

CALIFORNIA ENERGY COMMISSION

1516 NINTH STREET
SACRAMENTO, CA 95814-5512
www.energy.ca.gov



California Energy Commission

DOCKETED
84-AFC-4C

TN # 70050

MAR 25 2013

DATE: March 25, 2013

TO: Interested Parties

FROM: Craig Hoffman, Compliance Project Manager

SUBJECT: **GILROY COGENERATION PROJECT (84-AFC-4C)**

Staff Analysis of Proposed Installation of Two New Selective Catalytic Reduction (SCR) Units on the Project's Two Auxiliary Boilers.

On February 18, 2013, Calpine Gilroy Cogen, L.P., filed a revised petition with the California Energy Commission requesting to modify the Gilroy Cogeneration Project. The modification(s) proposed in the petition would install two new Selective Catalytic Reduction (SCR) units on the project's two auxiliary boilers. The addition of a SCR system on each boiler would allow the project to comply with recent changes to the Bay Area Air Quality Management District regulations for emissions of nitrogen oxides (NOx) for auxiliary boilers. The Bay Area Air Quality Management District has determined that the project proposal would result in new permit to operate requirements from the district.

The Gilroy Cogeneration Project is a 115-megawatt, natural gas-fired power plant located in the City of Gilroy in Santa Clara County. The project was certified by the California Energy Commission on November 13, 1985, and began commercial operation in May, 1988.

California Energy Commission staff (staff) reviewed the petition and assessed the impacts of this proposal on environmental quality and on public health and safety. Staff proposes additional Air Quality conditions of certification **AQ-SC-1 thru AQ-SC-7** and modifications to **AQ-1.3**. It is staff's opinion that, with the implementation of the revised conditions, the project will reduce project related NOx emissions and would remain in compliance with applicable laws, ordinances, regulations, and standards (LORS) and the proposed modifications would not result in any significant adverse direct, indirect, or cumulative impacts to the environment (Title 20, California Code of Regulations, Section 1769).

The notice has been mailed to Gilroy Cogen mail list 794 and sent electronically to the Siting list serve. The petition and staff's analysis have been posted on the California Energy Commission's webpage at http://www.energy.ca.gov/sitingcases_pre-1999/index.html. Staff intends to recommend approval of the petition at the April 10, 2013, Business Meeting of the Energy Commission. If the petition is approved, the commission's order will also be posted on the webpage.

Agencies and members of the public who wish to provide written comments on the petition are asked to submit comments to the Energy Commission Dockets Unit prior to **April 9, 2013**. Please include the docket number, 84-AFC-4C, in the subject line or first paragraph of your comments. Those submitting comments electronically should provide them in either Microsoft Word format or as a Portable Document Format (PDF) to docket@energy.ca.gov. Please include your name or your organization's name in the file name. Those preparing non-electronic written comments should mail or hand-deliver them to:

California Energy Commission
Dockets Unit, MS-4
Docket No. 84-AFC-4C
1516 Ninth Street
Sacramento, CA 95814-5512

All written comments and materials filed with the Dockets Unit will become part of the public record of the proceeding. Additionally, comments may be posted on the website.

If you have any questions, please contact Craig Hoffman, Compliance Project Manager, at (916) 654-4781, or by fax to (916) 654-3882, or via e-mail at craig.hoffman@energy.ca.gov.

If you desire information on participating in the Energy Commission's review of the project, please contact the Energy Commission's Public Adviser at (916) 654-4489, or at (800) 822-6228 (toll free in California). 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.ca.gov.

Enclosure

Mail List – Gilroy Gogen 794
List Serve - Siting

GILROY COGENERATION PROJECT (84-AFC-4C)

Petition for the Proposed Installation of Two New Selective Catalytic Reduction Units on the Project's Two Auxiliary Boilers

EXECUTIVE SUMMARY
Prepared by: Craig Hoffman
March, 2013

INTRODUCTION

On February 18, 2013, Calpine Gilroy Cogen, L.P. (Calpine, or project owner), filed a petition with the California Energy Commission (Energy Commission) to amend the 1985 Energy Commission Decision approving the Gilroy Cogeneration Project (Gilroy Cogen, or project). The original petition was filed on December 12, 2012 and revised in February 2013, to reflect new permit to operate requirements that will be required by the Bay Area Air Quality Management District (BAAQMD).

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

Energy Commission staff (staff) has completed its review of all materials received. The staff analysis below is staff's assessment of Calpine's proposal to install new equipment to comply with changed regulations limiting NOx emissions.

PROJECT LOCATION AND DESCRIPTION

The Gilroy Cogen is a 115-megawatt, natural gas-fired power plant located in the City of Gilroy in Santa Clara County. The project was certified by the Energy Commission on November 13, 1985, and began commercial operation in May, 1988.

DESCRIPTION OF PROPOSED MODIFICATIONS

The petition requests authorization to install a Selective Catalytic Reduction (SCR) system on each of the facility's two auxiliary boilers, S-101 and S-102. This installation would allow these auxiliary boilers to comply with BAAQMD and State Implementation Plan revisions to Regulation 9, Rule 7, "Nitrogen Oxides and Carbon Monoxide from Industrial, Institutional and Commercial Boilers, Steam Generators and Process Heaters," which establish a new emissions limit of 5 parts per million by volume @ 3% O₂ of NOx. With installation of the new SCR systems, emissions from the S-101 and S-102 auxiliary boilers will achieve a NOx limit of 5 parts per million by volume dry.

If approved, a SCR system would be installed in the exhaust flow path of each of the two natural gas-fired steam boilers. The installation would occur in a vertical section of the flue gas duct, downstream of the main boiler section but upstream of the economizer. The installation would include the SCR systems, ammonia flow control units, ammonia vaporization equipment, replacement of ammonia forwarding pumps, interconnecting piping, power, control systems, emissions monitoring systems, and all other ancillary components. The ammonia supply for the SCRs would be from an existing aqueous ammonia tank located on the project site.

This modification will result in a decrease in the hourly and annual NOx emissions.

NECESSITY FOR THE PROPOSED MODIFICATIONS

The change to the project's design is necessary to ensure compliance with BAAQMD's revisions to Regulation 9, Rule 7. For facilities that must install new control equipment, the BAAQMD deadline to comply with the lower NOx emission limits is the next scheduled major maintenance, or January 1, 2014, whichever is earlier. Gilroy Cogen currently plans to install the SCR systems during the next major maintenance event, scheduled for April and May, 2013.

STAFF'S ASSESSMENT OF THE PROPOSED PROJECT CHANGES

The technical area sections contained in this staff analysis include staff-recommended changes to the existing conditions of certification. Staff believes the changes would reduce potential impacts resulting from the proposed modifications to less than significant levels. A summary of staff's conclusions reached in each technical area are summarized in **Executive Summary Table 1**, below.

Energy Commission technical staff reviewed the petition for potential environmental effects and consistency with applicable LORS. Staff has determined that the technical or environmental areas of air quality, biological resources, cultural resources, geological hazards and resources, facility design, noise and vibration, paleontological resources, public health, socioeconomics, traffic and transportation, transmission line safety and nuisance, 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 for these areas.

Hazardous Materials Management and Worker Safety and Fire Protection staff have reviewed the project proposal in regard to changes to the chemical inventory and quantities of chemicals needed for the proposed project. The SCR systems will require the use of aqueous ammonia that is already in use and located at the project site for the existing power plant. Calpine Gilroy expects the annual incremental ammonia usage for both boilers to be approximately 10,000 gallons of 19 percent ammonia. This will result in an approximate annual average addition of 1.5 truck load deliveries. Although the

amount of aqueous ammonia and deliveries will increase, the existing conditions of certification will ensure that on-site deliveries, storage and use of hazardous materials will not have an increased impact on environmental quality, public health and safety.

Staff determined, however, that the technical area of air quality would be affected by the proposed project changes and has proposed conditions of certification **AQ-SC-1 thru AQ-SC-7** and modifications to **AQ-1.3** in order to assure compliance with LORS and to reduce potential environmental impacts to a less than significant level. The proposed conditions of certification **AQ-SC-1 thru AQ-SC-7** and modifications to **AQ-1.3** are provided in the Air Quality staff analysis section below.

**Executive Summary Table 1
Summary of Impacts to Each Technical Area**

TECHNICAL AREAS REVIEWED	STAFF RESPONSE			New or Revised Conditions of Certification Recommended
	Technical Area Not Affected	No Significant Environmental Impact*	Process As Amendment	
Air Quality			X	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)).

STAFF RECOMMENDATIONS AND CONCLUSIONS

Staff concludes that the following required findings mandated by 20 CCR, §1769(a)(3) can be made and recommends approval of the petition by 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 LORS;
- C. The modification(s) proposed in the petition will reduce NO_x emissions from the project and allow the project to comply with recent changes to the BAAQMD regulations for emissions of nitrous oxides (NO_x) for auxiliary boilers;
- D. There has been a substantial change in circumstances since the Energy Commission certification, thus justifying the changes.

CALPINE GILROY COGEN (84-AFC-4C)
Request to Amend Final Commission Decision Air Quality Analysis
Nancy Fletcher

INTRODUCTION

On February 18, 2013, Calpine Gilroy Cogen, L.P. (Gilroy Cogen), filed a petition (Calpine 2013) with the California Energy Commission (Energy Commission) requesting minor amendments to the conditions of certification for the Gilroy Cogen Project (project). The project is a 115-megawatt (MW) natural gas-fired cogeneration power plant providing steam to the Gilroy Foods plant for food processing and dehydration and generating electricity for sale to Pacific Gas and Electric Company. The facility consists of one 87 MW turbine/ cogeneration unit with two 104 million British thermal units per hour (MMBtu/hr) auxiliary boilers. The original Commission Decision approving the project was issued in November 1985 and the cogeneration plant has been in commercial operation since May 1988.

Gilroy Cogen requested revisions to the conditions of certification to install selective catalytic reduction (SCR) on the project's two auxiliary boilers. The addition of the SCR systems will lower emissions of oxides of nitrogen (NO_x) from the boilers in order to comply with recent changes to the Bay Area Air Quality Management District (BAAQMD) Regulation 9, Rule 7 Nitrogen Oxides and Carbon Monoxide from Industrial, and Commercial Boilers, Steam Generators and Process Heaters. Regulation 9, Rule 7 establishes oxides of nitrogen (NO_x) and carbon monoxide (CO) limits for the boilers. The existing low NO_x burners meet the current interim NO_x limit of 30 parts per million volume dry (ppmvd) @ 3 percent O₂ when firing a gaseous fuel. Regulation 9, Rule 7 will require the auxiliary boilers to meet a NO_x emission limit of 5 ppmvd @ 3 percent O₂. Regulation 9, Rule 7 establishes a deadline of January 1, 2012 for at least one third of a facility's affected units. However, the rule allows for an additional 24 months for boilers at facilities that had to install additional control equipment under Regulation 9, Rule 9 Nitrogen Oxides from Stationary Gas Turbines. The Energy Commission amended the Gilroy Cogen Decision in 2011 to allow the facility to install the additional control equipment to meet Regulation 9, Rule 9 requirements. Therefore, the deadline for the Gilroy Cogen facility to meet these new requirements is January 1, 2014 for the first boiler and January 1, 2015 for the second boiler. The facility is proposing to install SCR systems and continuous emissions monitors on both boilers in April and May of 2013 ensuring the project meets the regulatory deadlines early.

There will be no increase of criteria pollutant emissions associated with this amendment. NO_x emissions will decrease once the SCR units become operational; however emissions of ammonia – not a criteria pollutant in and of itself, but a precursor to one (particulate matter) – will increase. Gilroy Cogen submitted an application for an Authority to Construct (ATC) to the BAAQMD for installation of the SCR systems on the auxiliary boilers. BAAQMD has reviewed the application and submitted a draft evaluation to Energy Commission staff including new permit conditions addressing the

proposed changes. The applicant is proposing to incorporate the proposed conditions into the existing conditions of certification.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS COMPLIANCE

The BAAQMD reviewed the requested modifications and determined the project would comply with their regulations. The BAAQMD submitted a draft engineering evaluation of the proposed project to Energy Commission staff for review. The BAAQMD analysis identified the following air quality laws, ordinances, regulations and standards (LORS) included in **Air Quality Table 1** as applicable to the proposed amendment. The proposed changes will allow

**Air Quality Table 1
Laws, Ordinances, Regulations, and Standards (LORS)**

Applicable Law	Description
Regulation 1	General Provisions and Definition – Includes provisions and definitions applicable to all regulations. Section 115 exempts existing sources from NSR BACT and offset requirements when modifying existing sources in order to comply with emission regulations.
Regulation 2, Rule 1	General Requirements –Includes criteria for issuance or denial of permits, exemptions, appeals and District actions. Sections 312.2 and 312.3 exempt applications that install air pollution control or abatement equipment and permits applications for projects undertaken solely to bring a facility into compliance with newly adopted regulatory requirements of the District or any other local, state or federal agency from District CEQA.
Regulation 2, Rule 2	New Source Review – Applies to new and modified sources. Outlines requirements and implements federal NSR and PSD requirements. Regulation 1 exempts the facility from BACT and offset requirements for this proposal. BAAQMD is delegated by EPA to meet federal prevention of significant deterioration (PSD) requirements for permits issued in accordance with 2-2. PSD is not triggered since there are no emission increases of any PSD pollutant above major modification thresholds (see discussion in analysis). Federal new source review (NSR) requirements are incorporated by reference.
Regulation 2, Rule 5	New Source review of Toxic Air Contaminants (TACs) – Applies preconstruction permit review to new and modified sources of TACs. Contains project health risk limits. The proposed project will result in increased ammonia emissions. Therefore, conditions will be added to ensure the project remains below threshold limits (see discussion in analysis section).
Regulation 2, Rule 6	Major Facility Review – Establishes procedures for large facilities to obtain Title V permits. The facility has an existing Title V permit. The proposed changes will require the Title V permit to be revised. The revisions will be considered administrative changes and the amendment will be processed after the issuance of the authority to construct (see discussion in analysis).
Regulation 6, Rule 1	General Requirements – Limits quantities of particulate matter in the atmosphere. Continued compliance is expected since the boilers will continue to be fired on natural gas and there is no increase in permitted emissions limits.
Regulation 9 Permits, Rule 1	Sulfur Dioxide – Establishes emission limits for sulfur dioxide. Continued compliance is expected since the boilers will continue to be fired on low sulfur natural gas and there is no increase in permitted emissions limits.
Regulation 9 Permits, Rule 7	Nitrogen Oxides and Carbon Monoxide from Industrial, Institutional, and Commercial Boilers, Steam Generators and Process Heaters – Establishes emission limits for NOx and CO. The proposed SCR system will allow the facility to come into compliance with lower

	NOx limits according to the compliance schedule.
40 CFR 60, Subpart Db	Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units [40 CFR Part 60 - New Source Performance Standards (NSPS)]. Requires monitoring, notification, and reporting of emissions and operation of the proposed natural gas fired auxiliary boiler. The boilers will continue to meet the NOx limits contained in 60.44b(a)(4) of the regulation.

the facility to comply with the recent revisions to BAAQMD Regulation 9, Rule 7, lowering the NOx limits for the auxiliary boilers.

The BAAQMD evaluation includes seven new proposed conditions to ensure the project remains in compliance with air quality laws, ordinances, regulations and standards (LORS). The conditions of certification in the original Commission Decision and any and all amendments thereafter including the proposed conditions ensure that the project will remain in compliance with all applicable LORS.

SETTING

Federal and state ambient air quality attainment status designations have changed since the original Energy Commission Decision in 1985. The project is located in Gilroy, a city in southern Santa Clara County, and is considered part of the San Francisco Bay Area Air Basin. The BAAQMD has jurisdiction over the seven full counties and two partial counties that are within the San Francisco Bay Area Air Basin. For convenience, staff includes **Air Quality Table 2**, which summarizes the area's current attainment status for state and federal air quality standards for the Bay Area Air Quality Management District.

Air Quality Table 2
Current Federal and State Attainment Status Bay Area Air Quality Management District

Pollutant	Averaging Time	California Status	Federal Status
Ozone (O ₃)	8 Hour	Non-attainment	Non-attainment
	1 Hour	Non-attainment	N/A
Carbon Monoxide (CO)	8 Hour	Attainment	Attainment
	1 Hour	Attainment	Attainment
Nitrogen Dioxide (NO ₂)	Annual	N/A	Attainment
	1 Hour	Attainment	Unclassified
Sulfur Dioxide (SO ₂)	Annual	N/A	Attainment
	24 Hour	Attainment	Attainment
	1 Hour	Attainment	Attainment
PM10	Annual	Non-attainment	N/A
	24 Hour	Non-attainment	Unclassified

PM2.5	Annual	Non-attainment	Attainment
	24 Hour	N/A	Non-attainment

Source: http://hank.baaqmd.gov/pln/air_quality/ambient_air_quality.htm^a Federal designation reflects the 8-hr standard. The national 1-hr standard was revoked June 15, 2005.

Notes: Unclassified means the area is treated the same as attainment. N/A= no standard applies or not applicable.

ANALYSIS

Gilroy Cogen filed a petition to amend the Energy Commission Decision to approve the installation of SCR on each auxiliary boiler to meet the BAAQMD revised NOx emission requirements according to the compliance schedule outlined in Regulation 9, Rule 7. Proposed Condition of Certification **AQ-SC2** would require the boilers to operate in compliance with the lower NOx limits once the SCR is installed. In addition, the facility is proposing to install two new continuous emission monitoring (CEM) units to monitor each boiler separately. Currently, the boilers share one CEMs monitor for both boilers. The Energy Commission Decision currently requires Gilroy Cogen to have a District approved CEMS monitoring systems for NOx for the boilers. The BAAQMD will require the new CEM systems to be certified to ensure their accuracy. The current CEM requirements do not specify shared or separate systems for the boilers, and the facility operates in compliance with the requirement. Proposed Condition of Certification **AQ-SC3** would require the NOx from each boiler to be monitored with a District approved CEM system. This will ensure the boilers will be in compliance with the lower NOx emission requirement. In addition, **AQ-SC3** will require CO to be monitored by the boilers' CEM systems. The BAAQMD already requires the boilers to have a CEM system monitoring CO. Including CO CEM requirements will allow the Energy Commission to verify that Gilroy Cogen complies with the annual 100 tons of CO emission limit for the boilers and turbine. In addition, the verification language for Condition of Certification **1.3** will be clarified to ensure that annual CO emissions for the boilers and turbine combined do not exceed 100 tons annually, consistent with existing BAAQMD permit requirements.

The SCR system will reduce NOx emissions from the boiler exhaust by introducing ammonia to the exhaust stream and utilizing a catalyst to convert NOx to nitrogen and water. A portion of the ammonia may pass through the SCR system without reacting and therefore be released through the exhaust stack. This is referred to as "ammonia slip" and can be minimized with proper system monitoring. NOx emissions from the boiler are currently required to meet interim Regulation 9, Rule 7-301 limitations of 30 ppmvd @ 3 percent O₂. According to the rule, these limits are applicable until the lower emissions of 5 ppm @ 3 percent O₂ are required. At 30 ppm the boilers emit NOx at 0.036 pounds per million British thermal units (lb/MMBtu). After the SCR is operational, NOx emissions will be lowered to 0.0061 lb/MMBtu. The boilers will continue to meet the NOx emission limits of 0.1 lb/MMBtu (low heating value) and 0.2 lb/MMBtu (high heating value) contained in 40 CFR 60, Subpart Db (60.44b[a]).

The adopted BAAQMD NOx requirements are 83 percent lower than the existing standards. However, NOx emissions associated with the operation of the auxiliary

boilers vary from year to year. In 2011, the annual NOx emissions from the auxiliary boilers were recorded at 6.6 tons. Annual 2011 NOx emissions including the combustion turbine totaled 11.9 tons. Therefore, the 2011 NOx emission associated with the auxiliary boilers accounted for 55 percent of the total NOx emissions. In 2012, the annual NOx emissions from the auxiliary boilers were reported at 4.5 tons and the total NOx emissions including the combustion turbine totaled 25.9 tons. The NOx emission associated with the auxiliary boilers in 2012 only accounted for 17 percent of the total NOx emissions. In addition to the lower NOx emission limits, hourly operation restraints will be placed on the auxiliary boilers (see discussion below and proposed Condition of Certification **AQ-SC6**) that will limit total NOx emissions from the auxiliary boilers to below 5 tons per year. Although the staff recommended requirement of 5 ppmvd @ 3 percent O₂ is 83 percent lower than the current limit of 30 ppmvd @ 3 percent O₂, the actual ppmvd concentration that Gilroy Cogen operates at fluctuates, and calculating the NOx emission reduction based on 30 ppmvd may not be accurate; the actual percentage reduction will not necessarily equate to 83 percent due to the variability of operations and the hourly operating limit that will be placed on the auxiliary boilers.

The BAAQMD is proposing to limit the ammonia slip from the auxiliary boilers to 10 ppm @ 3 percent O₂ averaged over three hours. In addition, the annual operation of the boilers will be limited in order to ensure the ammonia emissions will not pose a significant risk to public health. Ammonia is classified as a toxic air contaminant (TAC) and exposure to levels of significance can irritate or burn the skin, eyes, nose and throat. BAAQMD Regulation 2, Rule 5 New Source Review of Toxic Air Contaminants establishes exemptions for low emissions levels of TACs. These emission levels are referred to as trigger levels and are specific to each TAC. The trigger level for ammonia is 7.1 pounds per hour and 7,700 pounds per year. Projects below these levels do not require a Risk Screening Analysis. Incorporating new Conditions **AQ-SC4** and **AQ-SC6** requiring the ammonia slip meet a limit of 10 ppm @ 3 percent O₂ and restricting the combined operation of the auxiliary boilers to 15,800 hours per year for Prevention of Significant Deterioration (PSD) purposes will also restrict the ammonia emissions to below the trigger level (see calculations below). In addition, proposed Condition **AQ-SC5** will require the ammonia slip to be tested at start-up and on an annual basis thereafter to ensure the ammonia slip requirements for the boilers are met.

The following calculations demonstrate the ammonia emissions are expected to be below the BAAQMD Regulation 2, Rule 5 risk screening trigger levels:

$$\text{lb/MMBtu NH}_3 = 10 \text{ E-06 ft}^3/\text{ft}^3(10 \text{ ppm}) \times 1/386.8 \text{ dscf/lb.-mol} \times 17 \text{ lb/lb.-mol} \times 8743 \text{ dscf/MMBtu} \times (20.95)/20.95-3 = 0.00448 \text{ lb/MMBtu}$$

$$\text{Per Boiler: lb/hour NH}_3 = 104 \text{ MMBtu/hour} \times 0.00448 \text{ lb/MMBtu} = 0.47 \text{ lb/hour}$$

$$\text{Per Boiler: lb/year NH}_3 = 0.47 \text{ lb/hour} \times 7,900 \text{ hours/year} = 3,713 \text{ lb/year, } 1.857 \text{ tons/year}$$

Both Boilers: NH₃ lb/hour = 0.94 lb/hour

Both Boilers: NH₃ lb/year = 7,426 lb/year, 3.713 ton/year

Hazardous Materials Management and Worker Safety and Fire Protection staff have reviewed the project proposal in regard to changes to the chemical inventory and quantities of chemicals needed for the proposed project. The SCR systems will require the use of aqueous ammonia that is already in use and located at the project site for the existing power plant. Calpine Gilroy expects the annual incremental ammonia usage for both boilers to be approximately 10,000 gallons of 19 percent ammonia. This will result in an approximate annual average addition of 1.5 truck load deliveries. Although the amount of aqueous ammonia and deliveries will increase, the existing conditions of certification will ensure that on-site deliveries, storage and use of hazardous materials will not have an increased impact on environmental quality, public health and safety.

Although the boilers currently meet the required 30 ppmvd @ 3 percent O₂ NO_x limitation as monitored by a CEMS, the current conditions of certification only require a 40 ppmvd @ 3 percent O₂ NO_x limit. Energy Commission staff, in consultation with BAAQMD and Gilroy Cogen, is proposing to incorporate a new Condition of Certification, **AQ-SC1**, containing the current 30 ppm NO_x requirement of BAAQMD Regulation 9, Rule 7-301. This requirement will be applicable until the SCR is installed and operational, at which time the requirement becomes 5 ppm @ 3 percent O₂. Staff is proposing no changes to Condition of Certification **1.4** requiring the boilers to meet 40 ppmvd @ 3 percent O₂. The 40 ppmvd @ 3 percent O₂ NO_x limitation contained in Condition of Certification **1.4** was based on BACT and PSD requirements that were incorporated into the conditions of certification. The PSD permit is not required to be amended due to this proposed action. Therefore, the limits in the PSD-based condition continue to be valid requirements for PSD compliance purposes.

BAAQMD is delegated by the EPA to issue the PSD permit for the facility. Under the delegation agreement, the District PSD permit is issued in accordance with Regulation 2, Rule 2 to meet federal PSD requirements. PSD is not triggered for this proposal since there is no emission increase of a PSD pollutant above a major modification threshold. The SCR is being installed to reduce NO_x. Ammonia emissions will increase; however, ammonia emissions are not regulated by the PSD permit program and there is no trigger level. Proposed Condition of Certification **AQ-SC6** limits the combined hours of operation for the auxiliary boilers to 15,800 hours. This limit ensures the potential increase of the facility's emissions above a 2 year baseline will remain below PSD major modification thresholds including greenhouse gas emissions as carbon dioxide equivalent (CO₂e), with the exception of CO. However, emissions of CO are limited to 100 tons per year for the boilers and turbine. Therefore the potential emissions for CO from the boilers will not exceed the 100 tons per year increase in CO over baseline levels PSD major modification threshold.

Gilroy Cogen is considered a major facility and has an existing federal Title V permit. Changes to the boiler descriptions and the addition of new conditions would require the

Title V permit to be revised. The required revisions would be an administrative amendment since the new emission limit required by BAAQMD Regulation 9, Rule 7 is not in the California State Implementation Plan (SIP). Therefore the requirement is not federally enforceable. The BAAQMD considers non-federally enforceable requirements to be administrative amendments. The District will process an administrative amendment to the Title V permit after the petition to amend is approved by the Energy Commission and the Authority to Construct (ATC) is issued by BAAQMD.

The BAAQMD analysis also proposes the addition of a new condition to ensure compliance with the new requirements through the monitoring and reporting of applicable parameters. The condition specifically requires the owner/operator to maintain records or hours of operation of the auxiliary boilers on a 12-month rolling average basis, fuel usage, the duration of each startup and shutdown event including emissions of NOx and CO during each event, all CEM data and source test records. Staff is recommending the addition of Condition of Certification **AQ-SC7** in order to ensure Gilroy Cogen continues to operate in compliance with the applicable LORS.

CONCLUSIONS AND RECOMMENDATIONS

The California Energy Commission staff (staff) recommends approval of the installation of SCR and the proposed additions and amendments to the Air Quality conditions of certification for Gilroy Cogen. The installation of SCR will lower NOx emissions and allow the facility to operate in compliance with the changes to BAAQMD Regulation 9 Rule 7. The requested changes will conform with the applicable LORS related to air quality and will not result in significant air quality impacts. The requested changes have already been reviewed by BAAQMD staff, and they are waiting Energy Commission adoption prior to finalizing the ATC authorizing the the facility to install the proposed SCR air quality control equipment.

PROPOSED AND AMENDED CONDITIONS OF CERTIFICATION

Staff recommends the addition of the following Air Quality conditions of certification and modification to existing Condition 1.3. **Bold underline** is used to indicate new language. ~~Strikethrough~~ is used to indicate deleted language.

AQ-SC1 **Until each SCR is installed, tuned and becomes operational, but no later than 60 days after initial startup of each SCR unit, the owner/operator shall ensure that the nitrogen oxide (NOx) emissions from each auxiliary boiler (S-101, S-102) continue to meet 30 ppmvd at 3 percent oxygen averaged over any one-hour period, except during startup and shutdown periods. (Basis: Regulation 9-7-301.1)**

Verification: **The project owner/operator shall monitor compliance with the NOx emission limitation with the continuous in-stack emission monitors described in Condition 1.12.**

AQ-SC2 **Within 60 days of initial startup of each SCR unit, the owner/operator shall ensure that the nitrogen oxide (NOx) emissions from each auxiliary boiler (S-101, S-102) do not exceed 5 ppmvd at 3 percent oxygen averaged over any one-hour period, except during startup and shutdown periods. (Basis: Regulation 9-7-307.6)**

Verification: **The project owner/operator shall monitor compliance with the NOx emission limitation with the continuous in-stack emission monitors described in Condition AQ-SC3.**

AQ-SC3 **The owner/operator shall monitor NOx and CO from each boiler with a District approved CEM system (Basis: Regulation 1-521, 2-1-403).**

Verification: **The project owner/operator shall submit to the BAAQMD a CEM plan that complies with the BAAQMD Manual of Procedures, Volume V (Continuous Emissions Monitoring and Procedures) for approval prior to the installation of the CEM system. The plan will describe the monitoring equipment, monitoring locations, calibration techniques and schedules, reporting format and procedures and schedules. Prior to operation, the project owner/operator shall submit to the compliance project manager (CPM) evidence of BAAQMD approval of the CEM plan.**

AQ-SC4 **Within 60 days of initial startup of each SCR unit, the owner/operator shall ensure that the ammonia (NH3) emission concentration at each exhaust point of S-101 and S-102 does not exceed 10 ppmvd, on a dry basis, corrected to 3 percent oxygen as measured with a District approved method, except during startup and shutdown periods. (Basis: Regulation 2, Rule 5).**

Verification: **The project owner/operator shall monitor ammonia slip through the testing requirements of AQ-SC5.**

AQ-SC5 **Within 90 days of initial startup of each SCR unit, the owner/operator shall have a District approved source test conducted for ammonia (NH3) at the exhaust point of S-101 and S-102 and on an annual basis thereafter. The owner/operator shall submit the results of the District approved source test to the District Source Test Section within 60 days of the source test date. (Basis: Regulation 2, Rule 5)**

Verification: **The project owner/operator shall submit a source test protocol to the BAAQMD and CPM at least 7 days prior to the source test. The owner/operator shall submit the results of the BAAQMD approved source test to the BAAQMD Source Test Section and CPM within 60 days of the source test date.**

AQ-SC6 **S-101 and S-102 shall not operate more than 15,800 hours combined on a 12-month rolling average basis. (Basis: Regulation 2, Rule 5, Regulation 2-1-403).**

Verification: The project owner/operator shall maintain records of the operating hours of the boilers and issue quarterly reports to the BAAQMD and CPM detailing the annual combined operational hours on a 12 month rolling average basis.

AQ-SC7 The owner/operator of S-101 and S-102 shall maintain records of hours of operation on a 12-month rolling average basis, fuel usage, the duration of each startup and shutdown event including emissions of NOx and CO during each event, all CEM data, and source test records in a District-approved log. These records shall be retained on site for a minimum of five years from the date of entry and made available to District representatives upon request. (Basis: Regulation 2-6-501, Regulation 9-7-307.6).

Verification: The project owner/operator shall monitor S-101 and S-102 hours of operation on a 12 month rolling average basis, fuel usage, the duration of each startup and shutdown event including NOx and CO emissions during each event and issue quarterly reports to the BAAQMD and CPM. All source test data will be submitted to the BAAQMD and CPM within 60 days of the source test date. In lieu of submitting hourly CEM data to the CPM, the owner/operator shall submit a list in the quarterly report of any upset or breakdown condition.

1.3 An oxidizing catalyst (A-100) shall reduce CO emissions from the gas turbine (S-100) by at least 80% (by weight), averaged over any three-hour period. The catalyst shall operate during all periods of turbine operation except during start-up, which shall not exceed one-half hour for a warm start, or one hour for a cold start. Annual CO emissions shall not exceed 100 tons per year. The District's Source Test Division **Section** shall approve the location of sampling ports needed to test for compliance with this condition.

Verification: **The project owner/operator** GEG shall submit a copy of BAAQMD's annual test results for CO in the following quarterly air quality report required by condition no. 15 after receipt from BAAQMD. **The owner/operator** GEG shall submit in the annual compliance report data that demonstrates compliance with the 100 tons/year **CO limitation in any consecutive twelve months for the auxiliary boilers and turbine combined** stated above.

REFERENCES

Calpine 2013 - Petition to Amend Commission Decision Conditions of Certification.
February 18, 2013.

BAAQMD 2013 - Bay Area Air Quality Management District Draft Engineering
Evaluation Calpine Gilroy Cogen, LP & Gilroy Energy Center LLC March 5, 7,
2013.

CEC 2011 - California Energy Commission - Calpine Gilroy Cogen Power Project- (84-AFC-4C) Staff Analysis of Installation of Dry Low NOx (DLN+) Combustors. February 25, 2011.

BAAQMDe 2013 - Brian Lusher. "Calpine Gilroy Condition Language for Ammonia" E-mail to Nancy Fletcher. March 5, 2013