

5.12 NOISE

This section addresses the noise impacts associated with the proposed PEF Expansion. The environmental consequences of developing the PEF Expansion are also discussed, along with the Applicant's proposal to apply the applicable Conditions of Certification from the existing PEF to the PEF Expansion.

The PEF Expansion consists of a 160 MW natural gas-fired, simple cycle. The additional Expansion area will comprise of approximately two acres, located entirely within the existing PEF 31-acre site boundary. The PEF Expansion requires no modification to the existing PEF offsite linear facilities (e.g., electric transmission line, fuel gas supply line, or water supply line). The PEF Expansion will use the existing PEF administration and control, warehouse and shop, and water treatment buildings. Site access and onsite roadways are common with the existing PEF. Figure 3.1-1 of this application depicts the new facilities required for the PEF Expansion project within the footprint of the existing PEF.

5.12.1 Affected Environment

The affected environment for the PEF Expansion is generally as described in 99-AFC-7, as amended. The Noise Section 5.12 of 99-AFC-7 is included for reference as part of Attachment K of this application.

5.12.1.1 Noise Prediction Modeling of Operational Noise

The PEF Expansion design, including a complete listing of major plant equipment and associated noise levels, was provided by the project engineer as the basis for this noise impact evaluation. Essentially, the PEF Expansion adds one simple cycle combustion turbine and associated support equipment. The equipment list includes the total number of pieces of equipment, including redundant equipment that would normally not be in service during standard operating conditions. Because the redundant items were not specifically identified, all listed pieces of equipment were included as potential noise sources for the impact calculations. The PEF Expansion equipment currently planned to be used on the site was determined from Table 3.4.1-1 of this application. The sound pressure levels (SPL) for specific pieces of equipment are presented in Section 5.12, Table 5.12-4 of 99-AFC-7 included for reference as Attachment K of this application. Multiples of the same equipment type were calculated separately and then added together to estimate the total sound pressure for the PEF Expansion equipment with substantial noise emissions. The equipment noise sources were then rank-ordered and added together to derive a composite total SPL for all combined equipment at a reference distance of 400 feet.

The predicted noise level at 400 feet was adjusted for distance attenuation at the nearest noise-sensitive receptor using the following formula:

$$\text{SPL, dBA} = \text{Reference SPL} - 20 \log r_{(\text{reference})}/r_{(\text{receptor})},$$

where r is in feet.

Additional propagation losses affecting the sound level due to air absorption, average meteorological conditions and ground absorption were conservatively considered and subtracted based upon recognized standards. Barrier effects of existing structures between the plant site and receiver locations were not included in the predictions. The shielding effects of the existing PEF equipment were also not included in the predictions. This makes the predictions conservative for far-field noise impact levels. The noise prediction calculations yield a noise contribution from the PEF Expansion project of less than 20 dBA at either of the nearest noise-sensitive areas. Specifically, the equipment associated with the PEF Expansion project is predicted to produce a noise level of approximately 17 dBA at the nearest noise-sensitive land use, approximately 4.4 miles from the project site. Because power plant noise is considered to be continuous, the calculated noise level represents the L_{90} , L_{50} , and L_{eq} . The Community Noise Equivalent Level (CNEL) from the PEF Expansion would be approximately 24 dBA at the nearest noise-sensitive land use. When added (on a logarithmic basis) to the equipment noise levels predicted from the existing PEF, the resultant increase in total PEF noise levels, as a result of the proposed PEF Expansion, is estimated to be 0.3 dBA at the nearest noise-sensitive land use.

5.12.2 Environmental Consequences

With the exception of the environmental consequences for the new turbine, discussed below, refer to Section 5.12 of 99-AFC-7 included as Attachment K for a complete discussion of environmental consequences.

5.12.2.1 Power Plant Construction Noise

The construction phase of the existing PEF is scheduled to be complete in Summer 2005. The PEF Expansion construction is proposed to occur after completion of the construction of the existing PEF. Thus, construction of the PEF Expansion would not result in any higher noise levels during construction.

During construction of the PEF Expansion project, a number of pieces of construction equipment will be on site. The construction schedule currently assumes that all construction activities will take place during the normal workweek (Monday through Friday). Noisy construction work (that which causes offsite annoyance as evidenced by the filing of a legitimate noise complaint) is restricted to 7:00 a.m. to 10:00 p.m. The PEF Expansion will not require steam blows.

An extensive field study was conducted by Bolt, Beranek, and Newman on power plant construction noise that has produced the most comprehensive and realistic source of quantitative far field noise data. This study data was used to develop Table 5.12-4 in Section 5.12 of 99-AFC-7 (included for reference as Attachment K of this application), which contains a sample of the construction equipment with the highest noise levels that may be on-site at any given time during the PEF Expansion construction period. If all of this equipment were to operate simultaneously at maximum power, a total noise level of approximately 89 dBA would occur at a distance of 50 feet from the acoustic center of the site. Accounting for the attenuation of sound by distance, the equipment noise of 89 dBA at 50 feet would be reduced to a noise level of 62 dBA at a distance of 1,000 feet from the construction activity. Construction activities are normally of short duration and do not occur all at the same time; therefore it is unlikely that the existing ambient noise level within adjacent mining or agricultural production areas will be impacted, or that the noise levels indicated above would adversely impact (or even be audible at) the nearest residential receptors.

5.12.2.2 Power Plant Operational Noise

As described in Section 5.12.1.1, the noise impact calculations indicate that the normal operating noise impact from the PEF Expansion will be less than 20 dBA L_{eq} at the nearest residential receptor locations, which is well below the maximum allowable noise level of 46 dBA L_{eq} . This noise level is also below the existing ambient noise levels at the noise-sensitive receptor locations and will be inaudible. Because the proposed project will not cause an increase in the ambient noise levels of five decibels at a noise-sensitive location, the proposed project meets the California Environmental Quality Act and CEC's criteria for no significant noise impact. Thus, the plant's design sound level goal is appropriate to avoid generation of significant noise, and development of the PEF Expansion will not produce a significant noise impact.

5.12.3 Cumulative Noise Effects

The overall noise levels from the existing PEF project would be increased by less than one decibel as a result of the additional PEF Expansion noise. This increase is not likely to be perceptible by an observer located near the existing PEF/proposed PEF Expansion site and would not result in an audible difference at any noise-sensitive receptor locations. Thus, the cumulative noise effect of the PEF Expansion is less than significant.

5.12.4 Mitigation Measures

The Applicant proposed to apply the applicable Conditions of Certification for the existing PEF to the PEF Expansion. These conditions are included for reference in Section 9.0 of this application. With the implementation of these Conditions of Certification, no significant

unavoidable adverse noise impacts are anticipated to occur from construction or operation of the PEF Expansion.

5.12.5 LORS Compliance

The PEF Expansion will comply with all applicable LORS related to noise impacts. A complete list of the applicable LORS for Noise is included in Section 7.0 LORS of this application.

5.12.6 References

The Noise references for the existing PEF are applicable to the PEF Expansion. The references from Section 5.12 of 99-AFC-7 are included as part of Attachment K of this application.