

CALIFORNIA ENERGY COMMISSION

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March 10, 2010

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Mr. David L. Jones
Air Pollution Control Officer
Kern County Air Pollution Control District
2700 "M" Street, Suite 302
Bakersfield, California 93301

**Re: Comments on Preliminary Determination of Compliance (PDOC)
Ridgecrest Solar Power Project (09-AFC-9)**

Dear Mr. Jones,

Energy Commission staff has reviewed the Kern County Air Pollution Control District PDOC for the Ridgecrest Solar Power Project and has the following comments for your consideration for inclusion in the Final Determination of Compliance (FDOC).

Comments on PDOC Emission Estimates

Criteria Pollutant Emission Estimates

Staff is concerned with the inconsistencies between the maximum daily and annual operating emission estimates provided by the applicant in the Application for Certification (AFC) and in later responses to staff data requests and emissions estimates provided in the PDOC. Staff prefers that the Energy Commission's Staff Assessments, which are based on an analysis of the project described in the AFC and data responses, and the District's DOC are consistent in terms of the presented emission estimates.

The following provides a comparison between the AFC emission estimate values or the latest values from the applicant's data responses to the Energy Commission, and the emission limits in the PDOC where there are discrepancies that are clearly more than simple calculation rounding differences. After each table is some discussion of the discrepancies. Staff would like the FDOC to correct the discrepancies in these emission estimates, including corresponding changes to the device conditions, and provide rationale why such corrections are or are not necessary. The emission factors / estimates are for nitrogen oxide (NOx), carbon monoxide (CO), particulate matter (PM) and sulfur oxides (SOx).

Auxiliary Boiler – Emission Discrepancies

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	NOx		CO		PM10/PM2.5		SOx	
	lb/day	t/yr	lb/day	t/yr	lb/day	t/yr	lb/day	t/yr
Applicant Data	2.24	0.32	7.56	1.07	2.01	0.28	2.27	0.32
PDOC Limits	5.78	0.96	19.43	3.24	4.02	0.67	0.11	0.02

It appears that the emission limits in the PDOC are not based on the same assumptions that the applicant used. The maximum daily emissions for the auxiliary boiler should be based on the applicant's worst case assumptions of operating hours and use. The applicant stated in the AFC that the auxiliary boiler would operate no more than 15 hours per day at 25 percent load and two hours per day at full load. The annual emissions for the auxiliary boiler, based on the applicant's worst case use assumptions provided to the Energy Commission, should be based on 4,500 hours of operation at 25 percent load and 500 hours of operation at full load. The applicant's air dispersion modeling impact analysis is based on the applicant's maximum operating scenarios; therefore, staff believes that these scenarios should be used to set daily and annual emission limits. Staff is not adverse to the District providing conditions that are related to these maximum daily and annual auxiliary boiler use assumptions, preferably in terms of daily and annual fuel use limits.

Additionally, the PDOC does not use the same emission factors as used by the applicant, where several of the applicant's emission factors (in pounds per million British thermal units [lbm/MMBtu]) are from vendor data. The emission factors are for PM, volatile organic compounds (VOC) and CO.

Auxiliary Boiler Emission Factor Discrepancies

	Applicant Vendor Data	PDOC
PM10/PM2.5	0.010 lb/MMBtu	0.0077 lb/MMBtu
VOC	0.005 lb/MMBtu	0.0087 lb/MMBtu
CO	0.0376 lb/MMBtu	0.0370 lb/MMBtu

Staff believes that, unless the applicant agrees to the District's lower emission factor bases, the emission factor basis should correspond to the slightly higher auxiliary boiler vendor values for these three pollutants.

Finally, the auxiliary boiler SOx emissions shown in PDOC are not comparable to the SOx emissions shown in AFC, nor do they seem comparable to the fuel standard required in the PDOC conditions. The applicant's SOx emission factor is based on the South Coast Air Quality Management District's (SCAQMD) SOx emission factor for Liquefied Petroleum Gas (LPG) combustion taken from the SCAQMD's 2008 Annual Emission Report General Instruction Book. This value is conservatively high and matches the HD-5 (Heavy Duty - 5% maximum allowable propylene content) propane (maximum sulfur content of 123 parts per million [ppm]). However, the emission factor from the PDOC does not match the 80 ppm sulfur standard for HD-10 (Heavy Duty - 10% maximum allowable propylene content) LPG (California motor vehicle grade LPG), nor does it match a normal sulfur content range of 20 to 30 ppm for LPG. Rather, it is based on a sulfur content of approximately 2.2 ppm. Staff believes that there was an inadvertent typographical error and the emission factor should be higher, either 20 - 30 ppm for LPG, or 80 for HD-10 LPG or even 123 ppm as used by the applicant and SCAQMD. However, staff believes that the regulated maximum sulfur content of 80 ppm for California LPG, which would correspond to a SOx emission factor of 0.0073 lbs/MMBtu, should be used as the permit emission limit basis.

Heat Transfer Fluid (HTF) Heater – Emission Discrepancies

The comments noted above for the auxiliary boiler regarding discrepancies with the vendor emission factors (PM10/PM2.5, VOC, and CO) and the SO_x emission factor basis not matching the normal or regulated LPG sulfur content also apply to the HTF heater emission factors and permit limits.

Heat Transfer Fluid (HTF) Vent Vapor Control System – Emission Discrepancies

The applicant has provided a design basis value of 0.75 lbs/hour of VOC emissions from the vent control system and provided operations of 2 hours per day and 400 hours per year. The PDOC uses these daily and annual hourly operation values but includes a separate calculation of the VOC emissions that are four times higher than the applicant's value (3.13 lbs/hour). Staff believes that the applicant's stated design basis value should be used as both the basis for the emission calculations and for emission limits for the vapor control system unless the District can explain why the permit levels need to be higher.

Cooling tower – Emission Discrepancies

The applicant has provided a design basis value of 0.03 lbs/hour of PM10/PM2.5 emissions and 3,700 hours of operation per year for the cooling tower. The PDOC uses the same hourly emission value but assumes 5,840 hours of operation per year, which leads to higher annual PM10/PM2.5 emissions (0.09 tons/year, compared to 0.06 tons/year from the applicant). Staff believes that the applicant's stated annual operation hours should be used as both the basis for the emission calculations and for emission limits for the cooling tower unless the District explains why the permit levels need to be higher.

Heat Transfer Fluid (HTF) System Fugitive Emissions

Staff notes that the District and applicant have used very different emission factors in their calculations of this emissions source, which are different based on the assumption of light liquid versus heavy liquid service and based on different emission factor reference sources. Staff believes that the District's approach, considering the in-use temperature of the HTF, has merit and is not commenting on that difference in approach or in the emission estimation methods in general. However, staff has received verbal communication from another project applicant that the emission factors used by the District may not be stated in the correct units, specifically the lb/hr factors may in fact be kg/hour factors. Staff would like the District to confirm the units of the emission factors used and also provide the Energy Commission a copy of the specific emission factor source reference table for docketing, or provide in the FDOC an internet link to the reference document and notation on where to find the specific emission factors that the District has used in its calculations.

Comments on PDOC Conditions

Boiler and Heater LPG Standard and Fuel Sulfur Basis

Staff believes that the term "HD-10 LPG" as used in the design conditions "a." for the boiler and the heater is an industry standard term but not a regulatory term. Staff proposes the following change, revised as appropriate for the heater, to make the LPG fuel requirement based on actual LPG regulations.

- a. Boiler shall be fueled exclusively with LPG meeting California motor vehicle LPG standards (CCR, Title 13, Section 2292.6)

Staff also believes, as also noted above, that the SO_x emissions provided in the auxiliary boiler and heater emission limit conditions should be based on the regulated maximum sulfur content of 80 ppm for California LPG, which would correspond to a SO_x emission factor of 0.0073 lbs/MMBtu.

Staff believes that emission limitations in the District Conditions need to be revised to be consistent with any revisions made to address the staff comments.

If you have any questions, please contact Gerry Bemis of my staff at (916) 654-4960. Thank you for the opportunity to comment on the Ridgecrest Solar Power Project's Preliminary Determinations of Compliance.

Sincerely,

MATTHEW S. LAYTON, Manager
Engineering & Corridor Designation Office
Siting, Transmission and Environmental
Protection Division

cc: Docket