STATE OF CALIFORNIA

Energy Resources Conservation
And Development Commission

In the Matter of: Application for Certification For the Palen Solar Power Project	Docket No. 09-AFC-7

Energy Commission Staff's Additional Supplemental Air Quality Testimony

On December 1, 2010, the South Coast Air Quality Management District issued a Final Determination of Compliance for the Palen Solar Power Project. Staff provides this additional supplemental air quality testimony to incorporate changes from the Revised Determination of Compliance.

DATED: December 1, 2010

Respectfully submitted,

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AIR QUALITY

Additional Supplemental Testimony of William Walters, P.E.

These additional Presiding Member's Proposed Decision (PMPD) comments are provided to address revisions necessary to the Conditions of Certification based on the South Coast Air Quality Management District's (SCAQMD or District) Final Determination of Compliance issued on December 1, 2010 (SCAQMD 2010d). Additionally, staff has reviewed the District's comments on staff's Air Quality Supplemental Staff Assessment (SSA) and the PMPD and has provided notes regarding our agreement regarding these comments.

The District's cover letter for the FDOC notes that the applicant has not yet completed all District Rule 212 public notice requirements and that the Permit to Construct for the project cannot be issued until after this 30-day public notice is completed. Specifically, Rule 212 requires that, if emission threshold or health impact triggers are exceeded, the applicant provide public notice of the Executive Officer's intent to grant a Permit to Construct to all addresses located within a one-quarter mile radius of the project. The project exceeds the Volatile Organic Compound (VOC) emission threshold for this public notification requirement. The applicant must provide this public notification to a total of six addresses that are located within a one-quarter mile radius of the project fence line. The District will then review any comments received, and will if necessary prepare a revised FDOC to address these comments. Staff does not believe that any revisions to the District conditions are likely to be necessary, but notes that such changes would impact operating conditions that would not be effective until construction is complete and that such changes could be addressed in a formal project amendment process. Staff has concluded, similar to our finding regarding that the applicant must provide proof of obtaining necessary VOC emission reduction credits prior to issuance of the PTC, this Rule 212 requirement is strictly a District LORS issue and the District will ensure that the notification requirement will be complied with prior to the SCAQMD issuing the Permit to Construct for the project. Therefore, staff has determined that with the issuance of the FDOC and incorporation of these proposed revisions to the Conditions of Certification the project would comply with LORS and would not result in any significant impacts to air quality.

<u>Staff's Review of the SCAQMD's SSA and PMPD Comments</u>

SCAQMD comments on the SSA and PMPD were docketed on December 1, 2010 (SCAQMD 2010e). Staff has reviewed these comments and, with one

minor exception noted below, concurs with these comments. Staff has provided suggested underline/strikeout text as necessary to address these comments where the SCAQMD comments did not provide suggested underline/strikeout corrections and where they were not sufficiently addressed in staff's first PMPD comments filed on November 29, 2010.

SCAQMD Comments on Federal NO_2 Standard. SCAQMD comments that U.S.EPA has issued guidance indicating that the 1-hour NO_2 standard is applicable to federal Prevention of Significance (PSD) projects and that PSPP does not trigger PSD thresholds and does not require a PSD permit. As a result SCAQMD comments further that the new federal NO_2 standard is not applicable to PSPP and that the Energy Commission recently made such a determination in the PMPD for CPV Sentinel Energy Project (Docket No. 07-AFC-3). Staff concurs that this is appropriate in the context of District permitting and Federal Clean Air Act compliance. However, staff also uses the National Ambient Air Quality Standards, including the new federal 1-hour NO_2 standard, as CEQA significance thresholds. Therefore, in this context staff has determined that the project would not create significant NO_2 impacts because the modeling analysis, including the federal 1-hour NO_2 modeling analysis required by staff, found that the project would not create exceedances of any of the current state and federal NO_2 ambient air quality standards. Determination of an ambient air quality standard exceedance for CEQA analysis purposes in this case is not the same thing as a determination of a regulatory exceedance or violation of the federal 1-hour NO_2 standard. Additionally, other agencies such as SCAQMD are not bound to analyze projects using the same CEQA significance criteria as used by Energy Commission staff. Staff believes that the PMPD appropriately provides the distinction of exceedance rather than violation of the standard and notes this issue is related to CEQA impact determination and not regulatory compliance, as provided on the second to last paragraph on Page 10 as follows:

> *The record further shows that, based on the modeling analysis and with implementation of recommended mitigation measures, as adopted in the Conditions of Certification below, project operations will not cause new exceedances of NAAQS, and no significant CEQA impacts will occur. (Ex. 301, p. C.1-25.)*

However, staff would not object if the Committee decided to add additional clarifying text that this finding is strictly a CEQA significance finding and that it is not a required LORS finding.

Staff's PMPD Comments

Staff recommends the following changes to the PMPD to incorporate the FDOC and comments made by SCAQMD.

Page 13:

6. Compliance with LORS

The project is expected to comply with all relevant federal and state LORS.

The SCAQMD issued a Preliminary Determination of Compliance (PDOC) for the PSPP on March 5, 2010, and later provided public notice with a 30 day comment period starting on April 15, 2010. The District then provided a Revised Determination of Compliance (RDOC) on October 21, 2010, that addressed comments received on the PDOC, and then provided an additional 30-day comment period. The District issued ~~will issue~~ a Final Determination of Compliance (FDOC) on December 1, 2010 after resolving issues raised by the public and agency comments. Compliance with all District rules and regulations was demonstrated to the District's satisfaction in the ~~P~~FDOC. The District's ~~P~~FDOC conditions are presented in the Conditions of Certification (**AQ-1** to **AQ-51**) which we hereby adopt.

Staff submitted an official PDOC comment letter on March 24, 2010 and the District's RDOC has adequately addressed Staff's comments and Staff had~~s~~ no additional substantive comments on the RDOC. ~~The FDOC may contain revisions to conditions due to Applicant or third party comments. Staff will provide the revised FDOC findings or Conditions of Certification in a supplement after receipt of the FDOC.~~

Page 14, Findings of Fact #9

9. The South Coast Air Quality Management District~~Mojave Desert Air Quality Management District~~ issued a Final~~Revised~~~~Preliminary~~ Determination of Compliance on December 1 ~~March 5~~, 2010, imposing conditions of compliance on project construction and operation to ensure compliance with District Rules and Regulations. These Rules and Regulations are incorporated into the Conditions of Certification below.

Explanation: This provides additional revision from that provided in staff's first set of PMPD comments to reference the recently received FDOC.

Pages 23 and 24, Condition of Certification AQ-SC11:

AQ-SC11 The project owner shall use one of the following four options to assure that the operation of the emergency engines will not cause an exceedance of the state or federal 1-hour NO_2 ambient air quality standards:

1) The project owner shall provide an air dispersion modeling analysis that demonstrates to Staff's satisfaction that the currently proposed or officially revised worst-case operating emissions would not have the potential to cause exceedances of the state or federal 1-hour NO_2 ambient air quality standards, or

2) The project owner shall procure emergency generator engines that meet ARB Tier 4 standards for NOx emissions (0.5 grams per brake~~break~~ horsepower), or

3) In the event that Tier 4 engines are not available at the time of engine purchase, the project owner shall; a) provide documentation from engine manufacturers that Tier 4 engines are not available; and b) procure emergency engines that have a NOx emissions guarantee of no more than 2.6 grams per brake~~break~~ horsepower, or

4) The project owner shall agree to limit the emergency generator engine testing duration to no more than 30 minutes per event and a testing frequency limited to the minimum required by engine manufacturer.

In no event shall the project owner propose the use of an emergency engine that does not meet the most strict applicable federal or state engine emission limit regulation without a signed waiver from U.S. EPA or ARB as appropriate. The project owner shall justify the date of engine purchase.

Verification: The project owner shall provide to the CPM the air dispersion modeling analysis, if performed, that demonstrates compliance with Part 1) of this Condition at least 30 days prior to purchasing the emergency engine generators for this project, or shall provide documentation to the CPM at least five days prior to purchasing the engine generators that demonstrates how they would comply with Part 2), or Part 3), or Part 4) of this Condition.

Pages 25 and 26, District Condition of Certification AQ-4:

AQ-4 The project owner shall conduct an initial source test(s) for the pollutant(s) identified below.

Pollutant to be Tested	Required Test Method(s)	Averaging Time	Test Location
NOx emissions	District Method 100.1	1 hour	Stack
CO emissions	District Method 100.1	1 hour	Stack
SOx emissions	Approved District method	District approved averaging time	Fuel Sample
VOC emissions	Approved District method	1 hour	Stack
PM10 emissions	Approved District method	District approved averaging time	Stack

The test shall be conducted after AQMD approval of the source test protocol, but no later than 180 days after initial start-up. The AQMD shall be notified of the date and time of the test at least 10 days prior to the test. The test shall be conducted to determine the oxygen levels in the exhaust. In addition, the tests shall measure the fuel flow rate (gallons/hour), and the flue gas flow rate.

The test shall be conducted in accordance with AQMD approved test protocol. The protocol shall be submitted to the AQMD engineer no later than 45 days before the proposed test date and shall be approved by the AQMD before the test commences. The test protocol shall include the proposed operating conditions of the boiler~~turbine~~ during the tests, the identity of the testing lab, a statement from the testing lab certifying that it meets the criteria of Rule 304, and a description of all sampling and analytical procedures.

The test shall be conducted when this equipment is operating at maximum~~, average,~~ and minimum loads.

Verification: The project owner shall provide a source test protocol to the District for approval and CPM for review at least 45 days prior to the first source test. The project owner shall notify the District and the CPM within 10 working days before the execution of the source test required in this Condition. The test shall be conducted within 180 days after initial start-up and the test results shall be submitted to the District and to the CPM within 60 days after test was conducted.

Pages 26 and 27, District Condition of Certification AQ-8:

AQ-8 The project owner shall provide to the AQMD a source test report in accordance with the following specifications:

- Source test results shall be submitted to the AQMD no later than 60 days after the source test was conducted.
- Emission data shall be expressed in terms of concentration (ppmv) corrected to three percent oxygen (dry basis), mass rate (lb/hr), and lb/MMCF. In addition, solid PM emissions, if required to be tested, shall also be reported in terms of grains/DSCF.
- All exhaust flow rate shall be expressed in terms of dry standard cubic feet per minute (DSCFM) and dry actual cubic feet per minute (DACFM).
- All moisture concentration shall be expressed in terms of percent corrected to three percent oxygen.

Source test results shall also include the oxygen levels in the exhaust, fuel flow rate (gallon per hour~~CFH~~), the flue gas temperature.

Verification: None required.

Page 28, District Condition of Certification AQ-13 (note: additional District edits to this conditionhave been added to what was presented in the first set of staff PMPD comments):

AQ-13 The project owner shall limit emission from this equipment as follows:

Contaminant	Emission Limit
PM10	639 lbs in any one year
NOx	709 lbs in any one year
SOx	722 lbs in any one year

~~**Verification**:~~ The project owner shall calculate the yearly~~monthly~~ emissions for NOx, PM10 and SOx using the equation below and the following emission factors: NOx: 1.02 lb/1,000 gal; PM10: 0.92 lb/1,000 gal; and SOx:1.03 lb/1,000 gal.

Yearly Emissions, lb/year = X (E.F.)

where X = yearly fuel usage in 1,000 gal/year and

E.F. = emission factor indicated above.

For the purpose of this Condition, the yearly emission limit shall be defined as a period of 12 consecutive months determined on a rolling basis with a new 12-month period beginning on the first day of each calendar month.

Verification: As part of the Annual Compliance Report, the project owner shall include information demonstrating compliance with the boiler operating emission rates.

Page 29 and 30, District Condition of Certification AQ-21:

AQ-21 This engine shall not be operated more than 200 hours in any one year, which includes no more than 50 hours per year and ~~4.2 hours per month~~ one hour per week for maintenance and testing as required in Rule 1470(c)(2).

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

Page 31, District Condition of Certification AQ-27:

AQ-27 This engine shall not be operated more than 200 hours in any one year, which includes no more than 50 hours per year and ~~4.2 hours per month~~ one hour per week for maintenance and testing as required in Rule 1470(c)(2).

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

Page 33, Equipment Description:

Application No. 506829 and 506833 (Solar Thermal Power Generation~~Ullage, Expansion Tank, Overflow Tank, and HTF Piping~~ Systems)

EQUIPMENT DESCRIPTION:

Solar thermal power generating system no. 1 and 2, each consisting of:

1. Solar parabolic mirrors
2. One ullage system, consisting of distillation columns and pressure vessels vented to activated carbon adsorption system no. 1 and 2 described by a/n 506830 and 506835
3. Eight expansion vessels, each with a capacity of 151,915 gallons, vented to activated carbon adsorption system no. 1 and 2 described by a/n 506830 and 506835
4. Heat transfer fluid (HTF~~htf~~) piping
5. Steam turbine
6. Electrical generator, 250 MW~~mw~~

Page 36, District Condition of Certification AQ-42:

AQ-42 The project owner shall monitor and test the ~~ullage system~~ heat transfer fluid (HTF) on a quarterly basis for HTF contamination in accordance with the procedures outlined in the T~~t~~herminol analytical evaluation guidelines provided by the manufacturer. The ullage system shall be operated whenever the percentage of total contaminants in the HTF sample reaches a maximum of two percent by volume.

Verification: As part of the Annual Compliance Report the project owner shall include a summary of the quarterly HTF test results required by this Condition and a corresponding summary of the periods of HTF ullage system venting operation to show compliance with this Condition.

Pages 37 and 38, District Condition of Certification AQ-43:

AQ-43 The project owner shall measure VOC emissions three-inches above the soil surface on a weekly basis using a flame ionization detector (FID) or photo-ionization detector (PID) or other device approved by the Executive Officer. The project owner shall maintain written records of weekly VOC emissions from the bio-remediation unit during periods when the unit is in operation. The project owner shall submit a written protocol to the Executive Officer to incorporate the proposed monitoring, reporting and recordkeeping requirements for the bio-remediation unit to be reviewed and approved by AQMD staff prior to initial operation of the bio-remediation unit.

a. During operation, if the soil in the bio-remediation unit results in a VOC reading of more than 50 ppmv calibrated as methane and measured 3 inches above the soil surface with a PID, FID, or other AQMD approved device, the bio-remediation unit shall be covered with a minimum of 10-mil plastic sheeting to control VOC emissions.

b. If the soil in the bio-remediation unit registers an organic matter concentration ~~VOC reading~~ of less than 1,000 ppmw~~v calibrated as methane and measured three-inches above the soil surface with a PID, fid, or other AQMD approved device~~, the project owner shall use naturally occurring soil bacteria or enhanced bioremediation procedures to treat the HTF contaminated soil. ~~During operations, the bioremediation unit shall be covered with a minimum of 10-mil plastic sheeting to control VOC emissions.~~

c. If the soil in the bio-remediation unit registers an organic matter concentration ~~VOC reading~~ of greater than or equal to 1,000 ppmw~~v~~ and but less than or equal to 10,000 ppmw~~v~~, the project owner shall use enhanced bio-remediation procedures to treat the HTF contaminated soil using accepted environmental engineering

practices. Soil stockpiles shall be conditioned as necessary through the addition of nutrients, moisture, and air, to maintain conditions suitable for bio-remediation operations. ~~During operations, the bioremediation unit shall be covered with a minimum of 10-mil plastic sheeting to control VOC emissions.~~

d. If the soil in the bio-remediation unit registers a VOC reading of greater than 10,000 ppmw~~v~~, the project owner shall store the contaminated soil in sealed containers while onsite. The project owner shall dispose of the HTF contaminated soil at an off-site facility~~landfill~~ suitable for disposal of such materials.

e. If the bio-remediation operation is not effective after 6~~two~~ months of continuous operation, the project owner shall submit another written protocol to propose an alternate method of soil remediation for approval by the Executive Officer.

Verification: The project owner shall provide a written protocol to incorporate the proposed monitoring, reporting and recordkeeping requirements to the District for approval and CPM for review prior to initial operation of the bio-remediation unit, and shall provide the CPM a summary of the monitoring results and other actions taken to comply with this Condition in the Annual Compliance Report.

Page 38, Equipment Description:

Application No. 506830 and 506835 (Air Pollution Control Systems (Activated Carbon Adsorption System))

EQUIPMENT DESCRIPTION:

Activated carbon adsorption system no. 1 and 2, each with two canisters in series, total capacity 4,000 pounds, venting eight~~the~~ expansion vessels and one ullage system described by a/n 506829 and 506833.

Pages 38 and 39, District Condition of Certification AQ-46:

AQ-46 The project owner shall monitor for breakthrough between the first and second carbon beds while the carbon system is in use using an OVA or other monitoring device as approved by the Executive Officer. Breakthrough shall occur when the OVA or other approved monitoring device shows a VOC concentration of 5 ppmv or greater, measured as methane, downstream of the first carbon bed. The carbon in the first bed shall be replaced with fresh carbon at least five times per month as necessary or at the occurrence of breakthrough, whichever comes first, prior to occurrence of breakthrough in the second carbon bed.

Verification: The project owner shall provide a summary of the carbon bed monitoring data as part of the Annual Compliance Report and shall submit tests to the District as required in this Condition.

Page 39, District Condition of Certification AQ-51:

AQ-51 A written report of the source test results shall be submitted to the Executive Officer within 60 days after the test is completed and shall contain, at a minimum, the VOC concentration, in ppm, at the inlet to the first carbon bed, between the first and second carbon bed, and at the outlet from the second bed, speciated for benzene. The test report shall include the overall control efficiency for the carbon adsorption system.

Verification: A summary of the source test results shall be submitted to the CPM within 60 days, or at the same time as the full test report is submitted to the District if later and allowed by the District, after source test completion.

REFERENCES

SCAQMD 2010d – South Coast Air Quality Management District. Final Determination of Compliance for Palen Solar Power Project, issued and docketed 12/1/2010.

SCAQMD 2010e – South Coast Air Quality Management District. South Coast Air Quality Management District's Comments Air Quality Supplemental Staff Assessment (October 26, 2010) Palen Solar Power Project and South Coast Air Quality Management District's Comments Presiding Member's Proposed Decision (November 2010) Palen Solar Power Project, Section V.B. Air Quality. Docketed 12/1/2010.

DECLARATION OF
Testimony of William Walters, P.E.

I, **William Walters,** declare as follows:

1. I am presently employed by Aspen Environmental Group, a contractor to the California Energy Commission's Siting,Transmission and Environmental Protection Division, as a senior associate in engineering and physical sciences.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the **Additional Staff Testimony** on **Air Quality** for the **Palen Solar Power** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: December 1, 2010 Signed: _____

At: Agoura Hills, California

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APPLICATION FOR CERTIFICATION FOR THE *PALEN SOLAR POWER PLANT PROJECT*

Docket No. 09-AFC-7

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(Revised 8/27/10)

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*indicates change

DECLARATION OF SERVICE

I, **Rhea Moyer**, declare that on **December xx, 2010**, I served and filed copies of the attached, **Energy Commission Staff's Additional Supplemental Air Quality Testimony** dated **December 1, 2010**. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at:
[http://www.energy.ca.gov/sitingcases/solar_millennium_palen]

The documents have been sent to both the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, in the following manner:

(*Check all that Apply*)

FOR SERVICE TO ALL OTHER PARTIES:

_x_ sent electronically to all email addresses on the Proof of Service list;

____ by personal delivery;

_x_ by delivering on this date, for mailing with the United States Postal Service with first-class postage thereon fully prepaid, to the name and address of the person served, for mailing that same day in the ordinary course of business; that the envelope was sealed and placed for collection and mailing on that date to those addresses **NOT** marked "email preferred."

AND

FOR FILING WITH THE ENERGY COMMISSION:

_x_ sending an original paper copy and one electronic copy, mailed and emailed respectively, to the address below (***preferred method***);

OR

____ depositing in the mail an original and 12 paper copies, as follows:

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 09-AFC-7
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512
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I declare under penalty of perjury that the foregoing is true and correct, that I am employed in the county where this mailing occurred, and that I am over the age of 18 years and not a party to the proceeding.

Rhea Moyer

Rhea Moyer

*indicates change