

DOCKETED

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Project Title:	SMUD Cosumnes Power Plant - Compliance
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Document Title:	Cosumnes Power Plant - Petition to Amend - Email - Air Quality Questions and Responses
Description:	N/A
Filer:	Mary Dyas
Organization:	California Energy Commission
Submitter Role:	Commission Staff
Submission Date:	11/7/2018 1:42:53 PM
Docketed Date:	11/7/2018

Dyas, Mary@Energy

From: Fletcher, Nancy@Energy
Sent: Wednesday, November 07, 2018 1:31 PM
To: Dyas, Mary@Energy
Subject: FW: Cosumnes Amendment AQ

From: Jeff Adkins <JAdkins@trinityconsultants.com>
Sent: Tuesday, October 30, 2018 3:20 PM
To: Fletcher, Nancy@Energy <Nancy.Fletcher@energy.ca.gov>
Cc: Layton, Matthew@Energy <Matthew.Layton@energy.ca.gov>; Dyas, Mary@Energy <Mary.Dyas@energy.ca.gov>; DeCarlo, Lisa@Energy <Lisa.DeCarlo@energy.ca.gov>; Eric Poff (Eric.Poff@smud.org) <Eric.Poff@smud.org>; René Toledo (Rene.Toledo@smud.org) <Rene.Toledo@smud.org>; Jeff Adkins <JAdkins@trinityconsultants.com>; Salamy, Jerry/SAC <Jerry.Salamy@jacobs.com>; Dave Blevins -EEG <Dave.Blevins@EthosEnergyGroup.com>; BLANK, Randall (EthosEnergy Group) (Randall.Blank@ethosenergygroup.com) <Randall.Blank@ethosenergygroup.com>
Subject: RE: Cosumnes Amendment AQ

Hello Nancy,

Please see our responses below to your questions regarding the Cosumnes Power Plant amendment application.

Please let me know if you have any questions regarding these responses, or if you would like the responses in a different format.

Thanks

Jeffrey Adkins

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From: Fletcher, Nancy@Energy [<mailto:Nancy.Fletcher@energy.ca.gov>]
Sent: Wednesday, October 24, 2018 3:44 PM
To: Jeff Adkins <JAdkins@trinityconsultants.com>
Cc: Layton, Matthew@Energy <Matthew.Layton@energy.ca.gov>; Dyas, Mary@Energy <Mary.Dyas@energy.ca.gov>; DeCarlo, Lisa@Energy <Lisa.DeCarlo@energy.ca.gov>
Subject: Cosumnes Amendment AQ

Hello,

The Sacramento Municipal Utility District Financing Authority (SFA) filed a petition (SFA 2018) with the California Energy Commission requesting an amendment to the Energy Commission license. SFA is proposing to operate the Cosumnes Power Plant (CPP) utilizing the enhanced capabilities of the General Electric 'Power FlexEfficiency Package' including Advanced Gas Path components and 'Dry-Low NOx' combustors, and an oxidation catalyst emission control system.

I have some additional questions regarding the proposed CPP amendment included below. Please note we plan to docket the responses.

- Please confirm CPP is now proposing no increases to the licensed hourly (AQ-17) and daily (AQ-18) potential limits for VOCs and PM10. Please note that the existing Energy Commission licensed facility PM10 emission limit is different from the Sacramento Metro Air Quality Management District limit.

This confirms that CPP is proposing no increases to the hourly and daily permit limits for VOCs and PM10 as part of this amendment.

- Please confirm CPP is now proposing to cap annual CO emissions at 123.1 tons per year total including both turbines.

This confirms that CPP is proposing to cap annual CO emissions at 123.1 tons per year total, including both turbines.

- Please confirm if the CO catalyst will be needed to meet the VOC standard of 1.17 ppmvd at 15% O₂, 3-hr average.

Previous source test data for both turbines without oxidation catalysts indicates that a catalyst is not necessary to meet the proposed VOC limit of 1.17 ppmvd at 15% O₂ on a 3-hr average. The highest source test measured value from either turbine over the past 6 years has been less than half of the proposed VOC limit.

- Please confirm if CPP operates as a base load facility (60 percent or greater annual capacity factor).

This confirms that CPP operates as a base load facility at 60% or greater annual capacity factor.

- Please provide detail on the digester gas supply. Please confirm if the digester portion of the natural/digester gas mix will continue to be approximately 4.97 percent of the fuel supply.

Digester gas from the Sacramento Regional Wastewater Treatment Plant (SRWTP) is injected into the natural gas supply line serving CPP, resulting in a more efficient use of the renewable energy created by the wastewater treatment digester gas, and an increase in SMUD's renewable energy portfolio.

Digester gas produced by the anaerobic digesters at the SRWTP was previously consumed in the duct burners at the Central Valley Financing Authority (CVFA) Cogeneration facility in Elk Grove, CA or flared at the SRWTP facility. As part of CEC Order No. 11-1102-5 docketed November 8, 2011, SMUD installed a digester gas treatment system at the CVFA facility in order to meet the DOT, PG&E Rule 21, EPA's acid rain regulation and approved petition, and GE large gas turbine requirements for gaseous fuels. SMUD then began injecting the treated digester gas into the natural gas pipeline running from CVFA to CPP.

CPP is limited by permit conditions to a total of 2,500 scfm of digester gas fuel to the facility. SMAQMD Authority to Construct Condition No. 8 equates this digester gas fuel flow rate to 92.63 MMBtu/hr of heat input. Therefore, based on a maximum firing rate of 2,200 MMBtu/hr per turbine, the digester gas portion of the natural/digester gas mix will continue to be less than approximately 4.97 percent of the fuel supply.

- Please provide all assumptions used for the greenhouse gas calculations, including fuel supplies and annual proportions.

GHG emissions presented in the Petition to Amend were based on the maximum potential to emit for the turbines (2,200 MMBtu/hr each) firing only natural gas fuel for 24 hours per day, 365 days per year. The 100% natural gas fuel assumption results in the highest GHG emissions case and matches the assumptions in the SMAQMD Permit to Operate. EPA GHG emission factors (2013 update) were utilized. Emission calculations

were presented in Appendix B of the SMAQMD permit application attached to the Petition to Amend and are summarized as follows:

$$\begin{aligned} 2,200 \text{ MMBtu/hr} \times 117.098 \text{ lb CO}_2\text{e/MMBtu} &= 257,616 \text{ lb/hr CO}_2\text{e per turbine} \\ 257,616 \text{ lb/hr} \times 2 \text{ turbines} \times 8760 \text{ hr/yr} / 2000 \text{ lb/ton} &= 2,256,716 \text{ tons/yr CO}_2\text{e total} \end{aligned}$$

Note that GHG emissions are presented above and in the application as “short” tons, not metric tons.

- CPP is currently licensed to meet a 10 ppm ammonia slip level. Please discuss the actual ammonia slip level CPP currently operates at. Please discuss the highest ammonia slip level CPP has operated at or is expected to operate at after taking advantage of the upgrades.

The highest ammonia slip levels measured during source tests performed over the past 6 years have been 2.23 ppm at 15% oxygen for CT2 and 0.99 ppm at 15% oxygen for CT3. CPP believes that these source test ammonia slip levels are representative of normal operation, and that it has maintained compliance with its permit limit of 10 ppmvd corrected to 15% oxygen, averaged over any 3-hour period, excluding startups and shutdowns.

The AGP Project is not expected to affect ammonia slip levels, and CPP expects to operate at similar ammonia slip levels in the future.

- Please justify the selection of the annual designation value as the representative PM2.5 background for the 24-hour National Ambient Air Quality Standard instead of using data readings from near-by ambient monitors within the county.

The closest PM2.5 monitor to the Cosumnes Power Plant is located near Sloughouse, CA (10 miles from the facility) and only began collecting PM2.5 data in 2017. The Sloughouse monitor does not have enough data collected to determine a design value.

The Sacramento County-wide design value was used consistent with the guidance provided in EPA Appendix W, specifically in section 8.3.2 which states “For many cases, the best starting point would be use of the current design value for the applicable NAAQS as a uniform monitored background contribution across the project area. However, there are cases in which the current design value may not be appropriate.” The cases identified in Appendix W where the current design value may not be appropriate are situations where the monitoring data can be refined to remove erroneous data or apply seasonal variations. These situations are not applicable here.

The Sacramento County design value also uses the highest design value across all of the monitors in the county, in this case the Del Paso Manor monitor. This monitor with the highest valid design value was conservatively selected as the background monitor value for the modeling exercise.

- Please confirm if there are any proposed changes to Table 1 Cooling Tower Specifications included in Order No. 08-0604-01 (TN 46617 docketed 6/6/2008).

There will be no changes to the CPP Cooling Tower specifications in Table 1 of CEC Order No. 08-0604-01 (TN 46617 docketed 6/6/2008) as a result of the AGP Project.

Please feel free to contact me if you have any questions or need any clarifications.

Nancy Fletcher -Air Resources Engineer
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Division

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