

## CALIFORNIA ENERGY COMMISSION

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**DATE:** January 23, 2012

**TO:** Interested Parties

**FROM:** Eric Veerkamp, Compliance Project Manager

**SUBJECT: Sunrise Power Project (98-AFC-4C)**

Staff Analysis of Proposed Modifications for minor modifications to air quality conditions, to delete unnecessary emission limitations, and for consistency

On August 13, 2010, Sunrise Power filed a petition with the California Energy Commission to amend the Energy Commission Decision for the Sunrise Power Plant Project. On November 17, 2010, Sunrise Power filed a revised petition in response to an Energy Commission request. Staff prepared an analysis of these proposed changes, and a copy is enclosed for your information and review.

The Sunrise Power Plant project is a 585 MW combined-cycle generating station power plant located in Kern County, California. The project was certified by the Energy Commission on December 6, 2000, and began commercial operation on June 27, 2001.

The petition, if approved, would modify **AQ-10** and **AQ-59**, and would delete **AQ-26** and **AQ-49**. Staff would also be incorporating additional COCs from the Permit to Operate (PTO) that were included by the San Joaquin Valley Air Pollution Control District (SJVAPCD or District) for this petition. The new COCs are **AQ-62** through **AQ-65**. The amended COCs would maintain consistency between the PTO and Energy Commission COCs and are necessary to ensure compliance with evolving SJVAPCD rules and regulations. With the implementation of revised conditions, the project will remain in compliance with applicable laws, ordinances, regulations, and standards and that the proposed modifications will not result in a significant adverse direct or cumulative impact to the environment (Title 20, California Code of Regulations, Section 1769).

The amendment petition and staff's analysis has been posted on the Energy Commission's webpage at [www.energy.ca.gov/sitingcases](http://www.energy.ca.gov/sitingcases). The Energy Commission's Order (if approved) will also be posted on the webpage. Energy Commission staff intends to recommend approval of the petition at the March 14, 2012 Business Meeting of the Energy Commission. If you have comments on this proposed modification, please submit them to me at the address below prior to February 22, 2012.

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Comments may be submitted by fax to (916) 654-3882, or by e-mail to [eveerkam@energy.state.ca.us](mailto:eveerkam@energy.state.ca.us). If you have any questions, please contact me at (916) 654-4611.

For further information on how to participate in this proceeding, please contact the Energy Commission Public Adviser's Office, at (916) 654-4489, or toll free in California at (800) 822-6228, or by e-mail at [publicadviser@energy.state.ca.us](mailto:publicadviser@energy.state.ca.us). News media inquiries should be directed to the Energy Commission Media Office at (916) 654-4989, or by e-mail at [mediaoffice@energy.state.ca.us](mailto:mediaoffice@energy.state.ca.us).

Enclosure

**SUNRISE POWER PROJECT (98-AFC-4C)**  
**Petition for Minor Modification to Air Quality Conditions of Certification**  
**Joseph Hughes**  
**January 19, 2012**

## **INTRODUCTION**

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Sunrise Power Project (Sunrise) was originally approved February 2001 and has since been amended multiple times. The project operates as a 585 megawatt (MW) combined cycle power plant in Kern County, California. The facility consists of two (2) 160 MW (nominal) natural-gas fired General Electric Frame 7FA combustion turbines equipped with dry Low NO<sub>x</sub> (DLN) combustors, two (2) duct fired heat recovery steam generators (HRSGs), and one (1) 265 MW steam turbine generator (STG). The plant also utilizes an anhydrous ammonia selective catalytic reduction system (SCR) for emissions controls of NO<sub>x</sub> and an oxidation catalyst for CO and VOCs. Sunrise is owned jointly by Chevron and Edison Mission Energy.

On August 13, 2010, Sunrise filed a petition to amend (SPP) for minor modifications to Air Quality Conditions of Certification (COCs) and on November 17, 2010, filed a revised petition (SPPa) in order to satisfy information requested by Energy Commission air quality staff (staff). The SPPa would modify **AQ-10** and **AQ-59**, and would delete **AQ-26** and **AQ-49**. Staff would also be incorporating additional COCs from the Permit to Operate (PTO) that were included by the San Joaquin Valley Air Pollution Control District (SJVAPCD or District) for this petition. The new COCs are listed below as **AQ-62** through **AQ-65**. The amended COCs would maintain consistency between the PTO and Energy Commission COCs and are necessary to ensure compliance with evolving SJVAPCD rules and regulations.

## **LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS) - COMPLIANCE**

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The SJVAPCD issued its PTO March 11, 2011 for the requested modifications determining that the project would comply with all laws, ordinances, regulations and standards (LORS). The environmental impacts assessment presented herein shows there will be no significant environmental impacts associated with the requested modifications in the SPPa, and the project as modified would comply with all applicable LORS.

## **ANALYSIS**

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Sunrise filed the SPPa to delete an unnecessary emission limitation imposed by **AQ-49** and create consistency between the District's PTO and Energy Commission's COCs. There are several COCs in the Energy Commission's Decision that are no longer consistent with the PTO and require modifications to the language to ensure compliance.

**AQ-10** limits startup and shutdown events to not exceed a time period of four hours duration each. This limit is outdated and has since been amended by the District to define limitations by the type of events. The new language limits startup events to 60 minutes for a hot startup, 128 minutes for a warm startup, and 230 minutes for a cold startup, and one hour for a shutdown. The emission limits in **AQ-14** for startup and shutdown events would remain the same. These timeframes are consistent with those analyzed in the November 30, 2001, Energy Commission Decision approving the combine cycle modification for the Sunrise Power Project. These timeframes, along with the worst case startup and shutdown emissions limited by **AQ-14**, steady state hourly emissions limited by **AQ-15**, daily emissions limited by **AQ-16**, and annual emissions limited by **AQ-17** were used to analyze the project's worst case potential impacts.

**AQ-49** requires that by two hours after turbine initial firing, CTG exhaust emissions shall not exceed any of the following: NO<sub>x</sub> (as NO<sub>2</sub>) 10.3 ppmv @ 15% O<sub>2</sub> and CO 25 ppmv @ 15% O<sub>2</sub>. This condition refers to "Thermal Stabilization Period" which was removed from the latest version of Rule 4703. This permit condition is not required by current State Implementation Plan (SIP) approved District Rule 4703 and as such is no longer applicable. This condition was removed from the PTO issued March 11, 2011. Currently the NO<sub>x</sub> and CO emission limits are 2 ppmv @ 15% O<sub>2</sub> and 4 ppmv @ 15% O<sub>2</sub>, respectively. These limits must be met within the associated startup timeframe as described in **AQ-10** of the SPPa. On January 24, 2010 it was determined that during cold startup events, the unnecessary limitations imposed by **AQ-49** were difficult to meet because a cold startup allows 230 minutes rather than the 120 minutes required by **AQ-49**. Furthermore, **AQ-49** was a District imposed COC and the emission limits associated with it were not used to evaluate worst case project impacts. The deletion of this condition would not change the worst case hourly, daily or annual emission limits controlled by **AQ-14** through **AQ-17**, and **AQ-50**, and as analyzed and approved in the November 30, 2001 Energy Commission Decision that showed no adverse impact would occur.

**AQ-59** states that compliance with PM<sub>10</sub> emission limit shall be determined by circulating water sample analysis by independent laboratory within 90 days of initial operation and weekly thereafter. The weekly testing requirement is outdated and has since been amended by the District to require water sample analysis on a quarterly basis. The District modified this COC as quarterly sampling was deemed a more reasonable determination of compliance based on this type of process. Staff finds this justifiable as weekly sampling is unnecessary. The PM<sub>10</sub> emission limits for the cooling tower would remain the same. PM<sub>10</sub> emissions from the cooling tower are a function of total dissolved solids (TDS) in the water supply. If quarterly sampling shows higher than allowable levels of TDS, the District can require additional and more frequent testing.

**AQ-26** states that the source test plans for the initial and seven year source test shall include a method for measuring the CO/VOC surrogate relationship that would be used to demonstrate compliance with VOC lbs/hr, lbs/day, and lbs/twelve month rolling average emission limits upon combined cycle operation. The CO concentration is used as a surrogate for VOC because CO is a product of incomplete combustion and elevated levels of CO indicate incomplete combustion (i.e., low CO concentrations indicate complete combustion of VOC compounds). Sunrise completed the testing and attempted to correlate the results. However, no correlation was established since the

VOC emission rate was so low that it was non-detectable for both generating units, for all three test runs performed. Since VOC emission levels are very low, and since CO emissions are set to a level to exceed the permit limit before VOC will, additional monitoring or testing of VOC outside of the annual testing requirement of **AQ-20** is not necessary. Sunrise is requesting that **AQ-26** be deleted for consistency with the PTOs as the SJVAPCD removed this condition from the PTO in 2002 because the plant's low VOC emission rates made this COC unnecessary.

Staff would also be incorporating four COCs that were included in the PTO. The COCs define reduced load periods, require emission control systems to operate to the maximum degree possible during startup and shutdown, require information sufficient to allow the District to determine compliance with the NOx emission limits when the CEMS is not operating properly, and specifies recordkeeping requirements. The four COCs are listed under the Proposed Modifications and Additional Conditions of Certification section as **AQ-62** through **AQ-65**.

## **CONCLUSIONS AND RECOMMENDATIONS**

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Staff recommends approval of the proposed modifications to COCs. The proposed changes would create consistency between SJVAPCD's PTO and the Energy Commission COCs. With the amended and incorporated COCs, the project would continue to comply with all applicable LORS. As it stands, there are conflicting COCs that create inconsistencies between emission limits. The proposed changes are required to provide clarity in the document.

## **PROPOSED MODIFICATIONS AND ADDITIONAL CONDITIONS OF CERTIFICATION**

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The following conditions of certification would be amended in the Final Commission Decision for the Sunrise Power Project to ensure compliance with all applicable LORS. The proposed changes are provided below. ~~Strikethrough~~ is used to indicate deleted language and underline for new language.

**AQ-10** Startup is defined as the period beginning with turbine initial firing. Shutdown is defined as the period beginning with initiation of turbine shutdown sequence and ending with cessation of firing of the gas turbine engine. Startup and shutdown durations shall not exceed a time period of 4 hours each 60 minutes for a hot startup, 128 minutes for a warm startup, and 230 minutes for a cold startup, and one hour for a shutdown, per occurrence. [District Rule 2201 and 4001]

**Verification:** The project owner shall provide records of the emissions and operations as part of the quarterly reports of Condition AQ-31.

~~**AQ-26** The source test plans for the initial and seven-year source test shall include a method for measuring the CO/VOC surrogate relationship that will be used to demonstrate compliance with VOC lbs/hr, lbs/day, and lbs/twelve month rolling average emission limits upon combined cycle operation. [District Rule 2201]~~

**Verification:** ~~The Project owner shall provide a source test plan to the CPM and District for the CPM and District approval 15 days prior to testing. Initial source testing shall occur no later than 90 days following the first day of combined cycle operation.~~

**AQ-49** ~~By two hours after turbine initial firing, CTG exhaust emissions shall not exceed any of the following:~~

~~NO<sub>x</sub> (as NO<sub>2</sub>): 10.3 ppmv @ 15% O<sub>2</sub>  
CO: 25 ppmv @ 15% O<sub>2</sub>~~

~~[District Rule 4703] Compliance with the aforementioned limits will commence on the clock hour following the 120th minute after initial firing. These emission limits are three hour rolling averages.~~

**Verification:** ~~The project owner shall provide records of the emissions as part of the quarterly reports of Condition AQ-31.~~

**AQ-59** Compliance with PM10 emission limit shall be determined by circulating water sample analysis by independent laboratory within 90 days of initial operation and ~~weekly~~**quarterly** thereafter. [District Rule 1081]

**Verification:** The project owner shall compile the required daily PM10 emissions data and maintain the data for a period of five years. The project owner shall make the site available for inspection by representatives of the District, CARB and the Commission.

**Conditions of Certification AQ-62 through AQ-65 apply to the 160 MW natural gas-fired combustion turbine generators.**

**AQ-62 Reduced load period is defined as the time during which a gas turbine is operated at less than rated capacity in order to change the position of the exhaust gas diverter gate. Each reduced load shall not exceed one hour. [District Rule 4703, 3.23] Federally Enforceable through Title V Permit**

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

**AQ-63 The emission control systems shall be in operation and emissions shall be minimized insofar as technologically feasible during startup and shutdown. [District Rule 4703, 5.3.2] Federally Enforceable Through Title V Permit**

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

**AQ-64 The owner or operator shall submit to the District information correlating the NO<sub>x</sub> control system operating parameters to the associated measured NO<sub>x</sub> output. The information must be sufficient to allow the District to determine compliance with the NO<sub>x</sub> emission limits in the conditions of**

**certification when the CEMS is not operating properly. [District Rule 4703, 6.2.5] Federally Enforceable Through Title V Permit**

**Verification: The project owner shall provide the required information as part of the quarterly reports of Condition AQ-31.**

**AQ-65 The owner or operator shall maintain a stationary gas turbine system operating log that includes, on a daily basis, the actual local startup and stop time, length and reason for reduced load periods, total hours of operation, the type and quantity of fuel used, and duration of each startup and each shutdown time period. [District Rule 4703, 6.2.6 & 6.2.7] Federally Enforceable Through Title V Permit**

**Verification: The project owner shall provide the required information as part of the quarterly reports of Condition AQ-31.**

## **REFERENCES**

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CEC2001a – California Energy Commission, Staff Assessment for Sunrise Power Plant Conversion to Combine Cycle Operations. November 9, 2001.

CEC2001b – California Energy Commission, Order Approving Project Modifications. November 30, 2001.

SPP – Sunrise Power Plant, Petition for Minor Modification, delete AQ-49. August 2010.

SPPa – Sunrise Power Plant, Revised Petition for Minor Modification, AQ. November 2010.

SJVAPCD – San Joaquin Valley Air Pollution Control District, Permit to Operate. June 2008.

SJVAPCD2010 – San Joaquin Valley Air Pollution Control District, Notice of Violation. February 19, 2010.

SJVAPCD2011 – San Joaquin Valley Air Pollution Control District, Permit to Operate. March 11, 2011.