CALIFORNIA ENERGY COMMISSION 1516 NINTH STREET SACRAMENTO, CA 95814-5512

November 13, 2009

Mr. David Warner Director of Permit Services San Joaquin Valley Unified Air Pollution Control District 1990 East Gettysburg Avenue Fresno, CA 93726



Dear Mr. Warner:

San Joaquin Solar 1 & 2 Power Plant (08-AFC-12) Comments on: Preliminary Determination of Compliance, Project # C-1090203

Energy Commission staff appreciates the opportunity to provide written public comments on the Preliminary Determination of Compliance (PDOC) issued by the District on October 8, 2009 for the San Joaquin Solar 1 & 2 Power Plant (SJS) proposed by San Joaquin Solar 1 LLC and San Joaquin Solar 2 LLC.

Energy Commission staff, pursuant to both the Warren-Alquist Act and the California Environmental Quality Act (CEQA), must determine whether the facility is likely to conform with applicable laws, ordinances, regulations, and standards, and whether mitigation measures can be developed to lessen potential impacts to a level of insignificance. These determinations may be difficult without additional information from the San Joaquin Valley Air Pollution Control District (SJVAPCD or District) in support of the PDOC.

Process Description, Natural Gas Use

The Equipment Listing in the PDOC identifies the natural gas firing capacity of the proposed facility as including four systems of burners each totaling 165 million British thermal units per hour (MMBtu/hr) of heat input, for a combined 660 MMBtu/hr of fossil fuel-firing capability. Energy Commission staff needs to be sure that the facility is permitted for only burning biomass, except for very limited natural gas use during startups. The PDOC requires startups to be complete in 8 hours, but it does not require curtailing use of natural gas fuel after the startup.

- Please provide conditions ensuring that natural gas would not be used in times of biomass fuel shortages, for partial loads, or for flame stabilization in conjunction with biomass fuel.
- Please clarify that PDOC Condition 53 for the biomass combustors allows use of the natural gas-fired preheat burners <u>only</u> during startups.

Process Description, Anticipated Mix of Fuels

PDOC Conditions 67 and 86 for the combustors require the type and heating value of the fuel to be monitored and recorded, and the discussion of Rule 4352 (PDOC p.61)

claims that a "complete fuel description" will be required. However, the PDOC does not specify what kind of information would be included in a "complete" fuel description.

• Please clarify in the PDOC Conditions 67 and/or 86 for the combustors what information makes a "complete" fuel description.

The PDOC does not include any limitation on the use of "non-wood" components in the biomass fuel. Energy Commission staff suggests monitoring the fuel by periodically taking samples to avoid treated wood, plastics, metals, and noncombustible material. Odors from green waste that may be compostable are not addressed. Manure should be prohibited. This is a concern because early in the development phase of the project, SJS had been negotiating contracts with fuel suppliers including manure (as in Resolution E-4213, made by the California Public Utilities Commission, December 18, 2008). The California Air Resources Board (ARB) has established rules for greenhouse gas reporting that suggest an appropriate definition for carbon in the fuel mix.

- Staff suggests that manure be specifically prohibited from use in the combustors.
- Staff suggests adding a discussion of nuisance avoidance (Rule 4102) and odor management for green waste material that may have started the composting process.
- Staff suggests adding a condition requiring that at least 97 percent of the total carbon in the fuel burned be biomass carbon (per ARB Mandatory Reporting Rules Section 95102 definition of "pure").

Tracking the fuel use closely appears to be needed for ensuring compliance with the annual emissions estimates given in the PDOC. Emission calculations for annual potential emissions (PDOC p.22) are all based on the annual average fuel mix being 50 percent "agricultural wood" and 50 percent "wood waste", rather than the worst-case fuel mix of 100 percent wood waste. Although Condition 86 for the combustors requires tracking of fuel type, there is no permit condition in the PDOC that would make the fuel mix enforceable. As such, the PDOC seems to be lacking a requirement that the facility use a fuel mix consistent with the emission forecasts. Additionally, there is no definition in the PDOC of "agricultural wood" or "wood waste" fuel, which makes enforcement of Condition 86 problematic.

- Please define the properties or specifications for "agricultural wood" and "wood waste" and ensure that the conditions provide a way to demonstrate compliance with these properties or specifications.
- Please either ensure that the annual emission estimates, including Post Project Potential to Emit (PE2), accommodate the worst-case fuel mix or establish an enforceable operating standard that specifies the annual fuel mix in a way that is consistent with the emission estimates.

New Source Performance Standards

Uncertainty over the proposed fuel mix creates uncertainty in the applicable requirements, especially regarding the New Source Performance Standards (NSPS) for the combustors (p.53-55). The PDOC (p.53) indicates that the facility would burn municipal-type solid waste. The PDOC does not differentiate "municipal-type solid

waste" from the proposed "municipal green wastes" of the Process Description (PDOC p.3). This affects the applicability of 40 CFR 60.43b(d) and 60.44b(d).¹

- Please clarify what is included in the PDOC's definition of "municipal green wastes."
- Please clarify whether "municipal-type solid waste" would be allowed at all.

The NSPS in 40 CFR 60.44b(d) seems to apply because the applicant proposes simultaneous combustion of wood and natural gas during startup. The NOx standard in 40 CFR 60.44b(d) is based upon the annual capacity factor for natural gas being 10 percent or less, with a federally-enforceable limit on natural gas use in conjunction with wood.

- Please clarify or add a condition that specifies that simultaneous combustion of natural gas and wood would only be allowed during a startup sequence.
- Please clarify whether the facility is subject to a federally-enforceable requirement that limits the use of natural gas to an annual capacity factor or simultaneous fuel mixing.

Applicable Rules, Air Toxics

The applicability of major new source review for air toxics is not clear. The PDOC (p.50) says that "SJS will be a major air toxics source" and therefore SJVAPCD Rule 2550 (New Source Review for Toxics) applies. However, under the discussion for Rule 4002 (National Emissions Standards for Hazardous Air Pollutants, PDOC p.56), it says that it was determined in the discussion for Rule 2550 that the project is a "non-major HAPs source," and that there are no applicable requirements under Rule 4002. The AFC (p.5.2-55 for Maximum Achievable Control Technology or MACT) clearly indicates that this project is a major source of air toxics.

- Please confirm that the discussions of new source review for toxics (Rule 2550) and control requirements for toxics (Rule 4002) are consistent.
- Please confirm that the PDOC and attached conditions reflect all applicable requirements for control of toxics, including limits on potential emissions of metallic hazardous air pollutants, hydrogen chloride, and/or mercury.

Applicable Rules, Continuous Monitoring

The PDOC (p.45) claims that monitoring NOx emissions would be a requirement of Rule 4306 (Boilers and Steam Generators), but elsewhere in the PDOC (p.60), it says Rule 4306 is not applicable.

¹ According to the federal rule (40 CFR 60.41b): *Municipal-type solid waste* means refuse, more than 50 percent of which is waste consisting of a mixture of paper, wood, yard wastes, food wastes, plastics, leather, rubber, and other combustible materials, and noncombustible materials such as glass and rock; *Wood* means wood, wood residue, bark, or any derivative fuel or residue thereof, in any form, including, but not limited to, sawdust, sanderdust, wood chips, scraps, slabs, millings, shavings, and processed pellets made from wood or other forest residues.

• Please confirm whether the NOx emissions monitoring requirement stems from Rule 4306 or, more-likely, the applicable requirement is Rule 4352 (Solid Fuel Fired Boilers).

Applicable Rules, Tier 3 Engines

SJS proposes to install four emergency-use engines meeting U.S. EPA Tier 2 emission standards, but cleaner Tier 3 engines are currently available with model year 2009. Energy Commission staff believes that the PDOC should require Tier 3 engines, either through requirements for federal New Source Performance Standards (Rule 4001) or Best Available Control Technology (BACT). Neither PDOC Section II regarding Applicable Rules nor the discussion of Rule 4001 (NSPS in PDOC p.51) show the applicability of federal New Source Performance Standards (NSPS) for Stationary Compression Ignition Internal Combustion Engines (40 CFR 60 - Subpart IIII).

- Please provide a brief description of the applicability of the NSPS Subpart IIII to the proposed emergency standby generator and firewater pump engines.
- Please clarify the applicability of BACT for each of the four proposed emergencyuse engines, given that the AFC (p.5.2-60) identifies the BACT for the firewater pump engines as those meeting the U.S. EPA Tier 3 emission standards.

Annual and Short-term Emissions from the Biomass Combustors

SJS proposes a maximum short-term carbon monoxide (CO) emissions factor for the biomass combustors of 0.046 lb/MMBtu (SJS Response to Data Request 81, Response to CURE Set 3, 8/26/09), and this is reported in Appendix C of the PDOC, regarding BACT. However, the PDOC specifies that facility-wide annual CO emission rates would be kept under 100 tons per year (tpy), reflecting more-stringent levels over the annual term. Particulate matter (PM10 and PM2.5) emission limits on an annual basis follow a similar pattern of being lower than the equivalent short-term hourly, keeping annual emissions under 100 tpy. It is not clear if the annual emission limits are meant to be federally-enforceable. Since PDOC Condition 59 addresses the natural gas preheat burner, it should specify whether it is based on the heat input of natural gas fuel or total fuel.

- Please include in Condition 50 averaging periods for the stack concentrations and emission limits. For example, the limits should specify whether the 8.46 lb/hr CO emission limit is to be tracked on a 1-hour basis or other average basis.
- Please describe how the permit emission limits would be federally-enforceable.
- Please clarify in Condition 59 that the preheat burner emission limits are based on heat input of natural gas and not total fuel heat input.

Equipment Listing, Shared Steam Turbine Generators

The Equipment Listing (PDOC p.4) for the four biomass combustors incorrectly imply that there would be four 53.4-megawatt (MW) steam turbine generators, with each one being associated with one combustor. The project proposal before the Energy Commission would include only two steam turbine generators.

• Please ensure that the descriptions of the combustors clearly show that each steam turbine generator would be shared by two combustors and two boilers.

Ambient Air Quality Attainment Status

The PDOC (p.46) indicates that the area is nonattainment for PM10, but the SJVAPCD is currently designated "attainment"² for federal PM10 standards. This same discussion indicates the area is "attainment" for NOx and VOC, but this is inaccurate because ozone is the criteria pollutant of concern and the sentence ignores ozone along with nitrogen dioxide (NO₂).

- Please ensure that the discussion of attainment status in the PDOC accurately reflects the U.S. EPA's attainment designations for PM10, ozone, and NO₂.
- Please ensure that the U.S. EPA's PM2.5 nonattainment designation from October 2009 is identified as needed.

Ambient Air Quality Impact Analysis

The ambient air quality modeling analysis (AAQA) attached with the PDOC Appendix F is dated June 8, 2009, and it says that it ". . . is valid only as long as the proposed data and parameters do not change." However, between June and October the emission rates proposed by SJS did change. The Wet Surface Air Cooler (WSAC) emissions allowed by the PDOC are different from and much higher than those analyzed in the modeling. Additionally, the AAQA in its present state shows that project PM10 concentrations on a 24-hour basis "failed" to pass the Ambient Air Quality Standard of 50 micrograms per cubic meter (μ g/m³). With background concentrations removed, the AAQA shows the project impact to be 60.7 μ g/m³ (PDOC Appendix F), and this would cause a new violation of the federal ambient air quality standard. This is inconsistent with the project's "calculated contribution" shown on PDOC p.47, which gives a contribution of 50 μ g/m³ on a 24-hour basis. Annual PM10 concentrations are compared to 30 μ g/m³ even though the state standard is 20 μ g/m³.

- Please confirm that the ambient air quality analysis in the PDOC is valid and reflects the most-recent proposed emissions and source parameters, as allowed elsewhere in the PDOC.
- Please ensure that the level of the project-related impact is reported consistently in the body of the PDOC, and that the results in Appendix F of the PDOC are accurately reported.
- Please confirm that the PM10 impacts are compared with the correct ambient air quality standards.

The PM10 emission rates and impacts shown in PDOC Appendix F seem to be based on the proposed commissioning phase, but this is not clear because there is no separate discussion of impacts during routine operations.

- Please clarify whether the impacts presented in the PDOC reflect commissioning or routine operation.
- For impacts during the commissioning phase, please describe whether the SJVAPCD considered prohibiting simultaneous commissioning of sources or restricting the commissioning process in a way to avoid causing PM10 violations,

² See http://www.valleyair.org/aqinfo/attainment.htm.

for example by requiring staggered commissioning of the four separate combustors.

Under SJVAPCD Rule 2201, Section 4.14.1, where the AAQA is required, the project must not cause a violation of an Ambient Air Quality Standard, but the PDOC Appendix F shows that this project would cause a new violation. Rule 2201 allows the Air Pollution Control Officer (APCO) to take into account the "mitigation" through offsets, which appears to be the path to compliance with this rule. However, the term "mitigation" is not defined in Rule 2201, and the PDOC does not clearly state that the APCO has made the necessary determination.

• Please clarify the discussion of Rule 2201 compliance to show that the APCO has determined that sufficient mitigation would be provided to overcome the new PM10 violation, if that is indeed the case. Without such an affirmative statement, compliance with Rule 2201 Section 4.14.1 is not clear.

Ammonia Emissions Monitoring

The equipment descriptions given in the PDOC state that a continuous emissions monitoring system (CEMS) for ammonia slip would be installed on each biomass combustor stack, which we recommend. However, in Condition 61 for the combustors, the ammonia CEMS are optional.

• Please ensure that the equipment descriptions reflect the applicant's proposal, especially regarding CEMS for ammonia slip, and revise if necessary.

We appreciate the District working with Energy Commission staff on this licensing case. If you have any questions regarding our comments, please contact Gerald Bemis at (916) 654-4960. We look forward to discussing our comments in further detail with you.

Sincerely,

/s/

MATTHEW S LAYTON Supervising Mechanical Engineer

cc: Docket (08-AFC-12) Proof of Service List California Air Resources Board U.S. Environmental Protection Agency, Region IX