

Memorandum

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To: Commissioner, Robert Weisenmiller. Presiding Member
Commissioner Karen Douglas, Associate Member
Hearing Officer Raoul Renaud

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From: California Energy Commission - Alan Solomon
1516 Ninth Street
Sacramento, CA 95814-5512
Siting Project Manager

Subject: Palen Solar Power Project (09-AFC-7) Air Quality Supplemental Staff Assessment

On October 21, 2010, the South Coast Air Quality Management District published a Revised Determination of Compliance (RDOC) that addressed comments received on the PDOC, and provided an additional 30 day public notice period.

This Supplemental Staff Assessment provides revisions and updates to the Revised Staff Assessment that were necessary to address applicant comments, address the revised conditions in the RDOC prepared by the South Coast Air Quality Management District, and, as necessary, to address new air quality laws, ordinances, regulations, and standards.

cc: Proof of Service List
Docket 09-AFC-7

C.1 – AIR QUALITY

Supplemental Testimony of William Walters, P.E.

C.1.1 SUMMARY OF CONCLUSIONS

The District provided a Revised Determination of Compliance (RDOC) on October 21, 2010 that addressed comments received on the PDOC, and provided an additional 30 day public notice period. This Supplemental Staff Assessment (SSA) provides revisions and updates to the Revised Staff Assessment (RSA) that were necessary to address applicant comments, address the revised conditions in the RDOC prepared by the South Coast Air Quality Management District, and as necessary to address new air quality laws, ordinances, regulations, and standards. California Energy Commission Staff (staff) is not proposing any revisions or updates to Appendix Air-1 - Greenhouse Gas Emissions or the CEQA findings previously made in the RSA for greenhouse gases.

The major revisions included in the RDOC are:

- The District re-analyzed the HTF piping component fugitive VOC emission estimate and determined that the project's emissions exceed the offset threshold for VOC.
- The two ullage, expansion tank, overflow tank, and HTF piping systems are now included as separate permit units and have 12 new permit conditions.
- The bioremediation/land treatment unit is now included as a permit unit and has three new permit conditions.
- The two ullage vent's activated carbon control systems are now included as permit units and have six new permit conditions.
- Permit conditions for the two auxiliary boilers, two emergency generator engines, and two fire pump engines were revised to address comments received on the PDOC.

In total, the RDOC has added 32 conditions, retained seven conditions, revised 12 conditions, and removed four conditions that were in the PDOC. This increases the total number of District conditions from 23 to 51.

Staff concludes that with the applicant's submittal of emission reduction credit source information to meet the District's Volatile Organic Compound offset requirements, as required by AQ-SC9, and the adoption of the conditions of certification in the Revised Staff Analysis (RSA), revised as necessary herein to address applicant comments and revisions from the South Coast Air Quality Management District's (SCAQMD) Revised Determination of Compliance (RDOC), the proposed Palen Solar Power Project would comply with all applicable laws, ordinances, regulations, and standards and would not result in any significant California Environmental Quality Act air quality impacts.

The RDOC is subject to a 30-day public notice period, after which the Final Determination of Compliance will be published by the district. Staff recommends that the

Committee accept this and any party's testimony at the October 27, 2010 evidentiary hearing, but also leave the record open to accept a staff errata document identifying any changes SCAQMD may make to their conditions to address comments received. Staff understands, from communication with SCAQMD staff, that the VOC ERCs now required by SCAQMD will be required to be identified prior to the publication of the FDOC. Therefore, staff will be able to provide that information in the errata document.

(From this point on only areas of the RSA needing revision/update are included in this (SSA) and the substantive revisions are shown in underline/strikeout. For context and clarity the document headings preceding each area of revision and certain areas of text surrounding each area of revision have been included. Additionally, the RSA page numbers for each area of revision are noted before each revision.)

C.1.4 PROPOSED PROJECT

C.1.4.2 ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

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(Pages C.1-17 to -19):

Project Emissions

Project Operation

Stationary Emission Sources

PSPP would consist of two power plant units at the facility, each of which consists of the following equipment and emission estimate bases:

- One 35-MMBtu/hr propane or liquefied petroleum gas (LPG) fired auxiliary boiler used for startup and HTF freeze protection; daily emissions based on 5 hrs/day at 25 percent load and 12 hours per day at full load. Annual emissions based on 5,1105,400 hr/year with 730 hours at full load and 4,380 hours~~duty cycle of 10 percent at full load and 90 percent at 25 percent load.~~
- One 300 hp diesel-fired emergency fire water pump engine; testing one hour test per week, not to exceed 50 hours per year.
- One 2,922 hp diesel-fired emergency generator engine; testing one hour test per week, not to exceed 50 hours per year.
- One two-cell cooling tower; Circulation rate of 6,034 gallons per minute, 2000 milligrams per liter Total Dissolved Solids (TDS), drift eliminator with drift losses of less than or equal to 0.0005 percent, max run time of 24 hr/day and 8,760 hr/year.
- One HTF ullage system; VOC control efficiency of 98 percent, limited to 0.75 lb/hr or 1.5 lb/day, operation is estimated at 2 hours per day maximum and 400 hrs/year.

- HTF piping system. Assumes ~~3,9373,050~~ valves, ~~184~~ (~~strike the "4"~~) pump seals, and ~~4,1827,594~~ connectors, and ~~10~~ pressure relief valves total for both for each units. The HTF piping system fugitive emissions have been revised consistent with the calculation methodology and procedures developed by the SCAQMD¹. SCAQMD is requiring by condition that all of the pressure relief valves (PRVs) either be vented to the expansion tanks or have rupture disks that would eliminate non-upset equipment leaks from the PRVs, so the PRVs are not included in the emission calculations. This revised methodology assumes light liquid emission factors determined with the assumption of an active inspection and maintenance program, as summarized below: recalculated by staff, consistent with the procedures developed by Kern County Air Pollution Control District that consider the properties of the HTF during the daily operation cycle, where it is assumed that for 16 hours per day the HTF in the piping system is consistent with the properties of a light liquid and for 8 hours per day the HTF in the piping system is consistent with the properties of a heavy liquid. The specific emission factors used are as follows:

<u>Piping Component</u>	<u>Light Liquid Emission Factor (lb/hr/source)</u>	<u>U.S.EPA Reference Table</u>	<u>Heavy Liquid Emission Factor (lb/hr/source)</u>	<u>U.S.EPA Reference Table</u>
Valves	5.55E-04	Table 2-9 (100 ppm)	1.90E-05	Table 2-4 (Heavy Oil)
Pump Seals	1.86E-03	Table 2-9 (100 ppm)	5.30E-05	Table 2-12 (Zero Factor)
Flanges/Connectors	1.65E-05	Table 2-12 (Zero Factor)	1.65E-05	Table 2-12 (Zero Factor)
Pressure Relief Valves	9.85E-02	Table 2-5 (<10,000 ppm)	1.90E-05	Table 2-4 (Heavy Oil)

Source: USEPA 1995.

Note: for pressure relief valves the in-service emission factors are for gas service, rather than light liquid service.

<u>Piping Component</u>	<u>Light Liquid Emission Factor (lb/hr/source)</u>	<u>U.S.EPA Reference Table (and Assumptions)</u>
Valves	3.22E-04	Table 2-9 (99% @50 ppm leak rate, 1% @100 ppm leak rate)
Pump Seals	1.06E-03	Table 2-9 (99% @50 ppm leak rate, 1% @100 ppm leak rate)
Flanges/Connectors	2.16E-04	Table 2-9 (99% @50 ppm leak rate, 1% @100 ppm leak rate)

Source: SCAQMD 2010c, USEPA 1995.

~~These emission factors may not assume appropriate control efficiencies for the inspection and maintenance program required by SCAQMD. Staff will update this emission estimate, if necessary, after receipt of the SCAQMD Final Determination of Compliance for this project and further consideration of the effectiveness of the inspection and maintenance program.~~

- One Fuel Depot consisting of one 500 gallon gasoline tank and two 10,000 gallon diesel tanks.

Mobile Emissions Sources

- Staff has included emissions for employee trips, assuming 134 employees per day averaging 95 miles round trip per employee.

¹ The SCAQMD emission factor basis, which staff believes is a reasonable methodology, provides a basis that is somewhat more conservative than the emissions calculation basis provided in the RSA. However, the total emission estimate for the HTF piping system is lower than presented in the RSA due to the reduced number of valves and connectors determined by the applicant since the RSA was published.

- Mobile emissions sources required for operation and maintenance were estimated by the applicant based on vehicle miles traveled (VMT) and operating hours. For example, a mirror washing cycle or event can be completed in three days, which would allow for approximately 78 washing events per year, but it was assumed that washing would only be required once per week during October through March and twice a week during April through September, for a total of 78 washing events per year (AECOM 2010a, DR-AIR-15 and Galati & Blek 2010i, p.7). Each mobile source type has a different basis for emissions estimates as provided in the applicant's revised emission estimate spreadsheets (Galati & Blek 2010i).

The PSPP onsite stationary and onsite and offsite mobile source emissions, totaled for both power units, are estimated and summarized in **Air Quality Tables 8** and **9**.

Air Quality Table 8
PSPP Operations - Maximum Daily Emissions (lbs/day)

	NOx	VOC	CO	PM10	PM2.5	SOx
Onsite Operation Emissions						
Auxiliary Boilers	10.30	4.64	34.84	9.28	9.28	10.48
Emergency Fire Pump Engines	3.77	0.20	3.44	0.20	0.20	0.01
Emergency Generators	58.70	3.09	33.47	1.93	1.93	0.06
Auxiliary Cooling Towers	---	---	---	1.45	1.45	--
HTF Vents	---	3.00	---	---	--	---
HTF Fugitives	---	<u>52.57</u> 92.89	--	--	--	--
Onsite Maintenance Vehicles	0.86	0.09	0.56	310.06	65.76	0.01
Fuel Depot	--	0.45	--	--	--	--
Subtotal of Onsite Emissions	73.63	<u>64.04</u> 104.36	72.31	322.92	78.61	10.56
Offsite Emissions						
Delivery Vehicles	39.16	2.89	11.02	2.95	2.11	0.04
Employee Vehicles	9.06	9.49	90.28	18.70	8.75	0.14
Subtotal of Offsite Emissions	48.22	12.38	101.30	21.65	10.86	0.18
Total Maximum Daily Emissions	121.85	<u>76.42</u> 116.74	173.61	344.57	89.47	10.74

Source: AECOM 2010a, Table E.3-9j (Palen DR Operating Emissions.xlsx), Galati & Blek 2010i, SCAQMD 2010c, and staff estimate for employee vehicles. ~~and HTF fugitives.~~

Air Quality Table 9
PSPP Operations - Maximum Annual Emissions (tons/yr)

	NOx	VOC	CO	PM10	PM2.5	SOx
Onsite Operation Emissions						
Auxiliary Boilers	<u>0.71</u> 0.67	<u>0.32</u> 0.30	<u>2.40</u> 2.27	<u>0.64</u> 0.60	<u>0.64</u> 0.60	<u>0.72</u> 0.68
Emergency Fire Pump Engines	0.09	0.00	0.09	0.00	0.00	0.00
Emergency Generators	1.47	0.08	0.84	0.05	0.05	0.00
Auxiliary Cooling Towers	---	---	---	0.26	0.26	---
HTF Vents	---	0.30	---	---	---	---
HTF Fugitives	---	<u>9.59</u> 16.95	---	---	---	---
Onsite Maintenance Vehicles	0.10	0.01	0.07	31.32	6.64	0.00
Fuel Depot	--	0.004	--	--	--	--
Subtotal of Onsite Emissions	<u>2.37</u> 2.33	<u>10.30</u> 17.74	<u>3.40</u> 3.27	<u>32.27</u> 32.23	<u>7.59</u> 7.55	<u>0.72</u> 0.68
Offsite Emissions						
Delivery Vehicles	1.46	0.11	0.41	0.11	0.08	0.00
Employee Vehicles	1.65	1.73	16.48	3.41	1.60	0.02
Subtotal of Offsite Emissions	3.11	1.84	16.89	3.52	1.68	0.022
Total Maximum Annual Emissions	<u>5.48</u> 5.44	<u>12.14</u> 19.48	<u>20.29</u> 20.16	<u>35.79</u> 35.75	<u>9.27</u> 9.23	<u>0.74</u> 0.70

Source: AECOM 2010a, Table E.3-9g (Palen DR Operating Emissions.xlsx), Galati & Blek 2010i, and SCAQMD 2010c, and staff estimate for employee vehicles. ~~and HTF fugitives.~~

.(Page C.1-26):

Operations Mitigation

Applicant's Proposed Mitigation

Emission Controls

HTF Piping Systems

The HTF piping system is composed of a number of piping components (pump seals, valves, pressure relief vents, flanges, etc.). These components would leak hot HTF that would evaporate and cause VOC emissions. The applicant is proposing maintenance inspections and repair of the piping system to reduce HTF leaks. Specific requirements for the inspection and maintenance (I&M) program have been included in District condition **AQ-33**.

.(Page C.1-27, insert above "Adequacy of Proposed Mitigation"):

Emission Offsets

The District has determined, after a re-analysis of the HTF piping system fugitive VOC emissions, that the total facility emissions of VOC are above the District's offset thresholds and therefore the District is requiring that 68 pounds of VOC emission

reduction credits² (ERCs) be provided to offset the VOC emissions of the project. The applicant has not yet provided information regarding the source of these emission reductions credits, but SCAQMD will not publish the Final Determination of Compliance and will not issue the permit to construct until the applicant has provided this information.

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.(Page C.1-27 and -28):

Adequacy of Proposed Mitigation

Staff concurs with the District's revised preliminary determination that the proposed project's stationary source proposed emission controls/emission levels for criteria pollutants meet regulatory requirements and that the proposed stationary source emission levels are reduced adequately. The applicant will be required to provide the ERCs prior to the publication of the Final Determination of Compliance. However, the District does not require the ~~HTF piping systems or the auxiliary cooling towers~~ to be permitted as stationary sources, so staff has included a conditions (AQ-SC10) to formalize the applicant's stipulated ~~VOC and PM10 mitigation measures, respectively, for these two~~ for this emission sources.

Staff also concurs with the District's revised determination that VOC offsets are required for the project to comply with the District's New Source Review rule. VOC ERCs are the most abundant type of ERC in the SCAQMD offset bank and staff believes that the applicant should be able to obtain these ERCs in a timely manner. However, consistent with staff's findings for other projects that need District offsets, staff's final air quality impact findings for this project are tentative, pending the applicant's submittal of its ERC source, which can be purchased ERCs or right to purchase contracts for ERCs.

While staff agrees that VOC offsets are needed for LORS compliance, staff does not believe that VOC offsets are required as a CEQA mitigation, consistent with staff's findings of other recent thermal solar projects, because: 1) the project is located in a federal ozone attainment area and the project's relatively low level of VOC emissions would not impact that status; 2) the project will enable indirect emission reductions from fossil fuel fired power plants; and 3) the project is implementing Best Available Control Technology for the stationary VOC emission sources and staff has recommended additional mitigation (AQ-SC6) to mitigate the operating vehicles exhaust emissions.

Additionally, staff generally agrees that the applicant's proposed fugitive dust mitigation measures would provide adequate fugitive dust emission control.

Staff Proposed Mitigation

As mentioned earlier in the discussions of the ozone and PM10 impacts, staff concludes that the proposed project's direct stationary source ozone precursor and PM10 emissions are minimal, but when combined with the maintenance vehicles emissions could be

² SCAQMD emission reduction credits are in the units of lbs/day, rather than tons/year or tons/quarter as are used for most other air districts within the State of California. The requirement of 68 lbs/day is equivalent to 12.41 tons/year, which is greater than the project's operating VOC emissions of 12.14 tons/year, including the onsite non-stationary source emissions and the offsite emissions.

significant. Additionally, staff believes that a solar renewable project, which would have a 30-year life in a setting likely to continue to be impacted by both local and upwind emission sources, should address its contribution to the potentially ongoing nonattainment of the PM10 and ozone standards. Staff concludes that the applicant's proposed mitigation measures, that mirror staff's current mitigation requirements for other large solar projects, would adequately mitigate the proposed project's stationary source, mobile equipment, and fugitive dust emissions. Therefore, staff recommends the operating mitigation be formalized, with minor modifications to meet current staff recommendations, in staff Conditions of Certification **AQ-SC6** and **AQ-SC7**.

Staff is also proposing Condition of Certification **AQ-SC8** to ensure that the Energy Commission license is amended as necessary to incorporate changes to the air quality permits.

Finally, staff is recommending ~~an~~ two additional conditions, ~~one each for the HTF piping systems and for the auxiliary cooling towers,~~ two operating stationary emission sources that are not included in the SCAQMD permit. ~~Proposed Condition of Certification **AQ-SC9** would require that an HTF piping component inspection and maintenance plan be prepared and followed to reduce leakage of HTF from the piping components³.~~ Proposed Condition of Certification **AQ-SC10** would require that the proposed cooling towers have high efficiency mist eliminators and require the applicant to test and control recirculating water total dissolved solids content to reduce particulate emissions from the cooling towers.

Additionally, staff has recommended a staff condition (**AQ-SC9**) that requires the project owner to submit the VOC ERC source information, submit formal requests to change the ERC source list, and submit documentation of the surrender of the ERCs in compliance with District rules.

Staff has determined that the proposed emission controls and emission levels, along with the applicant proposed and staff recommended emission mitigation measures, would mitigate all proposed project air quality impacts to less than significant pursuant to CEQA.

Staff has considered the minority population surrounding the site (see **Socioeconomics Figure 1**). Since the proposed project's direct air quality impacts have been reduced to less than significant, there is no environmental justice issue for air quality.

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C.1.12 COMPLIANCE WITH LORS

The South Coast Air Quality Management District (SCAQMD or District) issued a Preliminary Determination of Compliance (PDOC) for the PSPP on March 5, 2010 (SCAQMD 2010a), and later provided public notice with a 30 day comment period

³ Please note that this condition will be revised in a supplement to address consistency with other solar projects now being licensed and the potential that the SCAQMD may add a condition for HTF piping component inspection and maintenance in its Final Determination of Compliance.

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 provided an additional 30 day public notice period. The District will issue a Final Determination of Compliance (FDOC) after resolving any additional issues raised by the public and agency comments. Compliance with all District rules and regulations was demonstrated to the District's satisfaction in the ~~PR~~RDOC. The District's ~~PR~~RDOC conditions are presented in the Conditions of Certification (**AQ-1 to AQ-5123**).

Staff submitted an official PDOC comment letter on March 24, 2010 (CEC 2010b) and the District's RDOC has adequately addressed staff's comments and staff has no additional substantive comments on the RDOC⁴.~~expects that t~~ The FDOC may~~will~~ contain revisions to conditions due to ~~Energy Commission,~~ applicant⁵, or third party comments, and staff will provide the revised FDOC findings or conditions of certification in a supplement after receipt of the FDOC.

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C.1.12.3 LOCAL

The District rules and regulations specify the emissions control and offset requirements for new sources such as the PSPP. Best Available Control Technology would be implemented, and emission reduction credits (ERCs) are not required to offset the proposed project's emissions by District rules and regulations based on the permitted stationary source emission levels for the proposed project. Compliance with the District's new source requirements would ensure that the proposed project would be consistent with the strategies and future emissions anticipated under the District's air quality attainment and maintenance plans.

The applicant provided an air quality permit application to the SCAQMD and the District issued a PDOC on March 5, 2010 (SCAQMD 2010a), and a Revised Determination of Compliance (RDOC) on October 22, 2010 (SCAQMD 2010c). The PDOC states that the proposed project is expected to comply with all applicable District rules and regulations. The DOC evaluates whether and under what conditions the proposed project would comply with the District's applicable rules and regulations, as described below.

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Regulation IX – Standards of Performance for New Stationary Sources

Rule 900 – Standard of Performance For New Stationary Source (NSPS)

This rule incorporates the Federal NSPS (40 CFR 60) rules by reference. The proposed boilers are subject to subpart Dc. The District conditions would ensure compliance with the requirements of this rule.

⁴ Staff has addressed a few minor topographical issues in the RDOC in the conditions provided herein and has provided a list of those topographical issues to SCAQMD.

⁵ It is staff's understanding that the applicant provided an application for a gasoline tank, which is not covered in the RDOC, so it seems likely that additional District conditions for the gasoline tank will be included in the FDOC.

The proposed Tier 2 and Tier 3 engines meet the current emission limit requirements of NSPS Subpart IIII. The exact model and size of the engines are only estimated at this time and it is uncertain exactly when the emergency engines would be purchased and whether Tier 4 engine emission limits may apply at that time. So, staff has added a requirement to the verification of District Condition of Certification (**AQ-1917** and **AQ-2522**) to require the applicant to provide documentation that demonstrates that the engines purchased meet the appropriate NSPS standards for new engines at the time of purchase.

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Regulation XI – Source Specific Standards

Rule 1166 – Volatile Organic Compound Emissions from Decontamination of Soil

This rule sets requirements for the VOC emissions from the handling and decontamination activities of VOC contaminated soils. The applicant is proposing bioremediation (also referred as land farming) of HTF-contaminated soils for the soil decontamination plan. At ambient conditions, the HTF has a very low vapor pressure at ambient temperature, and consequently the VOC emissions from this operation are expected to be negligible. The PSPP would be required to: 1) submit a mitigation plan for approval to excavate the HTF contaminated soils; 2) implement VOC-contaminated soil decontamination measures, as approved by the Executive Officer in writing, at the bioremediation area. The District has included conditions in the RDOC (AQ-43 to -45) to ensure compliance with this rule., and obtain a permit to construct and operate to comply with this rule.

Regulation XIII – New Source Review

Rule 1303 – Requirements

This rule requires implementation of BACT for a new emissions unit. Each of PSPP's equipment would employ current BACT. ~~Offsets are not required for the proposed project since emissions for all pollutants would be less than the applicable offset threshold exemption levels shown in Rule 1304 (d), Table A.~~

The District re-analyzed the HTF piping component fugitive VOC emissions for the project and found that the revised VOC emission estimate would cause the project's VOC emissions to exceed the offset threshold exemption levels shown in Rule 1304 (d), Table A. The District has determined that a total of 68 lbs/day of VOC ERCs are necessary to offset the project's VOC emissions. Offsets are not required by the District for the other criteria pollutants that have been determined to have emissions below the threshold exemption levels.

Modeling is required if emissions of NOx, CO, and PM10 exceed the emission rates specified in Appendix A, Table A-1. The emissions for PSPP have not been determined to exceed these thresholds; therefore, modeling requirements do not apply.

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(Page C.1-52):

C.1.15 MITIGATION MEASURES/ PROPOSED CONDITIONS OF CERTIFICATION

C.1.15.1 STAFF CONDITIONS OF CERTIFICATION

The following staff conditions have been revised from those presented in the Revised Staff Analysis. Condition **AQ-SC9** is no longer necessary due to SCAQMD adding a condition requiring a leak detection and repair program for the facility (**AQ-33**). A new condition **AQ-SC9** has been added to require that the applicant identify its VOC emission reduction credit sources, request any revisions to those sources, and provide copies of the surrendered credits to the CPM prior to site operation. Condition **AQ-SC11** has been revised to address applicant comments, as provided in staff's analysis docketed on September 29, 2010 (CEC 2010h).

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(Page C.1-59):

~~**AQ-SC9** The project owner shall establish an inspection and maintenance program to determine, repair, and log leaks in the HTF piping network and expansion tanks. Inspection and maintenance program and documentation shall be available to the CPM upon request.~~

~~**Verification:** The project owner shall establish an inspection and maintenance that that at a minimum includes the following:~~

- ~~A. All pumps, compressors and pressure relief devices (pressure relief valves or rupture disks) shall be electronically, audio, or visually inspected once every operating period.~~
- ~~B. All accessible valves, fittings, pressure relief devices (PRDs), hatches, pumps, compressors, etc. shall be inspected quarterly using a leak detection device such as a Foxboro OVA 108 calibrated for methane.~~
- ~~C. VOC leaks greater than 100 ppmv shall be tagged (with date and concentration) and repaired within seven calendar days of detection.~~
- ~~D. VOC leaks greater than 10,000 ppmv shall be tagged and repaired within 24 hours of detection.~~
- ~~E. The project owner shall maintain a log of all VOC leaks exceeding 10,000 ppmv, including location, component type, and repair made.~~
- ~~F. The project owner shall maintain record of the amount of HTF replaced on a monthly basis for a period of five years.~~
- ~~G. Any detected leak exceeding 100 ppmv and not repaired in 7 days and 10,000 ppmv not repaired within 24 hours shall constitute a violation of the District's Authority to Construct (ATC)/Permit to Operate (PTO).~~
- ~~H. Pressure sensing equipment shall be installed that will be capable of sensing a major rupture or spill within the HTF network.~~

~~The inspection and maintenance plan shall be submitted to the CPM for review and approval at least 30 days before taking delivery of the HTF. The project owner shall~~

~~make the site available for inspection of HTF piping Inspection and Maintenance Program records and HTF system equipment by representatives of the District, ARB, and the Energy Commission.~~

AQ-SC9 The project owner shall provide a list of the proposed VOC emission reduction credit (ERC) sources that total at least 68 pounds per day, shall submit requests to modify this list, and shall submit documentation confirming that the ERCs have been surrendered as required by South Coast Air Quality Management District rules.

Verification: The project owner shall provide to the CPM the following:

- A. The list of proposed emission reduction credit sources, with the amount of reduction, the location of reduction, the method of reduction and date of reduction prior to initiating construction.
- B. Documentation prior to the start of operation that demonstrates the emission reduction credits have been surrendered in a manner and timeframe that complies with District rules.
- C. Any requests to modify the list of emission reduction credits shall be provided no later than at least 30 days prior to their surrender.

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(Page C.1-60 to -69):

Staff Condition for Project Alternatives

AQ-SC11 The project owner shall use one of the following four options to assure~~confirm~~ that the operation of the emergency engines will not cause an exceedance of the state or federal 1-hour NO₂ ambient air quality standards by either of the following methods:

- 1) The project owner~~applicant~~ shall~~will~~ 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 NO₂ ambient air quality standards, or
- 2) The project owner~~applicant~~ shall~~will~~ procure emergency generator engines that meet ARB Tier 4 standards for NO_x emissions (0.5 grams per 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 NO_x emissions guarantee of no more than 2.6 grams per 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 5 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.

C.1.15.2 DISTRICT CONDITIONS

District Revised Determination of Compliance Conditions (SCAQMD 2010c)

The following district conditions have been revised from those presented in the Revised Staff Analysis to incorporate the revisions in the Revised Determination of Compliance (SCAQMD 2010c). For clarity all of the District conditions are presented with the revisions and additions shown in strikeout/underline. References below to the term "Executive Officer" apply to the South Coast AQMD.

Standard Conditions

Standard conditions **AQ-1** and **AQ-2** apply to all permitted equipment.

AQ-1 Operation of this equipment shall be conducted in accordance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.

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.

AQ-2 This equipment shall be properly maintained and kept in good operating condition at all times.

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.

Application No. 506828 and 506834 (Two 35 MMBtu/hr LPG-fired Auxiliary Boilers)

EQUIPMENT DESCRIPTION:

BOILER, AUXILLIARY STEAM, NEBRASKA, MODEL NB-201D-45-SH, 35 MMBTU/HR, WATER TUBE, PROPANE FIRED, 29,000 LB/HR STEAM AT 165 PSIG, 480 DEGREES FAHRENHEIT, EQUIPPED WITH A CB NATCOM, MODEL NO. ~~(TBD)~~P-37-G-22-1117 ULTRA-LOW NO_x RAPID MIX BURNER.

AQ-3 This equipment shall be fired exclusively with ~~propane~~ liquefied petroleum gas (LPG) which meets the requirements of AQMD Rule 431.1 and the standards specified in CCR Title 13, Section 2292.6 for California motor vehicles.

Verification: The project owner shall maintain records of the ~~propane~~/LPG deliveries and specifications onsite for a period of ~~three~~two years and shall make the site available

for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

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 to determine the oxygen levels in the exhaust. In addition, the tests shall measure the fuel flow rate (CFH), 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 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.

AQ-5 The project owner shall limit the fuel usage to no more than ~~393 mmcf~~ 698,087 gallons in any one year. For the purpose of this condition, one year shall be defined as a period of twelve (12) consecutive months determined on a rolling basis with a new 12-month period beginning on the first day of each calendar month.

For the purpose of this condition, fuel usage shall be defined as the total propane usage of a single boiler. The project owner shall maintain records in a manner approved by the District to demonstrate compliance with this condition.

Verification: The project owner shall submit records required by this condition in the Annual Compliance Report, including the monthly start and end readings of the fuel flow meter (**AQ-67**).

AQ-6 The project owner shall limit the fuel usage to no more than 58,174 gallons in any one month. For the purpose of this condition, fuel usage shall be defined as the total propane usage of a single boiler. The project owner shall maintain records in a manner approved by the District to demonstrate compliance with this condition.

Verification: The project owner shall submit to the CPM the record of boiler fuel usage demonstrating compliance with this condition as part of the Annual Compliance Report.

AQ-67 The project owner shall install and maintain a(n) flow meter to accurately indicate the fuel usage being supplied to the boiler. The project owner shall also install and maintain a device to continuously record the parameter being measured.

Verification: At least 30 days prior to the installation of the boiler, the project owner shall provide the District and the CPM the specification of the flow meter.

AQ-78 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 3% 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 3% oxygen.

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

Verification: None required.

AQ-9 The NO_x emissions from this equipment shall not exceed 9 ppmv, measured over 60 minute averaging time period at 3% O₂.

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

AQ-10 The CO emissions from this equipment shall not exceed 50 ppmv, measured over 60 minute averaging time period at 3% O₂.

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

AQ-811 The 9 PPM NO_x emission limits shall not apply during start-up and shutdown periods. Start-up and shutdown periods each shall not exceed 15 minutes. Written records of start-ups and shutdowns shall be maintained and made available upon request from the Executive Officer.

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

AQ-912 The 50 PPM CO emission limits shall not apply during start-up and shutdown periods. Start-up and shutdown periods each shall not exceed 15 minutes. Written records of start-ups and shutdowns shall be maintained and made available upon request from the Executive Officer.

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

AQ-4013 The project owner shall limit emission from this equipment as follows:

Contaminant	Emission Limit
PM10	569 lbs/year <u>639 lbs in any one year</u>
NO _x	632 lbs/year <u>709 lbs in any one year</u>
SO _x	283 lbs/year <u>722 lbs in any one year</u>
VOC	<u>284 lbs/year</u>

The project owner shall calculate the monthly emissions for ~~NO_x~~VOC, PM10 and SO_x using the equation below and the following emission factors: NO_x: 1.027 lb/mmcf1,000 gal; VOC: 0.57 lb/mmcf; PM10: 4.15-0.92 lb/mmcf1,000 gal; and SO_x: 1.030 lb/mmcf1,000 gal.

Yearly Emissions, lb/year = X (E.F.)
where X = yearly fuel usage in mmcf1,000 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 twelve (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.

AQ-14 The project owner shall limit emission from this equipment as follows:

<u>Contaminant</u>	<u>Emission Limit</u>
PM10	53 lbs in any one month
NOx	59 lbs in any one month
SOx	60 lbs in any one month
VOC	27 lbs in any one month

The project owner shall calculate the monthly emissions for NOx, VOC, PM10 and SOx using the equation below and the following emission factors: NOx: 1.02 lb/1,000 gal; VOC: 0.46 lb/1,000 gal; PM10: 0.92 lb/1,000 gal; and SOx: 1.03 lb/1,000 gal.

Monthly Emissions, lb/month = X (E.F.)
 where X = monthly fuel usage in 1,000 gal/month and E.F. = emission factor indicated above.

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

AQ-4415 The project owner shall limit the annual operation of this equipment to no greater than ~~5,000~~ 5,110 hours in any one year.

Verification: The project owner shall submit to the CPM the boiler hours of use records demonstrating compliance with this condition as part of the Annual ~~Compliance~~ Operation Report.

~~**AQ-12** The project owner shall limit the fuel usage to no more than 172 mmcf in any one calendar year. The project owner shall maintain records in a manner approved by the District to demonstrate compliance with this condition.~~

~~**Verification:** The project owner shall submit records required by this condition in the Annual Compliance Report, including **a photograph showing the annual reading of flow meter.** The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.~~

AQ-16 The boiler shall not be operated at loads of less than 25% except during initial start-up and shutdown.

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

Application No. 506831 and 506836 (Two Emergency Fire Pump Engines)

EQUIPMENT DESCRIPTION:

INTERNAL COMBUSTION ENGINE, EMERGENCY, 300 BHP, DIESEL FUELED, CATERPILLAR, MODEL NO. 9CPXL08.8ESK, LEAN BURN, FOUR CYCLE, TURBOCHARGED AND AFTERCOOLED, DRIVING A FIRE PUMP.

AQ-4517 The project owner shall install and maintain a(n) non-resettable totalizing fuel meter to accurately indicate the fuel usage of the engine.

Verification: At least 30 days prior to the installation of the engine, the project owner shall provide the District and the CPM the specification of the fuel meter.

AQ-4618 The project owner shall only use diesel fuel containing sulfur less than or equal to 15 ppm by weight.

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

AQ-19 This equipment shall comply with Rule 431.2 and 1470.

Verification: The project owner shall submit the engine specifications at least 30 days prior to purchasing the engines for review and approval demonstrating that the engines meet NSPS and ARB ATCM emission limit requirements at the time of engine purchase, and also meets the emission limit requirements of Rule 1470. The project owner shall submit records demonstrating compliance with the engine use and sulfur content limitations of conditions **AQ-21** and **AQ-18** in the Annual Compliance Report, including a photograph showing the annual reading of engine hours.

AQ-1420 ~~The project owner shall install and maintain a(n) An operational non-resettable elapsed-totalizing time meter shall be installed and maintained to accurately indicate the engine elapsed operating time of the engine.~~

Verification: At least 30 days prior to the installation of the engine, the project owner shall provide the District and the CPM the specification of the hour meter.

AQ-1321 ~~The project owner shall limit the operating time to no-This engine shall not be operated more than 199.99 200 hours in any one year. For the purposes of this condition, the operating time is inclusive of time allotted for maintenance and testing, which includes no more than 50 hours per year and 4.2 hours per month 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.

AQ-17 ~~The project owner shall operate and maintain this equipment according to the following requirements:~~

- ~~a. This equipment shall only operate if utility electricity is not available.~~
- ~~b. This equipment shall only be operated for the primary purpose of providing a backup source of power to drive an emergency fire pump.~~
- ~~c. This equipment shall only be operated for maintenance and testing, not to exceed 50 hours in any one year.~~
- ~~d. This equipment shall only be operated under limited circumstances under a Demand Response Program (DRP).~~
- ~~e. An engine operating log shall be kept in writing, listing the date of operation, the elapsed time, in hours, and the reason for operation. The log~~

shall be maintained for a minimum of 5 years and made available for AQMD personnel upon request.

- f. ~~The project owner shall keep records in a manner approved by the Executive Officer, for the date of operation, the elapsed time, in hours, and the reason for operation of the engine.~~

Verification: ~~The project owner shall submit the engine specifications at least 30 days prior to purchasing the engines for review and approval demonstrating that the engines meet NSPS and ARB ATCM emission limit requirements at the time of engine purchase. The project owner shall submit records required by this condition that demonstrating compliance with the engine use and sulfur content limitations of conditions **AQ-13** and **AQ-16** and the engine limitations of this condition in the Annual Compliance Report, including **a photograph showing the annual reading of engine hours**. 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-22 The project owner shall keep a log of engine operations documenting the total time the engine is operated each month and the specific reason for operation as:

- a. Emergency use
- b. Maintenance and testing
- c. Other (be specific)

In addition, for each time the engine is manually started, the log shall include the date of engine operation, the specific reason for operation, and the totalizing hour meter reading (in hours and tenths of hours) at the beginning and the end of the operation. On or before January 15th of each year, the project owner shall record in the engine operating log:

- a. The total hours of engine operation for the previous calendar year, and
- b. The total hours of engine operation for maintenance and testing for the previous calendar year

Engine operation log(s) shall be retained on site for a minimum of three calendar years and shall be made available to the Executive Officer or representative upon request.

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.

AQ-23 This equipment shall comply with the following BACT emission limits.

<u>Contaminant</u>	<u>Emission Limit (gm/bhp-hr)</u>
<u>NOx + VOC</u>	<u>3.0</u>
<u>CO</u>	<u>2.6</u>
<u>PM10</u>	<u>0.15</u>

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

Application Nos. TBD508665 and 508667 (Two Emergency Electrical Generator Engines)

EQUIPMENT DESCRIPTION:

INTERNAL COMBUSTION ENGINE, EMERGENCY, 2,922 BHP, CUMMINS, DIESEL FUELED, LEAN BURN, FOUR CYCLE, MODEL NO. QSK60-G6, TURBOCHARGED AND AFTERCOOLED, DRIVING AN ELECTRICAL GENERATOR RATED AT 2.18 MW.

AQ-2024 The project owner shall install and maintain a(n) non-resettable totalizing fuel meter to accurately indicate the fuel usage of the engine.

Verification: At least 30 days prior to the installation of the engine, the project owner shall provide the District and the CPM the specification of the fuel meter.

AQ-25 This equipment shall comply with Rule 431.2 and 1470.

Verification: The project owner shall submit the engine specifications at least 30 days prior to purchasing the engines for review and approval demonstrating that the engines meet NSPS and ARB ATCM emission limit requirements at the time of engine purchase, and also meets the emission limit requirements of Rule 1470. The project owner shall submit records demonstrating compliance with the engine use and sulfur content limitations of conditions **AQ-21** and **AQ-18** in the Annual Compliance Report, including a photograph showing the annual reading of engine hours.

AQ-1926 ~~The project owner shall install and maintain a(n) An operational non-resettable elapsed totalizing time meter shall be installed and maintained to accurately indicate the engine elapsed operating time of the engine.~~

Verification: At least 30 days prior to the installation of the engine, the project owner shall provide the District and the CPM the specification of the hour meter.

AQ-1827 ~~The project owner shall limit the operating time to no~~ This engine shall not be operated more than 199.99-200 hours in any one year. For the purposes of this condition, the operating time is inclusive of time allotted for maintenance and testing, which includes no more than 50 hours per year and 4.2 hours per month 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.

AQ-21 ~~The project owner shall only use diesel fuel containing sulfur less than or equal to 15 ppm by weight.~~

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

~~**AQ-22** The project owner shall operate and maintain this equipment according to the following requirements:~~

- ~~a. This equipment shall only operate if utility electricity is not available.~~
- ~~b. This equipment shall only be operated for the primary purpose of providing a backup source of power to drive an emergency electrical generator.~~
- ~~c. This equipment shall only be operated for maintenance and testing, not to exceed 50 hours in any one year.~~
- ~~d. This equipment shall only be operated under limited circumstances under a Demand Response Program (DRP).~~
- ~~e. An engine operating log shall be kept in writing, listing the date of operation, the elapsed time, in hours, and the reason for operation. The log shall be maintained for a minimum of 5 years and made available for AQMD personnel upon request.~~
- ~~f. The project owner shall keep records in a manner approved by the Executive Officer, for the date of operation, the elapsed time, in hours, and the reason for operation of the engine.~~

~~**Verification:** The project owner shall submit the engine specifications at least 30 days prior to purchasing the engines for review and approval demonstrating that the engines meet NSPS and ARB ATCM emission limit requirements at the time of engine purchase. The project owner shall submit records required by this condition that demonstrating compliance with the engine use and sulfur content limitations of conditions **AQ-18** and **AQ-21** and the engine limitations of this condition in the Annual Compliance Report, including a **photograph showing the annual reading of engine hours**. 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-28** Operation beyond the allotted time for engine maintenance and testing shall be allowed only in the event of a loss of grid power or up to 30 minutes prior to a rotating outage, provided that the utility distribution company has ordered rotating outages in the control area where the engine is located or has indicated that it expects to issue such an order at a certain time, and the engine is located in a utility service block that is subject to the rotating outage. Engine operation shall be terminated immediately after the utility distribution company advises that a rotating outage is no longer imminent or in effect.~~

~~**Verification:** The project owner shall submit to the CPM the specific reason for operation of the emergency generator engine as part of the Annual Compliance Report, and the project owner shall submit to the CPM the hours of emergency generator engine operation as part of the Annual Compliance Report.~~

~~**AQ-29** This engine shall not be used as part of an interruptible service contract in which a facility receives a payment or reduced rates in return for reducing electric load on the grid when requested by the utility or the grid operator.~~

~~**Verification:** The project owner shall submit to the CPM the specific reason for operation of the emergency generator engine as part of the Annual Compliance Report,~~

and 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-30 The project owner shall keep a log of engine operations documenting the total time the engine is operated each month and the specific reason for operation as:

- a. Emergency use
- b. Maintenance and testing
- c. Other (be specific)

In addition, for each time the engine is manually started, the log shall include the date of engine operation, the specific reason for operation, and the totalizing hour meter reading (in hours and tenths of hours) at the beginning and the end of the operation. On or before January 15th of each year, the project owner shall record in the engine operating log:

- a. The total hours of engine operation for the previous calendar year, and
- b. The total hours of engine operation for maintenance and testing for the previous calendar year

Engine operation log(s) shall be retained on site for a minimum of three calendar years and shall be made available to the Executive Officer or representative upon request.

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.

AQ-31 This equipment shall comply with the following BACT emission limits.

<u>Contaminant</u>	<u>Emission Limit (gm/bhp-hr)</u>
<u>NOx + VOC</u>	<u>4.8</u>
<u>CO</u>	<u>2.6</u>
<u>PM10</u>	<u>0.15</u>

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

Application No. 506829 and 506833 (Ullage, Expansion Tank, Overflow Tank, and HTF Piping Systems~~Two HTF Ullage Vent Control 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
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) PIPING
5. STEAM TURBINE
6. ELECTRICAL GENERATOR, 250 MW

STORAGE TANK, HEAT TRANSFER FLUID, 15,900 GALLONS, HEIGHT: 22 FEET; DIAMETER: 12 FEET, VENTED TO AN ACTIVATED CARBON ADSORPTION SYSTEM WITH TWO CANISTERS IN SERIES, CAPACITY: 2,000 POUNDS.

AQ-32 The HTF expansion vessels shall be vented to the activated carbon adsorption system no. 1 and no. 2, which is in full operation and which has been issued a permits to construct under a/n 506830 and 506835, respectively.

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.

AQ-33 The project owner shall develop and implement a comprehensive inspection and maintenance (I&M) program to determine, repair or replace, and report leaks in the HTF piping network and expansion vessels. Such I&M program shall be submitted to the Executive Officer for approval no later than 180 days from the issuance of a permit to construct for this equipment. I&M program records and as well as any related records shall be kept on file for a period of 3 years and be made available to the Executive Officer upon request. In addition, the project owner shall submit a protocol to the Executive Officer within the first 60 days of full operation describing the methodology to be used to perform the following tasks:

- a. All pumps connectors, and pressure relief valves (PRVs) and associated rupture disks shall be electronically, visually or by audio, inspected once every operating day.
- b. All accessible valves, connectors, and PRV's (including rupture disks) shall be inspected quarterly using an AQMD Rule 1173 approved leak detection device calibrated for methane.
- c. VOC leaks greater than 100 ppmv shall be recorded and repaired or replaced within 7 days of detection.
- d. VOC leaks greater than 10,000 ppmv shall be recorded and repaired or replaced within 24 hours of detection.
- e. The project owner shall maintain written records of all VOC leaks exceeding 100 ppmv. The records shall indicate the location of the leak, the type of leak, and the repair(s) or replacement made. The records shall be kept on

file for a period of 3 years and shall be made available to the Executive Officer upon request.

- f. Pressure-sensing equipment shall be installed and operated which will be capable of detecting a major leak, rupture or spill within the HTF network.

Verification: The project owner shall submit copies of the I&M program plan and protocol to the CPM for review at the same time when they submitted, in compliance with the timeframe requirements of this condition, to the District for approval. The project owner shall submit information demonstrating compliance with the substantive and recordkeeping provisions of this condition during facility operation in the Annual Compliance Report.

AQ-34 The project owner shall maintain written records of the amount of heat transfer fluid (HTF) replaced on a monthly basis. Such records shall be kept on file for a period of 3 years and shall be made available to the Executive Officer upon request.

Verification: The project owner shall provide the amount heat transfer fluid (HTF) replaced each year in the Annual Compliance Report. 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-35 The following component count shall be used to determine the fugitive VOC emissions.

<u>Equipment</u>	<u>Count (per unit)</u>
<u>Valves</u>	<u>1,969</u>
<u>Pump Seals</u>	<u>9</u>
<u>Connectors</u>	<u>2,091</u>

The project owner shall provide AQMD with a final component count within 90 days of completion of construction.

Verification: The project owner shall provide the District and the CPM the final HTF piping component count within 90 days of completion of construction, and shall keep a record of changes in the component count in the inspection and maintenance program documentation kept at the site.

AQ-36 All expansion vessels shall be kept closed except during maintenance, inspection, repair or replacement.

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.

AQ-37 This equipment shall be maintained and operated according to manufacturer's specification to ensure compliance with applicable AQMD, state, and federal rules and regulations.

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.

AQ-38 Written records shall be used to demonstrate compliance with all applicable AQMD, state, or federal rules and regulations, including records of any incidental or supporting operational data needed to justify findings.

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

AQ-39 The emissions from the ullage system, including all fugitives shall not exceed the following limits:

<u>Compound</u>	<u>Emission Limits (per unit)</u>	
	<u>lbs/month</u>	<u>tons/year</u>
<u>Volatile Organic Compounds (VOC)</u>	<u>824.40</u>	<u>4.95</u>

Compliance with the maximum monthly emission limit shall be verified by the project owner each month the source is operated. Compliance with the maximum monthly emission limit shall be verified using appropriate operational data and recordkeeping to fully document the maximum monthly emission rate. Written records of such documentation of compliance shall be retained for a period of 3 years and made available to the Executive Officer upon request.

Verification: As part of the Annual Compliance Report the project owner shall include information on operating emission rates to demonstrate compliance with 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-40 The expansion tank shall only be vented to the atmosphere through the carbon adsorption system issued a permit to construct under a/n 506830 (506835). In no event shall the ullage system be operated for more than 400 hours in any one year. The project owner shall maintain written records of elapsed operational time of the ullage system and such records shall be made available to the Executive Officer upon request.

Verification: As part of the Annual Compliance Report the project owner shall include information on operating hours of the ullage system to demonstrate compliance with 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-41 The project owner shall ensure that all pressure relief valves (PRVs) which vent to the atmosphere shall be equipped with rupture disks.

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

AQ-42 The project owner shall monitor and test the ullage system on a quarterly basis for HTF contamination in accordance with the procedures outlined in the

therminol 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 2 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.

Application No. 506827 (Bio-Remediation (Land Treatment) Unit)

EQUIPMENT DESCRIPTION:

SOIL BIO-REMEDICATION (LAND TREATMENT) UNIT, CONSISTING OF:

1. BIO-REMEDICATION ALDN FARM, LENGTH: 800 FEET; WIDTH 200 FEET
2. IRRIGATION SYSTEM FOR BIO-REMEDICATION OPERATIONS
3. BIO-REMEDICATION FERTILIZER AND ASSOCIATED COMPOUNDS

AQ-43 The project owner shall measure VOC emissions 3 inches above the soil surface 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. If the soil in the bio-remediation unit registers a VOC reading of less than 1,000 ppmv calibrated as methane and measured 3 inches above the soil surface with a PID, fid, or other AQMD approved device, the project owner shall use naturally occurring soil bacteria 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.
- b. If the soil in the bioremediation unit registers a VOC reading of greater than or equal to 1,000 ppmv and but less than or equal to 10,000 ppmv, 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.
- c. If the soil in the bioremediation unit registers a VOC reading of greater than 10,000 ppmv, 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 landfill suitable for disposal of such materials.

- d. If the bio-remediation operation is not effective after 2 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.

AQ-44 Written records shall be used to demonstrate compliance with all applicable AQMD, state, or federal rules and regulations, including records of any incidental or supporting operational data needed to justify findings.

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 The project owner shall submit a VOC-contaminated soil handling plan in accordance with AQMD Rule 1166 to the Executive Officer for approval no later than 180 days from the issuance of a permit to construct for this equipment.

Verification: The project owner shall provide a VOC-contaminated soil handling plan to the District for approval and CPM for review within 180 days of the issuance of a permit to construct.

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 THE EXPANSION VESSELS DESCRIBED BY A/N 506829 AND 506833.

AQ-2346 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 downstream of the first carbon bed. The carbon in the first bed shall be replaced with fresh carbon at least 5 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.

AQ-47 The project owner shall at any given time period, maintain at least ten extra carbon adsorption canisters on the premises to ensure that the activated carbon adsorption systems can continuously operate without interruption whenever the ullage system is in operation.

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

AQ-48 The project owner shall install a non-resettable, totalizing elapsed time meter to accurately indicate the cumulative operational time, in hours, of the activated carbon adsorption system.

Verification: At least 30 days prior to the installation of the carbon adsorption system, the project owner shall provide the District and the CPM the specification of the totalizing elapsed time meter.

AQ-49 An initial source test plan/protocol shall be submitted to the Executive Officer 60 days prior to the test and shall be approved before the test begins. The plan shall include the proposed operating conditions of the of the equipment during the test, the test methods, the identity of the testing laboratory, a statement from the testing laboratory certifying that it meets the no conflict requirements of the AQMD and a description of all sampling and analytical procedures to be used.

Verification: The project owner shall provide an initial source test plan to the District for approval and CPM for review at least 60 days prior to the test.

AQ-50 The initial source test shall be performed within 60 days after full operation but no later than 180 days after the initial start-up of the equipment.

Verification: The project owner shall notify the District and the CPM at least 15 days before the execution of the compliance test required in this condition.

AQ-51 A written report of the source test results shall be submitted to the Executive Officer 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.

C.1.16 CONCLUSIONS

- Staff has made the following conclusions about the PSPP:
- The proposed project, pending receipt of the VOC emission reduction credit (ERC) source information sufficient to meet the RDOCs noted project offset requirements, would comply with applicable District Rules and Regulations and staff recommends the inclusion of the District's PRDOC conditions as Conditions of Certification **AQ-1** through **AQ-5123**.

- If left unmitigated, the proposed project's construction activities would likely contribute to significant CEQA adverse PM10 and ozone impacts. Staff recommends **AQ-SC1** to **AQ-SC5** to mitigate the potential impacts.
- The proposed project's operation would not cause new violations of any NO₂, SO₂, PM2.5 or CO ambient air quality standards. Therefore, the project-direct operation NO_x, SO_x, PM2.5 and CO emission impacts are not CEQA significant.
- The proposed project's direct and indirect, or secondary emissions contribution to existing violations of the ozone and PM10 ambient air quality standards are likely CEQA significant if unmitigated. Therefore, staff recommends **AQ-SC6** to mitigate the onsite maintenance vehicle emissions and **AQ-SC7** to mitigate the operating fugitive dust emissions to ensure that the potential ozone and PM10 CEQA impacts are mitigated to less than significant over the life of the project.
- ~~To ensure that the two HTF piping networks emissions are adequately controlled through an inspection and maintenance program, staff recommends **AQ-SC9**.~~
- To ensure that the VOC emission reduction credit information, for the VOC offsets required by the District, is provided to staff for review, staff recommends **AQ-SC9**.
- To ensure that the two auxiliary cooling towers emissions are adequately controlled through the use of a high efficiency mist eliminator and control of the recirculating water total dissolved solids content, staff recommends **AQ-SC10**.
- To ensure that the project alternatives, if any one of them is approved, do not create significant short term NO₂ impacts staff has recommended Condition of Certification **AQ-SC11** that is only applicable to the project alternatives,
- The proposed project would be consistent with the requirements of SB 1368 and the Emission Performance Standard for greenhouse gases (see **Appendix Air-1**).

C.1.17 REFERENCES

CEC 2010h - CEC / A. Solomon (tn: 58636). Staff consideration of applicant requested revision to AQ-SC11, docketed 9.28/10.

SCAQMD 2010c – South Coast Air Quality Management District (tn: 58826). Revised Determination of Compliance for Palen Solar Power Project, docketed 10/21/2010.

**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 staff testimony on **Air Quality** for the **Palen Solar Power Project Supplemental Staff Assessment** 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: October 22, 2010

Signed: _____

At: Agoura Hills, California

WILLIAM WALTERS, P.E.
Air Quality Specialist

ACADEMIC BACKGROUND

B.S., CHEMICAL ENGINEERING, 1985, CORNELL UNIVERSITY

PROFESSIONAL EXPERIENCE

Mr. Walters has over 20 years of technical and project management experience in environmental compliance work, including environmental impact reports, emissions inventories, source permitting, energy and pollution control research RCRA/CERCLA site assessment and closure, site inspection, and source monitoring.

Aspen Environmental Group

2000 to present

Responsible as lead technical and/or project manager of environmental projects, including the following specific relevant recent (2000 and forward) responsibilities and projects:

- **Engineering and Environmental Technical Assistance to Conduct Application for Certification Review for the California Energy Commission:**
 - Preparation and project management of the air quality section of the Staff Assessment and/or Initial Study and the visual plume assessment for the following licensing projects: Hanford Energy Park; United Golden Gate, Phase I; Huntington Beach Modernization Project*; Woodland Generating Station 2; Ocotillo Energy Project, Phase I; Magnolia Power Project*; Colusa Power Project; Rio Linda/Elverta Power Plant Project; Roseville Energy Center; Henrietta Peaker Project; Tracy Peaking Power Plant Project*; Avenal Energy Project; San Joaquin Valley Energy Center*; Salton Sea Unit 6 Project*; Modesto Irrigation District Electric Generation Station*; Walnut Energy Center*; Riverside Energy Resource Center*; Pastoria Energy Facility Expansion; Bullard Energy Center; Panoche Energy Center; Starwood Power Plant; Riverside Energy Resource Center Units 3 and 4 Project; Colusa Generating Station*; Chula Vista Energy Upgrade Project*; Orange Grove Power Plant Project*; Carlsbad Energy Center Power Project*; Hydrogen Energy California (in process); Canyon Power Plant Project*; Imperial Valley Solar Project*; Beacon Solar Energy Project; Calico Solar Power (in process); Abengoa Mojave Solar Project; Genesis Solar Energy Project; Blythe Solar Power Project; Palen Solar Power Project (in process); Ridgecrest Solar Power Project; Rice Solar Energy Project (in process); Ivanpah Solar Electric Generating Station project.
 - Preparation and project management of the visible plume assessment for the following licensing projects: Metcalf Energy Center Power Project*; Contra Costa Power Plant Project*; Mountainview Power Project; Potrero Power Plant Project; El Segundo Modernization Project; Morro Bay Power Plant Project; Valero Cogeneration Project; East Altamont Energy Center*; SMUD Cosumnes Power Plant Project*; Pico Power Project; Blythe Energy Project Phase II; City of Vernon Malburg Generating Station; San Francisco Electric Reliability Project; Los Esteros Critical Energy Facility Phase II; Roseville Energy Park; City of Vernon Power Plant; South Bay Replacement Project; Walnut Creek Energy Park; Sun Valley Energy Project; Highgrove Power Plant; Colusa Generating Station; Russell City Energy Center; Avenal Energy Project; Community Power Project; San Gabriel Generating Station; Sentinel Energy Project; Victorville 2 Hybrid Power Project; City of Palmdale Hybrid Energy Project (in process); Chevron Richmond Power plant Replacement Project; Tracy Combined Cycle Power Plant; Lodi Energy Center; and San Joaquin Solar 1&2 Power Plant.
 - Assistance in the aircraft safety review of thermal plume turbulence for the Riverside Energy Resources Center; Russell City Energy Center Amendment*; Eastshore Energy Power Plant*; Carlsbad Energy Center (in progress), City of Palmdale Hybrid Energy Project; Riverside Energy Resource Center Units 3 and 4 Project; Victorville 2 Hybrid Power Project; Blythe Energy Project Phase II*, Tracy Power Plant; Avenal Energy Project; and Blythe Solar Energy Project siting cases. Assistance in the aircraft safety review of

* - Includes providing expert witness testimony.

thermal and visual plumes of the operating Blythe Energy Power Plant. Preparation of a white paper on methods for the determination of vertical plume velocity determination for aircraft safety analyses.

■ **Other California Energy Commission and relevant project experience:**

- Preparation and instruction of a visual water vapor plume modeling methodology class for the CEC.
- Preparation and project management of the public health section of the Initial Study for the Woodland Generating Station 2 Energy Commission licensing project.
- Preparation of project amendment or project compliance assessments, for air quality or visual plume impacts, for several licensed power plants, including: Metcalf Energy Center; Pastoria Power Plant; Elk Hills Power Plant; Henrietta Peaker Project; Tracy Peaker Project; Magnolia Power Project; Delta Energy Center; SMUD Cosumnes Power Plant; Walnut Energy Center; San Joaquin Valley Energy Center; City of Vernon Malburg Generating Station; Otay Mesa Power Plant; Los Esteros Critical Energy Facility; Pico Power Project; Riverside Energy Resource Center; Blythe Energy Project Phase II; Inland Empire Energy Center; Salton Sea Unit 6 Project; Black Rock 1, 2, and 3 Geothermal Power Project, and Starwood Power-Midway Peaking Power Plant.
- Preparation of the air quality section of the staff paper “A Preliminary Environmental Profile of California’s Imported Electricity” for the Energy Commission and presentation of the findings before the Commission.
- Preparation of the draft staff paper “Natural Gas Quality: Power Turbine Performance During Heat Content Surge”, and presentation of the preliminary findings at the California Air Resources Board Compressed Natural Gas Workshop and a SoCalGas Technical Advisory Committee meeting.
- Preparation of the staff paper “Emission Offsets Availability Issues” and preparation and presentation of the Emission Offsets Constraints Workshop Summary paper for the Energy Commission.
- Preparation of information request and data analysis to update the Energy Commission’s Cost of Generation Model capital and operating cost factors for combined and simple cycle gas turbine projects. Additionally, performed a review of the presentation for the revised model as part of the CEC’s 2007 Integrated Energy Policy Report workshops, and attended the workshop and answering Commissioner questions on the data collection and data analysis. Prepared an update to the Energy Commission’s capital and operating cost factors for combined and simple cycle gas turbine projects within the Cost of Generation model as part of the 2009 Integrated Energy Policy Report process.
- Preparation of the Air Quality Section, air quality emission calculations, or other technical studies, in support of the environmental documentation for renewable energy projects including; the Liberty Energy XXIII Renewable Energy Project; the Topaz Solar Farm, the Pacific Wind Energy Project, and the Pine Tree Wind Development Project.
- Preparation of comments on the Air Quality, Alternatives, Marine Traffic, Public Safety, and Noise section of the Cabrillo Port Liquefied Natural Gas Deepwater Port Draft EIS/EIR for the City of Oxnard.

CERTIFICATION

- Chemical Engineer, California License 5973

AWARDS

- California Energy Commission Outstanding Performance Award 2001



BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT
COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
1-800-822-6228 – WWW.ENERGY.CA.GOV

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

Docket No. 09-AFC-7

**PROOF OF SERVICE
(Revised 8/27/10)**

APPLICANT

Alice Harron
Senior Director of Project Development
*1111 Broadway, 5th Floor
Oakland, CA 94607
harron@solarmillenium.com

*Michael Cressner, Project
Development & Permitting
Solar Millennium, LLC
1111 Broadway, 5th Floor
Oakland, CA 94709
cressner@solarmillennium.com

Arrie Bachrach
AECOM Project Manager
1220 Avenida Acaso
Camarillo, CA 93012
arrie.bachrach@aecom.com

Ram Ambatipudi
Chevron Energy Solutions
150 E. Colorado Blvd., Ste. 360
Pasadena, CA 91105
rambatipudi@chevron.com

Co-COUNSEL

Scott Galati, Esq.
Marie Mills
Galati/Blek, LLP
455 Capitol Mall, Suite 350
Sacramento, CA 95814
sgalati@gb-llp.com
mmills@gb-llp.com

Co-COUNSEL

Peter Weiner, Matthew Sanders
Paul, Hastings, Janofsky &
Walker LLP
55 2nd Street, Suite 2400-3441
San Francisco, CA 94105
peterweiner@paulhastings.com
matthewsanders@paulhastings.com

INTERVENORS

California Unions for Reliable Energy
(CURE)
c/o Tanya A. Gulesserian,
Marc D. Joseph
Jason W. Holder
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard,
Suite 1000
South San Francisco, CA 94080
tgulesserian@adamsbroadwell.com
jholder@adamsbroadwell.com

Michael E. Boyd, President
Californians for Renewable Energy
(CARE)
5439 Soquel Drive
Soquel, CA 95073-2659
michaelboyd@sbcglobal.net

Alfredo Figueroa
Californians for Renewable Energy
(CARE)
424 North Carlton
Blythe, CA 92225
lacunadeaztlan@aol.com

Basin and Range Watch
Kevin Emmerich
Laura Cunningham
P.O. Box 153
Baker, CA 92309
atomicoadranch@netzero.net

Lisa T. Belenky, Senior Attorney
Center for Biological Diversity
351 California St., Suite 600
San Francisco, CA 94104
lbelenky@biologicaldiversity.org
Ileene Anderson
Public Lands Desert Director
Center for Biological Diversity
PMB 447, 8033 Sunset Boulevard
Los Angeles, CA 90046
ianderson@biologicaldiversity.org

INTERESTED AGENCIES

California ISO
e-recipient@caiso.com

Holly L. Roberts, Project Manager
Bureau of Land Management
Palm Springs-South Coast
Field Office
1201 Bird Center Drive
Palm Springs, CA 92262
CAPSSolarBlythe@blm.gov

ENERGY COMMISSION

ROBERT WEISENMILLER
Commissioner and Presiding Member
rweisenm@energy.state.ca.us

KAREN DOUGLAS
Chairman and Associate Member
kldougla@energy.state.ca.us

Raoul Renaud
Hearing Officer.
rrenaud@energy.state.ca.us

Alan Solomon
Siting Project Manager.
asolomon@energy.state.ca.us

Lisa DeCarlo
Staff Counsel
ldecarlo@energy.state.ca.us

Jennifer Jennings
Public Adviser's Office
e-mail service preferred
publicadviser@energy.state.ca.us

DECLARATION OF SERVICE

I, Sabrina Savala, declare that on October 26, 2010, I served and filed copies of the attached Supplemental Staff Assessment Air Quality. 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: [\[http://www.energy.ca.gov/sitingcases/solar_millennium_palen\]](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:

- sent electronically to all email addresses on the Proof of Service list;
- by personal delivery;
- 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:

- 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
docket@energy.state.ca.us

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.

Original Signed by _____
Sabrina Savala