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CALIFORNIA ENERGY COMMISSION
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SACRAMENTO, CA 95814-5512
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DATE: November 25, 2013

TO: Interested Parties

FROM: Mary Dyas, Compliance Project Manager

SUBJECT: Pastoria Energy Facility Project (99-AFC-7C)
Staff Analysis of Proposed Modifications to AQ-16

On September 27, 2013, Pastoria Energy Facility, LLC, filed a petition with the California Energy Commission to amend the Energy Commission Decision for the Pastoria Energy Facility (PEF) Project. Staff prepared an analysis of this proposed change, and a copy is enclosed for your information and review.

The PEF project is a 750-MW combined cycle power plant located approximately 30 miles south of the City of Bakersfield, in Kern County. The project was certified by the Energy Commission in December 2000, and began commercial operation in January 2003.

The proposed modifications will allow Pastoria Energy Facility, LLC to eliminate the one-hour carbon monoxide concentration limit of 25 ppm concentration for the natural gas-fired combustion turbine generators that becomes effective two hours after a turbine startup.

Energy Commission staff reviewed the petition and assessed the impacts of this proposal on environmental quality, public health and safety, and proposes a revision to existing condition of certification **AQ-16**. It is staff's opinion that, with the implementation of revised condition AQ-16, 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 has been posted on the Energy Commission's webpage at http://www.energy.ca.gov/sitingcases/pastoria/. 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 January 15, 2014, Business Meeting of the Energy Commission.

Agencies and members of the public who wish to provide comments on the amendment petition or staff analysis are asked to submit their comments prior to December 24, 2013, using the Energy Commission's e-commenting feature by going to the Energy Commission's PEF webpage http://www.energy.ca.gov/sitingcases/pastoria/, and clicking on the "Submit e-Comment" link. A full name, e-mail address, comment title,

and either a comment or an attached document (in the .doc, .docx, or .pdf format) are mandatory. After entering a challenge-response test used by the system to ensure that responses are generated by a human user and not a computer, click on the "Agree & Submit Your comment" button to submit the comment to the Energy Commission Dockets Unit. Written comments may also be mailed or hand delivered to:

California Energy Commission
Dockets Unit, MS-4
Docket No. 99-AFC-7C
1516 Ninth Street
Sacramento, CA 95814-5512

All comments and materials filed with the Dockets Unit will become part of the public record of the proceeding.

If you have any questions, please contact Mary Dyas, Compliance Project Manager, at (916) 651-8891, or by fax to (916) 654-3882, or via e-mail at: mary.dyas@energy.ca.gov.

If you desire information on participating in the Energy Commission's amendment process, please contact the Energy Commission's Public Adviser's Office, at (916) 654-4489 or toll free in California, at (800) 822-6228. The Public Adviser's Office can also be contacted via email at publicadviser@energy.ca.gov.

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

Mail to list #758

PASTORIA ENERGY FACILITY (99-AFC-7C)
Petition to Amend the Commission Decision
EXECUTIVE SUMMARY

Mary Dyas

INTRODUCTION

On September 27, 2013, the Pastoria Energy Facility, LLC, filed a petition with the California Energy Commission requesting to modify the Final Decision for the Pastoria Energy Facility (PEF). The 750-megawatt project was certified by the Energy Commission in December 2000, and began commercial operation in January 2003. The facility is located approximately 30 miles south of the City of Bakersfield**,** in Kern County. Staff has completed its review of all materials received.

The purpose of the Energy Commission's review process is to assess any impacts the proposed modifications would have on environmental quality and public health and safety. The process includes an evaluation of the consistency of the proposed changes with the Energy Commission's Final Decision (Decision), and if the project, as modified, will remain in compliance with applicable laws, ordinances, regulations, and standards (Title 20, Calif. Code of Regulations, section 1769).

This Staff Analysis contains the Energy Commission staff's evaluation of the affected technical area of Air Quality.

DESCRIPTION OF PROPOSED MODIFICATIONS

The modification(s) proposed in the petition would eliminate the one-hour carbon monoxide (CO) concentration limit of 25 ppm concentration for the natural gas-fired combustion turbine generators that becomes effective two hours after a turbine startup. This change in Condition of Certification **AQ-16** would not have any significant impact on air quality, and no Laws, Ordinances, Regulations or Standards will change as a result of the proposed permit change.

NECESSITY FOR THE PROPOSED MODIFICATIONS

During startups, CO emissions are elevated above normal, controlled levels while the gas turbine is being brought up to full load and the emissions control system becomes fully effective. The project owner has found that under cold start conditions, low-load CO emissions are higher than expected and the emission controls take longer than expected to reach full control efficiency. Therefore, CO emissions during some cold startups are higher and are elevated longer than the two hours anticipated when the Final Decision for the PEF was issued in December 2000. As a result, the gas turbine cannot consistently comply with the current hourly CO concentration limit that becomes effective two hours after a turbine startup. However, after 3 hours the requirement can be met while still keeping well below the 8-hour CO standard. This change is necessary because in the past the project could abort startup operations if concentrations

approached the emission limits and the facility's new power purchase agreement does not allow this same flexibility.

STAFF'S ASSESSMENT OF THE PROPOSED PROJECT CHANGES

The technical area of air quality contained in this Staff Analysis indicates recommended staff changes to the existing Final Decision and conditions of certification. Staff believes that by requiring the proposed changes to the existing condition **AQ-16**, the potential impacts of the proposed changes would be reduced to less than significant levels. A summary of staff's conclusions reached in each technical area are summarized in the following table. The details of the proposed condition changes can be found under the appropriate technical headings in this Staff Analysis.

Executive Summary Table 1
Summary of Impacts to Each Technical Area

TECHNICAL AREAS REVIEWED	STAFF RESPONSE		
	Technical Area Not Affected	No Significant Environmental Impact*	Process As Amendment
Air Quality			X
Biological Resources	X		
Cultural Resources	X		
Geological Hazards & Resources	X		
Hazardous Materials Management	X		
Facility Design	X		
Land Use	X		
Noise and Vibration	X		
Paleontological Resources	X		
Public Health	X		
Socioeconomics	X		
Soil and Water Resources	X		
Traffic and Transportation	X		
Transmission Line Safety & Nuisance	X		
Transmission System Engineering	X		
Visual Resources	X		
Waste Management	X		
Worker Safety and Fire Protection	X		

*There is no possibility that the modifications may have a significant effect on the environment and the modification will not result in a change or deletion of a condition adopted by the commission in the final decision or make changes that would cause the project not to comply with any applicable laws, ordinances, regulations, or standards (LORS) (20 Cal. Code Regs., § 1769 (a)(2)).

Energy Commission technical staff reviewed the petition to amend for potential environmental effects and consistency with applicable laws, ordinances, regulations and standards (LORS). Staff has determined that the technical or environmental areas of Biological Resources, Cultural Resources, Facility Design, Geological and Paleontological Resources, Hazardous Materials Management, Noise and Vibration, Public Health and Safety, Traffic And Transportation, Transmission Line Safety and Nuisance, Transmission System Engineering, Visual Resources, Waste Management, And Worker Safety And Fire Protection are not affected by the proposed changes, and no revisions or new conditions of certification are needed to ensure the project remains in compliance with all applicable LORS.

Staff determined that the technical area of Air Quality would be affected by the proposed project change and has proposed a revised condition of certification in order to assure compliance with LORS and to reduce potential environmental impacts to a less than significant level.

STAFF RECOMMENDATIONS AND CONCLUSIONS

Staff concludes that the following required findings mandated by Title 20, section 1769(a)(3) of the California Code of Regulations can be made and will recommend approval of the petition to the Energy Commission:

A. There will be no new or additional unmitigated significant environmental impacts associated with the proposed changes;

B. The facility will remain in compliance with all applicable laws, ordinances, regulations and standards;

C. The change will be beneficial to the project owner because it would eliminate the one-hour carbon monoxide (CO) concentration limit of 25 ppm concentration for the natural gas-fired combustion turbine generators that becomes effective two hours after a turbine startup.

D. There has been a substantial change in circumstances since the Energy Commission certification justifying the changes.

PASTORIA ENERGY FACILITY (99-AFC-7C)
Petition to Amend the Commission Decision
AIR QUALITY
Joseph Hughes

INTRODUCTION

On September 27, 2013, the Pastoria Energy Facility, LLC, filed a petition to amend the California Energy Commission Decision (CEC 2000) to eliminate the one-hour carbon monoxide (CO) concentration limit of 25 parts per million (ppm) for the natural gas-fired combustion turbine generators (CTGs) that becomes effective two hours after initiation of a turbine startup (SJVAPCD Rule 4703) for the Pastoria Energy Facility (PEF).

The 750 megawatt (MW) project was certified by the Energy Commission on December 21, 2000. PEF is located on 30 acres at the Tejon Ranch, which is located about 30 miles south of Bakersfield and about 6.5 miles east of Interstate 5 near the base of Tehachapi Mountains. PEF is a combined cycle generating facility that includes three natural gas-fired F-class CTGs, three heat recovery steam generators, two steam turbine generators, two cooling towers, and associated support equipment. The project is located in the San Joaquin Valley and within the boundaries of the San Joaquin Valley Air Pollution Control District (SJVAPCD).

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

All previously analyzed laws, ordinances, regulations, and standards (LORS) continue to apply to the project and the proposed change does not trigger any additional air quality LORS. However, the requested modification did require a Certificate of Conformity (SJVAPCD 2013a) from SJVAPCD to determine compliance with Rule 4703.

The SJVAPCD Certificate of Conformity confirmed that the proposed action does not result in any physical change to equipment or change in the hours of operation, production or utilization rate, method of operation or any New Source Review (NSR) required emission limit. The language requested to be deleted is redundant to and out of date with current NSR and Rule 4703 emissions requirement relating to startup.

An application for permit amendment was filed with the SJVAPCD on April 15, 2013. The SJVAPCD issued an Authority to Construct (ATC) permit August 20, 2013 demonstrating that the proposed changes comply with all applicable LORS. This ATC permit would become applicable only if the Energy Commission approves this amendment request.

SETTING

In 2004, the PEF prepared an ambient air quality impact assessment for carbon monoxide (CO) during cold startups to assess the project's impacts relative to the state and national ambient air quality standards (AAQS/NAAQS). This assessment was approved by the SJVAPCD and the US Environmental Protection Agency (USEPA). The current requested modification does not change the assumptions used to analyze the project's 1-hour CO impacts; however, the requested modification does slightly change the assumptions that were used to assess the project's impacts relative to the 8-hour CO AAQS and NAAQS.

Background concentrations of CO remain well below AAQS and NAAQS, and all of California remains in attainment for CO. The worst case 8-hour average CO background concentrations at the nearest monitoring station (Bakersfield – Golden State Highway) declined from 8,818 (µg/m³) (1996-1998) as presented in the Final Commission Decision to 1,622 (µg/m³) (2010-2012) as provided by the Air Resources Board (ARB) historical data (http://www.arb.ca.gov/adam/topfour/topfour1.php).

BACKGROUND

SJVAPCD Rule 4703 states that, except during startup or shutdown periods, the CTG shall not exceed the CO concentration limit of 25 ppm at 15% O_2 and that the duration of each startup or each shutdown shall not exceed two hours. The rule further states that an owner or operator may submit an application for a Permit to Operate condition to allow more than the duration of time specified for each transitional operation (e.g. startup or shutdown) for review and approval by the Energy Commission, SJVAPCD, and EPA.

The Final Commission decision allows a three hour startup at 1,235 pounds per hour (lb/hr) of CO; however it also limits CO concentrations to 25 ppm within two hours after initiation of a turbine startup. PEF is requesting that the CO concentration limit in Condition of Certification **AQ-16** be removed. The requested modification does not alter any existing Best Available Control Technology (BACT), hourly, daily or annual emission limits (SJVAPCD 2013a). PEF has indicated that under cold ambient air startup conditions, low-load CO emissions are higher than expected and the emission controls take longer than expected to reach full control efficiency. Therefore, CO emissions during some cold startups are higher and are elevated longer than the two hours anticipated in the Final Commission Decision. As a result, the gas turbine cannot consistently comply with Rule 4703. There have been no exceedances of this concentration limit, because historically the PEF facility would abort startup operations if concentrations approached Rule 4703 emission limits. However, the facility's new power purchase agreement (PPA) does not allow this same flexibility, which has resulted in the requested modification.

The current permits for the three CTGs have conditions of certification that define startup periods and limit the maximum allowable CO emissions during these periods, in addition to limiting maximum allowable CO emissions during steady state operations

(See Relevant Conditions of Certification section below). Condition of Certification **AQ-12** limits startup and shutdown durations to three hours and one hour, respectively, Condition of Certification **AQ-15** limits CO startup emissions to 1,235 lb/hr, and Condition of Certification **AQ-17** limits steady state CO emissions to 24.92 lb/hr and 6 ppm @ 15% O_2. Condition of Certification **AQ-16** is a redundant condition that limits CO concentrations to 25 ppm two hours after turbine initial firing and PEF is requesting this language be removed.

RELEVANT CONDITIONS OF CERTIFICATION

The following Conditions of Certification are presented as background information to support this staff assessment.

AQ-12 Startup is defined as the period beginning with turbine initial firing until the unit meets the lb/hr and ppmv emission limits in condition 17. Shutdown is defined as the period beginning with initiation of turbine shutdown sequence and ending with cessation of firing of the gas turbine engine. Duration of startup and shutdown shall not exceed three hours and one hour, respectively, per occurrence. [District Rule 2201 and 4001]

AQ-13 Only one of CTGs S-3636-1, 2 or 3 shall be in startup at any one time. [District Rule 2201]

AQ-15 During startup or shutdown CGT exhaust emissions shall not exceed any of the following: NOx (as NO2) - 130 lb., VOC — 273 lb. or CO -1235 lb., in any one hour. [District Rule 2201]

AQ-16 By two hours after turbine initial firing, CTG exhaust emissions shall not exceed any of the following: NOx (as NO2) - 12.2 ppmv @ 15% O2 and CO - 25 ppmv @ 15% O2. [District Rule 4703]

AQ-17 Emission rates from the CTG, except during startup and/or shutdown, shall not exceed any of the following: NOx (as NO2) - 17.03 lb/hr and 2.5 ppmvd @ 15% O2, VOC - 3.8 lb/hr and 2.0 ppmvd @ 15% O2, CO - 24.92 lb/hr and 6 ppmvd @ 15% O2, ammonia - 10 ppmvd @15%O2. NOx (as NO2) emission limit is a one-hour average. Ammonia emission limit is a twenty-four hour rolling average. All other emission limits are three-hour rolling averages. [District Rules 2201, 4001, and 4703]

ANALYSIS

In 2004, the worst case CO emissions increases were modeled such that, on any given day, one turbine would be in startup mode at 60% load and the remaining two turbines would be operating in steady state at 100% load (**AQ-13** limits one CTG to startup mode at any one time). The results from the 2004 modeling analysis can be used as a basis for calculating the potential impact relative to the 8-hour CO standard associated with the proposed increase in allowable CO emissions resulting from removal of the 25 ppm

CO concentration limit effective two hours after initial firing of the CTG using linear extrapolation (SJVAPCD 2013a).

The 2004 modeling analysis estimated an impact relative to the 8-hour CO AAQS of 301 micrograms per cubic meter (µg/m³) using an emission rate of 337.3 lb/hr. The 8-hour emission rate of 337.3 lb/hr was derived by calculating two hours at 1,235 lb/hr (**AQ-15**), one hour at 25 ppmv (**AQ-16**), and five hours at the maximum hourly CO emission rate of 24.92 lb/hr (**AQ-17**).

The current requested 8-hour emission rate resulting from the deletion of the 25 ppm CO concentration limit effective two hours after initial fire of the CTG (**AQ-16**) is used to evaluate the impacts relative to the 8-hour CO AAQS is 478.3 lb/hr. The 478.3 lb/hr emission rate was derived by calculating three hours at 1,235 lb/hr (**AQ-12** and **AQ-15**) and five hours at the maximum hourly CO emission rate of 24.92 lb/hr (**AQ-17**). Using linear extrapolation the current requested facility impact is calculated to be 427 (µg/m³). The results are provided below in **Air Quality Table 1**.

Air Quality Table 1
Maximum Modeled Impacts for Requested Modification

Pollutant	Averaging Time	2004 Modeling Facility Impact (µg/m³)	Current Request Facility Impact[a,c] (µg/m³)	Background[b] (µg/m³)	Total Impact (µg/m³)	AAQS (µg/m³)	Percent of Standard
CO	8-hour	301	427	1,622	2,049	10,000	20%

Source:
a. PEF 2013, SJVAPCD 2013a, and staff calculations.
b. ARB, Air Quality Data Statistics (http://www.arb.ca.gov/adam/welcome.html). Accessed October 2013.

Notes:
c. CO - 478.3 (lb/hr) / 337.3 (lb/hr) = 1.42, 1.42 x 301 (µg/m³) = 426.83 (µg/m³).

CONCLUSIONS AND RECOMMENDATIONS

Staff recommends approval of the proposed project modification. The requested modification would not change any hourly, daily, or annual emission limits. The project would continue to comply with applicable laws, ordinances, regulations, and standards (LORS). The proposed project modification would not cause any significant impacts to ambient air quality standards.

PROPOSED MODIFICATIONS TO CONDITIONS OF CERTIFICATION

The following Condition of Certification would be amended in the Final Commission Decision for the Pastoria Energy Facility. ~~Strikethrough~~ is used to indicate deleted language and **bold underline** for new language.

AQ-16 By two hours after turbine initial firing, CTG exhaust emissions shall not exceed ~~any of the following~~: NOx (as NO2) – 12.2 ppmv @ 15% O2~~ and CO – 25 ppmv @15% O2~~. [District Rule 4703]

Verification: The project owner shall provide records of compliance as part of the quarterly reports of Condition AQ-39.

REFERENCES

CEC 2000 – California Energy Commission. Energy Commission Final Decision on the Pastoria Energy Facility, Application for Certification (99-AFC-07). December 21, 2000.

PEF 2013 – Pastoria Energy Facility, LLC. Petition to Amend Air Quality Condition of Certification AQ-16. September 27, 2013.

SJVAPCD 2013 – San Joaquin Air Pollution Control District. Authority to Construct for the Pastoria Energy Facility. August 20, 2013.

SJVAPCD 2013a – San Joaquin Air Pollution Control District. Certificate of Conformity for the Pastoria Energy Facility. July 8, 2013.