

CALIFORNIA ENERGY COMMISSION

1516 NINTH STREET
SACRAMENTO, CA 95814-5512



DATE: February 20, 2002

TO: Interested Parties

FROM: Nancy Tronaas, Compliance Project Manager

SUBJECT: Public Review of Staff Analysis for Proposed Modifications to the La Paloma Generating Project (98-AFC-2C): PM10 Limits and Commissioning Variance

The La Paloma Generating Project (LPGP) is a nominal 1048 MW natural-gas-fired power plant that is under construction near the town of McKittrick in Kern County, California. On January 11, 2002, the La Paloma Generating Company filed a petition in accordance with Section 1769(a) of the California Code of Regulations to modify the Energy Commission Decision for the following:

Description of Proposed Changes: Possible reduction of PM₁₀ (particulate matter) emission limits for the natural gas-fired combustion turbines that would allow for flexibility based upon the outcome of the initial source tests.

Additionally, Energy Commission staff proposes a new air quality condition of certification to permit variances in emission limits for NO_x, CO and VOC during initial commissioning activities through October 25, 2002.

Energy Commission staff reviewed the petition and prepared the enclosed analysis of the proposed changes. This analysis provides staff recommendations for revised/new project conditions of certification that will ensure that the proposed modifications will not cause any new or additional significant environmental impacts, and that the project will remain in compliance with all applicable laws, ordinances, regulations, and standards. Based on the results of this analysis, Energy Commission staff intends to recommend approval of the petition at the March 5, 2002 Business Meeting of the Energy Commission.

If you have technical questions concerning the enclosed staff analysis, please contact Gabriel Behymer at (916) 654-4482 or by e-mail at gbehlymer@energy.state.ca.us. If you have questions concerning the amendment process, please call me at (916) 654-3864 or by e-mail at ntronaas@energy.state.ca.us.

If you wish to submit written comments concerning the enclosed staff analysis, your comments must be received no later than March 4, 2002.

Enclosure

La Paloma Generating Project (98-AFC-2)

Staff Analysis: PM10 Source Testing & Initial Commissioning Variance

Prepared by: Gabriel D. Behymer

Amendment Request

The La Paloma Generating Company (La Paloma) requests an amendment to the Conditions of Certification for the La Paloma Generating Project (LPGP) to allow them to potentially lower the amount of PM10 emission reduction credits (ERCs) they will need to surrender to the San Joaquin Valley Air Pollution Control District (SJVAPCD or District) to mitigate the project's PM10 emission impacts.

Additionally, staff proposes to amend, and La Paloma concurs, the Conditions of Certification to reflect a recently issued District Variance that specifically deals with the initial commissioning period of the LPGP that was not foreseen in the original licensing case.

The following assessment proposes to modify Condition of Certification AQ-15 and add Conditions of Certification AQ-79 and AQ-80.

Background

The LPGP is currently under construction approximately 1.5 miles east of the town of McKittrick, in western Kern County. The LPGP will be a 1,048 MW natural gas fired, combined cycle facility. As of the end of January 2002 the project was approximately 90% complete and projected to go fully online in September 2002.

Recent operating data from turbines similar to those being installed at the LPGP has shown that the PM10 emissions may be much lower than originally assumed. The project owner wants to have the flexibility to reduce their permitted emissions limit, and thus the necessary quantity of ERC surrendered for the project, after initial source testing reveals the actual PM10 emissions from the facility.

Once construction is complete, each combustion turbine generator (CTG) and associated heat recovery and electrical generation equipment will need to go through a series of initial commissioning tests. During these tests, emissions will be in excess of the permitted levels for short periods of time. Initial commissioning is a necessary practice for all facilities of this type, however neither the District permit conditions nor the Commission's Conditions of Certification provided LPGP with language governing initial commissioning.

On November 14, 2001, the SJVAPCD issued a Regular Variance to LPGP allowing LPGP to emit elevated levels of NOx, CO and VOC during initial commissioning activities on each of their four CTGs. The variance will be in effect from December 25, 2001 through October 25, 2002.

This proposed amendment will not result in any changes to the LPGP emissions limits or level of mitigation. LPGP may submit a separate amendment request to change the PM10 mitigation levels once they complete initial source testing and have complete data regarding any potential reduction of PM10 emission limits.

Laws, Ordinances, Regulations and Standards (LORS)

The applicable LORS are the same as those identified in the original La Paloma analysis.

Analysis

Tendering PM10 Emissions Reduction Credits

La Paloma proposes to “tender” their PM10 Emissions Reduction Credits (ERC) to the District, as opposed to surrendering them. This concept of tendering is the basis for the changes proposed for Condition AQ-15 and the addition of Condition AQ-79. The actual procedures for tendering ERCs at the District level will be very similar to those for surrendering ERCs. The ERCs will be turned over to the District prior to first fire (the beginning of initial commissioning), just as if they were to be surrendered. The District would not withdraw the ERCs from use until La Paloma completes their initial source testing and determines if they can operate under a lower PM10 limit. If that proves to be the case, La Paloma will instruct the District as to which ERCs they want to surrender and which they want returned at no penalty. In fact, the same forms and procedures will be followed as for surrendering the ERCs. The only difference will be that the tendered ERCs will not be withdrawn from use by the District until after the initial commissioning period is over and the initial source tests are complete. If La Paloma were to simply surrender their ERCs normally and then lower their operating limits they would incur a penalty on the ERCs returned to them (approximately 10% of the ERCs would be lost due to District rules).

Since the District would receive a completed and signed Application for ERC Withdrawal prior to first fire and can withdraw the ERCs from use at any time should the need arise, it is staff’s opinion that the concept of tendering is safe and valid. Staff therefore concurs with La Paloma’s proposed changes to Condition of Certification AQ-15 and addition of Condition of Certification AQ-79.

If the initial source tests performed as the final step in the initial commissioning process reveal that the LPGP can operate under a lower PM10 limit, then La Paloma will submit a new amendment request to the District and the Commission at that time.

Initial Commissioning Air Emissions

In the original licensing procedures for the LPGP, initial commissioning was discussed, but special provisions were made for it in the Conditions of Certification per an agreement made with the District. Subsequent licensing cases in the District found that the initial commissioning period needed to be addressed in the Commission Conditions of Certification, but not the District’s Permit to Operate (which is issued after initial

commissioning is complete). Additionally, given the implications of “tendering ERCs” above, it is important to identify the timing of and expected emissions during the initial commissioning period.

La Paloma has identified three phases of initial commissioning that will occur for each of the four CTGs proposed for the LPGP and provided estimates of the maximum emissions during each phase. AIR QUALITY Table 1 below presents the estimated worst case criteria pollutant emissions during initial commissioning.

SOx and PM10 are emitted in proportion to the quantity of fuel consumed. Since the CTG will not consistently operate at full power during the initial commissioning phase, fuel consumption will be substantially lower than during commercial operation. SOx and PM10 emissions during initial commissioning will thus be substantially less than the permitted levels for commercial operation and are not calculated in detail.

AIR QUALITY Table 1
Estimated Maximum Emissions During Initial Commissioning (lbs/hr)

Pollutant	Phase I	Phase II	Phase III
NOx	331.6	331.6	331.6
CO	711.0	675.9	711.0
VOC	43.2	50.4	43.2

Phase I (Run-In) includes first ignition, start-up to full speed, no load run-in, no load generator and switch over preparation tests. These tests confirm the correct basic operation of many of the protection devices, electronic controllers and the CTG itself. Phase I is expected to last five to eight days.

Phase II (Steam Blow) includes first ignition and operation of the second combustion chamber, run-in load steps, and finally steam blow. Once the run-in load tests are complete, the CTGs are capable of operating for unlimited time periods and up to full power. The steam blow follows, where pressurized steam is blown through the steam pipes and boiler in order to clean out any debris and construction residuals. Steam blow must be done before installation of the oxidation and selective reduction catalysts to avoid possible damage to the emissions control equipment. Phase II is expected to last 12 to 14 days.

After Phase II and before Phase III, the unit will be shut down and both the oxidation catalyst and SCR will be installed.

Phase III (Final Tuning) includes tuning of the SCR ammonia injector and first load of the vacuum system, bypass stations, and cooling towers. Phase III is expected to last approximately 60 hours.

The worst case emissions during the initial commissioning phase of the entire LPGP facility will be when two (of the four) turbines have completed initial commissioning and are operating at full load while the two remaining turbines are still undergoing uncontrolled initial commissioning tests. La Paloma prepared a refined modeling analysis of this scenario for NOx using the Industrial Source Complex Short Term

model, Version 3. The modeling projected a maximum 1-hour NO₂ impact of 329 µg/m³. Since the facility will offset excess NO₂ emissions during this period by surrendering ERCs, the emissions will only be considered significant if they cause a new violation or contribute to an existing violation of the state ambient air quality NO₂ standard of 470 µg/m³.

The maximum background level is usually the maximum 1-hour average NO₂ level recorded locally over the past few years. The monitoring station used in the original project analysis was located in Fellows, about 10 miles south of the project site. Unfortunately, this monitoring station has been closed and has not recorded data since 1995. The closest monitoring site with current data at this time is the CARB maintained Golden State Highway station in Bakersfield, about 35 miles east of the project site. Annual ambient maximum 1-hour NO₂ data is presented below in AIR QUALITY Table 2 for the years 1993 through 2000 for both the Bakersfield station (Golden State Highway) and the Fellows station.

AIR QUALITY Table 2
Annual Ambient Maximum 1-Hour NO₂ Levels (µg/m³)

Year	Bakersfield	Fellows
1993	-	92
1994	229	94
1995	237	62
1996	243	-
1997	220	-
1998	248	-
1999	177	-
2000	147	-

This comparison is presented to establish the likelihood that the current ambient NO₂ background at the project site is equal to or below the level assumed in the original project analysis, 94 µg/m³. This can be assumed because ambient NO₂ patterns are regional in nature, even though the local maximum can differ from day to day.

The modeled maximum ambient impact is presented below in AIR QUALITY Table 3 in comparison to the maximum background NO₂ concentration.

AIR QUALITY Table 3
Maximum Construction Impacts ($\mu\text{g}/\text{m}^3$)

Pollutant	Averaging Time	Modeled Impact	Background (Year)	Total Impact	Limiting Standard	Percent of Standard
NO2	1 hour	329	94 (1994)*	423	470	90%
			229 (1994)**	558		119%
			177 (1999)***	506		108%
			147 (2000)****	476		101%
* Fellows annual maximum 1994 ** Bakersfield (Golden State Highway station) annual maximum 1994 (collected on July 9, 1994) *** Bakersfield (Golden State Highway station) annual maximum 1999 (collected on November 5, 1999) **** Bakersfield (Golden State Highway station) annual maximum 2000 (collected on September 19, 2000)						

Since the background NO₂ level at the project site is assumed to be equal to or below 94 $\mu\text{g}/\text{m}^3$, this comparison shows that the projected maximum impact from initial commissioning activities is unlikely to cause a new violation of the state ambient air quality standard. In addition, since the maximum measured ambient levels are below the state standard of 470 $\mu\text{g}/\text{m}^3$, the project's emissions will not contribute to an existing violation.

Conclusions

Since the possible reduction of PM₁₀ emissions limits for the La Paloma project will likely result in a net benefit to air quality, staff concludes that the proposed ERC tendering and possible emissions limit reductions will not cause a significant negative impact on air quality. The changes to Condition of Certification AQ-15 and new Conditions of Certification AQ-79 and AQ-80 will define the tendering process and bring the Commission's conditions into agreement with the District issued variance.

In light of the conservative nature of the modeling analysis prepared, the ambient monitoring data available, and the continuous emissions monitoring and emissions mitigation required by the District, staff concludes that the initial commissioning activities at La Paloma will not cause a significant air quality impact. Staff presents proposed Condition of Certification AQ-80 to provide specific language governing the La Paloma initial commissioning period.

Staff has analyzed the proposed changes to the La Paloma Power Project and concludes that there will be no significant air quality impacts associated with approving the request with staff's recommended language in the conditions to follow. Staff concludes that the proposed changes are based on new information that was not available during the original licensing proceedings. Staff concludes that the proposed language by Staff retains the intent of the original Commission Decision and Conditions of Certification.

Proposed Changes to the Conditions of Certification

~~Strikethrough~~ indicates deleted text and underline indicates replacement or new text.

AQ-15 Upon initial operation of ~~Prior to commencement of operation of the equipment covered by SJVAPCD Permit Nos. S-3412-1 through '6 and '12 '13, emission offsets certificates shall be provided~~ tendered (per AQ-79) for all calendar quarters in the following amounts at the offset ratio specified in Rule 2201 (6/15/95 version) Table 1:

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
PM10	142,479 lb	144,062 lb	145,646 lb	145,646 lb
SOx (as SO2)	30,099 lb	30,443 lb	30,768 lb	30,768 lb
NOx (as NO2)	139,270 lb	140,818 lb	142,365 lb	142,365 lb
VOC	19,963 lb	20,185 lb	20,407 lb	20,407 lb

[District Rule 2201]

Verification: The project owner shall provide copies of all the necessary ERC certificates to the CPM prior to the commencement of construction.

AQ-79 Permittee may lower hourly, daily and rolling twelve-month PM10 emission limits in Conditions AQ-12, AQ-13 and/or AQ-14, and thereby reduce PM10 offset requirements set forth in AQ-15, based on actual PM10 emissions demonstrated during initial source tests. The District will reflect revised limits in the permit to operate for the subject equipment. Any emission reduction credit certificates, or portions thereof, that were tendered to the District but are not needed to meet reduced PM10 offset requirements will be returned to the permittee at full value. The permittee shall indicate which emission reduction credit certificates are to be retired.

Verification: The project owner shall notify the CPM of any proposed changes in the PM10 emission limits, indicate which ERC certificates are to be retired and if necessary submit a Request to Amend conditions AQ-12 through AQ-15 within 60 days after the last unit is initially source tested.

AQ-80 Relief granted by the San Joaquin Valley Air Pollution Control District Hearing Board on November 14, 2001 in Regular Variance Docket Nos. S-01-33R, S-01-34R, S-01-35R and S-01-36R shall apply to Conditions of Certification AQ-5, AQ-8 through AQ-14 and AQ-37. The owner/operator shall comply with all requirements incorporated in the 15 conditions of these regular variances.

Verification: The owner/operator shall submit copies of all reports required under condition 12 of each Regular Variance to the CPM.