

CALIFORNIA ENERGY COMMISSION

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DOCKET	
99-AFC-1C	
DATE	AUG 04 2010
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DATE: August 4, 2010

TO: Interested Parties

FROM: Mary Dyas, Compliance Project Manager

**SUBJECT: Elk Hills Power Project (99-AFC-1C)
Staff Analysis of Proposed Air Quality Modifications**

On June 22, 2010, Elk Hills Power, LLC (EHP) filed a petition with the California Energy Commission (Energy Commission) to amend the Energy Commission Decision for the Elk Hills Power Project. Staff prepared an analysis of this proposed change and a copy is enclosed for your information and review. The analysis can also be found on-line at: <http://www.energy.ca.gov/sitingcases/elkhills/compliance/index.html>.

The 500 megawatt Elk Hills Power Project (EHPP) was certified by the California Energy Commission in December 2000. The facility began commercial operations in July 2003. The facility is located in the middle of Occidental's Elk Hills oil and gas field, which is about 25 miles west of Bakersfield, CA, in Kern County, California.

Due to the increase in total dissolved solids (TDS) in the source water supply, EHP is requesting a change to the daily PM10 emission limits for the cooling tower specified in Condition of Certification AQ-50, a reduction in the annual permitted PM10 emission limit specified in Condition of Certification AQ-18 pertaining to the two gas turbines, and to allow a change in permit condition wording in Condition of Certification AQ-57 with regards to the diesel-fired internal combustion engine used to drive a fire water pump for consistency with the San Joaquin Valley Air Pollution Control District.

Energy Commission staff reviewed the petition and assessed the impacts of this proposal on environmental quality, public health and safety, and proposes revisions to existing Conditions of Certification AQ-18, AQ-51, and AQ-57. It is staff's opinion that, with the implementation of the revised condition, the project will remain in compliance with applicable laws, ordinances, regulations, and standards and that the proposed modifications will not result in a significant adverse direct or cumulative impact to the environment (Title 20, California Code of Regulations, Section 1769).

The amendment petition and staff's analysis have been posted on the Energy Commission's webpage at www.energy.ca.gov/sitingcases. The Energy Commission's Order (if approved) will also be posted on the webpage. Energy Commission staff intends to recommend approval of the petition at the September 8, 2010, Business Meeting of the Energy Commission.

Interested Parties Letter with Staff Analysis

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If you have comments on this proposed modification, please submit them to me at the address below by September 6, 2010.

Mary Dyas, Compliance Project Manager
California Energy Commission
1516 9th Street, MS-2000
Sacramento, CA 95814

Comments and questions may be submitted by fax to (916) 654-3882, or by e-mail to mdyas@energy.state.ca.us.

For further information on how to participate in this proceeding, please contact the Energy Commission Public Adviser's Office, at (916) 654-4489, or toll free in California at (800) 822-6228, or by e-mail at publicadviser@energy.state.ca.us. News media inquiries should be directed to the Energy Commission Media Office at (916) 654-4989, or by e-mail at mediaoffice@energy.state.ca.us.

Enclosure

ELK HILLS POWER PROJECT (1999-AFC-1C)

Petition to Amend: Air Quality Conditions Modifications

Joseph Hughes

INTRODUCTION

On December 6, 2000 the California Energy Commission (Energy Commission) approved the application for certification and granted the license for the Elk Hills Power Project (EHPP). The EHPP began commercial operation on July 23, 2003. The EHPP is a nominal 500 megawatt, natural gas-fired, combined cycle facility. The power plant consists of two combustion turbine generators (CTGs), two heat recovery steam generators (HRSGs) and exhaust stacks, and one steam turbine.

On June 22, 2010 the Elk Hills Power, LLC (EHP) filed a petition to amend their Energy Commission license. The petition seeks to amend Conditions of Certification **AQ-18**, **AQ-50**, and **AQ-57**. The requested changes consist of increasing daily PM10 emissions from the cooling tower, decreasing annual PM10 emissions from the combustion turbine generators (CTGs) to offset the increased emissions from the cooling tower, and implement a wording change for the fire water pump.

LAWS, ORDINANCES, REGULATION, AND STANDARDS (LORS) - COMPLIANCE

The San Joaquin Valley Air Pollution Control District (District) released an Authority to Construct (ATC) on May 26, 2010 and revised Permit to Operate (PTO)/Title V permit July 6, 2010 to allow the requested changes to air quality conditions. The Title V permit contains the permit conditions specified by the District to ensure compliance with applicable federal, state, and local air quality requirements. The conditions include emissions limitations and operating limitations that ensure compliance with air quality laws, ordinances, regulations and standards (LORS).

AIR QUALITY Table 1 summarizes the applicable LORS for the facility.

AIR QUALITY Table 1
Laws, Ordinances, Regulations, and Standards

APPLICABLE LORS	DESCRIPTION
Federal	
42 U.S.C. §7401 et eq.	Federal Clean Air Act: New Source Review
State	
Health and Safety Code §41700	"... no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property."
Local	
Rule 1081	Source Sampling
Rule 2201	New and Modified Source Review
Rule 2520	Federally Mandated Operating Permits
Rule 4001	New Source Performance Standards
Rule 4002	National Emission Standards for Hazardous Air Pollutants
Rule 4101	Visible Emissions
Rule 4102	Nuisance
Rule 4703	Stationary Gas Turbines
Rule 7012	Hexavalent Chromium – Cooling Towers

SETTING

AIR QUALITY Table 2 summarizes area designation for the San Joaquin Valley Air Pollution Control District.

AIR QUALITY Table 2
Area Designation for San Joaquin Valley Air Pollution Control District

POLLUTANT	ATTAINMENT STATUS ^A	
	FEDERAL	STATE
Ozone	Nonattainment	Nonattainment
CO	Attainment	Attainment
NO ₂	Attainment	Attainment
SO ₂	Attainment	Attainment
PM10	Attainment	Nonattainment
PM2.5	Nonattainment	Nonattainment

Source: ARB 2010

^a Attainment = Attainment or Unclassified, where Unclassified is treated the same as Attainment for regulatory purposes.

ANALYSIS

Elk Hills Power, LLC (EHP) is requesting three modifications to the Air Quality Conditions of Certification (COC) in the Energy Commission's Decision for the Elk Hills Power Project (EHPP). The first requested modification would increase the daily PM10 emission limit for the cooling tower in COC **AQ-50** to account for the increased total dissolved solids (TDS) in the EHPP water supply. The second requested modification would decrease the annual PM10 emission limits from both CTGs in COC **AQ-18** to offset the requested increased PM10 emissions for the cooling tower. The third requested modification is a wording change to COC **AQ-57** for the fire water pump to create consistency with the District application template.

COOLING TOWER

PM10 emissions from the EHPP cooling tower are a function of TDS in the incoming water supply. Over time, the EHPP has experienced increased TDS in the supply water received from the Western Kern Water District (WKWD). Due to the increase in TDS in the water supply, the facility was forced to increase blowdown considerably by decreasing the cycles of concentration, to stay in compliance. This resulted in a significant increase in water usage, blowdown disposal and cost. A variance was issued in June 2009 to conduct laboratory testing to determine the increased TDS levels and an acceptable PM10 emission limit for the cooling tower while simultaneously minimizing water usage.

AQ-51 requires compliance with the PM10 daily emission limit to be demonstrated as follows: $\text{PM10 lb/day} = \text{circulating water recirculation rate} * \text{total dissolved solids concentration in the blowdown water} * \text{design drift rate} * \text{correction factor}$. [District Rule 2201]

The correction factor is the PM/PM10 emission ratios at different TDS levels. EHP provided a PM/PM10 emission rates curve in Table 2-1 of the Petition to Amend that was referenced from "Cooling Tower PM10 Calculation Protocol". The maximum TDS levels measured during the testing period of June 11, 2009 to August 31, 2009 was 2,690 ppm. The corresponding PM/PM10 correction factor determined from Table 2-1 of the Petition to Amend was 55%. The use of the equation in **AQ-51** results to 10.7 lb/day of PM10 from the cooling tower. With a requested 10% contingency factor from EHP added to the maximum calculated PM10 limit, the proposed PM10 emission limit for **AQ-50** becomes 11.7 lb/day. This is a net increase from the original permitted limit of 2.3 lb/day or approximately 840 lb/year of PM10 emissions from the cooling tower. EHPP has proposed to offset the potential increase in PM10 emissions from the cooling tower by decreasing the same amount from the permitted limit for the CTGs.

COMBUSTION GAS TURBINES

EHP proposes to reduce the annual permitted PM10 emission limits for the CTGs so that the requested increase in PM10 emissions associated with the cooling tower does not increase the overall potential emissions from the facility. The current annual PM10

emission limit for the two CTGs combined is 262,800 lb/year. The proposed increase in annual PM10 from the cooling tower is 840 lb/year. Subtracting 840 lb/year from the current permit limits for the CTGs results in the proposed annual PM10 emission limit of 261,960 lb/year, thus offsetting the increase of PM10 from the cooling tower. The District determined that decreasing the permitted PM10 emission limit for the CTGs to offset the same amount of the requested increase for the cooling tower is acceptable.

FIRE WATER PUMP

The requested modification would be administrative and would create a more stringent condition that would ensure compliance with all LORS and maintain consistency between the Energy Commission's COC **AQ-57** and the District's PTO condition #3. The language change would require the positive crankcase ventilation (PCV) system to recirculate crankcase emissions into the air intake system for combustion.

CONCLUSIONS AND RECOMMENDATIONS

The project would continue to comply with applicable laws, ordinances, regulations, and standards. The increased PM10 emissions from the cooling tower are directly related to the increased TDS from the plant's water source. This increase is out of the control of Elk Hills Power, LLC and it is infeasible to change the project process in a way that would account for the higher TDS and remain in compliance with the PM10 emission limit for the cooling tower. The increased PM10 emission limits for the cooling tower would be offset by the decrease of permitted PM10 emission limits for the CTGs. The change to condition wording relating to the fire water pump would create a more stringent condition that would ensure compliance with District rules and regulations. Staff recommends approval of the requested modifications to COC **AQ-18**, **AQ-50**, and **AQ-57**.

PROPOSED AMENDED CONDITIONS OF CERTIFICATION

AQ-18 Annual emissions from both CTGs calculated on a twelve (12) consecutive month rolling basis shall not exceed any of the following: PM10 – ~~262,800~~261,960 lb/year, SOx (as SO2) - 57,468 lb/year, NOx (as NO2) – 335,022 lb/year, VOC - 64,478 lb/year, and CO – 831,008 lb/year. [District Rule 2201]

Verification: The project owner shall provide records of compliance as part of the quarterly reports of condition AQ-35.

AQ-50 PM10 emission rate shall not exceed ~~9.4~~11.7 lb/day. [District Rule 2201]

Verification: Please refer to condition AQ-51

AQ-57 This engine shall be equipped with either a positive crankcase ventilation (PCV) system that recirculates crankcase emissions into the air intake system

for combustion, or a crankcase emissions control device of at least 90% control efficiency. [District Rule 2201]

Verification: The project owner shall make the site available for inspection by representatives of the District, CARB and the Commission.

REFERENCES

ARB - California Air Resources Board, Ambient Air Quality Standards, Area Designations <http://www.arb.ca.gov/desig/desig.htm>. May 2010.

Petition to Amend – Elk Hills Power, LLC. Petition to Amend: Air Quality Conditions Modifications, June, 2010.

SJVAPCD - San Joaquin Valley Air Pollution Control District, Authority to Construct, May, 2010.

SJVAPCD(a) - San Joaquin Valley Air Pollution Control District, Permit to Operate, July, 2010.