

DOCKETED

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STATE OF CALIFORNIA
ENERGY RESOURCES CONSERVATION
AND DEVELOPMENT COMMISSION

In the Matter of:)	
PIO PICO ENERGY CENTER)	Docket No. 11-AFC-1C
)	Order No. 16-0210-4
PIO PICO ENERGY CENTER, LLC)	ORDER APPROVING a Petition to Amend
)	to Increase Hourly Heat Input to the Gas
)	Turbines

On July 15, 2014, the Pio Pico Energy Center, LLC (Pio Pico, LLC) filed a petition with the California Energy Commission (Energy Commission) requesting to amend the Final Decision for the Pio Pico Energy Center (PPEC). The modification would be limited to the proposed nominal (approximately 10 percent) increase in hourly heat input. This increase is a result of operational experience and machine tuning rather than major physical changes to the General Electric (GE) LMS100 natural gas-fired combustion turbine generators.

STAFF RECOMMENDATION

Since the proposed project changes are not limited by or specifically addressed in any existing Air Quality Conditions of Certification (COCs), the Petition to Amend does not propose any changes to the Air Quality COCs. However, the San Diego Air Pollution Control District Final Determination of Compliance Addendum issued on August 25, 2015, made several changes to conditions to update new application identification numbers, new rule references, and new testing requirements and protocols. In order to facilitate the enforcement of the Energy Commission's permit conditions through the local air district, staff proposes to make the same changes to the Energy Commission's Air Quality COCs. The affected Energy Commission Air Quality COCs are: **AQ-2, AQ-5, AQ-9, AQ-17 thru AQ-32, AQ-34 thru AQ-49, AQ-51, AQ-52, AQ-54, AQ-55, AQ-57 thru AQ-59, AQ-61 thru AQ-63, AQ-66 thru AQ-73, and AQ-75 thru AQ-77**. Proposed new Air Quality COCs are **AQ-80 thru AQ-83**.

The increase in hourly heat input to the gas turbines increases the heights of the thermal plumes that will emit from the turbine exhaust stacks, necessitating changes to the aviation hazard notifications required under Condition of Certification **TRANS-9** (reflect the higher elevation of thermal plumes).

Energy Commission staff reviewed the petition, finds that it complies with the requirements of Title 20, section 1769 (a) of the California Code of Regulations, and recommends approval of Pio Pico, LLC's petition to modify the PPEC and amend related conditions of certification.

ENERGY COMMISSION FINDINGS

Based on staff's analysis, the Energy Commission concludes that the proposed modifications will not result in any significant impacts to public health and safety, or to the environment. The Energy Commission finds that:

- The petition meets all the filing criteria of Title 20, section 1769 (a), of the California Code of Regulations, concerning post-certification project modifications;
- The modification will not change the findings in the Energy Commission's Final Decision, pursuant to Title 20, section 1755, of the California Code of Regulations;
- The project will remain in compliance with all applicable laws, ordinances, regulations, and standards, subject to the provisions of Public Resources Code, section 25525;
- The modification proposed in the petition would allow performance improvements by increasing the maximum hourly heat input by about 10 percent, from 903 MMBtu/hr to 1,000 MMBtu/hr;
- The proposed modification would be advantageous to the San Diego Gas & Electric Company, with whom PPEC has a power purchase agreement, as it will allow PPEC to deliver up to an additional 18 MW without the need to construct additional power generation facilities; and
- The proposed modifications are justified because there has been a substantial change in circumstances since the Energy Commission certification, in that GE has made performance improvements to the LMS100 gas turbines that allow slightly higher hourly heat input and higher electrical output.

CONCLUSION AND ORDER

The Energy Commission hereby adopts staff's recommendations and approves the following changes to the Commission Decision for the PPEC. New language is shown as **bold and underlined**, and deleted language is shown in ~~strikethrough~~. Staff made additional corrections as follows in double underline for additions and ~~double strikethrough~~ for deletions to distinguish them from the changes in the staff analysis published on November 6, 2015.

AMENDED CONDITIONS OF CERTIFICATION

Below is a list of conditions of certification that staff recommends to be revised from those approved in the 2012 Energy Commission Final Decision (CEC 2012a). In addition to the conditions reflecting the project changes discussed above, staff also proposes administrative changes in conditions of certification to make the Energy Commission and San Diego Air Pollution Control District (SDAPCD) air quality conditions consistent. These changes reflect the August 25, 2015, SDAPCD Final Determination of Compliance Addendum.

Definitions for Conditions of Certification

Commissioning Period—For each combustion turbine, the commissioning period is the period of time commencing with the initial startup, also known as the first fire, of that turbine and ending after 112 hours of turbine operation, or the date the permittee notifies the District the commissioning period has ended. For purposes of this condition, the number of hours of turbine operation is defined as the total unit operating minutes during the commissioning period divided by 60 **rounded to the nearest hundredth of an hour.** [Rule 20.3(d)(1)]

Compliance Time Periods—For each emission limit expressed as pounds, pounds per hour, or parts per million **by volume on a dry basis (ppmvd)** based on a one-hour or less averaging period or compliance period, compliance shall be based on using data collected at least once every minute when compliance is based on CEMS ~~data~~ **data except as specified in the district approved CEMS Protocol.** [Rules 69.3, 69.3.1, and 20.3(d)(1)]

Continuous Emissions Monitoring Protocol—~~A~~**The** Continuous Emission Monitoring System (CEMS) Protocol is a document approved in writing by the District that describes the methodology and quality assurance and quality control procedures for monitoring, calculating, and recording stack emissions from the combustion turbine that is monitored by the CEMS. [Rules 69.3, 69.3.1, and 20.3(d)(1) and 40 CFR Part 60 Subpart KKKK, **40 CFR Part 60 Appendix B and F,** and 40 CFR Part 75]

Initial Startup—**Initial startup shall be defined for each combustion turbine as the first time that the combustion turbine combusts fuel on-site.** [Rule 20.3]

Shutdown— **Unless otherwise defined for purposes of a specific condition, for** ~~For~~ purposes of determining compliance with the emission limits of this permit, a shutdown period is the 11 minute period preceding the moment at which fuel flow ceases. [Rule 20.3(d)(1)]

Startup—A startup period is the period of time that begins when fuel flows to the combustion turbine following a non-operational period. **Unless otherwise defined for purposes of a specific condition, for** ~~For~~ purposes of

determining compliance with the emission limits of this permit, the duration of a startup period shall not exceed 30 consecutive minutes. [Rule 20.3(d)(1)]

Unit Operating Hour—For each turbine, a unit operating hour means any clock hour in which the turbine combusts fuel ~~for any part of the hour or for the entire hour.~~

Unit Operating Minute—For each turbine, a unit operating minute means any clock minute in which the turbine combusts ~~any~~ fuel.

PIO PICO ENERGY CENTER (PPEC) PERMIT CONDITIONS ~~District Final~~
Determination of Compliance Conditions

The following SDAPCD conditions (**AQ-1 to AQ-7983**) apply to each unit of equipment, and the proposed PPEC facility as a whole.

General Conditions

AQ-2 The project owner shall operate the project in accordance with all data and specifications submitted with the application under which this license is issued and District Application No. APCD2010-APP-001251 **as amended by Application No. APCD2011-APP-001540 and APCD2014-APP-003627.**
[Rule 14]

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-5 Prior to the initial startup date for any of the three combustion turbines, the project owner shall surrender to the District Class A Emission Reduction Credits (ERCs) in an amount equivalent to 84.5 tons per year of oxides of nitrogen (NOx) to offset the net maximum allowable increase of 70.4 tons per year of NOx emissions for the three combustion turbines ~~described in District Application No. APCD2010-APP-001251~~ **authorized to be constructed under this permit.**
[Rule 20.3(d)(8)]

Verification: The project owner shall submit to the CPM, within 15 days of ERC surrender to the District, information demonstrating compliance with this condition.

AQ-9 All records required by this permit shall be maintained on site for a minimum of five years and made available to the District upon request. [Rule ~~14~~21]

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

COMBUSTION TURBINE CONDITIONS

General Conditions

AQ-17 The exhaust stacks for each combustion turbine shall be at least 100 feet in height above site base elevation **and with an interior exhaust stack diameter of no more than 14.5 feet at the point of release unless it is demonstrated**

to the District that all requirements of District Rules 20.3 and 1200 are satisfied with a different stack configuration. [Rules 20.3(d)(2) and 1200]

Verification: The project owner shall submit to the District and the CPM for review the exhaust stack specification at least 60 days before the installation of the stack.

AQ-18 The combustion turbines shall be fired on Public Utility Commission (PUC) quality natural gas. The permittee **project owner** shall maintain, on site, quarterly records of the natural gas sulfur content (**expressed in units of grains of sulfur compounds per 100 dscf of natural gas**) and hourly records of the higher and lower heating values **expressed in British thermal units per standard cubic foot (Btu/scf)** (~~btu/scf~~) of the natural gas; ~~And These records shall be provided~~ records to District personnel upon request. **Natural gas sulfur content records must be kept with a minimum reporting limit of 0.25 grains sulfur compounds per 100 dscf of natural gas.** [Rule 20.3(d)(1)]

Verification: The project owner shall submit the quarterly fuel sulfur content values in the Quarterly Operation Reports (**AQ-SC8**) and make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-19 Unless otherwise specified in this permit ~~or the District approved CEMS Protocol~~, all continuous monitoring data shall be collected at least once every **clock** minute. [Rules 69.3, 69.3.1, and 20.3(d)(1)]

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

Emission Limits

AQ-20 For purposes of determining compliance with emission limits based on source testing, the average of three subtests shall be used. For purposes of determining compliance with emission limits based on a Continuous Emission Monitoring System (CEMS), data collected in accordance with the **District approved** CEMS Protocol shall be used and the averages for averaging periods specified herein shall be calculated as specified in the CEMS Protocol. [Rules 69.3, 69.3.1, and 20.3(d)(1) and 40 CFR Part 60 Subpart KKKK, **40 CFR Part 60 Appendix B and F**, and 40 CFR Part 75]

Verification: Source test results demonstrating compliance with this condition shall be provided to the CPM and are due within the timeframes specified in Conditions **AQ-48** and **AQ-49**. CEMS data summaries shall be submitted to the CPM as part of the Quarterly Operation Reports (**AQ-SC8**).

AQ-21 For purposes of determining compliance with emission limits based on CEMS data, all CEMS calculations, averages, and aggregates shall be performed in accordance with the CEMS Protocol approved in writing by the District. [Rules 69.3, 69.3.1, and 20.3(d)(1) and 40 CFR Part 60 Subpart KKKK, **40 CFR Part 60 Appendix B and F**, and 40 CFR Part 75]

Verification: CEMS data summaries shall be submitted to the CPM as part of the Quarterly Operation Reports (**AQ-SC8**).

AQ-22 ~~NOT USED.~~ For each emission limit expressed as pounds, pounds per hour, or parts per million by volume on a dry basis (ppmvd) based on a one-hour or less averaging period or compliance period, compliance shall be based on using data collected at least once every minute when compliance is based on CEMS data. [Rules 69.3, 69.3.1, and 20.3(d)(1)]

Verification: CEMS data summaries shall be submitted to the CPM as part of the Quarterly Operation Reports (AQ-SC8).

AQ-23 When a combustion turbine is combusting fuel (operating), the emission concentration of oxides of nitrogen (NO_x), calculated as nitrogen dioxide (NO₂), shall not exceed 2.5 ~~parts per million by volume on a dry basis (ppmvd)~~ corrected to 15% oxygen averaged over a ~~4~~one-clock-hour period, except during commissioning, startup and shutdown periods for that turbine. [Rule 20.3(d)(1)]

Verification: The project owner shall provide CEMS emissions data to demonstrate compliance with this condition as part of the Quarterly Operation Reports (AQ-SC8).

AQ-24 When a combustion turbine is operating, the emission concentration of carbon monoxide (CO) shall not exceed 4.0 ppmvd corrected to 15 % oxygen, averaged over a ~~4~~one-clock-hour period, except during commissioning, startup, and shutdown periods for that turbine. [Rule 20.3(d)(1)]

Verification: The project owner shall provide CEMS emissions data to demonstrate compliance with this condition as part of the Quarterly Operation Reports (AQ-SC8).

AQ-25 When a combustion turbine is operating, the volatile organic compound (VOC) concentration, calculated as methane, measured in the exhaust stack, shall not exceed 2.0 ppmvd corrected to 15% oxygen, averaged over a one-clock-hour period, except during commissioning, startup, and shutdown periods for that turbine. For purposes of determining compliance based on the CEMS, the District approved VOC/CO surrogate relationship, and the CO CEMS data, averaged over a ~~4~~one-clock-hour period shall be used. The VOC/CO surrogate relationship shall be verified and/or modified, if necessary, based on source testing. [Rule 20.3(d)(1)]

Verification: The project owner shall provide the CEMS data, using the appropriate VOC/CO surrogate relationship, to demonstrate compliance with this condition as part of the Quarterly Operation Reports (AQ-SC8).

AQ-26 When a combustion turbine is operating, the ammonia concentration (ammonia slip), shall not exceed 5.0 ppmvd corrected to 15 % oxygen and averaged over a one-clock-hour period, except during commissioning, startup, and shutdown periods for that turbine. [Rule 1200]

Verification: The project owner shall provide the estimated ammonia concentrations and ammonia emissions based on the annual source test data, the CEMS data and SCR ammonia flow data to demonstrate compliance with this condition as part of the Quarterly Operation Reports (AQ-SC8).

AQ-27 When a combustion turbine is operating with post-combustion air pollution control equipment that controls oxides of nitrogen (NO_x) emissions, the emission concentration NO_x, calculated as nitrogen dioxide (NO₂), shall not exceed 13.9 ppmvd ~~averaged~~calculated over each one-clock-hour period and corrected to 15% oxygen, except ~~for~~during startup and shutdown periods for that turbine, as defined in Rule 69.3.1. This limit does not apply during any period in which the facility is subject to a variance from the emission limits contained in Rule 69.3.1. [Rule 69.3.1]

Verification: The project owner shall provide CEMS emissions data to demonstrate compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC8**).

AQ-28 When a combustion turbine is operating without any post-combustion air pollution control equipment that controls oxides of nitrogen (NO_x) emissions, the emission concentration of NO_x calculated as nitrogen dioxide (NO₂) from each turbine shall not exceed 23.2 parts-per-million-by-volume-on-a-dry-basis (ppmvd) ~~averaged~~calculated over each one-clock-hour period and corrected to 15% oxygen, except ~~for~~during startup and shutdown periods for that turbine, as defined in Rule 69.3.1. This limit does not apply during any period in which the facility is subject to a variance from the emission limits contained in Rule 69.3.1. [Rule 69.3.1]

Verification: The project owner shall provide CEMS emissions data to demonstrate compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC8**).

AQ-29 When a combustion turbine is operating, the emission concentration of oxides of nitrogen (NO_x), calculated as nitrogen dioxide (NO₂) shall not exceed 42 ppmvd ~~averaged~~calculated over each one-clock-hour period and corrected to 15% oxygen, on a dry basis, except during startup and shutdown periods for that turbine, as defined in Rule 69.3. This limit does not apply during any period in which the facility is subject to a variance from the emission limits contained in Rule 69.3. [Rule 69.3]

Verification: The project owner shall provide CEMS emissions data to demonstrate compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC8**).

AQ-30 For each rolling ~~four~~-4-unit-operating-hour period, average emission concentration of oxides of nitrogen (NO_x) for each turbine calculated as nitrogen dioxide (NO₂) in parts per million by volume on a dry basis (ppmvd) corrected to 15% oxygen or, alternatively, as elected by the ~~permittee~~project owner, the average NO_x emission rate in pounds per megawatt-hour (lb/MWh) shall not exceed an average emission limit calculated in accordance with 40 CFR Section 60.4380(b)(3). The emission concentration and emission rate averages shall be calculated in accordance with 40 CFR Section 60.4380(b)(1). The average emission concentration limit and emission rate limit shall be based on an average of hourly emission limits over the four-4-unit-operating-hour period including the operating hour and the three unit operating hours immediately preceding that hour. For any unit operating hour where multiple emission standards would apply based on load of the turbine,

the applicable standard shall be the higher of the two limits. The hourly emission concentration limit and emission rate limit shall be **as follows based on the load of the turbine over the four unit operating hour period:**

<u>Case</u>	<u>Emission Limit ppmvd at 15% O₂</u>	<u>Emission Limit lb/MWh</u>
<u>i. All four hours at or above 75% Load</u>	<u>15</u>	<u>0.43</u>
<u>ii. All four hours below 75% Load</u>	<u>96</u>	<u>4.7</u>
<u>iii. Combination of hours</u>	<u>(a x 15+b x 96)/4</u>	<u>(a x 0.43+b x 4.7)/4</u>

Where: a = the number of unit operating hours in the four hour period with all operation above 75% load and b = 4-a.

~~15 ppmvd corrected to 15% oxygen and 0.43 lb/MWh, respectively at all times during the clock hour.~~ The averages shall exclude all clock hours occurring before the Initial Emission Source Test but shall include emissions during all other times that the equipment is operating including, but not limited to, emissions during startup and shutdown periods **for that turbine.** For each six-calendar-month period, emissions in excess of these limits and monitor downtime shall be identified in accordance with 40 CFR Sections 60.4350 and 60.4380(b)(2), except that Section 60.4350(c) shall not apply for identifying periods in excess of a NOx concentration limit. **For the purposes of this condition, unit operating hour shall have the same meaning as defined in 40 CFR 60.4420.** [40 CFR Part 60 Subpart KKKK]

Verification: The project owner shall provide CEMS emissions data to demonstrate compliance with this condition as part of the Quarterly Operation Reports (AQ-SC8).

AQ-31 The emissions of particulate matter less than or equal to 10 microns in diameter (PM10) **from the exhaust stack of each combustion turbine** shall not exceed ~~5.0~~5.5 pounds per hour for each combustion turbine. **Compliance with this limit shall be demonstrated based upon source testing and calculated as the average of three ~~subtests~~ subtests.** [Rule 20.3(d)(1) and (d)(2)]

Verification: Source tests demonstrating compliance with this condition shall be provided to the CPM and are due within the timeframes specified in Conditions **AQ-48** and **AQ-49**.

AQ-32 The discharge of particulate matter from the exhaust stack of each combustion turbine shall not exceed 0.10 grains per dry standard cubic foot (0.23 grams/dscm) **corrected to 12% carbon dioxide.** The District may require periodic testing to verify compliance with this standard. [Rule 53]

Verification: Source tests demonstrating compliance with this condition shall be provided to the CPM and are due within the timeframes specified in Conditions **AQ-48** and **AQ-49**.

AQ-34 Mass emissions from each combustion turbine of oxides of nitrogen (NO_x), calculated as NO₂; carbon monoxide (CO); and volatile organic compounds (VOC), calculated as methane, shall not exceed the following limits, except during commissioning, startup, and shutdown periods for that turbine. A one-clock-hour averaging period for these limits shall **be used when compliance is determined using** ~~apply to~~ CEMS data.

<u>Pollutant</u>	<u>Emission Limit, lb/hour</u>
a. NO _x	8.2
b. CO	8.0
c. VOC	2.3

[Rule 20.3(d)(2)]

Verification: The project owner shall submit to the CPM operating data to demonstrate compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC8**).

AQ-35 Excluding any minutes that are coincident with a shutdown period, cumulative mass emissions **from each combustion turbine** of oxides of nitrogen (NO_x), calculated as NO₂; carbon monoxide (CO); and volatile organic compounds (VOC), calculated as methane, ~~during a combustion turbine's startup period~~ shall not exceed the following limits during any **each of that turbine's** startup periods, except during that turbine's commissioning period.

<u>Pollutant</u>	<u>Emission Limit, lb/event</u>
a. NO _x	22.5
b. CO	17.9
c. VOC	4.7

[Rule 20.3(d)(1)]

Verification: The project owner shall submit to the CPM operating data to demonstrate compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC8**).

AQ-36 Cumulative mass emissions **from each combustion turbine** of oxides of nitrogen (NO_x), calculated as NO₂; carbon monoxide (CO); and volatile organic compounds (VOC), calculated as methane, ~~during a combustion turbine's shutdown period~~ shall not exceed the following limits during **each of that turbine's** ~~any~~ shutdown periods, except during that turbine's commissioning period.

<u>Pollutant</u>	<u>Emission Limit, lb/event</u>
a. NO _x	6.0
b. CO	47.0
c. VOC	3.0

[Rule 20.3(d)(1)]

Verification: The project owner shall submit to the CPM operating data to demonstrate compliance with this condition as part of the Quarterly Operation Reports (AQ-SC8).

AQ-37 The **total aggregate** oxides of nitrogen (NOx) emissions from each combustion turbine shall not exceed 50 pounds per hour and total aggregate NOx emissions from all combustion turbines combined shall not exceed 150 pounds per hour, calculated as nitrogen dioxide and measured over each ~~one~~ 4-clock-hour period. ~~These~~**This** emission limits shall apply during all times one or more turbines are operating, including, but not limited to, emissions during commissioning, startup, and shutdown periods. [Rule 20.3(d)(2)]

Verification: The project owner shall provide CEMS emissions data to demonstrate compliance with this condition as part of the Quarterly Operation Reports (AQ-SC8).

AQ-38 The carbon monoxide (CO) emissions from each combustion turbine shall not exceed 75 pounds per hour and total aggregate CO emissions from all combustion turbines combined shall not exceed 225 pounds per hour measured over each ~~one~~ 4-clock-hour period. This emission limit shall apply during all times that one or more turbines are operating, including, but not limited to emissions during commissioning, startup, and shutdown periods. [Rule 20.3(d)(2)(i)]

Verification: The project owner shall provide CEMS emissions data to demonstrate compliance with this condition as part of the Quarterly Operation Reports (AQ-SC8).

AQ-39 Beginning with the earlier of the initial startup dates for any combustion turbine, aggregate emissions of oxides of nitrogen (NOx), calculated as nitrogen dioxide (NO₂); carbon monoxide (CO); volatile organic compounds (VOCs), calculated as methane; particulate matter less than or equal to 10 microns in diameter (PM10); and oxides of sulfur (SOx), calculated as sulfur dioxide (SO₂), from the combustion turbines described in District Application No. APCD2010-APP-001251 **authorized to be constructed under this permit**, except emissions from emission units excluded from the calculation of aggregate potential to emit as specified in Rule 20.1 (d) (1), **as it exists on the date the permit to operate for this equipment is approved**, shall not exceed the following limits for each rolling 12-calendar-month period **beginning with the 12-calendar-month period that begins with the month in which the earliest initial startup among the equipment authorized to be constructed under this permit occurs**:

<u>Pollutant</u>	<u>Emission Limit, tons per year</u>
a. NOx	70.4
b. CO	96.4
c. VOC	19.4
d. PM10	35.8
e. SOx	4.1

The aggregate emissions of each pollutant shall include emissions during all times that the equipment is operating including, but not limited to, emissions

during commissioning, startup, and shutdown periods. **All calculations performed to show compliance with these limits shall be performed according to a protocol approved in advance in writing by the District.** [Rules **20.3(d)(2)**, 20.3(d)(3), **20.3(d)(5)**, 20.3(d)(8) and 21]

Verification: The project owner shall submit to the CPM and the District the facility annual operating and emissions data demonstrating compliance with this condition as part of the fourth quarter's Quarterly Operation Report (AQ-SC8).

AQ-40 The cooling tower shall be equipped with a mist eliminator designed to achieve a drift rate of 0.001% or less. Not later than 90 calendar days prior to the start of construction, the project owner shall submit to the District the final selection, design parameters and details of the mist eliminator. In addition, the maximum total dissolved solids (TDS) concentration of the water used in the cooling tower shall not exceed 5,600 ppm. The TDS concentration shall be verified through quarterly testing of the water by a certified lab using an EPA approved method. [Rule 20.3(d)(1)] **The wet surface air cooler (WSAC) shall be equipped with a mist eliminator designed to achieve a drift rate of 0.001% or less. Not later than 90 calendar days prior to the start of construction of the WSAC, the project owner shall submit to the District the final selection, design parameters and details of the mist eliminator. In addition, the maximum total dissolved solids (TDS) concentration of the air-side recirculating cooling water used in the WSAC shall not exceed 5,600 ppm. The TDS concentration shall be verified through calendar quarterly testing of the water by a certified lab using an EPA approved method. In addition, beginning with the earlier of the initial startup dates for any combustion turbine, emissions of PM₁₀ from the WSAC shall not exceed 1.46 tons for each rolling 12-calendar-month period beginning with the 12-calendar-month period that begins with the month in which the earliest initial startup among the equipment authorized to be constructed under this permit occurs. For each calendar month, PM₁₀ emissions from the WSAC shall be calculated using a District approved protocol that is based on either the design maximum air-side recirculating cooling water flow to the WSAC or the measured total air-side recirculating water flow to the WSAC during the calendar month; the design maximum drift rate; the TDS concentration from the calendar quarterly measurement for the calendar quarter that contains the month; and the actual hours of operation of the WSAC fans during the calendar month. Except for the TDS concentration, for which the project shall maintain records not less frequently than a calendar quarterly basis, the project owner shall maintain records not less frequently than a calendar monthly basis of each variable parameter necessary to calculate the WSAC PM₁₀ emissions with the District approved protocol methodology including, but not limited to, the recirculating air-side cooling water flow rate and actual hours of operation of the WSAC fans, if applicable. [Rule 20.3(d)(1)]**

Verification: The project owner shall submit to the CPM for review and District for approval final selection, design parameters and details of the cooling tower **WSAC** mist

eliminator at least 90 days prior to the start of construction. The project owner shall provide cooling water testing data in compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC8**). The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-41 For each calendar month and each rolling 12-calendar-month period, the project owner shall maintain records, as applicable, on a calendar monthly basis, of mass emissions during each calendar month and rolling 12-calendar month period of NO_x, calculated as NO₂; CO; VOCs, calculated as methane; PM₁₀; and SO_x, calculated as SO₂, in tons, from each emission unit ~~described in District Application No. APCD2010-APP-001251~~ authorized to be constructed under this permit, except for emissions from emission units excluded from the calculation of aggregate potential to emit as specified in Rule 20.1 (d) (1) as it exists on the date the permit to operate for this equipment is approved. These records shall be made available for inspection within 15 calendar days after the end of each calendar month. The recorded emissions shall be calculated in accordance with an emission calculation protocol approved by the District. A proposed emission calculation protocol to calculate the emissions from each emission unit shall be submitted to the District for approval not later than 90 calendar days before the earlier of the initial startup dates for either of the three combustion turbines. Where applicable, this protocol may rely in whole or in part on the CEMS Protocol or other monitoring protocols required by this permit. [Rules 20.3(d)(3), 20.3(d)(8) and 21]

Verification: The project owner shall provide emissions summary data in compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC8**). The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-42 For each calendar month and each rolling 12-calendar-month period, the project owner shall maintain records, as applicable, on a calendar monthly basis, of aggregate mass emissions of NO_x, calculated as NO₂; CO; VOCs, calculated as methane; PM₁₀; and SO_x, calculated as SO₂, in tons from all the emission units ~~described in District Application No. APCD2010-APP-001251~~ authorized to be constructed under this permit combined, except for emissions from emission units excluded from the calculation of aggregate potential to emit as specified in Rule 20.1 (d) (1). These records shall be made available for inspection within 15 calendar days after the end of each calendar month. [Rules 20.3(d)(3), 20.3(d)(8) and 21]

Verification: The project owner shall provide emissions summary data in compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC8**). The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

Ammonia – SCR (and CO catalyst)

AQ-43 Not later than 90 calendar days prior to the start of construction, unless a later date is approved in writing by the District, the project owner shall submit to the District the final selection, design parameters and details of the selective catalytic reduction (SCR) and oxidation catalyst emission control systems for the combustion turbines including, but not limited to, the minimum ammonia injection temperature for the SCR catalyst at which ammonia injection is feasible; the catalyst volume, catalyst material, catalyst manufacturer, space velocity and area velocity at full load; and control efficiencies of the SCR for controlling NOx emissions and the oxidation catalyst for controlling CO and VOCs at temperatures between the minimum and maximum operating temperatures ~~100 °F and 1000 °F~~ at space velocities corresponding to 100% and 25% load. Such information may be submitted to the District as trade secret and confidential pursuant to District Rules 175 and 176. [Rules 20.3(d)(1) and 14]

Verification: The project owner shall submit to the CPM for review and District for approval final selection, design parameters and details of the SCR and oxidation catalyst emission control systems at least 90 days prior to the start of construction.

AQ-44 When a combustion turbine is operating, ammonia shall be injected at all times that the associated selective catalytic reduction (SCR) system catalyst outlet temperature is 575 degrees Fahrenheit or greater. [Rules 20.3(d)(1)]

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-45 Continuous monitors shall be installed on each SCR system prior to their initial operation to monitor or calculate, and record the ammonia solution injection rate in pounds per hour and the SCR outlet temperature in degrees Fahrenheit for each unit operating minute. The monitors shall be installed, calibrated and maintained in accordance with a District approved protocol, which may be part of the CEMS Protocol. This protocol, which shall include the calculation methodology, shall be submitted to the District for written approval at least 90 calendar days prior to initial startup of the gas turbines with the SCR system, unless a later date is approved in writing by the District. The monitors shall be in full operation at all times when the turbine is in operation. [Rules 20.3(d)(1)]

Verification: The project owner shall submit to the CPM for review and the District for approval a turbine operation and ammonia injection rate monitoring protocol in compliance with this condition at least 90 days prior to the initial startup.

AQ-46 Except during periods when the ammonia injection system is being tuned or one or more ammonia injection systems is in manual control for compliance with applicable permit conditions, the automatic ammonia injection system serving the each SCR system shall be in operation in accordance with manufacturer's specifications at all times when ammonia is being injected into

the SCR system. Manufacturer specifications shall be maintained on site and made available to District personnel upon request. [Rules 20.3(d)(1) **and 21**]

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-47 The concentration of ammonia solution used in the ammonia injection system shall be less than 20% ammonia by weight. Records of ammonia solution concentration shall be maintained on site and made available to District personnel upon request. [Rules 14 **and 21**]

Verification: The project owner shall maintain on site and provide on request of the CPM or District the ammonia delivery records that demonstrate compliance with this condition.

Testing

AQ-48 All source test or other tests required by this permit shall be performed by the District or ~~by an independent contractor~~ and witnessed **and approved** by the District. Unless otherwise specified in this permit or authorized in writing by the District, if testing will be performed by an independent contractor **and witnessed by the District**, a proposed test protocol shall be submitted to the District for written approval at least 60 calendar days prior to source testing. Additionally, the District shall be notified a minimum of 30 calendar days prior to the test so that observers may be present unless otherwise authorized in writing by the District. [Rules 20.3(d)(1) and 1200 and 40 CFR Part 60 Subpart KKKK and 40 CFR §60.8]

Verification: The project owner shall submit to the CPM for review and the District for approval the initial source test protocol at least 60 days prior to the initial source test. The project owner shall notify the CPM and District no later than 30 days prior to the proposed source test date and time.

AQ-49 Unless otherwise specified in this permit or authorized in writing by the District, within 45 calendar days after completion of a source test or **Relative Accuracy Test Audit (RATA)** performed by an independent contractor, a final test report shall be submitted to the District for review and approval. [Rules 20.3(d)(1) and 1200 and 40 CFR Part 60 Subpart KKKK, 40 CFR §60.8, and 40 CFR Part 75]

Verification: The project owner will submit all RATA or source test reports to the CPM for review and the District for approval within 45 days of the completion of those tests.

AQ-51 Not later than 60 calendar days after completion of the commissioning period for each combustion turbine, an Initial Emissions Source Test shall be conducted on that turbine to demonstrate compliance with the NO_x, CO, VOC, PM₁₀, and ammonia emission standards of this permit. The source test protocol shall comply with all of the following requirements:

- a. Measurements of NO_x and CO concentrations and emissions and oxygen (O₂) concentration shall be conducted in accordance with U.S.

Environmental Protection Agency (EPA) methods 7E, 10, and 3A, respectively, and District source test Method 100, or alternative methods approved by the District and EPA.

- b. Measurement of VOC **concentrations and** emissions, **except for formaldehyde**, shall be conducted in accordance with EPA Methods 25A and/or 18, or **an** alternative methods approved by the District and EPA.
- c. **Measurement of formaldehyde concentrations and emissions shall be conducted in accordance with EPA Method 316 or 323, as specified by the District, or an alternative method approved by the District and EPA.**
- d. **The total VOC concentration and emissions shall be the sum of the VOC concentration and emissions measured as specified in Subsection b of this condition and the formaldehyde concentration and emissions measured by Subsection c of this condition.**
- ee. Measurements of ammonia **emissionsconcentrations** shall be conducted in accordance with Bay Area Air Quality Management District Method ST-1B or an alternative method approved by the District and EPA.
- df. Measurements of PM10 emissions shall be conducted in accordance with EPA Method 5 and 202 or **an** alternative methods approved by the District and EPA. For purposes of this permit, **total particulate matter measured using EPA Method 5 and 202**~~all the particulate matter measured~~ shall be considered to be PM10.
- eg. Source testing shall be performed at the normal load level, as specified in 40 CFR Part 75 Appendix A Section 6.5.2.1 (d), provided it is not less than 80% of the combustion turbine's rated load unless it is demonstrated to the satisfaction of the District that the combustion turbine cannot operate under these conditions. If the demonstration is accepted, then emissions source testing shall be performed at the highest achievable continuous power level. The District may specify additional testing at different load levels or operational conditions to ensure compliance with the emission **and concentration** limits of this permit and District Rules and Regulations.
- fh. Measurements of particulate matter emissions shall be conducted in accordance with SDAPCD Method 5 or an alternative method approved by the District and EPA.
- gj. Measurements of opacity shall be conducted in accordance with EPA Method 9 or an alternative method approved by the District and EPA.
- hj. Unless otherwise authorized in writing by the District, testing for NOx, CO, VOC, PM10, and ammonia concentrations and emissions, as applicable, shall be conducted concurrently with the NOx and CO continuous emission measurement system (CEMS) Relative Accuracy Test Audit (RATA).

[Rules 20.3(d)(1) and 1200]

Verification: The project owner shall submit to the CPM for review and the District for approval the initial source test protocol and source test report within the timeframes specified in Conditions **AQ-48** and **AQ-49**.

AQ-52 A renewal source test and a NOx and CO Relative Accuracy Test Audit (RATA) shall be periodically conducted on each combustion turbine to demonstrate compliance with the NOx, CO, VOC, **PM10** and ammonia emission standards of this permit and applicable relative accuracy requirements for the CEMS systems using District approved methods. The renewal source test and the NOx and CO RATAs shall be conducted in accordance with the applicable RATA frequency requirements of 40 CFR75, Appendix B, Sections 2.3.1 and 2.3.3. The renewal source test shall be conducted in accordance with a protocol complying with all the applicable requirements of the source test protocol for the Initial Emissions Source Test. [Rules 69.3, 69.3.1, and 20.3(d)(1) and 40 CFR Part 60 Subpart KKKK, and 40 CFR Part 75]

Verification: The project owner shall submit to the CPM for review and the District for approval the periodic RATA and source test protocols, and RATA source test reports within the timeframes specified in Conditions **AQ-48** and **AQ-49**.

AQ-54 Not later than 60 calendar days after completion of the commissioning period for each combustion turbine, an initial emission source test for toxic air contaminants shall be conducted on that turbine to determine the emissions of toxic air contaminants from the combustion turbines. At a minimum the following compounds shall be tested for, and emissions, if any, quantified:

- a. Acetaldehyde
- b. Acrolein
- c. Benzene
- d. Formaldehyde
- e. Toluene
- f. Xylenes

This list of compounds may be adjusted by the District based on source test results to ensure compliance with District Rule 1200 **and the conditions of this permit** is demonstrated. The District may require one or more or additional compounds to be quantified through source testing as needed to ensure compliance with Rule 1200 **and the conditions of this permit**. Within 60 calendar days after completion of a source test performed by an independent contractor, a final test report shall be submitted to the District for review and approval. [Rule 1200]

Verification: The results and field data collected during source tests required by this condition shall be submitted to the CPM for review and the District for approval within 60 days of testing.

AQ-55 The District may require one or more of the following compounds, or additional compounds, to be quantified through source testing periodically to ensure compliance with **Rule 1200 and the conditions of this permit**:

- a. Acetaldehyde
- b. Acrolein
- c. Benzene
- d. Formaldehyde
- e. Toluene
- f. Xylenes

If the District requires the ~~permitee~~**project owner** to perform this source testing, the District shall request the testing in writing a reasonable period of time prior to the testing date. [Rule 1200 **and California H&S Code §41510**]

Verification: The results and field data collected during source tests required by the District under this condition shall be submitted to the CPM for review and the District for approval within 60 days of testing.

AQ-57 The sulfur content of the combustion turbine fuel shall be sampled not less than once each calendar quarter in accordance with a protocol approved by the District, which shall be submitted to the District for approval not later than 90 calendar days before the ~~earlier of the~~**earliest** initial startup dates for ~~either any~~ of the three combustion turbines and measured with ASTM D1072-90 (Reapproved 1994), Standard Test Method for Total Sulfur in Fuel Gases; ASTM D3246-05, Standard Test Method for Sulfur in Petroleum Gas by Oxidative Microcoulometry; ASTM D4468-85 (Reapproved 2000), Standard Test Method for Total Sulfur in Gaseous Fuels by Hydrogenolysis and Rateometric Colorimetry; ASTM D6228-98 (Reapproved 2003), Standard Test Method for Determination of Sulfur Compounds in Natural Gas and Gaseous Fuels by Gas Chromatography and Flame Photometric Detection; or ASTM D6667-04, Standard Test Method for Determination of Total Volatile Sulfur in Gaseous Hydrocarbons and Liquefied Petroleum Gases by Ultraviolet Fluorescence or an alternative test method approved by the District and EPA. Sulfur content information provided by the local serving utility may be used to satisfy this condition with the advanced written approval of the District. [Rule 20.3(d)(1), Rule 21, and 40 CFR Part 75]

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

CONTINUOUS MONITORING

AQ-58 The project owner shall comply with the applicable continuous emission monitoring requirements of 40 CFR Part 75 **and 40 CFR Part 60**. [40 CFR Part 75 **and 40 CFR Part 60**]

Verification: The project owner shall maintain a copy of the CEMS protocol required by **AQ-60** on site and provide it, other CEMS data, and the CEMS for inspection on request by representatives of the District, ARB, and the Energy Commission.

AQ-59 A continuous emission monitoring system (CEMS) shall be installed on each combustion turbine and properly maintained and calibrated to measure,

calculate, and record the following, in accordance with the District approved CEMS Protocol:

- a. **Clock h** Hourly average(~~s~~) concentration of oxides of nitrogen (NOx) **in parts per million by volume on a dry basis (ppmvd), both** uncorrected and corrected to 15% oxygen, ~~in parts per million (ppmvd), necessary to demonstrate compliance with the NOx limits of this permit;~~
- b. **Clock h** Hourly average concentration of carbon monoxide (CO) **in parts per million by volume on a dry basis (ppmvd), both** uncorrected and corrected to 15% oxygen, ~~in parts per million (ppmvd), necessary to demonstrate compliance with the CO limits of this permit;~~
- c. Percent oxygen (O₂) in the exhaust gas for each unit operating minute;
- d. **Clock h** Hourly mass emissions of oxides of nitrogen (NOx), **calculated as NO₂**, in pounds;
- e. Cumulative mass emissions of oxides of nitrogen (NOx), **calculated as NO₂**, in each startup and shutdown period, in pounds;
- f. **Calendar d** Daily mass emissions of oxides of nitrogen (NOx), **calculated as NO₂**, in pounds;
- g. Calendar monthly mass emissions of oxides of nitrogen (NOx), **calculated as NO₂**, in pounds;
- h. Rolling **four-4**-unit-operating-hour average concentration of oxides of nitrogen (NOx) corrected to 15% oxygen, in parts per million **by volume dry on a dry basis (ppmvd) corrected to 15% oxygen**;
- i. Rolling **four-4**-unit-operating-hour average oxides of nitrogen (NOx) emission rate, **calculated as NO₂**, in pounds per megawatt-hour (MWh);
- j. Calendar quarter, calendar year, and rolling 12-calendar-month period mass emissions of oxides of nitrogen (NOx), **calculated as NO₂**, in tons;
- k. Cumulative mass emissions of carbon monoxide (CO) in each startup and shutdown period, in pounds;
- l. **Clock h** Hourly mass emissions of carbon monoxide (CO), in pounds;
- m. **Calendar d** Daily mass emission of carbon monoxide (CO), in pounds;
- n. Calendar monthly mass emission of carbon monoxide (CO), in pounds;
- o. Rolling 12-calendar-month period mass emission of carbon monoxide (CO), in tons;
- p. Average concentration of oxides of nitrogen (NOx) and carbon monoxide (CO) **in parts per million by volume on a dry basis (ppmvd), both**

uncorrected and corrected to 15% oxygen, ~~in parts per million (ppmv),~~
during each unit operating minute; **and**

- q. Average emission rate in pounds per hour of oxides of nitrogen (NO_x), **calculated as NO₂**, and carbon monoxide (CO) during each unit operating minute.

[Rules 69.3, 69.3.1, and 20.3(d)(1) and 40 CFR Part 60 Subpart KKKK, and 40 CFR Part 75]

Verification: The project owner shall submit to the CPM for review and the District for approval a CEMS protocol, as required by **AQ-60**, which includes description of the methods of compliance with the requirements of this condition. The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-61 No later than the earlier of 90 unit operating days or 180 calendar days after each combustion turbine commences commercial operation, a Relative Accuracy Test Audit (RATA) and other required certification tests shall be performed and completed on the turbine's NO_x CEMS in accordance with 40 CFR Part 75 Appendix A and on the CO CEMS in accordance with 40 CFR Part 60 Appendix B. The RATAs shall demonstrate that the NO_x and CO CEMS comply with the applicable relative accuracy requirements. At least 60 calendar days prior to the test date, the project owner shall submit a test protocol to the District for written approval. Additionally, the District and U.S. EPA **Region 9** shall be notified a minimum of 45 calendar days prior to the test so that observers may be present. Within 45 calendar days of completion of this test, a written test report shall be submitted to the District for approval. For purposes of this condition, commences commercial operation is defined as the first instance when power is sold to the electrical grid. [Rules 69.3, 69.3.1, and 20.3(d)(1) and 40 CFR Part 60 Subpart KKKK, and 40 CFR Part 75]

Verification: The project owner shall submit to the CPM for review and the District for approval the RATA certification test protocol at least 60 days prior to the RATA test and shall notify the CPM, the U.S. EPA and the District of the RATA test date at least 45 days prior to conducting the RATA and other certification tests. The project owner will submit all RATA or source test reports to the CPM for review and the District for approval within 45 days of the completion of those tests.

AQ-62 A monitoring plan in conformance with 40 CFR **Section** 75.53 shall be submitted to U.S EPA Region 9 and the District at least 45 calendar days prior to the Relative Accuracy Test Audit (RATA), as required in 40 CFR 75.62. [40 CFR Part 75]

Verification: The project owner shall submit to the CPM for review and the U.S. EPA and District for approval a monitoring plan in compliance with this condition at least 45 days prior to the RATA test.

AQ-63 The oxides of nitrogen (NO_x) and oxygen (O₂) components of the CEMS shall be certified and maintained in accordance with applicable Federal Regulations including the requirements of Sections 75.10 and 75.12 of Title 40, Code of Federal Regulations Part 75 (40 CFR 75), the Performance Specifications of Appendix A of 40 CFR Part 75, the Quality Assurance procedures of Appendix B of 40 CFR Part 75 and the CEMS Protocol approved by the District. The carbon monoxide (CO) components of the CEMS shall be certified and maintained in accordance with 40 CFR Part 60, Appendices B and F, unless otherwise specified in this permit, and the CEMS Protocol approved by the District. [Rules 69.3, 69.3.1, and 20.3(d)(1) and 40 CFR Part 60 Subpart KKKK, and 40 CFR Part 75]

Verification: The project owner shall submit to the CPM for review and the District for approval a CEMS protocol, as required by AQ-60, which includes description of the methods of compliance with the requirements of this condition. The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-66 Any violation of any emission standard as indicated by the CEMS shall be reported to the District's compliance division within 96 hours after such occurrence. [H&S §42706 Rule 19.2]

Verification: The project owner shall notify the District regarding any emission standard violation as required in this condition and shall document all such occurrences in each Quarterly Operation Report (AQ-SC8).

AQ-67 The CEMS shall be maintained and operated, and reports submitted, in accordance with the requirements of Rule 19.2 Sections (d), (e), (f)-(1), (f)-(2), (f)-(3), (f)-(4) and (f)-(5), and the CEMS Protocol approved by the District. [Rule 19.2]

Verification: The project owner shall submit to the District the CEMS reports as required in this condition and shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-68 Except for changes that are specified in the initially approved CEMS Protocol or a subsequent revision to that protocol that is approved in advance, in writing, by the District, the District shall be notified in writing at least thirty (30) calendar days prior to any planned changes made in the CEMS or Data Acquisition and Handling System (DAHS), including, but not limited to, the programmable logic controller, software which affects the value of data displayed on the CEMS / DAHS monitors with respect to the parameters measured by their respective sensing devices ~~or~~ and any planned changes to the software that controls the ammonia flow to the SCR. Unplanned or emergency changes shall be reported within 96 hours. [Rules 69.3, 69.3.1, and 20.3(d)(1) and 40 CFR Part 60 Subpart KKKK, and 40 CFR Part 75]

Verification: The project owner shall submit to the CPM for review and the District for approval any revision to the CEMS/DAHS or ammonia flow control software, as required

by this condition, to be approved in advance at least 30 days before any planned changes are made. The project owner shall notify the District regarding any unplanned emergency changes to these software systems within 96 hours and shall document all such occurrences in each Quarterly Operation Report (AQ-SC8).

AQ-69 At least 90 calendar days prior to the Initial Emissions Source Test, the project owner shall submit a monitoring protocol to the District for written approval which shall specify a method of determining the VOC/CO surrogate relationship that shall be used to demonstrate compliance with all VOC emission-limits when using CEMS data. This protocol can be provided as part of the Initial Source Emissions Test Protocol. [Rule 20.3(d)(1)]

Verification: The project owner shall submit to the CPM for review and the District for approval the monitoring protocol as part of the initial source test protocol in compliance with requirements of this condition at least 90 days prior to the initial source test.

AQ-70 Fuel flowmeters shall be installed and maintained to measure the fuel flow rate, corrected for temperature and pressure, to each combustion turbine. Correction factors and constants shall be maintained on site and made available to the District upon request. The fuel flowmeters shall meet the applicable quality assurance requirements of 40 CFR Part 75, Appendix D, and Section 2.1.6. [Rules 69.3, 69.3.1, and 20.3(d)(1) and 40 CFR Part 60 Subpart KKKK, and 40 CFR Part 75]

Verification: The project owner shall submit to the CPM the natural gas fuel usage data from the fuel flow meters as part of the Quarterly Operation Report (AQ-SC8).

AQ-71 Each combustion turbine shall be equipped with continuous monitors to measure, calculate, and record unit operating days, and hours, and minutes and the following operational characteristics:

- a. Date and time;
- b. Natural gas flow rate to the combustion turbine during each unit operating minute, in standard cubic feet per hour;
- c. Total heat input to the combustion turbine based on the fuels higher heating value during each unit operating minute, in million British thermal units per hour (MMBtu/hr);
- d. Higher heating value of the fuel on an hourly basis, in million-British thermal units per standard cubic foot (MMBtu/scf);
- e. ~~Combustion turbine~~Gross electrical energypower output during each unit operating minute in ~~gross-megawatts hours~~-(MWh); and
- f. Water injection rate in gallons per minute (gpm) or pounds per hour (lb/hr).

The values of these operational characteristics shall be recorded at least each unit operating minute. The monitors shall be installed, calibrated, and maintained in accordance with ~~the~~ Turbine Operation Monitoring

~~P~~protocol, which may be part of the CEMS Protocol, ~~approved by the District,~~ **and which shall include any relevant calculation methodologies, that is approved, in advance, in writing, by the District.** The monitors shall be in full operation at all times when the combustion turbine is in operation. Calibration records for the continuous monitors shall be maintained on site and made available to the District upon request. [Rules 69.3, 69.3.1, and 20.3(d)(1) and 40 CFR Part 60 Subpart KKKK, and 40 CFR Part 75]

Verification: The project owner shall submit to the CPM for review and the District for approval a turbine operation monitoring protocol in compliance with this condition and within the timeframes specified in **AQ-72**. The project owner shall make the site available for inspection of records and equipment required in this condition by representatives of the District, ARB, and the Energy Commission.

AQ-72 At least 90 calendar days prior to initial startup of the each combustion turbine, the project owner shall submit a turbine operation monitoring protocol to the District for written approval. This may be part of the **submitted** CEMS ~~P~~protocol. [Rules 69.3, 69.3.1, and 20.3(d)(1) and 40 CFR Part 60 Subpart KKKK, and 40 CFR Part 75]

Verification: The project owner shall submit to the CPM for review and the District for approval a turbine monitoring protocol in compliance with this condition at least 90 days prior to the initial startup of each combustion turbine.

AQ-73 Operating logs or Data Acquisition and Handling System (DAHS) records shall be maintained to record the beginning and end times and durations of all startups, shutdowns, and tuning periods to the nearest minute, quantity of fuel used in each **clock minute**, clock hour, calendar month, and 12-calendar-month period in standard cubic feet; hours of operation each day; and hours of operation during each calendar year. For purposes of this condition, the term "hours of turbine operation" is defined as the total operating minutes the turbine is combusting fuel during the calendar year divided by 60 **rounded to the nearest hundredth of an hour**. [Rules 69.3, 69.3.1, and 20.3(d)(1) and 40 CFR Part 60 Subpart KKKK, and 40 CFR Part 75]

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

COMMISSIONING

AQ-75 ~~Thirty~~ **Within thirty** calendar days after the end of the commissioning period for each combustion turbine, the project owner shall submit a written ~~progress~~ report to the District. This report shall include, at a minimum, the date the commissioning period **started and** ended, the **date and times of all** startup and shutdown periods, the emissions of NOx and CO during startup and shutdown periods, and the emissions of NOx and CO during ~~steady-state operation~~ **other periods**. This report shall also detail any turbine or emission control equipment malfunction, upset, repairs, maintenance, modifications, or replacements affecting emissions of air contaminants that occurred during the

commissioning period. All of the following continuous monitoring information shall be reported for each minute and, except for cumulative mass emissions **during startup and shutdown periods**, averaged over each hour of operation:

- a. Concentration of oxides of nitrogen (NO_x) **both** uncorrected and corrected to 15% oxygen, in parts per million **by volume on a dry basis** (ppmvd);
- b. Concentration of carbon monoxide (CO) **both** uncorrected and corrected to 15% oxygen, in parts per million **by volume on a dry basis** (ppmvd);
- c. Percent oxygen (O₂) in the exhaust gas;
- d. Mass emissions of oxides of nitrogen (NO_x), **calculated as NO₂**, in pounds;
- e. Cumulative mass emissions of oxides of nitrogen (NO_x), **calculated as NO₂**, in each startup and shutdown period, in pounds;
- f. Cumulative mass emissions of carbon monoxide (CO) in each startup and shutdown period, in pounds
- g. Mass emissions of carbon monoxide (CO), in pounds;
- h. Total heat input to the combustion turbine based on the fuel's higher heating value, in million British thermal units per hour (MMBtu/hr);
- i. Higher heating value of the fuel on an hourly basis, in ~~million~~ British thermal units per standard cubic foot (MMBtu/scf);
- j. Gross electrical power output of the turbine, in megawatts hours (MWh) for each hour;
- k. SCR outlet temperature, in degrees Fahrenheit; ~~and~~
- l. Water injection rate in gallons per minute (gpm) or pounds per hour (lb/hr); and**
- m. Ammonia injection rate in pounds per hour (lb/hr).**

The hourly average information shall be submitted in writing and in an electronic format approved by the District. The minute-by-minute information shall be submitted in an electronic format approved by the District. [Rules 69.3, 69.3.1, 20.3(d)(1) and 20.3(d)(2)]

Verification: A log of the dates, times, and cumulative unit operating hours when fuel is being combusted during the commissioning period shall be maintained by the project owner. The project owner shall submit, commencing one month from the time of gas turbine first fire, a monthly commissioning status report throughout the duration of the commissioning phase that demonstrates compliance with the requirements listed in this condition. The monthly commissioning status report shall be submitted to the CPM by the 10th of each month for the previous month, for all months with turbine commissioning activities following the turbine first fire date. The project owner shall also provide the reporting required by this condition to the District and CPM within 30 days of completing commissioning of each turbine. The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-76 For each combustion turbine, the project owner shall submit the following notifications to the District and U. S. EPA, Region ~~IX~~9:

- a. A notification in accordance with 40 CFR Section 60.7(a)(1) delivered or postmarked not later than 30 calendar days after construction has commenced;
- b. A notification in accordance with 40 CFR Section 60.7(a)(3) delivered or postmarked within 15 calendar days after initial startup; and
- c. An Initial Notification in accordance with 40 CFR Section 63.6145(c) and 40 CFR Section 63.9(b)(2) submitted no later than 120 calendar days after the initial startup of the turbine.

In addition, the project owner shall notify the District when: (1) construction is complete by submitting a Construction Completion Notice before operating any unit that is the subject of this permit, (2) each combustion turbine first combusts fuel by submitting a First Fuel Fire Notice within five calendar days of the initial operation of the unit, and (3) each combustion turbine first generates electrical power that is sold by providing written notice within 5 days of this event.

[Rules 24 and 21 and 40 CFR Part 75, 40 CFR Part 60 Subpart KKKK, 40 CFR Part §60.7, 40 CFR Part 63 Subpart YYYY, and 40 CFR Part §63.9]

Verification: The project owner shall provide notification to the District and U.S. EPA Region IX as required by this condition and shall provide copies of these notifications as part of the final monthly commissioning status reports (**AQ-75**) due the month after the notifications are sent.

REPORTING

AQ-77 The ~~permittee~~**project owner** shall file semiannual reports in accordance with 40 CFR §60.4375. [40 CFR Part 60 Subpart KKKK]

Verification: Semiannual compliance reports shall be submitted to the District and the CPM as part of the second quarter's and fourth quarter's Quarterly Operation Reports (**AQ-SC8**).

NEW PROJECT AMMENDMENT PERMIT CONDITIONS

GENERAL CONDITIONS

AQ-80 **The equipment authorized to be constructed under this permit is described in Application No. APCD2010-APP-001251 as amended by Application Nos. APCD2011-APP-001540 and APCD2014-APP-003627.**

Verification: **The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.**

COMBUSTION TURBINE CONDITIONS

AQ-81 [RESERVED—SEE DEFINITIONS]

Emission Limits

AQ-82 The emissions of particulate matter less than or equal to 10 microns in diameter (PM10) from the exhaust stacks of the combustion turbines shall not exceed 3.5 pounds per hour per turbine, calculated as the arithmetic average of the source test results from the six most recent sets of valid source tests performed on the three turbines. For the purpose of this condition, a valid source test is a source test for which the results have been approved by the District, and that included at least three subtests in the calculation of average emission rate. [Rule 20.3(d)(1) and (d)(2)]

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

Testing

AQ-83 All testing conducted to measure concentrations or emissions of volatile organic compounds (VOCs) shall include measurement of formaldehyde and the result shall be added to the result determined for other VOC concentrations or emissions, as applicable. Measurement of VOC emissions shall be conducted in accordance with EPA Method 18, or alternative methods approved by the District and EPA. Measurement of emissions of formaldehyde shall be conducted in accordance with EPA Method 316 or 323, or an alternative method approved by the District and EPA.

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

Staff has proposed modifications to the **Traffic and Transportation** condition of certification **TRANS-9** in the Final Commission Decision as shown below. **Bold and single underlined** or single strikethrough text identifies changes recommended in the previously published analysis for the PPEC amendment. **Bold and double underlined** or ~~double strikethrough~~ text identifies changes recommended after the analysis was published.

TRANS-9 Pilot Notification and Awareness - The project owner shall initiate the following actions to ensure pilots are aware of the project location and potential hazards to aviation:

- Submit a letter to the FAA requesting a Notice to Airmen (NOTAM) be issued advising pilots of the location of the PPEC and recommending avoidance of overflight of the project site below 4,720 **2,000** feet AGL. The letter should also request that the NOTAM be maintained in active status

until ~~the Los Angeles Section Chart~~ and Airport Facility Directories (AFDs) have been updated.

- Submit a letter to the FAA requesting a power plant depiction symbol be placed at the PPEC site location on the ~~Los Angeles San Diego~~ Sectional Chart with a notice to "avoid overflight below 4,720 ~~2,000~~ feet AGL".
- Submit a request to and coordinate with the Brown Field Municipal Airport Manager to add a new remark to the Automated Surface Observing System (ASOS) identifying the location of the PPEC and advising pilots to avoid direct overflight below 4,720 ~~2,000~~ feet AGL as they approach or depart the airport.
- Request that Southern California TRACON and/or the San Diego Air Traffic Control Center submit aerodrome remarks describing the location of the PPEC plant and advising against direct overflight below 4,720 ~~2,000~~ feet AGL to the:
 - ✓ ~~FAA AeroNav Services, formerly the FAA National Aeronautical Charting Office (Airport Facility Directory)~~ FAA Airport Facility Directory – Southwest U.S.
 - ✓ ~~Jeppesen Sanderson Inc. (Jeppesen Airway Manual Services – Western U.S. Airport Directory); and (JEPPGuide Airport Directory, Western Region)~~
 - ✓ ~~Airguide Publications (Flight Guide, Western States)~~ Pilots Guide to California Airports

Verification: Within 30 days following the start of construction of the heat input components, the project owner shall submit draft language for the letters of request to the FAA (including Southern California TRACON) and Brownfield Field Municipal Airport to the CPM for review and approval.

At least 60 days prior to the start of operations, the project owner shall submit the required letters of request to the FAA and request that Southern California TRACON submit aerodrome remarks to the listed agencies. The project owner shall submit copies of these requests to the CPM. A copy of any resulting correspondence shall be submitted to the CPM within 10 days of receipt.

If the project owner does not receive a response from any of the above agencies within 45 days of the request (or by 15 days prior to the start of operations) the project owner shall follow up with a letter to the respective agency/ies to confirm implementation of the request. A copy of any resulting correspondence shall be submitted to the CPM within 10 days of receipt.

The project owner shall contact the CPM within ~~72 hours~~ 10 days if notified that any or all of the requested notices cannot be implemented. Should this occur, the

project owner shall appeal such a determination, consistent with any established appeal process and in consultation with the CPM. A final decision from the jurisdictional agency denying the request, as a result of the appeal process, shall release the project owner from any additional action related to that request and shall be deemed in compliance with that portion of this condition of certification.

IT IS SO ORDERED.

CERTIFICATION

The undersigned Secretariat to the Commission does hereby certify that the foregoing is a full, true, and correct copy of an Order duly and regularly adopted at a meeting of the California Energy Commission held on **February 10, 2016**.

AYE: Weisenmiller, Douglas, Hochschild, Scott

NAY: None

ABSENT: McAllister

ABSTAIN: None



TIFFANI WINTER
Secretariat