

**CALIFORNIA ENERGY COMMISSION**1516 NINTH STREET  
SACRAMENTO, CA 95814-5112**DOCKET**  
**07-AFC-5**DATE OCT 31 2007  
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October 31, 2007

**TO: AGENCY DISTRIBUTION LIST****REQUEST FOR AGENCY PARTICIPATION IN THE REVIEW OF THE IVANPAH SOLAR ELECTRIC GENERATING SYSTEM, APPLICATION FOR CERTIFICATION (07-AFC-5)**

On August 31, 2007, Solar Partners I, LLC, Solar Partners II, LLC, Solar Partners IV, LLC and Solar Partners VIII, LLC (Solar Partners) submitted a single Application for Certification (AFC) to the California Energy Commission to develop three solar thermal power plants and shared facilities in close proximity to the Ivanpah Dry Lake, in San Bernardino County, California on federal land managed by the Bureau of Land Management (BLM). The Energy Commission provided your agency with the Solar Partners AFC document on or near September 12, 2007. Solar Partners has provided Supplements A & B to the original AFC filing on October 19, 2007. The supplemental filings meet the Energy Commission's requirements for data adequacy prior to the start of the Energy Commission's formal review of the project proposal. On October 31, 2007, the Energy Commission found the AFC and supplements to be complete and initiated the 12-month review of the project.

**PROJECT LOCATION**

The proposed project would be constructed in three phases: two 100-megawatt (MW) phases (known as Ivanpah 1 and Ivanpah 2) and a 200-MW phase (Ivanpah 3). The three plants are collectively referred to as the Ivanpah Solar Electric Generating System (ISEGS) and would be located in:

- southern California's Mojave Desert, near the Nevada border, to the west of Ivanpah Dry Lake
- San Bernardino County 4.5 miles southwest of Primm, Nevada, 3.1 miles west of the California-Nevada border
- Township 17N, Range 14E, and Township 16N, Range 14E

**PROJECT DESCRIPTION**

The proposed project is referred to as the Ivanpah Project. The project includes three solar concentrating thermal power plants, based on distributed power tower and heliostat mirror technology, in which heliostat (mirror) fields focus solar energy on power tower receivers near the center of each heliostat array. Each 100-MW site would require approximately 850-acres (or 1.3 square miles) and would have three tower receivers and arrays; the 200-MW site would require approximately 1,600 acres (or 2.5 square miles) and would have 4 tower receivers and arrays. Given that the three plants would be developed in concert, the proposed solar facilities would share common facilities

including an administration building, operations and maintenance building, substation, access road, and the reconducted transmission lines for all three phases. The total area required for all three phases including the shared facilities would be approximately 3,400-acres (or 5.3 square miles). Construction of the entire project is anticipated to begin in the first quarter of 2009, with construction being completed in the last quarter of 2012.

## **PROCESS DESCRIPTION**

In each solar receiver plant, one Rankine-cycle reheat steam turbine receives live steam from the solar boilers and reheat steam from one solar reheater located in the power block at the top of its own tower. The reheat tower would be located adjacent to the turbine. Additional heliostats would be located outside the power block perimeter road, focusing on the reheat tower. Final design layout locations are still being developed. The solar field and power generation equipment would be started each morning after sunrise and insolation build-up, and shut down in the evening when insolation drops below the level required to keep the turbine online.

Each plant also includes a partial-load natural gas-fired steam boiler, which would be used for thermal input to the turbine during the morning start-up cycle to assist the plant in coming up to operating temperature more quickly. The boiler would also be operated during transient cloudy conditions, in order to maintain the turbine on-line and ready to resume production from solar thermal input, after the clouds pass. After the clouds pass and solar thermal input resumes, the turbine would be returned to full solar production. Each plant uses an air-cooled condenser or "dry cooling," to minimize water usage in the site's desert environment. Water consumption would therefore, be mainly to provide water for washing heliostats. Auxiliary equipment at each plant includes feed water heaters, a deaerator, an emergency diesel generator, and a diesel fire pump.

Electricity would be produced by each plant's solar receiver boiler and the steam turbine generator. The heliostat mirrors would be arranged around each solar receiver boiler. Each mirror tracks the sun throughout the day and reflects the solar energy to the receiver boiler. The heliostats would be 7.2-feet high by 10.5-feet wide (2.20-meters by 3.20-meters) yielding a reflecting surface of 75.6 square feet (7.04 square meters). They would be arranged in arcs around the solar boiler towers asymmetrically.

Each solar development phase would include:

- a natural gas-fired start-up boiler to provide heat for plant start-up and during temporary cloud cover;
- an air-cooled condenser or "dry cooling," to minimize water usage in the site's desert environment;

- one Rankine-cycle reheat steam turbine that receives live steam from the solar receiver boilers and reheat steam from one solar reheater located in the power block at the top of its own tower adjacent to the turbine; and
- a raw water tank with a 250,000 gallon capacity; 100,000 gallons to be used for the plant and the remainder to be reserved for fire water.
- a small onsite wastewater plant located in the power block that treats wastewater from domestic waste streams such as showers and toilets;
- auxiliary equipment including feed water heaters, a deaerator, an emergency diesel generator, and a diesel fire pump.

### **TRANSMISSION**

Ivanpah 1, 2 and 3 would be interconnected to the Southern California Edison (SCE) grid through upgrades to SCE's 115-kV line passing through the site on a northeast-southwest right-of-way. Upgrades would include a new 220/115-kV breaker and-a-half substation between the Ivanpah 1 and 2 project sites. The existing 115-kV transmission line from the El Dorado substation would be replaced with a double-circuit 220-kV overhead line that would be interconnected to the new substation. Power from Ivanpah 1, 2 and 3 would be transmitted at 115-kV to the new substation.

### **NATURAL GAS**

Natural gas supply for ISEGS would connect to the Kern River Gas Transmission Company pipeline about 0.5 miles north of the Ivanpah 3 site.

### **WATER USE AND DISCHARGE**

Raw ground water would be drawn from one of two wells, located east of Ivanpah 2, which would provide water to all three plants. Each well would have sufficient capacity to supply water for all three phases. Actual water is not expected to exceed 100 acre feet per year for all three plants. Groundwater would go through a treatment system for use as boiler make-up water and to wash the heliostats. No wastewater would be generated by the system, except for a small stream that would be treated and used for landscape irrigation.

### **ENERGY COMMISSION AND BUREAU OF LAND MANAGEMENT JOINT REVIEW PROCESS**

The BLM and the Energy Commission have executed a Memorandum of Understanding concerning their intent to conduct a joint environmental review of all three plants in a single National Environmental Policy Act (NEPA)/California Environmental Quality Act (CEQA) process. It is in the interest of the BLM and the Energy Commission to share in the preparation of a joint environmental analysis of the proposed project to avoid duplication of staff efforts, to share staff expertise and information, to promote intergovernmental coordination at the local, state, and federal levels, and to facilitate

public review by providing a joint document and a more efficient environmental review process.

Under federal law, the BLM is responsible for processing requests for rights-of-way to authorize the proposed project and associated transmission lines and other facilities to be constructed and operated on land it manages. In processing applications, the BLM must comply with the requirements of NEPA, which requires that federal agencies reviewing projects under their jurisdiction consider the environmental impacts associated with the proposed project construction and operation.

As the lead agency under CEQA, the Energy Commission is responsible for reviewing and ultimately approving or denying all applications to construct and operate thermal electric power plants, 50 MW and greater, in California. The Energy Commission's facility certification process carefully examines public health and safety, environmental impacts and engineering aspects of proposed power plants and all related facilities such as electric transmission lines and natural gas and water pipelines.

### **ENERGY COMMISSION'S FACILITY CERTIFICATION PROCESS**

The Energy Commission is responsible for reviewing and ultimately approving or denying all applications to construct and operate thermal electric power plants, 50 MW and greater, in California. The Energy Commission's facility certification process carefully examines public health and safety, environmental impacts and engineering aspects of proposed power plants, and all related facilities such as electric transmission lines and natural gas and water pipelines. The issuance of a certificate by the Energy Commission is in lieu of any local, state, or federal permit (to the extent permitted by federal law). The Energy Commission is the lead agency under the California Environmental Quality Act (CEQA), but produces several environmental and decision documents rather than an Environmental Impact Report.

Now that the Energy Commission has determined that the AFC is complete, staff will begin data discovery and issue analysis phases where a detailed examination of the issues will occur.

Over the coming months, the Energy Commission and BLM will conduct a number of public workshops and hearings on the proposal to determine whether the proposed project should be approved for construction and operation and under what set of conditions. These workshops will provide the public as well as local, state and federal agencies the opportunity to ask questions about, and provide input on, the proposed project. The Energy Commission and BLM will issue joint notices for these workshops and hearings at least 10 days prior to the meeting.

### **AGENCY PARTICIPATION**

The Energy Commission requests that you review the sections of interest to your agency and determine whether the major issues of concern to your agency have been

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identified. We request that you provide any comments you may have regarding the potential issues to Jack W. Caswell, Project Manager, 1516 Ninth Street, MS-15, Sacramento, CA 95814, or email to [jcaswell@energy.state.ca.us](mailto:jcaswell@energy.state.ca.us).

There may be specific requests for agency review and comment during the proceedings. Local agencies may seek reimbursement for costs incurred in responding to those requests.

Enclosed is a copy (CD) of the AFC and Supplements A & B in electronic format. If you would like to have a hard copy of the AFC and the Supplemental A & B filings sent to you, if you have questions, or if you would like additional information on reimbursement or on how to participate in the Energy Commission's review of the project, please contact Jack W. Caswell, Project Manager, at (916) 653-0062 or by email at [jcaswell@energy.state.ca.us](mailto:jcaswell@energy.state.ca.us). The status of the project, copies of notices, electronic version of the AFC, and other relevant documents are also available on the Energy Commission's Internet web site at: <http://www.energy.ca.gov/sitingcases/ivanpah>. You can also receive email notification of all project related activities and availability of reports by subscribing to the List Server on the website.

Sincerely,

A handwritten signature in black ink, appearing to read "Roger E. Johnson", with a long horizontal flourish extending to the right.

Roger E. Johnson, Manager  
Energy Facilities Siting and Compliance Office

Enclosure