying with the tariff, BPA completed system impact and facilities studies, and now BPA's TBL must decide whether to provide transmission service for the CGF. The TBL plans to issue a ROD on the transmission request after completion of this supplement analysis and the determination of whether a supplemental EIS is needed. If a supplemental EIS is needed, the ROD would follow the supplemental EIS.

When the PBL is ready to make a decision whether to acquire any power generated by CGF, it will issue a separate ROD.

Since the completion of the RCP EIS in November 1995, some changes have occurred in the project proposal. These include: 1) a change in the cooling system preference from a water-cooled to an air-cooled system, 2) increased generating capacity of the plant due to performance improvements and efficiencies of the combustion turbines, 3) an operational change in the project to operate as a "merchant plant," and 4) a reduction in mass emission rates of oxides of nitrogen (NOx). In accordance with the procedural requirements of NEPA, BPA shall prepare a supplemental EIS if there are substantial changes to the proposal or significant new circumstances or information relevant to environmental concerns. Pursuant to 10 Code of Federal Regulations (C.F.R.) §1021.314(c) and 40 C.F.R. §1502.9(c)(1), this supplement analysis has been prepared to determine if a supplemental EIS is required for the proposed project.

2.0 Description of the Original Project (RCP EIS, November 1995)

The CGF would be located on a 33-acre parcel in the Chehalis Industrial Park. The industrial park is approximately 3.2 miles south of the Chehalis city limits in an unincorporated area of Lewis County, Washington. The site is accessed via Bishop Road, and properties in the vicinity are mostly agricultural and residential. Within the industrial park there are industrial firms, such as manufacturing, distribution centers, and food processing plants.

The project would consist of two natural-gas-fired combined-cycle combustion turbines that together could supply up to 460 average MW of power. The project plans are to connect with an existing Northwest Pipeline Corporation underground gas pipeline 8 miles south of the facility. In case of an interruption of natural gas supply, the plant design includes a backup fuel supply of No. 2 fuel oil. Fuel oil would be delivered by truck and stored in one 1.6-million-gallon storage tank for each combustion turbine unit. This would supply enough fuel for approximately 5 days of operation.

The project would require approximately 1700 feet of 500-kV double-circuit overhead transmission line and a new substation on the facility site to interconnect the project to BPA's Paul/Allston 500-kV No. 1 Line.

The project originally proposed using one of two alternative cooling systems, a water-cooled system and an air-cooled system, with the water-cooled system as the preferred alternative. Two water sources were proposed to supply water to the facility—reclaimed water from the City of Chehalis wastewater treatment plant effluent, and City of Chehalis municipal water from the Chehalis River.

3.0 Changes Since the RCP EIS

The BPA Business Plan EIS (BP EIS) (Department of Energy [DOE] DOE/EIS-0183) and ROD were completed in late 1995. The BP EIS provides a cumulative environmental analysis of BPA's and the region's electric resources operation and development. Since the BP EIS analysis was regionwide, it established a process to conduct additional analyses that would give additional clarifying environmental information when specific sites were identified. This supplement analysis provides this clarifying information for the CGF and allows the Administrator to prepare a tiered ROD to the BP EIS ROD.

The following describes and analyzes changes to CGF since the RCP EIS and BP EIS.

3.1 Cooling System Preference

Since the completion of the RCP EIS, Chehalis Power has decided to change the preference of cooling systems from the use of a water-cooled system to an air-cooled system. This change reduces the amount of water needed for the project from 3 million gallons/day to 192,000 gallons/day.

3.2 Generation Plant Output

In the RCP EIS, the proposed CGF project was described as capable of producing an average of 460 MW. However, since then, the manufacturer of the turbines that CGF proposes to use has revised the nominal capacity ratings. These revisions are based upon continued improvement in the turbine performance, as well as on additional data from turbines that others have purchased and installed. The turbines are now expected to produce an average of 520 MW. This represents approximately a 12-percent increase in output. The improved efficiency of the turbines consumes less gas per kilowatt-hour of power generated and decreases carbon dioxide (CO₂) emissions per kilowatt-hour.

The transmission facilities, as proposed, are capable of integrating the increased generation. However, because of the increased generation capacity of CGF, there would be an increase in magnetic fields by a magnitude of approximately 12 percent. For a full discussion of magnetic fields, refer to Sections 3.11.2 and 4.11.3 in the RCP EIS.

3.3 Operational Change

In the RCP EIS, the output of the CGF was to be acquired by BPA or another entity on a long-term contract. In keeping with current changes in the power industry, Chehalis Power is now proposing that CGF be operated as a "merchant plant," which means that

the power output would be available for sale on a daily basis. Under this scenario, the power purchasers may change frequently and the terms of power sales agreements are likely to be for much less than 5 years.

3.4 Air Quality

The RCP EIS discussed the proposed emissions and resulting ambient concentrations due to the use of either Advanced Dry Low NO_x (ADLN) combustors or dry low NO_x burners with Selective Catalytic Reduction (SCR). The developers are now proposing ADLN with SCR. This change in controls will lower the NO_x emissions from 795 tons/year as projected in the RCP EIS to 241 tons/year (70-percent reduction when firing with natural gas, from 9.9 parts/million [ppm] to 3 ppm). The volatile organic compounds (VOC), particulate matter (PM), sulfur dioxide, (SO₂) and carbon monoxide (CO) emissions will remain the same as those discussed in the RCP EIS.

3.5 Separation of Preferred Alternative into Two Subalternatives

In the RCP EIS (Section 1.2), BPA's preferred alternative was stated as “. . . the acquisition of power from the two units optioned at Chehalis . . . (only if there is a need for power at a future date), or wheeling of power by BPA if another party acquires the energy output.”

Both the option of purchasing the power output from the project and the integration of the generation project were intertwined in this alternative. Because of BPA's new corporate structure (described in Section 1.0 above), this alternative has been broken into two subalternatives which may be accepted or rejected in separate RODs. The leading subalternative, integration of the project, enables CGF power to travel to the FCRTS grid after the construction of the generating facility. The second subalternative, the purchase of the Chehalis power by PBL, would be contingent upon TBL's decision to construct the transmission facilities, but this option would be exercised independently of TBL's decision.

4.0 Environmental Considerations

4.1 Cooling System Preference

In response to the continuing concern over the use of surface water and the use of reclaimed water that would otherwise discharge into the Chehalis River, Chehalis Power has decided to change the cooling system preference from a water-cooled to an air-cooled system. This reduces project water needs by over 90 percent. This preference change would eliminate the use of biocides and other chemicals to treat the cooling water, and would also eliminate the vapor plume from the cooling towers. The construction of the reclaimed waste water supply and return pipelines from the City of Chehalis municipal system to the project site would no longer be needed, and associated construction disturbance to both the environment and landowners would be avoided. These changes would, therefore, reduce the potential impacts of CGF on aquatic resources from those analyzed in the RCP EIS.

4.2 Generation Plant Output

The 12-percent increased generation capacity from continued improvements in the turbine performance will not cause environmental impacts beyond those analyzed in the RCP EIS. The RCP EIS examined predicted average and maximum project emissions, and the minor predicted increased emissions due to increased natural gas consumption falls within this range. The improved efficiency of the turbines consumes less gas per kilowatt-hour of power generated and decreases CO₂ emissions per kilowatt-hour.

4.3 Operational Change

The change in operation to that of a merchant plant is not expected to cause any environmental impacts beyond those analyzed in the RCP EIS. Since power purchasers could change frequently, and purchase agreements could be for shorter periods, the plant could possibly be operating less than originally planned, thus reducing environmental impacts.

4.4 Air Quality

Ambient Air Quality

Ambient concentrations of nitrogen dioxide (NO₂), SO₂, and PM smaller than 10 micrometers (um) in diameter (PM₁₀) were monitored by the project developer from April 1994 to March 1995. All measurements were below relevant air quality standards. No known ambient monitoring has occurred in the project area since 1995. However, ambient concentrations of these pollutants are expected to drop in the near future because Transalta is installing sulfur scrubbers and low NO_x burners at the nearby Centralia coal-fired power plant. These controls will lower the coal plant's sulfur emissions by 90 percent and nitrogen emissions by 50 percent from those projected in the RCP EIS. The project area remains an attainment area for criteria pollutants.

Nitrogen Deposition

The growth of nitrogen emissions in the Pacific Northwest is now considered a major issue by the Federal Land Managers (FLM). It has replaced sulfur as their major pollutant of concern for adverse effects from deposition in Class I areas. The RCP EIS states that injury from nitrogen deposition is not expected if NO₂ deposition is less than 5 kilograms/hectare/year (11 pounds/acre/year) (Section 4.3.3). Recent concern over nitrogen deposition has resulted in FLM setting a significance criteria for nitrogen deposition for new Prevention of Significant Deterioration Program (PSD) sources at 0.005 kilogram/hectare/year (0.011 pounds/acre/year) (BPA Cumulative Air Impact Study Protocol, 2001). The RCP EIS states that the maximum nitrogen deposition from the project, emitting 9.9 ppm NO_x, would be 0.63 kilogram/hectare/year. Under the current proposal, nitrogen emissions would be one-third of levels projected in the RCP EIS.

When the RCP EIS was written, the best available pollutant deposition flux model was used (ISCT2DFT). This model does not consider pollutant chemistry and thus over-estimates conditions beyond 50 kilometers. Because this model was used, the RCP EIS estimate of nitrogen deposition is likely to be very conservative. Since 1995, a new

model has been developed which considers atmospheric chemistry and provides more realistic estimates of wet and dry nitrogen/sulfur deposition (CALPUFF). Because ISCT2DFT generates conservative estimates, and nitrogen emissions have dropped from the proposed project, actual deposition will likely be less than that predicted in the RCP EIS.

Visibility

Visibility of the project's plume in the RCP EIS was analyzed using VISCREEN and uncontrolled emissions. Even using these conservative assumptions, the model results indicated compliance with visibility screening criteria. The use of SCR and an oxidation catalyst will reduce the already insignificant impacts of plume visibility.

Carbon Dioxide Emissions

Increased gas use will increase the facilities' net CO₂ emissions by 8 percent from the proposed 1995 levels. The net CO₂ increase brings the CO₂ emissions up from 1.8 million tons/year to 1.944 million tons/year. Chehalis Power has agreed to prepare a CO₂ mitigation plan for this 8-percent increase in CO₂ by April 13, 2002.

The increase in gas use and CO₂ emissions is also partially offset by a decrease in the plant's heat rate (from 7,359 British Thermal Units [BTUs]/kilowatt-hour to 7,154 BTUs/kilowatt-hour). Decreasing the heat rate will result in less gas being used to generate each megawatt than originally assumed in the RCP EIS. A lower heat rate will also decrease CO₂ emissions per megawatt.

Emissions from Dry Cooling

Both wet and dry cooling were discussed in the RCP EIS. Wet cooling was the preferred alternative. The project developers have since reversed their preference and have chosen dry cooling over wet cooling. The use of dry cooling eliminates cooling tower emissions and has no effect on SO₂ or NO₂ emissions. The RCP EIS stated that the compressors used in the dry cooling system would increase the ambient concentrations of CO and PM₁₀ over wet cooling. Dry cooling will increase ambient CO by 10 micrograms (ug)/cubic meter (1-hour maximum) and PM₁₀ by 1.3 ug/cubic meter (24-hour maximum) (RCP EIS, Section 4.3.1). These estimates are still within the ranges evaluated in the RCP EIS.

Criteria Pollutant Emissions

The RCP EIS discussed the proposed emissions and resulting ambient concentrations due to the use of either ADLN combustors or dry low NO_x burners with SCR. Chehalis Power, Incorporated, has agreed to install SCR in addition to ADLN as per an Administrative Order on Consent, signed by Region 10 of the Environmental Protection Agency on March 22, 2001. This change in controls will lower the NO_x emissions from 795 tons/year to 241 tons/year (70-percent reduction when firing with natural gas, from 9.9 ppm to 3 ppm). The VOC, PM, SO₂, and CO emissions will remain the same as those discussed in the RCP EIS. The new NO_x emission rate will reduce the project's predicted impacts on ambient air quality from those projected in the RCP EIS.

Toxic Air Pollutants

Ammonia emitted by the SCR was included in the analyses of the alternatives in the RCP EIS. The ammonia emissions described in the recent Site Certificate Agreement (April 13, 2001) remain the same as those described in the RCP EIS (10 ppm ammonia slip). All other toxic air pollutants remain the same.

Cumulative Effects to Air Quality

The RCP EIS discussed project exceedences of the PSD Significant Impact Levels (SILs) for NO₂ and SO₂ due to permitted diesel use (720 hours/year). No exceedences were predicted if the developers limited operations to natural gas. When PSD SILs are exceeded, competing source modeling is typically required (PSD cumulative impact analysis). In 1995, the Chehalis Power project was the first PSD increment-consuming source in the area. Because there were no other competing sources, PSD competing source analysis was not required (under the Clean Air Act) and not discussed in the RCP EIS. PSD rules do not require sources to reevaluate their impacts when they extend PSD permits. The rules only require PSD sources to reevaluate Best Available Control Technology when they extend PSD permits. Therefore, when the project's PSD permit was extended (August 1998), competing source modeling was not required and not conducted.

The RCP EIS generically discussed cumulative air quality impacts (Section 4.3.7). Future development was expected to occur in the industrial park, but specifics were not known. It was expected that significant new sources would be required to evaluate emissions from existing sources, including the CGF. Additionally, the BP EIS anticipated the development of new combustion turbines in the region and evaluated the environmental impacts, including cumulative impacts, associated with such development (BP EIS Section 4.4.3, and particularly Section 4.4.3.8).

Since 1995, there have been no substantial air emission increases in the area. There have been no new major sources, and only one new permitted source in the project area—the rebuilt Hardel Plywood Plant. The plywood plant's emissions do not exceed PSD SILs and the facility was not required to conduct a PSD cumulative impact analysis. The remaining existing major sources in the project area are listed in the RCP EIS (Table 3.3.1). As mentioned above, emissions from the coal plant will be less than they were in 1995.

While CGF has been thoroughly examined and under consideration for almost 6 years, three new resources have been proposed to be constructed in this area—Fredrickson, Satsop, and Transalta. However, prior to making a decision on integrating these newly proposed resources, BPA has committed to preparing a regional modeling study to assess the potential air quality impacts from newly proposed power projects within the BPA service area.

Further, the project has offered to mitigate for the 8-percent increase in CO₂ emissions from that predicted in 1995.

4.5 Separation of Preferred Alternative into Two Subalternatives

The separation of the preferred alternative into two separate subalternatives does not create any new environmental impacts. The RCP EIS assumed that both actions would be carried out. If the project is integrated into BPA's transmission system, but BPA decides not to purchase any output from CGF, CGF will simply market the power produced to someone else. The RCP EIS took into consideration that CGF might sell power to someone other than BPA in analyzing the environmental impacts of the project. If BPA decides not to integrate the project to enable CGF to connect to the FCRTS, then CGF cannot build the generating plant and no environmental effects will occur. This division of alternatives for purposes of decision-making will create no additional environmental impacts.

5.0 Determination

The proposed CGF project changes described above do not exceed the projected impacts originally analyzed in the RCP EIS. In some circumstances, changes in the CGF reduce projected impacts from those analyzed in the RCP EIS. BPA determines that none of the proposed changes and their corresponding environmental effects present significant new information or circumstances relevant to environmental concerns. Preparation of a supplemental EIS is therefore not required.

/s/ Thomas C. McKinney 5/17/2001

Thomas C. McKinney
NEPA Compliance Officer
Bonneville Power Administration