DOCKET
09-AFC-9
DATE JUN 08 2010
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June 8, 2010

Eric Solorio
Project Manager
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

RE: Ridgecrest Solar Power Project (RSPP), Docket No. 09-AFC-9, Responses to Kerncrest Audubon Society Data Requests Set 1 #1-#3

Dear Mr. Solorio:

As requested, attached please find Ridgecrest Solar I, LLC's responses to Kerncrest Audobon Society Data Requests Set 1 #1-#3. This has been docketed in accordance with CEC requirements.

If you have any questions, please feel free to contact me at 510-809-4662 (office) or 949-433-4049 (cell).

Sincerely,

Billy Owens
Director, Project Development

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BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT
COMMISSION OF THE STATE OF CALIFORNIA
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APPLICATION FOR CERTIFICATION
For the *RIDGECREST SOLAR POWER PROJECT*

Docket No. 09-AFC-9

PROOF OF SERVICE
(Revised 5/12/2010)

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DECLARATION OF SERVICE

I, Elizabeth Copley, declare that on June 8, 2010, I served and filed copies of the attached Ridgecrest Solar Power Project (Docket No. 09-AFC-9) Responses to Kerncrest Audubon Society Data Requests. 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_ridgecrest].

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;

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

AND

For filing with the Energy Commission:

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

OR

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

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 09-AFC-9
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.

RIDGECREST SOLAR POWER PROJECT (09-AFC-9)
KERNCREST AUDUBON SOCIETY NO. 1 DATA REQUESTS #1 - #3

Technical Area: Air Quality and Biological Resources (Section 5.1 and 5.3) Response Date: June 8, 2010

Following are responses to Set 1-Data Requests of Kerncrest Audubon Society, dated May 10, 2010.

KAS No. 1 DR-1

Data Request:

Provide a brief verbal description explaining the data, calculations, and assumptions used for determining the amount of propane that will be used and stored on the site. In particular the figures stated as being average minimum low temperatures for the area appear substantially higher than we believe the weather records here would indicate. An explanation of the calculations would be very helpful.

Response:

The Heat Collection Elements (HCE) consist of a steel tube, which contains the Heat Transfer Fluid (HTF), surrounded by an evacuated glass tube insulator. Glass to metal seals and metal bellows are incorporated into the HCE to ensure a vacuum-tight enclosure. Using a vacuum tight enclosure avoids HTF cooling via conduction and convection, leaving thermal radiation as the main source for heat loss. This insulation technology is similar to a vacuum flask, or Thermos, that is commonly used to keep coffee or soup warm throughout the day. The vacuum between the steel tube and the glass tube removes the material (e.g., air) that could serve as a heat conductor and allows the HTF to retain its temperature for long periods of time. To use a simple analogy, hot coffee placed in a vacuum insulated Thermos will stay hot for hours, even if left outside on a cold night. At the end of the operating day, the HTF fluid is much hotter than coffee and the freeze point of HTF is much colder than anyone would want to drink hot coffee, so the time it takes HTF to cool from the operating temperature of 740 degrees Fahrenheit to the freezing point of 55 degrees Fahrenheit is much longer than a Thermos would keep coffee hot. Radiation losses are minimized by stowing the mirrors in a downward facing direction, as the mirrors shield the HCEs from the cold atmosphere.

There will also be heat loss from the piping headers at the end of each row of HCEs. The mechanism for heat loss from the header piping is a combination of conduction and convection. Heat is conducted through the piping insulation to the surface of the insulation where heat is lost (primarily) through convection to the atmosphere. Conduction losses are a function of the quality (i.e., thermal conductivity) and thickness of the piping insulation and the temperature difference between the piping and the outer surface of the insulation. As the outer surface of the insulation is heated via conduction, heat is lost to the atmosphere through convection. Convection is a function of wind velocity. The piping in the headers is well insulated with fiberglass insulation, so conduction losses are minimized.

To predict how many hours per year the propane-fired heater would operate for freeze protection, the rate of heat loss must be predicted. As noted above, the mechanisms for heat loss are radiation from the vacuum insulated HCEs and conduction/convection from the insulated piping headers. Radiant heat loss is relatively simple mathematical function that depends on the temperature difference between the hot body, which in this case is the HTF piping, and the cold ambient air temperature. Conduction /convection heat loss from the piping headers is also a relatively simple mathematical relationship which depends on the HTF temperature, thermal conductivity and thickness of the insulation and windspeed, among other things. The rate of heat loss, known as heat flux, tells us how quickly the HTF fluid cools. Because the nighttime

temperature and windspeed varies, the temperature difference between the HCEs and the atmosphere varies continuously and the rate of conduction/convection losses varies continuously. Thus the heat flux varies continuously. Therefore, to predict the temperature of the HTF at any given time requires a computer model. The computer model uses the hourly nighttime temperature (which is obtained from the National Oceanographic and Atmospheric Administration [NOAA]), hourly windspeed data from the California Air Resources Board (CARB), the thermal conductivity of the insulation, and the temperature of the HTF in an iterative calculation to predict the HTF temperature every non-operational hour throughout the year. Only those non-operational hours in which the HTF temperature is predicted to drop below 55 degrees Fahrenheit would the heater be required to operate. On most nights, the heat flux is low enough that the HTF remains above the freeze point and does not require supplemental heat. The computer model predicts that the HTF temperature would drop below 55 degrees Fahrenheit fewer than 500 hours per year. The Applicant conservatively estimated propane use and the associated emissions based on 500 hours to ensure that propane usage and the associated emissions would not be underestimated. Therefore, the propane use estimates presented in the AFC are accurate and additional propane usage is not anticipated.

KAS No. 1 DR-2

Data Request:

> Provide a copy of the protocol used for Burrowing Owl (BUOW) surveys or a reference to where it can be found. In particular we are interested in the criteria used to identify potential burrows. The protocol would allow us to better judge the accuracy of the number of BUOW to be included in mitigation discussions.

Response:

Protocol used to conduct burrowing owl surveys was in accordance with Burrowing Owl Survey Protocol and Mitigation Guidelines prepared by The California Burrowing Owl Consortium (1993). Please refer to Ridgecrest Power Project (RSPP) Docket No. 09-AFC-9, 2010, Biological Survey Methodologies (April 9, 2010), for a complete description of burrowing owl survey methods implemented for 2010 for the RSPP.

KAS No. 1 DR-3

Data Request:

> Provide detailed data regarding the location and configuration of the evaporative ponds and of the netting to be used to deny avian, reptilian, and mammalian access to the ponds. With regard to netting, the gage, type of material, and size of the grid are of particular concern. This information will be helpful for us to evaluate the impact of the ponds upon wildlife that may be attracted to them.

Response:

Technical Area: Air Quality and Biological Resources (Section 5.1 and 5.3) Response Date: June 8, 2010

Detailed data regarding the location and configuration of the evaporation ponds and of the netting used is provided in Section 11.4.2 of the Report of Waste Discharge, submitted to the Lahontan Regional Water Quality Control Board and CEC on June 4, 2010.