



NOTIFICATION OF PRELIMINARY DECISION BY THE MONTEREY BAY AIR RESOURCES DISTRICT TO ISSUE A SIGNIFICANT MODIFICATION OF THE FEDERAL OPERATING (TITLE V) PERMIT TO CALPINE CORPORATION PURSUANT TO DISTRICT RULE 218

Pursuant to Rule 218, the Monterey Bay Air Resources District solicits written public comments to the preliminary decision to approve the issuance of a Title V Permit significant modification to Calpine Corporation for their existing facility located in King City. The facility consists of two power plants on adjacent properties, a 120 Mw Cogeneration plant located at 750 Metz Road and a 50 Mw Peaker plant located at 51 Don Bates Way.

Calpine Corporation's King City facility is subject to the requirements of the federally mandated Title V permitting program. The Title V permit to be issued will contain all the applicable federal requirements, and will not change the Calpine Corporation's operations.

Calpine Corporation has submitted an application for a significant modification of the Title V Permit. Calpine Corporation is requesting to amend their Title V permit to include the Acid Rain permit requirements of 40 CFR Part 72 to the cogeneration facility with the General Electric (GE) Frame 7 gas turbine. Calpine Corporation has been operating a combustion turbine as a cogeneration electric generation facility supplying energy to Pacific Gas and Electric Company under a Standard Offer No.4 (504) contract and steam to an industrial host under a steam supply contract since 1989. These contracts expired on April 28, 2019, and as a result, CKCC will no longer be exempt from Acid Rain program requirements under 40 CFR 72.6(b).

The proposed permit will be forwarded to the US EPA for a 45-day review period. The District will not issue a permit to which EPA objects. The public may petition the US EPA, Region 9, Operating Permits Section, within 60 days after the US EPA 45-day review period to object the issuance of the final permit. This petition shall be based only on objections that were raised with reasonable specificity during the public comment period, unless the petitioner demonstrates that it was impracticable to raise the issue during that time period.

The Calpine Corporation application and the District Evaluation Report of this project are available for public inspection at the District office and website at www.mbard.org.

The public has an opportunity to review and comment on the proposed Project. Under special circumstances, the District may hold a public hearing. Written comments must be submitted to the address below and be postmarked by February 21, 2020.

Monterey Bay Air Resources District
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Monterey, CA 93940
(831) 647-9411
ajimenez@mbard.org
Attention: Armando Jimenez

MONTEREY BAY AIR RESOURCES DISTRICT

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Monterey, CA 93940
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**EVALUATION REPORT AND STATEMENT OF BASIS
FOR
SIGNIFICANT MODIFICATION
OF THE MAJOR FACILITY REVIEW PERMIT**

December 2019
Application TV-0000012A

APPLICATION RECEIVED FROM:

Calpine King City Cogen, LLC & Gilroy Energy Center, LLC for King City Power Plant
750 Metz Road
King City, CA 93930

PLANT SITE LOCATION:

750 Metz Road & 51 Don Bates Way
King City, CA 93930

APPLICATION PROCESSED BY:

Armando Jimenez, Air Quality Engineer

ORIS CODE: 10294

Nature of Business: Cogeneration & Power Generation

SIC Code: 4931 - Electric & Other Services Combined
 4911 - Electric Power Generation

RESPONSIBLE OFFICIAL:

Name: Mr. Kevin Karwick
Title: General Manager Central Coast Projects
Phone: (408) 337-3429

ALTERNATE RESPONSIBLE OFFICIALS

Name: Paul Mansfield
Title: Operations & Maintenance Manager
Phone: (831) 385-7947

Name: Mr. Gary Fuller
Title: EHS Specialist
Phone: (661) 282-4405

FACILITY CONTACT PERSON:

Name: Mr. Gary Fuller
Title: EHS Specialist
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FACILITY DESCRIPTION

The facility consists of Calpine King City Cogen, LLC (CKCC), a combined cycle cogeneration plant and the Gilroy Energy Center, LLC (GEC), a simple cycle combustion turbine. The facilities are located in King City, California and are operated by the Calpine Corporation.

Calpine King City Cogen, LLC produces most of the electricity through the expansion of fuel combusted (natural gas or fuel oil) in a gas turbine that is connected to a generator. Heat in the gas turbine exhaust is used to produce high-pressure steam in a heat recovery steam generator, which is used to produce additional electricity from a steam turbine/generator. In addition, two auxiliary boilers are located at the facility and are used to provide process steam ~~for facility processes and in order to maximize electrical power production from~~ the steam turbine/generator operations and startup during peak power production periods ~~or~~ when the gas turbine is not operating.

The Gilroy Energy Center, LLC for King City was constructed and is in operation as authorized by the California Energy Commission's Adoption Order for Docket Number 01-EP-6 dated May 2, 2001 and by District Authority to Construct (ATC) 10738 issued on July 30, 2001 and District Permit to Operate (PTO) 10738 issued on October 22, 2002, the quarterly and annual NO_x emission limits were modified by ATC 11435 issued on February 5, 2003 and PTO 11435 issued on March 3, 2003 and PTO 11609 issued on June 25, 2003, the testing frequency was modified by PTO 12304 issued on August 11, 2005, the DAHS was updated under PTO 14085 issued on October 8, 2009, and further refined by PTO 14717 issued on December 1, 2010. This simple cycle combustion turbine is fired exclusively on natural gas.

PROJECT DESCRIPTION

Pursuant to Rule 218 of the Monterey Bay Air Resources District (District) Rules and Regulations, the District intends to issue a minor modification to the Title V Operating Permit to Calpine Corporation (Calpine).

Calpine has submitted a Title V modification application to include the Acid Rain permit requirements of 40 CFR Part 72 to the cogeneration facility with the General Electric (GE) Frame 7 gas turbine. CKCC has been operating a combustion turbine as a cogeneration electric generation facility supplying energy to Pacific Gas and Electric Company under a Standard Offer No.4 (504) contract and steam to an industrial host under a steam supply contract since 1989. These contracts expired on April 28, 2019, and as a result, CKCC will no longer be exempt from Acid Rain program requirements under 40 CFR 72.6(b). The proposed changes will not impact the cumulative emission from the facilities.

EQUIPMENT DESCRIPTION

The facility has proposed to change the reference for the Cogeneration Facility from Unit 1 to Unit CTG (Combustion Turbine Generator) or GTG (Gas Turbine Generator). The description of the equipment for the cogeneration plant, Unit CTG/GTG, and the simple cycle combustion turbine, Unit 2, is listed below. No physical changes are being proposed.

Below is the equipment description:

UNIT 1 ~~CTG/GTG~~ – COGENERATION FACILITY CONSISTING OF:

- 1a. Gas Turbine Generator, General Electric Frame 7, Model EA 7001, Rated At 941.1 MMBtu/Hr Nominal Heat Input And 85.7 MW Nominal Electrical Output, Steam Injection For NO_x Control, 5 Lbm H₂O/Lbm Fuel Design Midpoint.
- 1b. Water Tube Type Heat Recovery Steam Generator, Nooter/Eriksen, High Pressure Steam Capacity: 272,000 Lbs/Hr @ 1475 psia and 930°F, Low Pressure Steam Capacity: 87,900 Lbs/Hr @ 100 PSIA Saturated.
- 1c. Steam Turbine Generator, Asea-BBC Dual Admission, Dual Extraction, High Pressure Turbine Model HT-16, Low Pressure Turbine Model LT-25, Generator Model Brush BDAX 7-225ERH, 37.6 MW Nominal Electrical Output.
- 1d. Condenser, Graham Manufacturing Model 79130, Water Cooled Shell And Tube Condenser Rated At 272 MMBtu/Hr.
- 1e. Cooling Tower, Hamon Cooling Towers, Three Cell Counterflow Cooling Tower Rated At 300 MMBtu/Hr, 24,000 GPM Rating, Drift Loss: 0.002%.
- 1f. Selective Catalytic Reduction NO_x Control System, Mitsubishi Heavy Industries Titanium Oxide Grid Honeycomb Type Catalyst, 1846 Cubic Feet Of Catalyst, Consisting Of: Twenty Eight Vertically Stacked Catalyst Modules, Each Holding 200 Ceramic Blocks Containing The Active Catalyst, Each Block Measuring 6" x 6" x 16", With 5 mm Catalyst Pitch.
- 1g. Ammonia Injection System Consisting Of: Two Ammonia Dilution Blowers, Each 10 Hp, 700 SCFM @ 40" W.G. Static Pressure, Combining Anhydrous Ammonia And Dilution Air; Ammonia Injection Grid With Thirty 2 Inch Distribution Pipes Configured Vertically Across The Duct, Each With Twenty Four Injection Nozzles.
2. Two Nebraska Model NS-F-86 Water Tube Boilers, Each Designed To Produce 121,120 Lbs/Hr Saturated Steam at 170 PSIG, Each With Coen Model 275 Type DAF Multi-Stage Low NO_x Burners Designed For A Maximum Heat Input Of 143 MMBtu/Hr And Two Stage Flue Gas Recirculation With A Design Rate Of 15%, And CO Control Provided By An Engelhard Catalytic Carbon Monoxide Converter With 21.24 Cubic Feet Of Ceramic Honeycomb Type Precious Metal Coated Catalyst Consisting Of Twelve Catalyst Modules, Each Measuring 24.5" x 24.5" x 6.4" Located Between The Boiler Flue Gas Outlet And Economizer Inlet On Each Boiler.

UNIT 2 - SIMPLE CYCLE GAS TURBINE CONSISTING OF:

- 2a. Simple Cycle Natural Gas Fired Gas Turbine Generator, Model LM6000PD, Rated At 500 MMBtu/Hr Maximum Heat Input And 49.6 MW Nominal Electrical Output, Dry Low NO_x Combustor To Control NO_x Formation.
- 2b. Selective Catalytic Reduction NO_x Control System.
- 2c. Oxidation Catalyst For Carbon Monoxide Control.

- 2d. CEM System Designed To Continuously Record The Measured Gaseous Concentrations, And Calculate And Continuously Monitor And Record The NOx And CO Concentrations Corrected To Fifteen (15) Percent Oxygen (O2) On A Dry Basis.
- 2e. Chiller Cooling Tower With A Design Water Recirculation Rate Of 4,160 Gallons Per Minute.

ANCILLARY EQUIPMENT:

- Emergency 170 Bhp Diesel Engine-Fire Pump Set.
- Exempt Abrasive Blasting Equipment.

APPLICABLE FEDERAL REQUIREMENTS

Applicable Requirement	Equipment Affected
Rule 200, Permits Required	Facility Wide
Rule 201, Sources Not Requiring Permits	Facility Wide
Rule 207, Review of New or Modified Sources	Facility Wide
Rule 213, Continuous Emissions Monitoring	Facility Wide
Rule 214, Breakdown Condition	Facility Wide
Rule 218, Title V: Federal Operating Permits	Facility Wide
Rule 219, Title IV: Acid Deposition Control	Facility Wide
Rule 308, Title V: Federal Operating Permit Fees	Facility Wide
Rule 400, Visible Emissions	Facility Wide
Rule 402, Nuisances	Facility Wide
Rule 403, Particulate Matter	Facility Wide
Rule 404, Sulfur Compounds and Nitrogen Oxides	Facility Wide
Rule 412, Sulfur Content Fuels	Facility Wide
Rule 426, Architectural Coatings	Facility Wide
Rule 431, Emissions From Electric Power Boilers	Auxiliary Boilers
Rule 1000, Permit Guidelines and Requirements for Sources Emitting Toxic Air Contaminants	Facility Wide
40 CFR Part 60, Subpart A, New Source Performance Standards (NSPS), General Provisions	Facility Wide
40 CFR Part 60, Subpart Db, Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units	Auxiliary Boilers
40 CFR Part 60, Subpart GG, Standards of Performance for Stationary Gas Turbines	Combined Cycle Cogeneration Facility and Simple Cycle Combustion Turbine
40 CFR Part 60, Subpart KKKK, Standards of Performance for Stationary Combustion Turbines	Combined Cycle Cogeneration Facility and Simple Cycle Combustion Turbine
40 CFR Subpart JJJJJ - National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and	Auxiliary Boilers

Applicable Requirement	Equipment Affected
Institutional Boilers Area Sources	
40 CFR Part 63, Subpart YYYYY, NESHAP for Combustion Turbines	Combined Cycle Cogeneration Facility and Simple Cycle Combustion Turbine
40 CFR Part 64, Compliance Assurance Monitoring	Combined Cycle Cogeneration Facility, Simple Cycle Combustion Turbine and Auxiliary Boilers
40 CFR Part 68, Subpart G, Risk Management Plan	Facility Wide
40 CFR Part 72, Acid Rain	Facility Wide
40 CFR Part 75, Continuous Emission Monitoring	Combined Cycle Cogeneration Facility and Simple Cycle Combustion Turbine
40 CFR Part 76, Acid Rain Nitrogen Oxides Emission Reduction Program	Combined Cycle Cogeneration Facility and Simple Cycle Combustion Turbine
40 CFR Part 82, Protection of Stratospheric Ozone	Facility Wide

COMPLIANCE DETERMINATION FOR APPLICABLE FEDERAL REQUIREMENTS

Rule 200 – Permits Required

The purpose of this Rule is to identify when District permits are issued. The provisions of this Rule shall apply to any person who builds, erects, alters, or replaces any article, machine, equipment or other contrivance which may cause the issuance of air contaminants or the use of which may eliminate or reduce or control the issuance of air contaminants.

Pursuant to Section 3.1, person shall build, erect, alter, or replace any article, machine, equipment or other contrivance which may cause the issuance of air contaminants or the use of which may eliminate or reduce or control the issuance of air contaminants unless the facility owner or operator has obtained a separate written Authority to Construct for each permit unit from the Air Pollution Control Officer. An Authority to Construct shall remain in effect until the Permit to Operate the equipment for which the application was filed is granted or denied or the application is cancelled.

This facility has historically complied with the requirements of this rule and continued compliance is expected.

Rule 201 – Sources Not Requiring Permits

The purpose of this Rule is to provide a list of source and equipment categories which are exempt from the requirements of District Rule 200 (Permits Required) to obtain an Authority to Construct (ATC) or Permit to Operate (PTO).

This rule identifies which equipment is exempt from District permitting requirements.

Rule 207 – Review of New or Modified Sources (as adopted on 4/20/11)

This Rule provides for the review of new and modified stationary air pollution sources to meet:

requirements for the review of new and modified stationary sources (NSR) and for the Prevention of Significant Deterioration (PSD), under the provisions of the federal Clean Air Act; and requirements for NSR under the provisions of the California Clean Air Act. The intent of this Rule is to insure that the most stringent requirements of these programs shall be applied.

This Rule shall apply to all new stationary sources and all modifications to existing stationary sources which, after construction or modification, emit or have the potential to emit any affected pollutants. The installation of the new flare and the modification of the existing flare are subject to the requirements of this Rule.

The proposed modification of the Title V permit to include the Acid Rain requirements will not result in an emissions increase. Thus, the requirements of this Rule do not apply.

Permit conditions are included on the permit to comply with the requirements of Rule 207.

District Rule 207 – Review of New of Modified Sources (as adopted on 2/15/17)

The purpose of this Rule is to provide for the review of new and modified stationary air pollution sources to meet the New Source Review requirements under the provisions of the California Clean Air Act. This Rule provides mechanisms by which Authorities to Construct may be granted to such sources without interfering with the attainment or maintenance of California ambient air quality standards. Each project subject to New Source Review shall undergo a review under the federal requirements contained within Rule 220 and Rule 221, and a parallel review under the requirements of this Rule and the most stringent applicable provisions shall apply.

Rule 207 applies to all new stationary sources and all modifications to existing stationary sources, which after construction or modification, emit or have the potential to emit any affected pollutants. This project is subject to the requirements of this Rule.

The proposed modification of the Title V permit to include the Acid Rain requirements will not result in an emissions increase. Thus, the requirements of this Rule do no apply.

213 – Continuous Emissions Monitoring

The purpose of this Rule is to provide requirements and standards for continuous emissions monitoring systems (CEMS).

The requirements of Rule 213 apply to electric power generation equipment subject to Title IV (Acid Deposition Control) of the federal Clean Air Act with nameplate generation capacities of at least 25 megawatts (MW); to fossil fuel-fired steam generators with a rated heat input of 250 million British thermal units (MMBtu) or greater per hour; and to any source required to install CEMS as required to prove compliance with air pollution requirements pursuant to an authority to construct or permit to operate. The requirements of this Rule are applicable to this facility.

Permit conditions are included on the permit to comply with the requirements of Rule 213.

Rule 214 – Breakdown Conditions

The purpose of this Rule is to specify conditions and procedures for breakdowns. The provisions of this Rule shall apply to any breakdown which results in a violation of any State law, District Regulation, permit,

or Hearing Board order.

The requirements imposed by the SIP approved version of this rule will be included on this permit. The SIP approved version of this rule is that which was adopted on December 13, 1984.

Permit conditions are included on the permit to comply with the requirements of Rule 214.

Rule 218 – Title V: Federal Operating Permits

This is the implementing regulation by which the District issues the federal Operating Permits and Title IV Acid Rain Permits. Pursuant to Section §2.27.2, modification to a federally enforceable condition on a permit to operate which is not a minor permit modification or an administrative permit amendment and which significantly changes monitoring conditions is considered a significant major modification to the Title V permit.

Pursuant to Section 3.1.6.15, applications for a source with an acid rain unit, shall include the elements required by 40 CFR Part 72. The facility has submitted an acid rain permit application, including a NO_x compliance plan, for the cogeneration facility.

Pursuant to Section 4.3.5, the permit for an electric utility unit shall include conditions which require compliance with any federal standard or requirement promulgated pursuant to Title IV (Acid Deposition Control) of the Act and any standard or requirement promulgated pursuant to Title V of the Act, except as modified by Title IV. Phase II requirements of the acid deposition control program include:

- a copy of the certificate of representation submitted to the US EPA in accordance with 40 CFR Part 72; and
- any continuous emission monitoring requirement promulgated pursuant to 40 CFR Part 75, including: the installation, operation and certification of equipment within 90 days of the start of commercial operation, whichever is later, for units covered under phase II; and
- the submission of quality assurance and quarterly monitoring reports; and
- any application requirement for an Acid Rain Permit pursuant to Section 3.1.3 herein; and
- any emissions limitation, including requirements that:
 - an electric utility unit not exceed the annual sulfur dioxide emission allowances allocated in 40 CFR Part 73 which allows a unit to emit one ton per year of sulfur dioxide for each emission allowance allotted while not allowing use of the allowances as a defense for non-compliance with the requirements of District Rule 207 (Review of New or Modified Sources) or any other applicable rules and regulation, and
 - an electric utility unit not exceed the nitrogen oxides emission limitations promulgated pursuant to 40 CFR Part 76 for coal-fired units subject to phase II and for which permits shall be reopened
- any required compliance plan, or other requirement, for repowering units in accordance with 40 CFR Part 72.

The facility has submitted a copy of the certificate of representation submitted to the US EPA. Permit conditions are included on the permit to comply with the requirements of Rule 218 and Title IV of the Act.

Rule 219 – Title V: Acid Deposition Control & 40 CFR Part 72, Acid Rain Program

The purpose of this Rule is to provide for the issuance of Acid Rain Permits as required under the provisions of Title IV of the Federal Clean Air Act by incorporating those provisions, as promulgated by USEPA, at

40 CFR Part 72, into this Rule by reference. The provisions of this Rule shall apply to any acid rain source, as defined by Title IV of the Act.

Now that Unit 1 cogeneration facility lost its contracts to supply energy to Pacific Gas and Electric Company under a Standard Offer No.4 (504) contract and steam to an industrial host under a steam supply contract, the cogeneration facility is no longer consider an Independent Power Production (IPP) Facility. Therefore, this facility is no longer exempt from the Acid Rain (Part 72) requirements based upon 40 CFR Part 72.6(b)(6). Unit 1 is subject to the acid rain permit requirements of 72.9(a). Unit 1 is not listed in table-2 of 40 CFR Part 73; therefore, the operator did not receive initial SO₂ allowances under the Acid Rain program.

Pursuant to Section §72.9, the facility must meet the monitoring requirements of Part 75, hold sufficient allowances, and comply with the acid rain SO₂ limit. The facility is expected to comply with the excess emissions, recordkeeping and reporting requirements in 72.9(e) and 72.9(f).

Pursuant to Section §72.73(b)(2), each Acid Rain permit issued in accordance with this section shall have a term of 5 years commencing on its effective date; *provided* that, at the discretion of the permitting authority, an Acid Rain permit for Phase II issued to a source may have a term of less than 5 years where necessary to coordinate the term of such permit with the term of an operating permit to be issued to the source under a State operating permit program. The District intends to coordinate the term of the Acid Rain permit with the facility's existing Title V permit and the new Acid Rain permit will have a term of less than 5 years.

Permit conditions will be added/modified to ensure compliance with the requirements of Rule 219 and Part 72.

Permit conditions are included on the permit to comply with the requirements of Rule 219 and Part 72.

Rule 308 – Title V: Federal Operating Permit Fees

The purpose of this Rule is to provide funding for the issuance and enforcement of Federal Operating Permits (FOPs) which meet the requirements of Title V of the Federal Clean Air Act and amendments (the Act). The fees required pursuant to this Rule shall be in addition to fees for District permits to operate and other fees required by other District rules.

Permit conditions are included on the Title V permit to ensure compliance with the fee provisions contained in Rule 308.

Rule 400 – Visible Emissions

The purpose of this Rule is to provide limits for the visible emissions from sources within the District. The provisions of this Rule shall apply to all sources of air pollutant emissions in the District.

Pursuant to Section 3.1, no air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark or darker than Ringelmann 1, or equivalent 20% opacity.

Permit conditions are included on the permit to ensure compliance with Rule 400.

Rule 402 – Nuisances

The purpose of this Rule is to provide an explicit prohibition against sources creating public nuisances while operating within the District. The provisions of this Rule shall apply to all sources of air pollutant emissions within the Air District.

Pursuant to District Rule 402, Part 3, no person shall discharge from any source whatsoever such quantities of air contaminants or other materials 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.

Permit conditions are included on the permit to ensure compliance with Rule 402.

Rule 403 – Particulate Matter

The purpose of this Rule is to provide particulate matter emission limits for sources operating within the District. The provisions of this Rule shall apply to any source discharging particulate matter while operating within the Air District.

Pursuant to Section 3.1, a person shall not discharge from any source whatsoever particulate matter in excess of 0.15 grains/ft³.

Frame 7 turbine rated at 941.1 MMBtu/hr:

Based upon the requirement of Rule 403 and the volumetric flow rate of 480,600 DSCFM, while firing on natural gas, would establish an emission limit of 617.9 lb/hr [(0.15 grain/ft³) (480,600 ft³/min) (1 lb/7,000 grain) (60 min/hr) = 617.9 lb/hr]. Current permit condition #1 limits PM emissions to 2.5 lb/hr, when firing on natural gas, well below the permitted level of Rule 403.

Based upon the requirement of Rule 403 and the volumetric flow rate of 510,616 DSCFM [(941.1 MMBtu/hr) (hr/60 min) (9,190 DSCF/MMBtu) (20.9/(20.9-15)) = 510,616 DSCFM], while firing on No. 2 fuel oil, would establish an emission limit of 656.5 lb/hr [(0.15 grain/ft³) (510,616 ft³/min) (1 lb/7,000 grain) (60 min/hr) = 656.5 lb/hr]. Current permit condition #13 limits PM emissions to 10 lb/hr, when firing on No. 2 fuel oil, well below the permitted level of Rule 403.

Auxiliary Boilers rated at 143 MMBtu/hr:

Based upon the requirement of Rule 403, the volumetric flow rate of 24,238 DSCFM [(143 MMBtu/hr) (hr/60 min) (8,710 DSCF/MMBtu) (20.9/(20.9-3)) = 24,238 DSCFM], while firing on natural gas, would establish an emission limit of 31.2 lb/hr [(0.15 grain/ft³) (24,238 ft³/min) (1 lb/7,000 grain) (60 min/hr) = 31.2 lb/hr]. Current permit condition #2 limits PM emissions to 0.60 lb/hr, when firing on natural gas, well below the permitted level of Rule 403.

Based upon the requirement of Rule 403, the volumetric flow rate of 25,574 DSCFM [(143 MMBtu/hr) (hr/60 min) (9,190 DSCF/MMBtu) (20.9/(20.9-3)) = 25,574 DSCFM], while firing on No. 2 fuel oil, would establish an emission limit of 32.9 lb/hr [(0.15 grain/ft³) (25,574 ft³/min) (1 lb/7,000 grain) (60 min/hr) = 32.9 lb/hr]. Current permit condition #14 limits PM emissions to 12.65 lb/hr, when firing on No. 2 fuel oil, well below the permitted level of Rule 403.

LM 6000 turbine rated at 500 MMBtu/hr (unit only permitted to combust natural gas):

Based upon the requirement of Rule 403, the volumetric flow rate of 257,117 DSCFM [(500 MMBtu/hr) (hr/60 min) (8,710 DSCF/MMBtu) (20.9/(20.9-15)) = 257,117 DSCFM], while firing on natural gas, would establish an emission limit of 330.6 lb/hr [(0.15 grain/ft³) (257,117 ft³/min) (1 lb/7,000 grain) (60 min/hr) = 330.6 lb/hr]. Current permit condition #9 limits PM emissions to 2.5 lb/hr, when firing on natural gas, well below the permitted level of Rule 403.

Permit conditions are included on the permit to ensure compliance with Rule 403.

Rule 404 – Sulfur Compounds and Nitrogen Oxides

The purpose of this Rule is to provide limits for the emissions of sulfur compounds, nitrogen oxides and nitrogen dioxide from sources within the District. The provisions of this Rule shall apply to sources of sulfur compounds, nitrogen oxides, and nitrogen dioxide subject to District Rule 200 *Permits Required*.

Section 3.1.1 limits sulfur compounds calculated as sulfur dioxide at 0.2 percent by volume (2,000 ppmv). Compliance for each unit is shown as follows:

Frame 7 turbine rated at 941.1 MMBtu/hr:

Based on the permit limit of 0.5 lb/hr of permit condition #1 and flow rate of 480,600 DSCFM, while firing on natural gas, the SO₂ concentration is 0.10 ppm [(0.5 lb SO₂/hr) (hr/60 min) (lbmole/64.1 lb SO₂) (385 ft³/lbmole) (min/480,600 ft³) (10⁶) = 0.10 ppm]. The SO₂ concentration is well below the permitted level of 2,000 ppm.

Based on the permit limit of 116.1 lb/hr of permit condition #13 and flow rate of 510,616 DSCFM, while firing on No. 2 fuel oil, the SO₂ concentration is 22.76 ppm [(116.1 lb SO₂/hr) (hr/60 min) (lbmole/64.1 lb SO₂) (385 ft³/lbmole) (min/510,616 ft³) (10⁶) = 22.76 ppm]. The SO₂ concentration is well below the permitted level of 2,000 ppm.

Auxiliary boilers rated at 143 MMBtu/hr:

Based on the permit limit of 0.085 lb/hr of permit condition #2 and flow rate of 24,238 DSCFM, while firing on natural gas, the SO₂ concentration is 0.35 ppm [(0.085 lb SO₂/hr) (hr/60 min) (lbmole/64.1 lb SO₂) (385 ft³/lbmole) (min/24,238 ft³) (10⁶) = 0.35 ppm]. The SO₂ concentration is well below the permitted level of 2,000 ppm.

Based on the permit limit of 7.55 lb/hr of permit condition #14 and flow rate of 25,574 DSCFM, while firing on No. 2 fuel oil, the SO₂ concentration is 29.55 ppm [(7.55 lb SO₂/hr) (hr/60 min) (lbmole/64.1 lb SO₂) (385 ft³/lbmole) (min/25,574 ft³) (10⁶) = 29.55 ppm]. The SO₂ concentration is well below the permitted level of 2,000 ppm.

LM 6000 turbine rated at 500 MMBtu/hr (unit only permitted to combust natural gas):

Based on the permit limit of 0.33 lb/hr of permit condition #9 and flow rate of 257,117 DSCFM, while firing on natural gas, the SO₂ concentration is 0.13 ppm [(0.33 lb SO₂/hr) (hr/60 min) (lbmole/64.1 lb SO₂) (385 ft³/lbmole) (min/257,117 ft³) (10⁶) = 0.13 ppm]. The SO₂ concentration is well below the permitted level of 2,000 ppm.

Section 3.1.2 limits NO_x emissions to 140 pounds per hour. Compliance for each unit is shown as follows:

Frame 7 turbine rated at 941.1 MMBtu/hr:

Permit condition #1 limits the NO_x emissions from the unit to 30.1 lb/hr, while firing on natural gas. Permit condition #13 limits the NO_x emissions from the unit to 47.8 lb/hr, while firing on No. 2 fuel oil. Thus, the unit meets the NO_x emissions limit of Section 3.1.2.

Auxiliary boilers rated at 143 MMBtu/hr:

Permit condition #2 limits the NO_x emissions from the unit to 7.25 lb/hr, while firing on natural gas. Permit condition #14 limits the NO_x emissions from the unit to 13.8 lb/hr, while firing on No. 2 fuel oil. Thus, the unit meets the NO_x emissions limit of Section 3.1.2.

LM 6000 turbine rated at 500 MMBtu/hr (unit only permitted to combust natural gas):

Permit condition #9 limits the NO_x emissions from the unit to 8.65 lb/hr, well below the NO_x emissions limit of Section 3.1.2.

Section 3.1.3 limits the flue gas NO_x concentration, calculated as NO₂ at 3 percent oxygen, from fuel burning equipment having a maximum heat input rate of more than 1-½ billion Btu per hour to 225 ppm. The equipment at this facility has a rating less than 1-½ billion Btu per hour.

Pursuant to Section 3.4.1, for determination of SO₂ emissions concentrations in stack gases during stationary source tests, EPA Methods 6 or 6C, or CARB Method 100 shall be performed. The District does not intend to require performance testing for this permit.

Pursuant to Section 3.4.2, for determination of NO_x emissions concentrations in stack gases during stationary source tests, EPA Method 7E or CARB Method 100 shall be performed. The District does not intend to require performance testing for this permit.

Pursuant to Section 3.5, records of emissions testing shall be maintained for a period of five years after creation and shall be made available to the District upon request.

These rule limits will be subsumed under the NSR limits which are included on the Title V permit.

Rule 412 – Sulfur Content of Fuels

The purpose of this Rule is to limit emissions of sulfur oxides from combustion sources within the District. The provisions of this Rule shall apply to all combustion sources operated within the Air District unless exempted pursuant to Section 1.3 of this Rule. Section 1.3 does not exempt turbines.

Pursuant to Part 3, no person shall burn within the District any gaseous fuel containing sulfur compounds in excess of 50 grains per 100 cubic feet of gaseous fuel, calculated as hydrogen sulfide at standard conditions. The sulfur content limits proposed in the application are 0.25 grains per 100 cubic feet of natural gas. This sulfur limit will be included on the permits.

Permit conditions are included on the permit to comply with the requirements of Rule 412.

Rule 426 – Architectural Coatings

The purpose of this Rule is to limit the emissions of Volatile Organic Compounds (VOC) from the use of architectural coatings. The provisions of this Rule shall apply to any person who supplies, sells, offers for sale, manufacturers, blends, or repackages any architectural coating for use within this District, as well as any person who applies or solicits the application of any architectural coating within the District.

Permit conditions are included on the permit to comply with the requirements of Rule 426.

Rule 431 – Emissions From Electric Power Boilers

The purpose of this Rule is to provide limitations on emissions of NO_x and CO during the combustion of natural gas or fuel oil by boilers providing steam for electric power generation. Pursuant to Section 1.2, the provisions of this Rule apply to all electric power boilers at the electric power generation facility located at Moss Landing. Thus, the auxiliary boilers are exempt from the requirements of this Rule.

Rule 1000 - Permit Guidelines And Requirements For Sources Emitting Toxic Air Contaminants

The purpose of this Rule is to:

- Prevent the emission into the atmosphere within the District of toxic air contaminants (TACs); and,
- Prevent occurrences which may endanger the health and welfare of the public within the District; and,
- Comply with the federal Clean Air Act §112(g) Toxic New Source Review requirements; and,
- Protect the public's health and welfare while allowing, where permitted, the continued operation of sources which do or may emit TACs; and,
- Not to limit in any way the provisions, extent, intent interpretation, or enforcement of District Rule 402.

This Rule applies to any new or modified stationary sources for which an Authority to Construct or a Permit to Operate is required, and which has the potential to emit into the atmosphere any TAC. Whenever a potential TAC may be subject to more than one District Rule, or to more than one requirement in this rule, the requirement resulting in the least hazard to the public, as determined by the Air Pollution Control Officer, shall apply.

Rule 1000 applies to any new or modified stationary sources for which an Authority to Construct or a Permit to Operate is required pursuant to District Regulation 200 and which has the potential to emit into the atmosphere any toxic air contaminant (TAC).

There are no equipment modifications being proposed that will increase TAC emissions.

40 CFR Part 60, Subpart A - New Source Performance Standards, General Provisions

This facility is subject to the requirements of Section §60.7 (notification and record keeping), Section §60.8 (performance tests), Section §60.11 (compliance with standards and maintenance requirements), and Section §60.13 (monitoring requirements) because they are subject to 40 CFR Part 60, Subparts Db and Gg. In their application, the source has requested that the requirements of Subpart A be subsumed under the NSR permit requirements.

The District asserts that compliance with the conditions on the Title V permit shall be considered compliance with the monitoring, record keeping, and reporting requirements contained in 40 CFR Parts 60.7, 60.8, 60.11, and 60.13.

Permit conditions are included on the permit to comply with the requirements of this NSPS.

40 CFR Part 60, Subpart Db – Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units

The auxiliary boilers at the facility are subject to the requirements of this part. In their Title V application,

the source has requested that the requirements of Subpart Db be subsumed under the NSR permit requirements. This is an appropriate action, due to the fact that the facility has emission limits on the NSR permits which are more stringent than the requirements of this part.

The sulfur dioxide limit from Section §60.42b(a) would be 11.4 lbs/hr (143 MMBtu/hr *0.08 lb/MMBtu). This 11.4 lbs/hr exceeds the 7.55 lbs/hr allowed for each boiler under the NSR permits.

The particulate matter limit from Section §60.43b(b) would be 14.3 lbs/hr (143 MMBtu/hr *0.1 lb/MMBtu). Low sulfur fuel requirement (0.05%) is the conventional technology utilized to reduce SO_x emissions and establishes the appropriate particulate matter emission limit from Section §60.43b. The allowance of 14.3 lbs/hr of particulate matter under Subpart Db exceeds the 12.65 lbs/hr allowed for each boiler under the NSR permits.

The NO_x limit from Section §60.44b(a) would be 28.6 lbs/hr (143 MMBtu/hr *0.2 lb/MMBtu). The emission factor for high heat release rate is utilized based upon the furnace volume of 1795 ft³ and a heat input of 143 MMBtu/hr. The heat release rate is 79,666 BTU/hr-ft³, which under the definition contained in Section §60.41b is considered a “high heat release rate”. The allowance of 28.6 lbs/hr of NO_x under Subpart Db exceeds the 13.8 lbs/hr allowed for each boiler under the NSR permits.

The testing, monitoring, record keeping and reporting requirements contained in Sections §60.45(b), §60.46(b), §60.47(b), §60.48(b), and §60.49(b) will be subsumed under the testing, monitoring, record keeping and reporting requirements established under the NSR permits and required under the Title V permitting process.

Permit conditions are included on the permit to comply with the requirements of this NSPS.

40 CFR Part 60, Subpart GG – Standards of Performance for Stationary Gas Turbines

The provisions of this subpart are applicable to all affected facilities with stationary gas turbines with a heat input at peak load equal to or greater than 10.7 gigajoules (10 million Btu) per hour, based on the lower heating value of the fuel fired. Under Section §60.330 an affected facility is any facility that commences construction, modification, or reconstruction after October 3, 1977. The gas turbines at this facility are subject to the requirements of this part. In addition to the back-end control using SCR, the turbines utilized steam/water injection or dry low NO_x combustors to control NO_x formation.

The NO_x emission factor from Section §60.332(a)(1) would be 113 ppmvd for the Frame 7 turbine. This 113 ppmvd limit far exceeds the 9 ppmvd limit on natural gas (15 ppmvd on fuel oil) established by District Rule 207. Therefore, the NO_x limit from the NSPS will be subsumed under the NSR permit requirements included on the Title V permit.

The allowable NO_x concentration limit derived from Section §60.332(a)(1) for the LM6000 turbine would be 75 ppmvd. This 75 ppmvd limit far exceeds the 5 ppmvd limit established by the BACT requirements of District Rule 207. Therefore, the NO_x limit from the NSPS will be subsumed under the NSR permit requirements included on the Title V permit.

The SO₂ limit from Section §60.333 would be 150 ppmv for both turbines. Compliance with this limit for the Frame 7 turbine is assumed due to the worst case limits contained in the facility NSR permits (firing on fuel oil) of 116.1 lbs/hr. The SO₂ concentration at this permitted emission level would be ~~23.8~~ 22.76 ppmv for the turbine ~~[(116.1 lbs/SO₂/hr) * (((MM lbmoles air) / (64.1 lbmole SO₂)) * 379 ft³ air) / (lbmole~~

~~$$\frac{\text{air}}{((480,600 \text{ SDCFM}) * (60 \text{ m/hr}) = 23.8 \text{ ppmv})} [(116.1 \text{ lb SO}_2/\text{hr}) (\text{hr}/60 \text{ min}) (\text{lbmole}/64 \text{ lb SO}_2) (385 \text{ ft}^3/\text{lbmole}) (\text{min}/510,616 \text{ ft}^3) (10^6) = 22.76 \text{ ppm}]$$~~. Compliance with this limit for the LM6000 is assured due to limits established by the BACT requirements of Rule 207 and established in the permit at 0.33 lbs/hr. The SO₂ concentration at this permitted emissions level would be 0.13 ppmv ~~$$\frac{(0.33 \text{ lbs}/\text{SO}_2/\text{hr}) * (((\text{MM lbmoles air}) / (64.1 \text{ lbmole SO}_2)) * 379 \text{ ft}^3 \text{ air}) / (\text{lbmole air}))}{((272,396 \text{ SDCFM}) * (60 \text{ m/hr}) = 0.13 \text{ ppmv})} [(0.33 \text{ lb SO}_2/\text{hr}) (\text{hr}/60 \text{ min}) (\text{lbmole}/64.1 \text{ lb SO}_2) (385 \text{ ft}^3/\text{lbmole}) (\text{min}/257,117 \text{ ft}^3) (10^6) = 0.13 \text{ ppm}]$$~~.

These values are well below the 150 ppmv SO₂ allowed for in the NSPS. Therefore, the SO₂ emission standard from this NSPS will be subsumed under the NSR permit requirements included on the Title V permit.

The testing and monitoring requirements contained in Section §60.334 and §60.335 will be subsumed under the testing and monitoring requirements established under the NSR permits and included on the Title V permit. This will include the annual emissions testing requirement and the requirement to monitor operations with the use of CEMs. Note that when the permit was initially issued, 40 CFR Part 60, Subpart GG required that turbines “using water or steam injection to control NO_x emissions shall install, calibrate, maintain and operate a continuous monitoring system to monitor and record the fuel consumption and the ratio of water or steam to fuel being fired in the turbine.” Subpart GG has since been updated (§60.334(b)) to allow for the use of a Continuous Monitoring System (CEM) monitoring NO_x and O₂ (or CO₂) as an alternate to the monitoring of the steam/water ratio. The permit will now only require the use of the CEM and not require monitoring of water/steam injection.

Permit conditions are included on the permit to comply with the requirements of this NSPS.

40 CFR Part 60, Subpart KKKK, Standards of Performance for Stationary Combustion Turbines

This subpart establishes emission standards and compliance schedules for the control of emissions from stationary combustion turbines that commenced construction, modification or reconstruction after February 18, 2005.

Section §60.2 defines a modification as any physical change in, or change in the method of operation of, an existing facility which increases the amount of any air pollutant (to which a standard applies) emitted into the atmosphere by that facility or which results in the emission of any air pollutant (to which a standard applies) into the atmosphere not previously emitted. The loss of exemption from the requirements of the Acid Rain program of the GE Frame 7 gas turbine do not meet the definition of modification of Section §60.2. Thus, the unit is not subject to the requirements of this Subpart.

40 CFR Subpart JJJJJ - National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources.

Pursuant to Section §63.11193, facilities that own or operate an industrial, commercial, or institutional boiler that is located at, or is part of, an area source of HAPs are subject to the requirements of this Subpart.

Pursuant to Section §63.11195(e), gas-fired boilers are not subject to this Subpart. Section §63.11237 defines a gas-fired boiler as any boiler that burns gaseous fuels not combined with any solid fuels and burns liquid fuel only during periods of gas curtailment, gas supply interruption, startups, or for periodic testing, maintenance, or operator training on liquid fuel. Periodic testing, maintenance, or operator training on liquid fuel shall not exceed a combined total of 48 hours during any calendar year.

The auxiliary boilers are fired on natural gas, except that No. 2 fuel oil may be used during training/testing

of the auxiliary boilers, during periods of natural gas curtailment by the utility, or in the events of natural gas supply malfunction or disruption. In any event, the use of the No. 2 fuel oil is limited to 240 hour per year. In addition, current condition 23 limits training/testing of the auxiliary boilers with No. 2 fuel oil to a maximum of two (2) times per calendar year, and the training shall not exceed two (2) full-load equivalent hours, well below the limit of 48 hours limit of Section §63.11237. Thus, the auxiliary boilers are considered gas-fired boilers and are exempt from the requirements of this Subpart.

40 CFR Part 63, Subpart YYYY – NESHAP for Stationary Combustion Turbines

Subpart YYYY establishes national emission limitations and operating limitations for hazardous air pollutants (HAP) emissions from stationary combustion turbines located at major sources of HAP emissions, and requirements to demonstrate initial and continuous compliance with the emission and operating limitations.

Pursuant to Section §63.6085, a facility is subject to this Subpart if it operates a stationary combustion turbine located a major source of HAP emissions. Calpine King City Cogen, LLC is not subject to the requirements of this subpart for combustion turbines because it is not a major source of Hazardous Air Pollutants (HAPs).

40 CFR Part 64, Compliance Assurance Monitoring

The requirements of this subpart apply to emissions units at Title V facilities that meet all of the three criteria specified in 40 CFR Part 64 Section §64.2(a)(1-3). The three applicability criteria are:

- The emission unit must be subject to a Federal emission limitation or standard for a regulated air pollutant, other than an exempt limitation.
- The emission unit uses a control device to achieve compliance with any such emission limitation or standard.
- This emission unit has potential pre-control device emissions of the specific pollutant being controlled greater than the major facility emissions threshold for that pollutant.

The combined cycle cogeneration facility, the simple cycle combustion turbine and the two auxiliary boilers are subject to the requirements of this subpart.

The combined cycle cogeneration facility is subject to this subpart due to its potential to emit NO_x and due to the fact that it is equipped with a selective catalytic reduction (SCR) system to reduce NO_x emissions. These units have CEMs installed which meet the general design criteria established in Section §64.3. These units are conditioned, Condition 16, which requires the CEMs to be calibrated and operated to measure the exhaust stack for NO_x, CO and O₂.

The simple combustion turbine is subject to this subpart due to its potential to emit NO_x and CO and due to the fact that the unit uses an oxidation catalyst for CO reduction and SCR for NO_x reduction. The unit has CEMs installed which meet the general design criteria established in Section §64.3. The Permit includes permit conditions to include with CAM requirements for the simple combustion turbine.

The two auxiliary boilers are subject to this subpart due to its potential to emit CO and due to the fact that it uses an oxidation catalyst for CO reduction. The unit have CEMs installed which meet the general design criteria established in Section §64.3. The Permit includes permit conditions to include with CAM requirements for the auxiliary boilers.

40 CFR Part 68, Risk Management Plan

Historically, CKCC and GEC have complied with the requirements of this Rule. In their application, they provided the District with the latest version of their Risk Management Plan dated 05/02/2016. The District fully expects continued compliance with the provisions of this Rule.

Permit conditions are included on the permit to comply with the requirements of this Rule.

40 CFR Part 72, Acid Rain

See analysis for District Rule 219.

40 CFR Part 75, Continuous Emissions Monitoring

Part 75, Subpart A, contains the applicability criteria, compliance dates, and prohibitions. Unit 1 (cogeneration facility) and Unit 2 (simple cycle gas turbine) are both subject to Part 72 and are therefore subject to the requirements of Part 75.

Part 75, Subpart B, contains specific monitoring provisions for each pollutant subject to part 75. Units 1 and 2 are required to meet the SO₂, NO_x, and CO₂ monitoring requirements contained in §75.10(a)(1), §75.10(a)(2), §75.10(a)(3). The opacity monitoring under §75.10(a)(4) are not required for gas fired units in accordance with Section §75.14(c). Section §75.10(b) requires each CEM to meet equipment, installation, and performance specification in part 75, Appendix A, and quality assurance/quality control in Appendix B. Section §75.10(c) requires heat input rate monitoring to meet requirements contained in part 75 Appendix F.

Section §75.11 contains specific provisions for SO₂ monitoring. Section §75.11(d)(2) allows the use of Appendix D to monitor SO₂ emissions from gas fired units. The Title V permit is conditioned to require the facility to monitor SO₂ emissions in accordance with Part 75.

Section §75.12 contains specific provisions for NO_x emission rates. The facility uses a NO_x CEM and an O₂ monitor to meet this requirement.

Section §75.13 contains CO₂ monitoring requirements. The facility monitors CO₂ in accordance with this section using the procedures in part 75, Appendix G.

Section §75.14 contains opacity monitoring requirements. The facility is exempt from opacity monitoring under part 75 per Section §75.14(c).

40 CFR 76, Acid Rain Nitrogen Oxides Emission Reduction Program

Pursuant to Section §76.1(a), the provisions apply to each coal-fired utility unit that is subject to an Acid Rain emissions limitation or reduction requirement for SO₂ under Phase I or Phase II pursuant to sections 404, 405, or 409 of the Act. The units at this facility are not capable of firing on coal and are not subject to the requirements of this Subpart.

40 CFR Part 82, Protection of Stratospheric Ozone

The facility is in compliance with the requirements of this part.

Permit conditions are included on the permit to comply with the requirements of this Rule.

PERMIT SHIELD

The District rules, Rule 218, allows for creation of a permit shield provisions. A permit shield is a provision stating that compliance with the conditions of the Federal Operating Permit (FOP) shall be deemed compliance with any applicable requirements as of the date of FOP issuance.

The District is proposing minor changes to the permit shield for NSPS Subpart GG. The proposed change is to revise the calculation for the SO₂ emissions to make it easier to follow and to correct the exhaust flow for the turbines. No changes are being proposed to the permit shield for NSPS Subpart Db.

“40 CFR Part 60, Subpart GG - Standards of Performance for Stationary Gas Turbines

The gas turbines at this facility are subject to the requirements of this NSPS. In addition to the back-end control using SCR, the turbines utilize steam/water injection or dry low NO_x combustors to control NO_x formation.

The NO_x emission factor from Section 60.332(a)(1) would be 113 ppmvd for the Frame 7 turbine. This 113 ppmvd limit far exceeds the 9 ppmvd limit on natural gas (15 ppmvd on fuel oil) established by District Rule 207. Therefore, the NO_x limit from the NSPS will be subsumed under the NSR permit requirements included on this Title V permit.

The allowable NO_x concentration limit derived from §60.332(a)(1) for the LM6000 turbine would be 75 ppmvd. This 75 ppmvd limit far exceeds the 5 ppmvd limit established by the BACT requirements of District Rule 207. Therefore, the NO_x limit from the NSPS will be subsumed under the NSR permit requirements that will be included on the permits.

*The SO₂ limit from Section 60.333 would be 150 ppmv for both turbines. Compliance with this limit for the Frame 7 turbine is assumed due to the worst case limits contained in the facility NSR permits (firing on fuel oil) of 116.1 lbs/hr and volumetric flow rate of 510,616 DSCFM [(941.1 MMBtu/hr) (hr/60 min) (9,190 DSCF/MMBtu) (20.9/(20.9-15)) = 510,616 DSCFM]. The SO₂ concentration at this permitted emission level would be ~~23.8~~ 22.76 ppmv for the turbine ~~$\frac{(116.1 \text{ lbs SO}_2/\text{hr}) * ((\text{MM lbmoles air}) / (64.1 \text{ lbmole SO}_2)) * ((379 \text{ Ft}^3 \text{ Air}) / (\text{lbmole air})) / ((480,600 \text{ SDCFM}) * (60 \text{ M/Hr}))}{(385 \text{ ft}^3/\text{lbmole}) (\text{min}/510,616 \text{ ft}^3) (10^6)}$~~ $\frac{(116.1 \text{ lb SO}_2/\text{hr}) (\text{hr}/60 \text{ min}) (\text{lbmole}/64.1 \text{ lb SO}_2) (385 \text{ ft}^3/\text{lbmole}) (\text{min}/510,616 \text{ ft}^3) (10^6)}{}$ = 22.76 ppm]. Compliance with this limit for the LM6000 turbine is assured due to limits established by the BACT requirements of Rule 207 ~~and~~ established in the permit at 0.33 lbs/hr and volumetric flow rate of 257,117 DSCFM [(500 MMBtu/hr) (hr/60 min) (8,710 DSCF/MMBtu)(20.9/(20.9-15)) = 257,117 DSCFM]. The SO₂ concentration at this permitted emission level would be 0.13 ppmv for the turbine ~~$\frac{(0.33 \text{ lbs SO}_2/\text{hr}) * ((\text{MM lbmoles air}) / (64.1 \text{ lbmole SO}_2)) * ((379 \text{ Ft}^3 \text{ Air}) / (\text{lbmole air})) / ((272,396 \text{ SDCFM}) * (60 \text{ M/Hr}))}{(385 \text{ ft}^3/\text{lbmole}) (\text{min}/257,117 \text{ ft}^3) (10^6)}$~~ $\frac{(0.33 \text{ lb SO}_2/\text{hr}) (\text{hr}/60 \text{ min}) (\text{lbmole}/64.1 \text{ lb SO}_2) (385 \text{ ft}^3/\text{lbmole}) (\text{min}/257,117 \text{ ft}^3) (10^6)}{}$ = 0.13 ppm].*

These values are well below the 150 ppmv SO₂ allowed for in the NSPS. Therefore, the SO₂ emission standard from this NSPS will be subsumed under the NSR permit requirement that will be included on the permits.

The testing and monitoring requirements contained in Sections 60.334 and 60.335 will be subsumed under the testing and monitoring requirements established under the NSR permits and that is included on this Title V permit. This will include the annual emissions testing requirement and the requirement to monitor operations with the use of CEMs.”

THE FOLLOWING CONDITIONS WILL BE INCLUDED ON THE TITLE V PERMIT:

The permit conditions listed on the Title V Permit are derived from District issued Authorities to Construct or Permits to Operate. The permit also includes the regulatory basis for each permit condition. Permit conditions are divided into the following sections: federally enforceable limits and standards, testing requirements and procedures, record keeping requirements, reporting requirements, and general conditions.

New permit conditions will be added to include the Acid Rain program requirements for the Frame 7 turbine.

FEDERALLY ENFORCEABLE EMISSION LIMITS AND STANDARDS

The District is proposing to modify current condition 1 to clarify that the emissions limits for the Frame 7 gas turbine apply when the unit is being fired on natural gas.

Proposed modification to condition 1:

1. *During periods of natural gas firing, ~~The~~ the Frame 7 gas turbine pollutant mass emission rates in the exhaust discharged to the atmosphere shall not exceed the following limits [District Rule 207; District Rule 403 limit of 617.9 lbs PM₁₀/hr; District Rule 404 NO_x limit of 140 lbs/hr and SO₂ limit of 2000 ppmv]:*

...

The District proposes to modify current condition 29, which requires the LM6000 gas turbine to hold sulfur dioxide allowances, to also require the Frame 7 to hold sulfur dioxide allowances in accordance with District Rule 219 and 40 CFR Part 72.

Proposed modification to condition 29:

29. *King City Power Plant shall hold Sulfur Dioxide Allowances not less than the total annual emissions of sulfur dioxide for the previous calendar year from the Frame 7 (unit GTG) and LM6000 (unit 2) Turbines. The Gilroy Energy Center, LLC for King City shall hold Sulfur Dioxide Allowances in the compliance subaccount for the LM6000 Turbine (Unit 2) not less than the total annual emissions of sulfur dioxide for the previous calendar year from the LM6000 Turbine. [District Rule 219 and 40 CFR §72.9(c)]*

In addition, the District is proposing to modify current condition 32 to clarify that the requirements of 40 CFR Part 68 – Risk Management Plans apply to the Gilroy Energy Center, LLC facility as well.

Proposed modification to condition 32:

32. *Calpine King City Cogen, LLC and the Gilroy Energy Center, LLC shall comply with the requirements of 40 CFR Part 68 – Risk Management Plans. Calpine King City Cogen, LLC's and the Gilroy Energy Center, LLC's Risk Management Plan must be revised and updated as required by 40 CFR §68.190. Calpine King City Cogen, LLC and the Gilroy Energy Center, LLC shall*

certify compliance with these requirements as part of the annual compliance certification required by 40 CFR Part 70 and this permit. [40 CFR Part 68]

TESTING REQUIREMENTS AND PROCEDURES

The District is proposing to modify or add testing requirement conditions to add the Rule citation for current conditions 38, 40 and 41.

In addition, the District is proposing to modify current condition 40, which specifies the method for determining PM emissions from cooling towers at the Gilroy Energy Center, LLC. The modification is to make the method consistent with the method used at the Calpine King City Cogen, LLC listed in current condition 40. Condition 39 was last updated at the request of the facility during the last Title V renewal.

Proposed modification to current condition 40:

40. *Gilroy Energy Center, LLC for King City shall conduct monthly measurements of the cooling tower water total dissolved solids (TDS) in accordance with EPA Method 160.1, or other method approved by the District and EPA. The TDS value from the latest testing shall be used in the following equation to calculate PM₁₀ emissions. The PM₁₀ emissions from the cooling tower shall be calculated as the product of the cooling tower recirculating water flow rate times the total dissolved solids in the cooling tower water times the cooling tower drift loss times the number of hours of operation, as follows: [District Rule 207]*

...

MONITORING AND RECORD KEEPING REQUIREMENTS

The District proposes to add new conditions to include the monitoring requirements of District Rule 219 and 40 CFR Part 72 for the Frame 7 turbine. The facility has provided a CEMS Certification Report for the GTG Frame 7 turbine. The CEMS certification was conducted on October 17, 2019 by Custom Instrumentation Services Corporation (CISCO).

Proposed new conditions:

- Calpine King City Cogen, LLC shall monitor SO₂ emissions from the Frame 7 Turbine in accordance with 40 CFR Part 72 and 75. [District Rule 219]
- CEMs shall be installed and operated on the Frame 7 Turbine. This system shall be designed to continuously record the measured gaseous concentrations, and calculate and continuously monitor and record the CO, CO₂ or O₂, and NO_x concentrations corrected to fifteen (15) percent oxygen (O₂) on a dry basis. [District Rules 201, 213, 219 and 40 CFR 64]

The equipment installed for the continuous monitoring of CO shall be maintained and operated in accordance with 40 CFR Part 60 Appendix F, and the equipment installed for the continuous monitoring of CO₂ or O₂ and NO_x shall be maintained and operated in accordance with 40 CFR Parts 72 and 75.

- A written Quality Assurance program for the Frame 7 Turbine CEM must be established in accordance with 40 CFR Part 75, Appendix B for NO_x and 40 CFR Part 60, Appendix F for CO which includes, but is not limited to: procedures for daily calibration testing, quarterly linearity and leak testing, record keeping and reporting implementation, and relative accuracy testing. [District Rule 219]

REPORTING REQUIREMENTS

The District proposes to add a new condition to include the reporting requirements of 40 CFR Part 75 for the Frame 7 turbine.

- Calpine King City Cogen, LLC shall submit quarterly Electronic Data Reports (EDR) to EPA for the Frame 7 Turbine. These reports must be submitted within 30 days following the end of each calendar quarter and shall include all information required in §75.64. [40 CFR Part 75]

GENERAL CONDITIONS

The District is not proposing changes to this section.

TITLE IV ACID RAIN PERMIT

The District will revise the Title IV Acid Rain Permit to include the Frame 7 turbine.

**MONTEREY BAY AIR RESOURCES DISTRICT
TITLE IV ACID RAIN PERMIT**

24580 Silver Cloud Court
Monterey, CA 93940
Telephone: (831) 647-9411

Effective ~~March 10, 2017~~ TBD through March 9, 2022

ISSUED TO:

Calpine King City Cogen, LLC & Gilroy Energy Center, LLC for King City Power Plant
750 Metz Road
King City, CA 93930

PLANT SITE LOCATION:

750 Metz Road & 51 Don Bates Way
King City, CA 93930

ISSUED BY:

Richard Stedman, Air Pollution Control Officer

March 10, 2017 TBD
Effective Date

ORIS Code: 10294

Nature of Business: Electric Power Generation

SIC Code: 4911 - Electric Power Generation

DESIGNATED REPRESENTATIVE:

Name: Mr. Kevin Karwick
Title: General Manager - Central Coast Projects
Phone: (408) 337-3429

ALTERNATIVE DESIGNATED REPRESENTATIVES:

Name: ~~Alexander Price~~ Paul Mansfield
Title: Operations & Maintenance Manager
Phone: (831) 385-794752

Name: ~~Ms. Genevieve Huffman~~ Mr. Gary Fuller
Title: EHS Specialist ~~H~~
Phone: ~~(831) 385-7943~~ (661) 282-4405

ACID RAIN PERMIT CONTENTS

- 1) Statement of Basis
- 2) The applicable SO₂ and NO_x emissions limitations.
- 3) Comments, notes and justifications regarding permit decisions and changes made to the permit application forms during the review process, and any additional requirements or conditions.
- 4) The permit application submitted for this source. The owners and operators of the source must comply with the standard requirements and special provisions set forth in the application.

1) STATEMENT OF BASIS

Statutory and Regulatory Authorities: In accordance with District Rules 218 and 219 and Titles IV and V of the Clean Air Act, the Monterey Bay Unified Air Pollution Control District issues this permit pursuant District Rules 218 and 219.

2) SO₂ AND NO_x EMISSIONS LIMITATIONS

	<u>Pollutant</u>	<u>Requirement</u>
<u>UNIT CTG</u>	<u>SO₂ Emissions Limitation</u>	<u>King City Power Plant shall hold Sulfur Dioxide Allowances not less than the total annual emissions of sulfur dioxide for the previous calendar year from the Frame 7 (unit GTG) and LM6000 (unit 2) Turbines.</u>
	<u>NO_x Emissions Limitation</u>	<u>This unit is not subject to the NO_x requirements from 40 CFR Part 76 as this unit is not capable of firing on coal.</u>

	<u>Pollutant</u>	<u>Requirement</u>
UNIT 2	<u>SO₂ Emissions Limitation</u>	<u>King City Power Plant shall hold Sulfur Dioxide Allowances not less than the total annual emissions of sulfur dioxide for the previous calendar year from the Frame 7 (unit GTG) and LM6000 (unit 2) Turbines. Gilroy Energy Center, LLC for King City shall hold SO₂ allowances, as of the allowance transfer deadline, in this unit's compliance subaccount not less than the total annual emissions of SO₂ for the previous calendar year from this unit.</u>
	<u>NO_x Emissions Limitation</u>	<u>This unit is not subject to the NO_x requirements from 40 CFR Part 76 as this unit is not capable of firing on coal.</u>

3) COMMENTS, NOTES AND JUSTIFICATIONS

None

4) PERMIT APPLICATION

Attached

**MONTEREY BAY AIR RESOURCES DISTRICT
TITLE V OPERATING PERMIT TV-0000012A**

24580 Silver Cloud Court
Monterey, CA 93940
Telephone: (831) 647-9411

ISSUED TO:

Calpine King City Cogen, LLC & Gilroy Energy Center, LLC for King City Power Plant
750 Metz Road
King City, CA 93930

PLANT SITE LOCATION:

750 Metz Road & 51 Don Bates Way
King City, CA 93930

ISSUED BY:

Richard Stedman, Air Pollution Control Officer

March 10, 2017 TBD

Effective Date

ORIS Code: 10294

Nature of Business: Cogeneration & Power Generation

SIC Codes: 4931 - Electric & Other Services Combined
4911 - Electric Power Generation

RESPONSIBLE OFFICIAL:

Name: Mr. Kevin Karwick
Title: General Manager- Central Coast Projects
Phone: (408) 337-3429

ALTERNATIVE RESPONSIBLE OFFICIALS:

Name: ~~Alexander Price~~ Paul Mansfield
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FACILITY CONTACT PERSON:

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FACILITY DESCRIPTION

The facility consists of Calpine King City Cogen, LLC, a combined cycle cogeneration plant and the Gilroy Energy Center, LLC for King City, a simple cycle combustion turbine.

Calpine King City Cogen, LLC produces most of the electricity through the expansion of fuel combusted (natural gas or fuel oil) in a gas turbine that is connected to a generator. Heat in the gas turbine exhaust is used to produce high-pressure steam in a heat recovery steam generator, which is used to produce additional electricity from a steam turbine/generator. ~~Low pressure steam extracted from this system is used as process steam at the Jerry and Suzanne Rava, Family Limited Partnership's plant.~~ In addition, two auxiliary boilers are located at the facility and are used to provide process steam for facility processes and in order to maximize electrical power production from the steam turbine/generator operations and startup during peak power production periods or when the gas turbine is not operating. ~~This facility is permitted by the District's local permitting program under Permits to Operate (PTOs) 16139, 14743, and 14744.~~

The Gilroy Energy Center, LLC for King City was constructed and is in operation as authorized by the California Energy Commission's Adoption Order for Docket Number 01-EP-6 dated May 2, 2001 and by District Authority to Construct (ATC) 10738 issued on July 30, 2001 and District Permit to Operate (PTO) 10738 issued on October 22, 2002, the quarterly and annual NO_x emission limits were modified by ATC 11435 issued on February 5, 2003 and PTO 11435 issued on March 3, 2003 and PTO 11609 issued on June 25, 2003, the testing frequency was modified by PTO 12304 issued on August 11, 2005, the DAHS was updated under PTO 14085 issued on October 8, 2009, and further refined by PTO 14717 issued on December 1, 2010. This simple cycle combustion turbine is fired exclusively on natural gas.

EQUIPMENT DESCRIPTION

UNIT ~~4~~ CTG/GTG – COGENERATION FACILITY CONSISTING OF:

- 1a. Gas Turbine Generator, General Electric Frame 7, Model EA 7001, Rated At 941.1 MMBtu/Hr Nominal Heat Input And 85.7 MW Nominal Electrical Output, Steam Injection For NO_x Control, 5 Lbm H₂O/Lbm Fuel Design Midpoint.
- 1b. Water Tube Type Heat Recovery Steam Generator, Nooter/Eriksen, High Pressure Steam Capacity: 272,000 Lbs/Hr @ 1475 psia and 930°F, Low Pressure Steam Capacity: 87,900 Lbs/Hr @ 100 PSIA Saturated.
- 1c. Steam Turbine Generator, Asea-BBC Dual Admission, Dual Extraction, High Pressure Turbine Model HT-16, Low Pressure Turbine Model LT-25, Generator Model Brush BDAX 7-225ERH, 37.6 MW Nominal Electrical Output.
- 1d. Condenser, Graham Manufacturing Model 79130, Water Cooled Shell And Tube Condenser Rated At 272 MMBtu/Hr.
- 1e. Cooling Tower, Hamon Cooling Towers, Three Cell Counterflow Cooling Tower Rated At 300 MMBtu/Hr, 24,000 GPM Rating, Drift Loss: 0.002%.
- 1f. Selective Catalytic Reduction NO_x Control System, Mitsubishi Heavy Industries Titanium Oxide

Grid Honeycomb Type Catalyst, 1846 Cubic Feet Of Catalyst, Consisting Of: Twenty Eight Vertically Stacked Catalyst Modules, Each Holding 200 Ceramic Blocks Containing The Active Catalyst, Each Block Measuring 6" x 6" x 16", With 5 mm Catalyst Pitch.

- 1g. Ammonia Injection System Consisting Of: Two Ammonia Dilution Blowers, Each 10 Hp, 700 SCFM @ 40" W.G. Static Pressure, Combining Anhydrous Ammonia And Dilution Air; Ammonia Injection Grid With Thirty 2 Inch Distribution Pipes Configured Vertically Across The Duct, Each With Twenty Four Injection Nozzles.
2. Two Nebraska Model NS-F-86 Water Tube Boilers, Each Designed To Produce 121,120 Lbs/Hr Saturated Steam at 170 PSIG, Each With Coen Model 275 Type DAF Multi-Stage Low NOx Burners Designed For A Maximum Heat Input Of 143 MMBtu/Hr And Two Stage Flue Gas Recirculation With A Design Rate Of 15%, And CO Control Provided By An Engelhard Catalytic Carbon Monoxide Converter With 21.24 Cubic Feet Of Ceramic Honeycomb Type Precious Metal Coated Catalyst Consisting Of Twelve Catalyst Modules, Each Measuring 24.5" x 24.5" x 6.4" Located Between The Boiler Flue Gas Outlet And Economizer Inlet On Each Boiler.

UNIT 2 - SIMPLE CYCLE GAS TURBINE CONSISTING OF:

- 2a. Simple Cycle Natural Gas Fired Gas Turbine Generator, Model LM6000PD, Rated At 500 MMBtu/Hr Maximum Heat Input And 49.6 MW Nominal Electrical Output, Dry Low NOx Combustor To Control NOx Formation.
- 2b. Selective Catalytic Reduction NOx Control System.
- 2c. Oxidation Catalyst For Carbon Monoxide Control.
- 2d. CEM System Designed To Continuously Record The Measured Gaseous Concentrations, And Calculate And Continuously Monitor And Record The NOx And CO Concentrations Corrected To Fifteen (15) Percent Oxygen (O₂) On A Dry Basis.
- 2e. Chiller Cooling Tower With A Design Water Recirculation Rate Of 4,160 Gallons Per Minute.

ANCILLARY EQUIPMENT:

- Emergency 170 Bhp Diesel Engine-Fire Pump Set.
- Exempt Abrasive Blasting Equipment.

PERMIT SHIELD

Compliance with the conditions contained on this Title V permit shall be deemed compliance with the following applicable requirements as of the date of issuance of this permit based upon the criteria following each applicable requirement:

40 CFR Part 60, Subpart A - New Source Performance Standards, General Provisions

This facility is subject to the requirements of this part because they are subject to 40 CFR Part 60, Subparts Db and GG. In their Title V application, the source has requested that the requirements of Subpart A be subsumed under the NSR permit requirements.

The District agrees, and asserts that compliance with the conditions on this Title V Permit shall be deemed compliance with the monitoring, record keeping, and reporting requirements contained in 40 CFR Parts 60.7, 60.8, and 60.13.

40 CFR Part 60, Subpart Db - Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units

The boilers at the facility are subject to the requirements of this part. In their Title V application, the source has requested that the requirements of Subpart Db be subsumed under the NSR permit requirements. This is an appropriate action, due to the fact that facility has emission limits from their NSR permits which are more stringent than the requirements of this part.

The sulfur dioxide limit from Section 60.42b(a) would be 11.4 lbs/hr (143 MMBtu/Hr * 0.8 lb/MMBtu * 0.1). This 11.4 lbs/hr exceeds the 7.55 lbs/hr allowed for each boiler under the NSR permits.

The particulate matter limit from Section 60.43b(b) would be 14.3 lbs/hr (143 MMBtu/Hr * 0.1 lb/MMBtu). Low sulfur fuel requirement (0.05%) is the conventional technology utilized to reduce SO_x emissions and establishes the appropriate particulate matter emission limit from Section 60.43b. The allowance of 14.3 lbs/hr of particulate matter under subpart Db exceeds the 12.65 lbs/hr allowed for each boiler under the NSR permits.

The NO_x limit from Section 60.44b(a) would be 28.6 lbs/hr (143 MMBtu/Hr * 0.2 lb/MMBtu). The emission factor for high heat release rate is utilized based upon the furnace volume of 1795 ft³ and a heat input of 143 MMBtu/hr. The heat release rate is 79,666 BTU/hr-ft³ which under the definition contained in Section 60.41b is considered a "high heat release rate". The allowance of 28.6 lbs/hr of NO_x under subpart Db exceeds the 13.8 lbs/hr allowed for each boiler under the NSR permits.

The testing, monitoring, record keeping and reporting requirements contained in Sections 60.45(b), 60.46(b), 60.47(b), 60.48(b), and 60.49(b) will be subsumed under the testing, monitoring, record keeping and reporting requirements established under the NSR permits and required under the Title V permitting process.

40 CFR Part 60, Subpart GG - Standards of Performance for Stationary Gas Turbines

The gas turbines at this facility are subject to the requirements of this NSPS. In addition to the back-end control using SCR, the turbines utilize steam/water injection or dry low NO_x combustors to control NO_x formation.

The NO_x emission factor from Section 60.332(a)(1) would be 113 ppmvd for the Frame 7 turbine. This 113 ppmvd limit far exceeds the 9 ppmvd limit on natural gas (15 ppmvd on fuel oil) established by District Rule 207. Therefore, the NO_x limit from the NSPS will be subsumed under the NSR permit requirements included on this Title V permit.

The allowable NO_x concentration limit derived from §60.332(a)(1) for the LM6000 turbine would be 75 ppmvd. This 75 ppmvd limit far exceeds the 5 ppmvd limit established by the BACT requirements of District Rule 207. Therefore, the NO_x limit from the NSPS will be subsumed under the NSR permit requirements that will be included on the permits.

The SO₂ limit from Section 60.333 would be 150 ppmv for both turbines. Compliance with this limit for the Frame 7 turbine is assumed due to the worst case limits contained in the facility NSR permits (firing on fuel oil) of 116.1 lbs/hr and volumetric flow rate of 510,616 DSCFM [(941.1 MMBtu/hr) (hr/60 min) (9,190 DSCF/MMBtu) (20.9/(20.9-15)) = 510,616 DSCFM]. The SO₂ concentration at this permitted emission level would be ~~23.8~~ 22.76 ppmv for the turbine ~~[(116.1 lbs SO₂/hr)*((MM lbmoles air)/(64.1 lbmole SO₂))*((379 Ft³ Air)/(lbmole air))]/((480,600 SDCFM)*(60 M/Hr)) = 23.8 ppmv]~~ [(116.1 lb SO₂/hr) (hr/60 min) (lbmole/64.1 lb SO₂) (385 ft³/lbmole) (min/510,616 ft³) (10⁶) = 22.76 ppm]. Compliance with this limit for the LM6000 turbine is assured due to limits established by the BACT requirements of Rule 207 ~~and~~ established in the permit at 0.33 lbs/hr and volumetric flow rate of 257,117 DSCFM [(500 MMBtu/hr) (hr/60 min) (8,710 DSCF/MMBtu)(20.9/(20.9-15)) = 257,117 DSCFM]. The SO₂ concentration at this permitted emission level would be 0.13 ppmv for the turbine ~~[(0.33 lbs SO₂/hr)*((MM lbmoles air)/(64.1 lbmole SO₂))*((379 Ft³ Air)/(lbmole air))]/((272,396 SDCFM)*(60 M/Hr)) = 0.13 ppmv]~~ [(0.33 lb SO₂/hr) (hr/60 min) (lbmole/64.1 lb SO₂) (385 ft³/lbmole) (min/257,117 ft³) (10⁶) = 0.13 ppm].

These values are well below the 150 ppmv SO₂ allowed for in the NSPS. Therefore, the SO₂ emission standard from this NSPS will be subsumed under the NSR permit requirement that will be included on the permits.

The testing and monitoring requirements contained in Sections 60.334 and 60.335 will be subsumed under the testing and monitoring requirements established under the NSR permits and that is included on this Title V permit. This will include the annual emissions testing requirement and the requirement to monitor operations with the use of CEMs.

FEDERALLY ENFORCEABLE EMISSION LIMITS AND STANDARDS

1. During periods of natural gas firing. The Frame 7 gas turbine pollutant mass emission rates in the exhaust discharged to the atmosphere shall not exceed the following limits [District Rule 207; District Rule 403 limit of 617.9 lbs PM₁₀/hr; District Rule 404 NO_x limit of 140 lbs/hr and SO₂ limit of 2000 ppmv]:

<u>Pollutant</u>	<u>Lbs/Hour</u>	<u>Lbs/Day</u>
Oxides of Nitrogen (NO _x)	30.1	722
Carbon Monoxide (CO)	20.0	480
Ammonia (NH ₃)	13.9	334
Particulate Matter <10 microns (PM ₁₀)	2.5	60
Volatile Organic Compounds (VOC)	1.0	24
Sulfur Dioxide (SO ₂)	0.5	12

These limits shall not apply during start-up, which is not to exceed five (5) hours, or shutdown, which is not to exceed two (2) hours, or during periods of oil firing. SCR catalytic controls, steam injection and good engineering practices shall be used to the fullest extent practical during start-up

to minimize pollutant emissions.

2. During periods of natural gas firing, the auxiliary boiler pollutant mass emission rates in the exhaust discharged to the atmosphere shall not exceed the following limits from each boiler [District Rule 207; District Rule 403 limit of 30.8 lbs PM₁₀/hr; District Rule 404 NO_x limit of 140 lbs/hr and SO₂ limit of 2000 ppmv; 40 CFR Part 60, Subpart Db SO₂ limit of 11.4 lbs/hr, PM₁₀ limit of 14.3 lbs/hr, and NO_x limit of 28.6 lbs/hr]:

<u>Pollutant</u>	<u>Lbs/Hour</u>
Oxides of Nitrogen (NO _x)	7.25
Carbon Monoxide (CO)	2.65
Particulate Matter <10 microns (PM ₁₀)	0.60
Volatile Organic Compounds (VOC)	0.20
Sulfur Dioxide (SO ₂)	0.085

These limits shall not apply during boiler shutdown, for a period not to exceed 30 minutes, or during cold start-up, for a period not to exceed three (3) hours, or during hot start-up, for a period not to exceed 30 minutes. During boiler shutdown or start-up, and during operations at or below 40 percent load, procedures incorporating good engineering practices shall be utilized to the fullest extent practical to minimize all pollutant emissions.

3. While firing on natural gas the emission concentration of oxides of nitrogen, as NO₂, in the Frame 7 turbine exhaust discharged to the atmosphere shall not exceed 9 ppmvd, calculated as a clock hour average at 15 percent O₂, dry. [District Rule 207; District Rule 404 NO_x limit of 200 ppm; 40 CFR Part 60, Subpart GG NO_x limit of 200 ppm]

This limit shall not apply during start-up, which is not to exceed five (5) hours, or shutdown, which is not to exceed two (2) hours. SCR catalytic controls, steam injection and good engineering practices shall be used to the fullest extent practical during start-up to minimize pollutant emissions.

4. During periods of natural gas firing, the emission concentration of oxides of nitrogen, as NO₂, in the auxiliary boiler exhaust discharge to the atmosphere shall not exceed 40 ppmvd at boiler loads greater than 40 percent and 100 ppmvd at boiler loads of 40 percent or less, calculated as a clock hour average at 3 percent O₂, dry. [District Rule 207; District Rule 404 NO_x limit of 350 ppm]

These limits shall not apply during boiler shutdown, for a period not to exceed 30 minutes, or during cold start-up, for a period not to exceed three (3) hours, or during hot start-up, for a period not to exceed 30 minutes. During boiler shutdown or start-up, and during operations at or below 40 percent load, procedures incorporating good engineering practices shall be utilized to the fullest extent practical to minimize all pollutant emissions.

5. The emission concentration of ammonia in the Frame 7 turbine exhaust discharged to the atmosphere shall not exceed 10 ppmvd, calculated as a three hour rolling clock hour average at 15 percent O₂, dry. [District Rule 207]

This limit shall not apply during start-up, which is not to exceed five (5) hours, or shutdown, which

is not to exceed two (2) hours. SCR catalytic controls, steam injection and good engineering practices shall be used to the fullest extent practical during start-up to minimize pollutant emissions.

6. The emission concentration of carbon monoxide in the Frame 7 turbine exhaust discharged to the atmosphere shall not exceed 10 ppmvd, calculated as a three hour rolling clock hour average at 15 percent O₂, dry. [District Rule 207]

This limit shall not apply during start-up, which is not to exceed five (5) hours, or shutdown, which is not to exceed two (2) hours. SCR catalytic controls, steam injection and good engineering practices shall be used to the fullest extent practical during start-up to minimize pollutant emissions.

7. The heat input rate to the LM6000 Turbine shall not exceed 500 MMBtu/hr and the unit shall only be fired on natural gas. [District Rule 207]
8. The maximum daily combined emissions from the LM6000 Turbine, including start-ups and shutdowns, shall not exceed the following limits: [District Rule 207]

<u>Pollutant</u>	<u>Lbs/Day</u>
Oxides of Nitrogen (NO _x)	233.95
Carbon Monoxide (CO)	172.13
Particulate Matter <10 microns (PM ₁₀)	60.00
Volatile Organic Compounds (VOC)	28.80
Ammonia (NH ₃)	150.48
Sulfur Dioxide (SO ₂)	7.92

9. The pollutant mass emission rates in the exhaust discharged to the atmosphere from the LM6000 Turbine shall not exceed the following limits: [District Rules 207, 403, & 404]

<u>Pollutant</u>	<u>Lbs/Hour</u>	<u>Lbs/Day</u>
Oxides of Nitrogen (NO _x)	8.65	207.6
Carbon Monoxide (CO)	6.31	151.4
Particulate Matter <10 microns (PM ₁₀)	2.50	60.0
Volatile Organic Compounds (VOC)	1.20	28.8
Ammonia (NH ₃)	6.27	150.5
Sulfur Dioxide (SO ₂)	0.33	7.9

These limits shall not apply during start-up, which is not to exceed one (1) hour, or shutdown, which is not to exceed thirty (30) minutes. SCR catalytic controls and good engineering practices shall be used to the fullest extent practical during start-up to minimize pollutant emissions.

10. The pollutant concentrations discharged to the atmosphere from the LM6000 Turbine shall not exceed the following limits, calculated at 15 percent O₂: [District Rule 207]

<u>Pollutant</u>	<u>Concentration (ppm)</u>	<u>Averaging Period</u>
Oxides of Nitrogen (as NO ₂)	5.0	1-hour clock hour

Carbon Monoxide (CO)	6.0	3-hour rolling clock hour
Ammonia (NH ₃)	10	3-hour rolling clock hour

These limits shall not apply during start-up, which is not to exceed one (1) hour, or shutdown, which is not to exceed thirty (30) minutes. SCR catalytic controls and good engineering practices shall be used to the fullest extent practical during start-up to minimize pollutant emissions.

11. The pollutant emission rates discharged to atmosphere from the LM6000 Turbine during a start-up shall not exceed the following limits. These limits apply to any start-up period which shall not exceed one (1) hour. [District Rule 207]

<u>Pollutant</u>	<u>Lbs/Start-Up</u>
Oxides of Nitrogen (as NO ₂)	35.00
Carbon Monoxide (CO)	27.00
Volatile Organic Compounds (as CH ₄)	1.20

12. The Frame 7 turbine and auxiliary boilers shall only be fired on natural gas, except that No. 2 fuel oil may be used during training/testing of the auxiliary boilers, as described in Condition 23, or during periods of natural gas curtailment by the utility, or in the events of natural gas supply malfunction or disruption not within the control of Calpine King City Cogen, LLC. In any event, No. 2 fuel oil shall not be used for more than 240 hours per year per piece of equipment. [District Rule 207]

13. During periods of No. 2 fuel oil firing, the Frame 7 turbine pollutant mass emission rates in the exhaust discharged to the atmosphere shall not exceed the following limits [District Rule 207; District Rule 403 limit of 617.9 lbs PM₁₀/hr; District Rule 404 NO_x limit of 140 lbs/hr and SO₂ limit of 2000 ppmv]:

<u>Pollutant</u>	<u>Lbs/Hour</u>	<u>Lbs/Day</u>
Sulfur Dioxide (SO ₂)	116.1	2786
Oxides of Nitrogen (NO _x)	47.8	1147
Carbon Monoxide (CO)	22.0	528
Ammonia (NH ₃)	13.9	334
Particulate Matter <10 microns (PM ₁₀)	10.0	240
Volatile Organic Compounds (VOC)	1.0	24

These limits shall not apply during start-up, which is not to exceed five (5) hours, or shutdown, which is not to exceed two (2) hours. SCR catalytic controls, steam injection and good engineering practices shall be used to the fullest extent practical during start-up to minimize pollutant emissions.

14. During periods of No. 2 oil firing, the auxiliary boiler pollutant mass emission rates in the exhaust discharged to the atmosphere shall not exceed the following limits from each boiler [District Rule 207; District Rule 403 limit of 30.8 lbs PM₁₀/hr; District Rule 404 NO_x limit of 140 lbs/hr and SO₂ limit of 2000 ppmv; 40 CFR Part 60, Subpart Db SO₂ limit of 11.4 lbs/hr, PM₁₀ limit of 14.3 lbs/hr, and NO_x limit of 28.6 lbs/hr]:

<u>Pollutant</u>	<u>Lbs/Hour</u>
Oxides of Nitrogen (NO _x)	13.8
Particulate Matter <10 microns (PM ₁₀)	12.65
Sulfur Dioxide (SO ₂)	7.55
Carbon Monoxide (CO)	2.85
Volatile Organic Compounds (VOC)	0.25

These limits shall not apply during boiler shutdown, for a period not to exceed 30 minutes, or during cold start-up, for a period not to exceed three (3) hours, or during hot start-up, for a period not to exceed 30 minutes. During boiler shutdown or start-up procedures, incorporating good engineering practices shall be utilized to the fullest extent practical to minimize all pollutant emissions.

15. While firing on No. 2 fuel oil, the emission concentration of oxides of nitrogen, as NO₂, in the Frame 7 turbine exhaust discharged to the atmosphere shall not exceed 15 ppmvd, calculated as a clock hour average at 15 percent O₂, dry. [District Rule 207; District Rule 404 NO_x limit of 200 ppm; 40 CFR Part 60, Subpart GG NO_x limit of 200 ppm]

This limit shall not apply during start-up, which is not to exceed five (5) hours, or shutdown, which is not to exceed two (2) hours. SCR catalytic controls, steam injection and good engineering practices shall be used to the fullest extent practical during start-up to minimize pollutant emissions.

16. During periods of No. 2 fuel oil firing at boiler loads greater than 40 percent, the emission concentration of oxides of nitrogen, as NO₂, in the auxiliary boiler exhaust discharged to the atmosphere shall not exceed 69 ppmvd, calculated as a clock hour average at 3 % O₂, dry. [District Rule 207]

This limit shall not apply during boiler shutdown, for a period not to exceed 30 minutes, or during cold start-up, for a period not to exceed three (3) hours, or during hot start-up, for a period not to exceed 30 minutes. During boiler shutdown or start-up, procedures incorporating good engineering practices shall be utilized to the fullest extent practical to minimize all pollutant emissions.

17. The sulfur content on any No. 2 fuel oil used as fuel in the Frame 7 turbine or auxiliary boilers shall not exceed 0.05 percent by weight. All fuel received must be certified to contain 0.05 percent sulfur, or less, by weight. [District Rule 207, District Rule 412 limit of 0.5% by weight sulfur]

18. The emission limits contained in conditions 1, 3, 5, 6, 8, 9, 10, and 11 shall not apply during periods of combustor tuning, balancing, or non-Air District regulatory mandated performance testing. These periods shall not exceed 100 hours per year per turbine. [District Rule 207]

Calpine King City Cogen, LLC and the Gilroy Energy Center, LLC for King City shall notify the District prior to initiating any of these activities, and shall monitor and record all periods of these activities in a log maintained on-site and shall submit a summary of this data to the District on an annual basis.

19. The emission limits contained in conditions 2, 4, and 14 shall not apply during periods of boiler tuning. Boiler tuning shall not exceed 50 hours per year per boiler. [District Rule 207]

 Calpine King City Cogen, LLC shall notify the District prior to initiating boiler tuning, and shall monitor and record all periods of boiler tuning in a log maintained on-site and shall submit a summary of this data to the District on an annual basis.

20. Calpine King City Cogen, LLC and the Gilroy Energy Center, LLC for King City shall maintain a turbine start-up protocol for both hot and cold start-up, which details the procedures that will be used to minimize the pollutant emissions, and shall amend this protocol based on operating experience. [District Rule 207]

21. Daily NO_x emissions from all combustion equipment at the facility shall not exceed 1,070 pounds per day. During periods of oil firing as allowed for on the permits for the Frame 7 Turbine and the Boilers, the allowable daily NO_x limit is increased by the incremental hourly NO_x limit for oil firing versus the natural gas hourly NO_x limit for all hours the equipment was actually operated on fuel oil. [District Rule 207]

22. Cumulative emissions, including emissions generated during Start-ups and Shutdowns, from all equipment at Calpine King City Cogen, LLC and the Gilroy Energy Center, LLC for King City shall not exceed the following quarterly and annual limits: [District Rule 207]

Pollutant	Pounds Of Emissions				
	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Annual
NO _x (as NO ₂)	72,452	73,178	73,905	73,905	293,440
SO _x	1,748	1,768	1,787	1,787	7,090
VOC	4,762	4,815	4,868	4,868	19,313
PM ₁₀	12,071	12,204	12,339	12,339	48,953
CO	58,445	59,095	59,744	59,744	237,028

Note: During periods of oil firing as allowed for on the permits for the Frame 7 Turbine and the Boilers, the allowable emissions are increased by the incremental hourly limit for oil firing versus the natural gas hourly limit for all hours the equipment was actually operated on fuel oil.

23. Training/testing of the auxiliary boilers shall be allowed only under the following conditions [District Rule 207]:
 - a. Only one boiler may be tested in a calendar day,
 - b. The District shall be notified a minimum of 30 calendar days prior to the date of training/testing on No. 2 fuel oil,

- c. The District has the authority to postpone training/testing of the auxiliary boilers due to adverse ambient air-quality conditions,
 - d. Each boiler may be used for training/testing on fuel oil a maximum of two (2) times per calendar year, and
 - e. The training/testing on fuel oil shall not exceed two (2) full-load equivalent hours.
24. Operation must be conducted in compliance with all data and specifications submitted in the applications to the California Energy Commission and the MBUAPCD. [District Rule 207]
25. Equipment must be properly maintained and kept in good operating condition. [District Rule 207]
26. Equipment shall not be operated unless the air pollution control equipment is in full use. [District Rule 207]
27. The PM₁₀ emissions from the Frame 7 cooling tower shall not exceed 20 pounds per day. [District Rule 207]
28. Water treatment chemicals containing chromium shall not be used in the cooling towers. [District Rule 207, 40 CFR Part 63.400]
29. ~~King City Power Plant shall hold Sulfur Dioxide Allowances not less than the total annual emissions of sulfur dioxide for the previous calendar year from the Frame 7 (unit GTG) and LM6000 (unit 2) Turbines. The Gilroy Energy Center, LLC for King City shall hold Sulfur Dioxide Allowances in the compliance subaccount for the LM6000 Turbine (Unit 2) not less than the total annual emissions of sulfur dioxide for the previous calendar year from the LM6000 Turbine.~~ [District Rule 219 and 40 CFR §72.9(c)]
30. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three (3) minutes in any one (1) hour which is as dark or darker than Ringelmann 1 or equivalent 20% opacity. [District Rule 400]
31. Calpine King City Cogen, LLC and the Gilroy Energy Center, LLC for King City shall cause to be operated an ambient air monitoring station at a site approved by the District in Southern Monterey County, for PM₁₀, O₃, and standard meteorological parameters on a continuous basis, in accordance with EPA requirements contained in 40 CFR Part 58, and as deemed necessary in accordance with the Air Resources Board guidelines. The air monitoring station instrumentations shall be compatible with the District's daily data retrieval polling methods.

The operation of the air monitoring station shall continue for the life of the project or until the Air

Pollution Control Officer determines that good cause exists to discontinue monitoring. Good cause includes adequate technical justification submitted by the permitted that successfully proves that the continuation of all or part of the monitoring requirement is no longer necessary. [District Rule 207]

32. Calpine King City Cogen, LLC and the Gilroy Energy Center, LLC shall comply with the requirements of 40 CFR Part 68 – Risk Management Plans. Calpine King City Cogen, LLC’s and the Gilroy Energy Center, LLC’s Risk Management Plan must be revised and updated as required by 40 CFR §68.190. Calpine King City Cogen, LLC and the Gilroy Energy Center, LLC shall certify compliance with these requirements as part of the annual compliance certification required by 40 CFR Part 70 and this permit. [40 CFR Part 68]
33. Calpine King City Cogen, LLC and the Gilroy Energy Center, LLC for King City shall comply with the requirements of 40 CFR Part 82 - Protection of Stratospheric Ozone. [40 CFR Part 82]

TESTING REQUIREMENTS AND PROCEDURES

34. An annual performance test of the Frame 7 gas turbine shall be conducted prior to December 31 of each year. Calpine King City Cogen, LLC shall conduct performance tests in accordance with EPA Method 20 for NO_x and O₂, EPA Method 10 for CO, EPA Method 18 for hydrocarbons, the collection method specified in BAAQMD Method 1B and the analysis specified in EPA Method 350.3 for ammonia, or other methods as approved by the District and EPA to verify compliance with conditions 1, 3, 5 and 6. Calpine King City Cogen, LLC shall furnish the District written results of such performance tests within sixty (60) days of the test completion. A testing protocol shall be submitted to the District no later than 30 days prior to testing, and District notification at least 10 days prior to the actual date of testing shall be provided so that a District observer can be present. The compliance test shall include, but not be limited to, the determination of the following parameters [District Rule 207]:
 - a. Oxides of Nitrogen, as NO₂: ppm at 15% O₂, dry and lb/hr.
 - b. Carbon Monoxide: ppm at 15% O₂, dry and lb/hr.
 - c. Ammonia: ppm at 15% O₂, dry and lb/hr.
 - d. Volatile Organic Compounds (VOC) and TOG: ppm and lb/hr.and the following process parameters:
 - e. Natural gas consumption.
 - f. Electricity generated during the test.
 - g. Ammonia injected; lb/hr.

35. A performance test of the LM 6000 turbine shall be conducted every 4,000 operating hours, but not less frequent than once every three years nor more frequent than once a year. The Gilroy Energy Center, LLC for King City shall conduct performance tests in accordance with EPA Method 20 for NO_x and O₂, EPA Method 10 for CO, EPA Method 18 for hydrocarbons, the collection method specified in BAAQMD Method 1B and the analysis specified in EPA Method 350.3 for ammonia, or other methods as approved by the District and EPA to verify compliance with conditions 9 and 10. The Gilroy Energy Center, LLC for King City shall furnish the District written results of such performance tests within sixty (60) days of the test completion. A testing protocol shall be submitted to the District no later than 30 days prior to testing, and District notification at least 10 days prior to the actual date of testing shall be provided so that a District observer can be present. The compliance test shall include, but not be limited to, the determination of the following parameters [District Rule 207]:

- a. Oxides of Nitrogen, as NO₂: ppm at 15% O₂, dry and lb/hr.
- b. Carbon Monoxide: ppm at 15% O₂, dry and lb/hr.
- c. Ammonia: ppm at 15% O₂, dry and lb/hr.
- d. Volatile Organic Compounds (VOC) and TOG: ppm and lb/hr.

and the following process parameters:

- e. Natural gas consumption.
- f. Electricity generated during the test.
- g. Ammonia injected; lb/hr.

36. An annual performance test of the auxiliary boilers shall be conducted prior to December 31 of each year. Calpine King City Cogen, LLC shall conduct performance tests in accordance with EPA Method 7E for NO_x, EPA Method 10 for CO, EPA Method 3A for O₂, or other methods as approved by the District and EPA to verify compliance with conditions 2 and 4. Calpine King City Cogen, LLC shall furnish the District written results of such performance tests within sixty (60) days of the test completion. A testing protocol shall be submitted to the District no later than 30 days prior to testing, and District notification at least 10 days prior to the actual date of testing shall be provided so that a District observer can be present. The compliance test shall include, but not be limited to, a test of the exhaust gas in the auxiliary boiler exhaust stacks, for: [District Rule 207]

- a. Carbon Monoxide: ppm at 15% O₂, dry and lb/hr;
- b. Oxides of Nitrogen, as NO₂: ppm at 15% O₂, dry and lb/hr;

and the following process parameter:

- c. Natural gas consumption rate.

37. No testing is specified for the emission limitations contained in conditions 13, 14, 15 and 16 while firing on fuel oil. Fuel oil is for emergency use only, and the District has no intention of the facility operating the equipment on fuel oil just to perform compliance testing. [District Rule 207]
38. Testing of all fuel oil delivered to the facility shall be conducted prior to or upon receipt of the fuel oil. Calpine King City Cogen, LLC and the Gilroy Energy Center, LLC for King City shall conduct testing in accordance with ASTM D1552-83, ASTM D1266-87 or ASTM D2622-87, or other method approved by the District and EPA to verify compliance with condition 17. Calpine King City Cogen, LLC and the Gilroy Energy Center, LLC for King City shall furnish the District written results of the test prior to firing the fuel oil, but in no case later than thirty (30) days of completion. [District Rule 207 and District Rule 412]
39. Calpine King City Cogen, LLC shall conduct monthly measurements of the cooling tower water total dissolved solids (TDS) in accordance with EPA Method 160.1, or other method approved by the District and EPA to verify compliance with the cooling tower PM₁₀ emission limit as specified in condition 27. The PM₁₀ emissions shall be calculated as the product of the cooling tower recirculating water flow rate times the total dissolved solids in the cooling water times the cooling tower drift loss times the number of hours of operation, as follows [District Rule 207]:

$$PM_{10} \text{ lb/day} = 5.0E-4 * F * TDS * DL * H$$

Where: F = cooling tower recirculation water flow rate in gpm
TDS = total dissolved solids in the cooling water in ppm
DL = drift loss of 0.002%
H = number of hours of operation

40. Gilroy Energy Center, LLC for King City shall conduct monthly measurements of the cooling tower water total dissolved solids (TDS) in accordance with EPA Method 160.1, or other method approved by the District and EPA. The TDS value from the latest testing shall be used in the following equation to calculate PM₁₀ emissions. The PM₁₀ emissions from the cooling tower shall be calculated as the product of the cooling tower recirculating water flow rate times the total dissolved solids in the cooling tower water times the cooling tower drift loss times the number of hours of operation, as follows: [District Rule 207]

$$PM_{10} \text{ lbs/day} = 5.0E-4 * F * TDS * DL * H$$

Where: F = cooling tower recirculating water flow rate in gpm
TDS = total dissolved solids in the cooling water in ppm
DL = drift loss of 0.0047%
H = number of hours of operation

41. No testing is specified for the generic (Rule 400) opacity requirement from condition 30 while firing on natural gas. When firing on fuel oil continuously for a period of 120 hours and at intervals of seven (7) days during continuing operation on fuel oil, Calpine King City Cogen, LLC shall conduct testing in accordance with the methodology contained in EPA Method 9 and the averaging/aggregating period contained in District Rule 400 to verify compliance with condition

30. [District Rule 207 and District Rule 400]

MONITORING AND RECORD KEEPING REQUIREMENTS

42. Calpine King City Cogen, LLC and the Gilroy Energy Center, LLC for King City shall demonstrate compliance by using properly operated and maintained continuous emission monitors on all combustion equipment (during all hours of operation including equipment Start-up and Shutdown periods, except for periods of CEM maintenance performed in accordance with District requirements) for all of the following parameters: [District Rule 207]

- a. Firing hours and Fuel Flow Rates.
- b. Oxygen (O₂) Concentrations, Nitrogen Oxide (NO_x) Concentrations, and Carbon Monoxide (CO) Concentrations.
- c. Ammonia Injection Rates.

Calpine King City Cogen, LLC and the Gilroy Energy Center, LLC for King City shall summarize all of the above parameters for each clock hour. For each calendar day, Calpine King City Cogen, LLC and the Gilroy Energy Center, LLC for King City shall calculate and record the total Firing Hours, the average hourly Fuel Flow Rates, and pollutant emission concentrations.

Calpine King City Cogen, LLC and the Gilroy Energy Center, LLC for King City shall use the parameters measured above and District-approved calculation methods to calculate the following parameters:

- d. Heat Input Rate.
- e. Corrected NO_x concentrations, NO_x mass emissions (as NO₂), corrected CO concentrations, and CO mass emissions.

As specified below, Calpine King City Cogen, LLC and the Gilroy Energy Center, LLC for King City shall calculate and record the following data:

- f. Total Heat Input Rate for every clock hour.
- g. The NO_x mass emissions (as NO₂), and corrected average NO_x emission concentration for every clock hour.
- h. The CO mass emissions for every clock hour, and corrected average CO emission concentration for every three-hour rolling clock hour period.
- i. On an hourly basis, the cumulative total NO_x mass emission (as NO₂) and the cumulative total CO mass emissions.
- j. For each calendar day, the cumulative total NO_x mass emission (as NO₂) and the cumulative total CO mass emissions.
- k. For each calendar quarter, the cumulative total NO_x mass emission (as NO₂) and the cumulative total CO mass emissions.
- l. For each calendar year, the cumulative total NO_x mass emission (as NO₂) and the cumulative total CO mass emissions.

43. Calpine King City Cogen, LLC and the Gilroy Energy Center, LLC for King City shall calculate and record on a daily basis, the Volatile Organic Compound (VOC) mass emissions, Fine

Particulate Matter (PM₁₀) mass emissions, Sulfur Dioxide (SO₂) mass emissions, and Ammonia (NH₃) mass emissions from each combustion source and the cooling tower. Calpine King City Cogen, LLC and the Gilroy Energy Center, LLC for King City shall use the actual heat input rates, actual Start-up times, actual Shutdown times, and District-approved emission factors to calculate these emissions. The calculated emissions shall be presented as follows: [District Rule 207]

- a. For each calendar day, VOC, PM₁₀, SO₂, and NH₃ mass emissions shall be summarized for each source.
- b. On a daily basis, the cumulative total VOC, PM₁₀, SO₂ and NH₃ mass emissions shall be summarized for each calendar quarter and for the calendar year.

44. Calpine King City Cogen, LLC shall monitor SO₂ emissions from the Frame 7 Turbine in accordance with 40 CFR Part 72 and 75. [District Rule 219 and 40 CFR Section §75.11(d)]

44.45. The Gilroy Energy Center, LLC for King City shall monitor SO₂ emissions from the LM6000 Turbine in accordance with 40 CFR Part 72 and 75. [District Rule 219 and 40 CFR Section §75.11(d)]

46. CEMs shall be installed and operated on the Frame 7 Turbine. This system shall be designed to continuously record the measured gaseous concentrations, and calculate and continuously monitor and record the CO, CO₂ or O₂, and NO_x concentrations corrected to fifteen (15) percent oxygen (O₂) on a dry basis. [District Rules 201, 213, 219 and 40 CFR 64]

The equipment installed for the continuous monitoring of CO shall be maintained and operated in accordance with 40 CFR Part 60 Appendix F, and the equipment installed for the continuous monitoring of CO₂ or O₂ and NO_x shall be maintained and operated in accordance with 40 CFR Parts 72 and 75.

45.47. CEMs shall be installed and operated on the LM6000 Turbine. This system shall be designed to continuously record the measured gaseous concentrations, and calculate and continuously monitor and record the CO, CO₂ or O₂, and NO_x concentrations corrected to fifteen (15) percent oxygen (O₂) on a dry basis. [District Rules 201, 213, 219 and 40 CFR 64]

The equipment installed for the continuous monitoring of CO shall be maintained and operated in accordance with 40 CFR Part 60 Appendix F, and the equipment installed for the continuous monitoring of CO₂ or O₂ and NO_x shall be maintained and operated in accordance with 40 CFR Parts 72 and 75.

48. A written Quality Assurance program for the Frame 7 Turbine CEM must be established in accordance with 40 CFR Part 75, Appendix B for NO_x and 40 CFR Part 60, Appendix F for CO which includes, but is not limited to: procedures for daily calibration testing, quarterly linearity and leak testing, record keeping and reporting implementation, and relative accuracy testing. [District Rule 219]

~~46.49.~~ A written Quality Assurance program for the LM6000 Turbine CEM must be established in accordance with 40 CFR Part 75, Appendix B for NO_x and 40 CFR Part 60, Appendix F for CO which includes, but is not limited to: procedures for daily calibration testing, quarterly linearity and leak testing, record keeping and reporting implementation, and relative accuracy testing. [District Rule 219]

~~47.50.~~ The ammonia emissions shall be monitored by the using the following ammonia slip calculation: [District Rule 207]

$$\text{NH}_3 \text{ slip (ppmvd @ 15\% O}_2\text{)} = ((\text{NH}_3 \text{ fed ppm} - (\text{NO}_x \text{ in ppm} - \text{NO}_x \text{ out ppm})) * (20.9 - 15) / (20.9 - \text{O}_2)) * b$$

Where:

$$\text{NH}_3 \text{ fed in ppm} = ((\text{NH}_3 \text{ injection rate, lb/hr} * a) / (Q * Fd * 4.4096E-8)) * ((20.9 - \text{O}_2\%) / 20.9)$$

4.4096E-8 = (K-factor constant) corrects for the molecular weight of ammonia

a = Ammonia Concentration (in % by weight/100)

b = Correction Factor based on source test data

Q = Fuel Flow mmbtu/hr

Fd = 8710 scf/mmbtu

~~48.51.~~ A continuous monitoring system must be operated to monitor and record the fuel consumption of the Frame 7 Turbine. This system must be accurate to within ± 5 percent. [District Rule 207; 40 CFR Part 60, Subpart GG]

~~49.52.~~ Continuous emission monitoring systems must be calibrated and operated to measure each auxiliary boiler exhaust for NO_x, CO and O₂. The system shall continuously record the NO_x and CO concentrations corrected to a value of 3 percent O₂, dry, and the NO_x and CO mass emission rates in pounds per hour. The system shall meet all the requirements of District Rule 213 and shall be certified at least once per year. [District Rule 207; District Rule 213 and 40 CFR 64]

~~50.53.~~ Continuous emission monitoring system must be calibrated and operated to measure the combined cycle cogeneration facility's exhaust for NO_x, CO, and O₂. The system shall continuously record the NO_x and CO concentrations corrected to a value of 15% O₂, dry, and the NO_x and CO mass emission rates in pounds per hour. The system shall meet all requirements of District Rule 213 and shall be certified at least once per year. [District Rule 207, District Rule 213 and 40 CFR 64]

~~51.54.~~ Instrumentation must be operated to measure the SCR catalysts inlet temperature and pressure differential across the SCR catalysts. [District Rule 207]

~~52.55.~~ Instrumentation must be operated to measure the auxiliary boiler oxidation catalyst inlet temperature and pressure differential across the oxidation catalyst. [District Rule 207]

53-56. Calpine King City Cogen, LLC and the Gilroy Energy Center, LLC for King City shall monitor and record all start-up, shutdown, and operational profiles in a log maintained on site. [District Rules 207 and 218]

54-57. Calpine King City Cogen, LLC shall monitor and record all periods of oil firing in a log maintained on site and shall submit a summary of this data on an annual basis, at renewal time of the District (non Title V) Permit to Operate. [District Rule 207]

55-58. Calpine King City Cogen, LLC and the Gilroy Energy Center, LLC for King City shall submit to the ~~Air Pollution~~-District upon request at the time of annual District (non Title V) Permit to Operate renewal, the annual natural gas fuel consumption, annual electricity generated, and annual emissions of NO_x, CO, TOG, and ammonia from this equipment for the preceding calendar year. [District Rule 207]

56-59. As applicable Calpine King City Cogen, LLC and the Gilroy Energy Center, LLC for King City shall maintain the following general records of required monitoring information [District Rule 218]:

- A) the date and time of sampling or measurements;
- B) the date(s) analyses were performed;
- C) the company or entity that performed the analyses;
- D) the analytical techniques or methods used;
- E) the results of such analyses;
- F) the operating conditions existing at the time of sampling or measurement; and
- G) the records of quality assurance for continuous monitoring systems (including, but not limited to quality control activities, audits, and calibration drift checks) and source testing methods.

57-60. Calpine King City Cogen, LLC and the Gilroy Energy Center, LLC for King City shall retain records of all required monitoring data and support information for a period of at least five (5) years from the date of the monitoring, sample collection, measurement, report, and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by the permit. [District Rule 218]

REPORTING REQUIREMENTS

58-61. Calpine King City Cogen, LLC and the Gilroy Energy Center, LLC for King City shall report breakdowns which results in the inability to comply with any emission standard or requirement contained on this permit to the Air Pollution Control Officer (APCO) within one hour of the occurrence, this one hour period may be extended up to six hours for good cause by the APCO. The APCO may elect to take no enforcement action if Calpine King City Cogen, LLC and the Gilroy Energy Center, LLC for King City demonstrate to the APCO's satisfaction that a breakdown condition exists.

The estimated time for repair of the breakdown shall be supplied to the APCO within twenty-four (24) hours of the occurrence and a written report shall be supplied to the APCO within five (5) days after the occurrence has been corrected. This report shall include at a minimum [District Rule 214]:

- A) a statement that the condition or failure has been corrected and the date of correction; and
- B) a description of the reason(s) for the occurrence; and
- C) a description of the corrective measures undertaken and/or to be undertaken to avoid such an occurrence in the future; and
- D) an estimate of the emissions caused by the condition or failure.

59.62. Calpine King City Cogen, LLC and the Gilroy Energy Center, LLC for King City shall submit monthly reports to the District, in a District approved format, within 45 days from the end of the month and these shall include [District Rules 207, 213 & 218]:

- A) the time intervals, date and magnitude of excess emissions, nature and cause of the excess (if known), corrective actions and preventative measures adopted; and
- B) the averaging period used for data reporting corresponding to the averaging period specified in the emission test period used to determine compliance with an emission standard for the pollutant in question; and
- C) time and date of each period during which the continuous monitoring system was inoperative except for zero and span checks and the nature of system repairs and adjustments; and
- D) all information pertaining to any monitoring as required by the permit (conditions ~~43-45~~ 43-47, ~~47-49~~ 50-52, and ~~53-55~~ 56-58); and
- E) a negative declaration specifying when no excess emissions occurred; and
- F) a summary of actual monthly emissions from the CEM for all equipment which operated.

63. Calpine King City Cogen, LLC shall submit quarterly Electronic Data Reports (EDR) to EPA for the Frame 7 Turbine. These reports must be submitted within 30 days following the end of each calendar quarter and shall include all information required in §75.64. [40 CFR Part 75]

60.64. The Gilroy Energy Center, LLC for King City shall submit quarterly Electronic Data Reports (EDR) to EPA for the LM6000 Turbine. These reports must be submitted within 30 days following the end of each calendar quarter and shall include all information required in §75.64. [40 CFR Part 75]

~~61-65.~~ Calpine King City Cogen, LLC and the Gilroy Energy Center, LLC for King City shall submit the total quarterly emissions, to verify compliance with Condition 22, to the District within 45 days from the end of each calendar quarter. [District Rule 207]

The total quarterly emissions for NO_x and CO shall be reported based upon the actual recorded CEM data as specified in Condition 42. Quarterly emissions of SO_x (as SO₂), PM₁₀, and VOC shall be reported as specified in Condition 43.

~~62-66.~~ Calpine King City Cogen, LLC and the Gilroy Energy Center, LLC for King City shall submit an annual compliance certification report to the District and U.S. EPA, in a District approved format, no later than February 15 for the period of January 1 through December 31 of the preceding year. [District Rule 218]

This report shall include a written statement from the responsible official which certifies the truth, accuracy, and completeness of the report and shall include at a minimum:

- A) identification of each term or condition of the permit that is the basis of the certification; and
- B) the compliance status; and
- C) whether compliance was continuous or intermittent; and
- D) the method(s) used for determining the compliance status of the source, currently and over the reporting period.

GENERAL CONDITIONS

~~63-67.~~ Calpine King City Cogen, LLC and the Gilroy Energy Center, LLC for King City shall comply with all conditions of this federal operating permit. Any noncompliance with a permit condition constitutes a violation of the Federal Clean Air Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. [District Rule 218]

~~64-68.~~ In an enforcement action, the fact that Calpine King City Cogen, LLC and the Gilroy Energy Center, LLC for King City would have to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit is not a defense. [District Rule 218]

~~65-69.~~ This permit may be modified, revoked, reopened and reissued, or terminated for cause as determined by the District. The filing of a request by Calpine King City Cogen, LLC and the Gilroy Energy Center, LLC for King City for a permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance does not stay any permit condition. [District Rule 218]

- ~~66~~.70. This permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations. [District Rule 218]
- ~~67~~.71. Calpine King City Cogen, LLC and the Gilroy Energy Center, LLC for King City shall furnish to the District, within a reasonable time, any information that the District may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit, or to determine compliance with the permit. Upon request, Calpine King City Cogen, LLC and the Gilroy Energy Center, LLC for King City shall also furnish to the District copies of records required to be retained by this permit. [District Rule 218]
- ~~68~~.72. For applicable requirements that will become effective during the permit term, Calpine King City Cogen, LLC and the Gilroy Energy Center, LLC for King City shall meet such requirements on a timely basis unless a more detailed schedule is expressly required by the applicable requirement. [District Rule 218]
- ~~69~~.73. Any document submitted to the District pursuant to this permit shall contain certification by the responsible official of truth, accuracy and completeness. All certifications shall state that based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete. Calpine King City Cogen, LLC and the Gilroy Energy Center, LLC for King City shall promptly, upon discovery, report to the District a material error or omission in these records, reports, plans, or other documents. [District Rule 218]
- ~~70~~.74. Calpine King City Cogen, LLC and the Gilroy Energy Center, LLC for King City shall report any violation of any emission standard, as indicated by the records of the monitoring device, to the District within 96 hours after such occurrence. The violation report shall include the time intervals, date and magnitude of excess emissions; nature and cause of the excess (if known), corrective actions and preventive measures adopted. [District Rule 218]
- ~~71~~.75. Calpine King City Cogen, LLC and the Gilroy Energy Center, LLC for King City shall report any deviation from permit requirements to the District within 96 hours after of occurrence. The report shall include deviations attributable to upset conditions (as defined in the permit), the probable cause of any deviation, and any corrective actions or preventive measure taken. [District Rule 218]
- ~~72~~.76. Upon any administrative or judicial challenge, all the emission limits, specific and general conditions, monitoring, record keeping, and reporting requirements of this permit, except those being challenged, remain valid and must be complied with. [District Rule 218]
- ~~73~~.77. For this federal operating permit to remain valid through the permit term of five years from the date of issuance, Calpine King City Cogen, LLC and the Gilroy Energy Center, LLC for King City shall pay an annual emission fee based upon the requirements of District Rule 308. [District Rule 218]

~~74.78.~~ Calpine King City Cogen, LLC and the Gilroy Energy Center, LLC for King City shall have available at the facility at all times a copy of this federal operating permit. [District Rule 218]

~~75.79.~~ For protection from enforcement action based upon an emergency, as defined in District Rule 218, the responsible official for Calpine King City Cogen, LLC and the Gilroy Energy Center, LLC for King City shall submit to the District relevant evidence which demonstrates [District Rule 218]:

- A) an emergency occurred; and
- B) that Calpine King City Cogen, LLC and the Gilroy Energy Center, LLC for King City can identify the cause(s) of the emergency; and
- C) that the facility was being properly operated at the time of the emergency; and
- D) that all steps were taken to minimize the emissions resulting from the emergency; and
- E) within two working days of the emergency event, Calpine King City Cogen, LLC and the Gilroy Energy Center, LLC for King City provided the District with a description of the emergency and any mitigating or corrective actions taken.

~~76.80.~~ Upon presentation of credentials, Calpine King City Cogen, LLC and the Gilroy Energy Center, LLC for King City shall allow the District, the ARB, the EPA, or an authorized representative, to perform the following [District Rule 218]:

- A) enter upon the premises where the federal operating permit source is located or in which any records are required to be kept under the terms and conditions of this federal operating permit;
- B) to have access to and copy any records required to be kept under the terms and conditions of this federal operating permit;
- C) to inspect any equipment, operation, or process described or required in this federal operating permit; and,
- D) to sample emissions from the source.

~~77.81.~~ The renewal application for this permit shall be submitted at least 6 months but no greater than 18 months prior to permit expiration. [District Rule 218]

**MONTEREY BAY AIR RESOURCES DISTRICT
TITLE IV ACID RAIN PERMIT**

24580 Silver Cloud Court
Monterey, CA 93940
Telephone: (831) 647-9411

Effective ~~March 10, 2017~~ TBD through March 9, 2022

ISSUED TO:

Calpine King City Cogen, LLC & Gilroy Energy Center, LLC for King City Power Plant
750 Metz Road
King City, CA 93930

PLANT SITE LOCATION:

750 Metz Road & 51 Don Bates Way
King City, CA 93930

ISSUED BY:

Richard Stedman, Air Pollution Control Officer

March 10, 2017 TBD
Effective Date

ORIS Code: 10294

Nature of Business: Electric Power Generation

SIC Code: 4911 - Electric Power Generation

DESIGNATED REPRESENTATIVE:

Name: Mr. Kevin Karwick
Title: General Manager - Central Coast Projects
Phone: (408) 337-3429

ALTERNATIVE DESIGNATED REPRESENTATIVES:

Name: ~~Alexander Price~~ Paul Mansfield
Title: Operations & Maintenance Manager
Phone: (831) 385-794752

Name: ~~Ms. Genevieve Huffman~~ Mr. Gary Fuller
Title: EHS Specialist-~~H~~
Phone: ~~(831) 385-7943~~ (661) 282-4405

ACID RAIN PERMIT CONTENTS

- 1) Statement of Basis
- 2) The applicable SO₂ and NO_x emissions limitations.
- 3) Comments, notes and justifications regarding permit decisions and changes made to the permit application forms during the review process, and any additional requirements or conditions.
- 4) The permit application submitted for this source. The owners and operators of the source must comply with the standard requirements and special provisions set forth in the application.

1) STATEMENT OF BASIS

Statutory and Regulatory Authorities: In accordance with District Rules 218 and 219 and Titles IV and V of the Clean Air Act, the Monterey Bay ~~Unified Air Pollution Control Resources~~ District issues this permit pursuant District Rules 218 and 219.

2) SO₂ AND NO_x EMISSIONS LIMITATIONS

	<u>Pollutant</u>	<u>Requirement</u>
<u>UNIT CTG</u>	<u>SO₂ Emissions Limitation</u>	<u>King City Power Plant shall hold Sulfur Dioxide Allowances not less than the total annual emissions of sulfur dioxide for the previous calendar year from the Frame 7 (unit GTG) and LM6000 (unit 2) Turbines.</u>
	<u>NO_x Emissions Limitation</u>	<u>This unit is not subject to the NO_x requirements from 40 CFR Part 76 as this unit is not capable of firing on coal.</u>

	<u>Pollutant</u>	<u>Requirement</u>
UNIT 2	<u>SO₂ Emissions Limitation</u>	<u>King City Power Plant shall hold Sulfur Dioxide Allowances not less than the total annual emissions of sulfur dioxide for the previous calendar year from the Frame 7 (unit GTG) and LM6000 (unit 2) Turbines. The Gilroy Energy Center, LLC for King City shall hold SO₂ allowances, as of the allowance-transfer deadline, in this unit's compliance subaccount not less than the total annual emissions of SO₂ for the previous calendar year from this unit.</u>
	<u>NO_x Emissions Limitation</u>	<u>This unit is not subject to the NO_x requirements from 40 CFR Part 76 as this unit is not capable of firing on coal.</u>

3) COMMENTS, NOTES AND JUSTIFICATIONS

None

4) **PERMIT APPLICATION**

Attached