

# Memorandum

Date: October 29, 2010

To: Melissa Jones  
Executive Director

From: California Energy Commission - Terry O'Brien, Deputy Director  
1516 Ninth Street Siting, Transmission & Environmental Protection Division  
Sacramento, CA 95814-5512

Subject: **ITEM FOR THE DECEMBER 15, 2010 BUSINESS MEETING -  
INLAND EMPIRE ENERGY CENTER (01-AFC-17C) PETITION  
TO MODIFY AIR QUALITY CONDITIONS OF CERTIFICATION**

## **PROJECT BACKGROUND**

On August 17, 2001, Inland Empire Energy Center, LLC filed an Application for Certification with the California Energy Commission (Energy Commission) seeking approval to construct and operate the Inland Empire Energy Center (IEEC). IEEC is an 800-megawatt natural gas-fired, combined-cycle electric generating facility located on approximately 46-acres in the newly incorporated City of Menifee, within Riverside County. Commercial operation began on June 29, 2009.

## **ISSUE**

The current amendment request would modify several Air Quality Conditions of Certification to reflect the changes that have been made to the South Coast Air Quality Management District (SCAQMD) permit since the last Energy Commission amendment was approved on April 11, 2007:

- On September 21, 2007, the SCAQMD issued a minor revision to the RECLAIM/Title V facility permit related to a change in the specifications for the auxiliary boiler.
- On April 4, 2008, the SCAQMD issued a minor revision to the RECLAIM/Title V facility permit related to permit condition changes needed to allow commissioning of the auxiliary boiler.
- On October 17, 2008, the SCAQMD issued a minor revision to the RECLAIM/Title V facility permit related to the auxiliary boiler's burner model designation, storage capacity for on-site aqueous ammonia storage tanks, and emission limits applicable to the auxiliary boiler during boiler startups/shutdowns.
- On June 3, 2009, the SCAQMD issued a minor revision to the RECLAIM/Title V facility permit related to allowable hours of operations for the emergency generators at the site.
- On August 25, 2009, the SCAQMD issued a minor revision to the RECLAIM/Title V facility permit related to allowable carbon monoxide (CO) emissions from the combined cycle units during startups and shutdowns.

Staff notes that the project has already been modified (i.e., the proposed conditions have already been approved by the SCAQMD) and the current amendment request addresses the differences between the Energy Commission's most recent decision and the current SCAQMD RECLAIM/Title V permit. Staff evaluated any potential non-compliance issues related to the Energy Commission Decision and any effect on air quality.

### **SUMMARY OF ANALYSIS BY STAFF**

Most of the proposed changes are administrative in nature (e.g., clarifying when limits apply or number of operating hours) and have no effect on environmental impacts. Since the gas turbines at this facility are the first General Electric S107H gas turbines operating in the United States, and the second and the third in the world, the original CO startup emission limits were based on very limited information available from the vendor. The recent commissioning data from IEEC Unit 1 indicate that the average CO emission rate during the turbine startups is approximately 300 lbs/hr, which is higher than the original emission limit in the permit (95 lbs/hr). The 800 lbs/hour CO limit is appropriate to accommodate rare scenarios (cold gas turbine start-up and cold ambient temperatures) and is not typical of routine start-up emissions. The proposed changes to conditions of certification, including changes to permitted emission levels, do not affect the project's compliance with ambient air quality standards; therefore, there will be no adverse health effects.

The project will remain in compliance with all applicable laws, ordinances, regulations, and standards (LORS). Staff recommends that the revised Conditions of Certification be approved as shown below for consistency with current SCAQMD permit requirements. ~~Strikethrough~~ is used to indicate deleted language and **underline and bold** is used for new language.

### **Staff Air Quality Conditions of Certification – Operation**

**AQ-SC14** The project owner shall limit emissions during startup periods. During startup periods, the project owner shall limit the combined CO emission rate for the two gas turbines to ~~490~~ **1600** lb/hr (~~95~~ **800** lb/hr for each turbine) and limit the combined NOx emission rate for the two gas turbines to 816 lb/hr (408 lb/hr for each turbine).

**Verification:** See the verification for Condition **AQ-18**.

### **Gas Turbines and SCR**

**AQ-18** The operator shall operate and maintain this equipment according to the following requirements:

The commissioning period shall not exceed ~~509~~ **738** hours of operation for both turbines during the first 180 calendar days from the date of initial start-up.

Startup/shutdown time shall not exceed 4 hours per day per gas turbine, except for a cold startup and combustor-tuning activities, which shall not exceed 6 hours per day per gas turbine. A cold startup shall be defined as a startup of the gas turbine after

72 hours of non-operation. Combustor-tuning activities shall be defined as all testing, adjusting, tuning, and calibration activities recommended by the turbine manufacturer to ensure safe, reliable, and in-specification operation of the turbine. Startup/shutdown and combustor-tuning activity emissions shall not exceed 408 lbs/hr NO<sub>x</sub> and ~~95~~ **800** lbs/hr CO averaged for the duration of the startup. The startup/shutdown and combustor-tuning activity emissions shall not exceed 803 lbs/event NO<sub>x</sub> and ~~300~~ **2000** lbs/event CO.

Monthly startup/shutdown time shall not exceed 31 hours. Shutdown time does not include non-operation time.

The operator shall provide the AQMD with written notification of the initial startup date. Written records of commissioning, startups, shutdowns, and combustor-tuning activities shall be maintained and made available upon request from AQMD. (SCAQMD E193-2)

**Verification:** The project owner shall submit to the CPM the final commissioning status report as in Condition AQ-17. The project owner shall provide startup/shutdown and combustor-tuning activity occurrence, duration, and emissions data demonstrating compliance with this condition as part of the Quarterly Operation Report (AQ-SC8). The project owner shall make the site available for inspection of the commissioning, startup/shutdown, and combustor tuning activity records by representatives of the District, CARB and the Commission.

### Auxiliary Boiler and SCR

**AQ-39** The 8.49 lbs/mmscf NO<sub>x</sub> emission limit(s) shall only apply after the installation and operation of the SCR catalyst during the interim reporting period to report RECLAIM emissions. (SCAQMD A99-2) The 100.67 lbs/mmscf NO<sub>x</sub> emission limit(s) shall only apply prior to the installation of the SCR catalyst during the interim reporting period to report RECLAIM emissions. (SCAQMD A99-4)

**Verification:** The project owner shall submit to the CPM and APCO auxiliary boiler emissions data demonstrating compliance with this condition through the use of the required RECLAIM emission factor, as appropriate, as part of the Quarterly Operation Report (AQ-SC8).

**AQ-42** The 7 ppmv NO<sub>x</sub> emission limit(s) is averaged over one hour at 3 percent oxygen, dry basis. This limit shall not apply during the initial auxiliary boiler commissioning period not to exceed 200 hours or until the SCR catalyst is installed and operational, whichever occurs first. This limit shall not apply during startup and shutdown periods. Startup shall not exceed 75 minutes per occurrence and shutdown shall not exceed 30 minutes per occurrence. There shall be no more than one startup and one shutdown per day. (SCAQMD A195-4)

**Verification:** The project owner shall submit to the CPM and APCO auxiliary boiler

CEMS emissions data demonstrating compliance with this condition as part of the Quarterly Operation Report (**AQ-SC8**).

**AQ-45** The 5 ppmv NH<sub>3</sub> emission limit(s) is averaged over 1 hour at 3 percent oxygen, dry basis. **The limit shall not apply during the auxiliary boiler D3 startup process when the SCR catalyst temperature is below 480 degree F. The limit shall not apply during the auxiliary boiler D3 boiler shutdowns.** (SCAQMD A195-8)

**Verification:** See verification for Conditions **AQ-32**, **AQ-33**, and **AQ-46**.

### Two Emergency Generator Engines and One Fire Pump Engine

**AQ-48 Emergency Generator Engines:** The operator shall limit the operating time of each engine to no more than ~~50~~ **200** hours per year. **The 200 hours annual limit includes no more than 50 hours in any one year for maintenance and testing purposes.** (SCAQMD C1-1) **Emergency Fire Pump Engine: The operator shall limit the operating time to no more than 50 hours in any one year. (SCAQMD C1-3)**

**Verification:** The project owner shall submit to the CPM and APCO the emergency generator and fire pump IC engines operations data demonstrating compliance with this condition as part of the Quarterly Operation Report (**AQ-SC8**).

**AQ-51** The emergency generator engines shall not be operated unless the operator demonstrates to the Executive Officer that the facility holds sufficient RTCs to offset the prorated annual emissions increase for the first compliance year of operation. In addition, this equipment shall not be operated unless the operator demonstrates to the Executive Officer that, at the commencement of each compliance year after the first compliance year of operation, the facility holds sufficient RTCs in an amount equal to the annual emissions increase. To comply with this condition, the operator shall prior to the first compliance year hold a minimum NO<sub>x</sub> RTCs of 1,946 lbs for each engine. This condition shall apply during the first twelve months of operation. To comply with this condition, the operator shall, prior to the beginning of all years subsequent to the first compliance year, hold a minimum NO<sub>x</sub> RTCs of ~~1,946~~ **7,784** lbs for each engine. In accordance with Rule 2005(f), unused RTCs may be sold only during the reconciliation period for the fourth quarter of the applicable compliance year inclusive of the first compliance year. (SCAQMD I296-4)

**Verification:** The project owner shall submit to the CPM copies of all RECLAIM reports filed with the District demonstrating compliance with this condition as part of the Quarterly Operation Report (**AQ-SC8**).

**Attachment Air Quality 1 – AQ-SC16, Equipment Description**

**EQUIPMENT DESCRIPTION**

Section H of the facility permit: Permit to Construct and temporary Permit to Operate

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions and Requirements	Conditions
<b>PROCESS 1: COMBUSTION AND POWER GENERATION</b>					
<b>SYSTEM 2: AUXILIARY EQUIPMENT</b>					
BOILER, AUXILIARY BOILER, NATURAL GAS, <del>NEBRASKA, MODEL NS F 76</del> <b>RENTECH, MODEL 2005-84</b> , WITH LOW NOX BURNER, 152.12 MMBtu/HR, WITH: A/N: 456170 <b>483511</b> Permit to Construct Issued: <del>6/02/06</del> <b>10/16/08</b> BURNER, NATURAL GAS, <del>TODD VARIFLAME</del> <b>JOHN ZINK</b> , MODEL VII690VGXXX, WITH LOW NOX BURNER, 152.12 MMBTU/HR	D3	C6	NOx MAJOR SOURCE**	<b>NOx:</b> 7.0 PPMV NATURAL GAS (4) [RULE 2005 BACT, RULE1703-PSD Analysis]; <b>NOx:</b> 8.49 LBS/MMSCF NATURAL GAS (1) [RULE 2012]; <b>100.67 LBS/MMSCF NATURAL GAS (1A) [RULE 2012]</b> <b>CO:</b> 50 PPMV NATURAL GAS (4) [RULE 1303 BACT]; <b>CO:</b> 400 PPMV NATURAL GAS (5A) [RULE 1146]; <b>CO:</b> 2,000 PPMV NATURAL GAS (5) [RULE 407]; <b>VOC:</b> 10 PPMV NATURAL GAS (4) [RULE 1303 BACT] <b>PM10:</b> 7.26 LB/MMSCF NATURAL GAS (4) [RULE 1303-BACT]; <b>PM10:</b> 0.1 GRAINS/SCF NATURAL GAS (5) [RULE 409]; <b>H2S:</b> 0.25 GRAINS PER 100 SCF NATURAL GAS (4) [RULE 1303-BACT]	A63.2, A99.2, <b>A99.4</b> , A195.4, A195.5, A195.6, B61.1, C1.2, D29.4, D82.3, D82.4, E193.1, E193.3, E193.6, I296.3, K40.2

<b>Process 2: INORGANIC CHEMICAL STORAGE</b>					
<b>System 1: AMMONIA STORAGE TANKS</b>					
ROOF, #1, 28% AQUEOUS AMMONIA, <del>16,000</del> <b>16,900</b> GALS, DIAMETER: 10 FT; LENGTH: 26 FT A/N: <del>439497</del> <b>480152</b> Permit to Construct Issued: <del>08/05/05</del> <b>10/16/08</b>	D7				E144.1, C157.1, E193-1, E193.3,
STORAGE TANK, FIXED ROOF, #2, 28% AQUEOUS AMMONIA, <del>16,000</del> <b>16,900</b> GALS, DIAMETER: 10 FT; LENGTH: 26 FT A/N: <del>439498</del> <b>480153</b> Permit to Construct Issued: <del>08/05/05</del> <b>10/16/08</b>	D8				E144.1, C157.1, E193-1, E193.3,

### **PUBLIC REVIEW**

A Notice of Receipt was docketed, posted on the Energy Commission website, and mailed to the post-certification mailing list on December 14, 2009. The revised staff analysis was docketed, posted on the Energy Commission website, and mailed to interested parties and affected public agencies on October 27, 2010.

No comments have been received.

### **STAFF FINDINGS**

Pursuant to Title 20, section 1769(a) of the California Code of Regulations, staff finds:

- The petition meets all the filing criteria of Title 20, section 1769(a) concerning post-certification project modifications;
- The modification would not change the findings in the Energy Commission's Final Decision pursuant to Title 20, section 1755;
- The project would remain in compliance with all applicable LORS, subject to the provisions of Public Resources Code section 25525;
- The proposed changes to conditions of certification, including changes to permitted emission levels, have been approved by the SCAQMD and do not affect the project's compliance with ambient air quality standards; and
- The purpose of the proposed amendment is to make the Energy Commission Air Quality Conditions of Certification consistent with the current SCAQMD RECLAIM/Title V permit for the IEEC project.

### **RECOMMENDATIONS**

Based on the above findings and staff's review of the proposed modification, staff recommends approval of the petition and revisions to the Conditions of Certification as presented in the attached staff analysis and proposed order.

**COMPLIANCE PROJECT MANAGER**

The Compliance Project Manager is Dale Rundquist, (916) 651-2072.

**BUSINESS MEETING PARTICIPANTS**

Dale Rundquist, CPM  
Tao Jiang, Air Quality Technical Staff  
Kevin W. Bell, Compliance Staff Counsel

Attachments: Staff Analysis  
Draft Order