

BEACON SOLAR ENERGY PROJECT (08-AFC-2) FACT SHEET

- Project Title:** Beacon Solar Energy Project (Beacon)
- Sponsor:** Beacon Solar, LLC (Beacon Solar), a Delaware limited liability company and wholly owned subsidiary of FPL Energy, LLC (FPLE), submitted the Application for Certification (AFC) to construct, own and operate the Beacon Solar Energy Project (Beacon).
- Location:** The project is located in eastern Kern County at the western edge of the Mojave Desert. The project is located along the California State Route (SR)-14 corridor, approximately four miles north-northwest of the northern boundary of California City, approximately 15 miles north of the Town of Mojave, approximately 17 miles north of Edwards Air Force Base, and approximately 24 miles northeast of the City of Tehachapi. Koehn Lake (usually dry) is located approximately five miles to the east-northeast, and Red Rock Canyon State Park is located approximately four miles to the north.
- The Beacon power block and solar arrays would occupy approximately 1,240 acres, with a rerouted drainage channel, evaporation ponds, roadways, administration buildings and other support facilities occupying the remainder of the 2,012-acre plant site. The entire plant site, except the access road that is to connect the site to SR-14, would be located east of the highway and an existing Union Pacific rail line that extends roughly north-south. The small unincorporated community of Cantil is located to the northeast of the site; the Honda Proving Center, an automotive test track, is situated immediately to the east; and SR-14 runs approximately southwest-northeast to the west of the railroad tracks. Most of the land surface surrounding the site is vacant.
- The project site is almost completely vacant and significantly disturbed from past agricultural activities that occurred up to the mid-1980s. There are several abandoned structures in a small area just east of SR-14 and west of the plant site boundary. The site is relatively flat, with elevations ranging from approximately 2,025 to 2,220 feet above mean sea level. Pine Tree Creek, a dry desert wash that would be rerouted around the periphery of the solar facility, trends north-northeast to south-southwest through the center of the plant site. There are mapped, State-designated Alquist-Priolo Earthquake Fault Zones on the site.
- Cost:** The capital cost for the project is approximately \$1 billion.

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- Licensing:** The Beacon project would have a nominal electrical output of 250 megawatts (MW). The project is being reviewed by the Energy Commission under a one year licensing 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. This facility certification process is functionally equivalent to the California Environmental Quality Act (CEQA) process. During the licensing, the Energy Commission is the lead agency and has responsibility for the preparation of the final environmental document known as the Final Staff Assessment. As part of our review process, the staff of the Energy Commission works closely with local, state and federal agencies to ensure that all laws, ordinances, regulations and standards are addressed in the final decision of the California Energy Commission.
- Construction:** If approved by the Energy Commission, project construction is expected to begin in the third quarter of 2009 and take approximately 25 months for project completion. Major milestones for the planned Beacon construction schedule are as follows:
- Begin construction: third quarter 2009
 - Startup and test: second quarter 2011
 - Commercial operations: third quarter 2011
- Commercial Operation:** The project would have a moderate sized workforce during operations; an estimated workforce of 66 full time equivalent personnel would be needed to staff the facility 24 hours per day/seven days per week. The project is planned to begin commercial operations in the third quarter of 2011.
- Product Sales:** The project would have a nominal electrical output of 250 megawatts (MW). LADWP is currently preparing a System Impact Study to evaluate the potential need for any downstream regional transmission system upgrades that would be required as a result of interconnecting the Beacon project. LADWP is in the process of developing a major transmission upgrade project explicitly designed to bring power to their customers from renewable energy projects in the general vicinity of the Beacon project site. At this time, a power purchase agreement has not been made for the Beacon project.
- Technology:** The project is a concentrated solar electric generating facility using established parabolic trough solar thermal technology to produce electrical power using a steam turbine generator fed from a solar steam generator. The solar steam generator receives heated heat transfer fluid from solar thermal equipment comprised of arrays of parabolic mirrors that collect energy from the sun.

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- Components:** Beacon Solar's primary objective for the proposed project is to construct, operate and maintain an efficient, economic, reliable, safe and environmentally-sound solar powered generating facility. This facility is intended to help meet the State of California objectives mandated by SB 1078 (California Renewable Portfolio Standard Program); AB 32 (California Global Warming Solutions Act of 2006); and other local mandates adopted by the State's municipal electric utilities for the long term wholesale purchase of renewable electric energy for distribution to their customers. The site has been previously disturbed by intensive farming and is in close proximity to transmission infrastructure. Key components of the Beacon project include the following:
- Beacon would implement concentrated solar parabolic trough mirror technology as a proven, reliable and efficient approach to bring new renewable power generation online.
 - Beacon Solar is seeking approval of two options for interconnecting the project to LADWP's transmission system, only one of which would eventually be built.
 - A new 17.6-mile, eight-inch gas pipeline would be constructed (entirely within already-disturbed rights of way) to connect the Beacon project to an existing Southern California Gas Company pipeline west of California City.

Transmission Line: Beacon Solar has filed an electrical interconnection request for the project with the Los Angeles Department of Water and Power (LADWP). LADWP's 230 kilovolt (kV) Barren Ridge Switching Station is located across California State Route 14 (SR-14) approximately 1.5 miles southwest of the project site. Beacon Solar is seeking approval of the following two similar options for interconnecting the project to LADWP's transmission system, only one of which would eventually be built:

Option 1: Construction of a new, approximately 3.5-mile 230 kV transmission line (approximately 1.6 miles within the 2,012-acre plant site boundary), that would run west from the power block across SR-14 and south across private property to the Barren Ridge Switching Station.

Option 2: Construction of a new, approximately 2.3-mile 230 kV transmission line (approximately 1.6 miles within the plant site boundary), that would run west across SR-14 to a new project switching station to be constructed at the location where the project's transmission line first meets LADWP's existing transmission right-of-way (ROW). A second, 230 kV transmission line slightly over one mile long would then be constructed east of and adjacent to the existing Los Angeles Department of Water and Power ROW from the new project switching station down to the Barren Ridge Switching Station.

Both options are being pursued at this time because a final route cannot be selected until the System Impact Study and Facilities Study are completed by LADWP, a more detailed design is completed, and the associated transmission line route easements are secured for the option selected.

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Fuel: The solar thermal technology would provide 100 percent of the power generated by the plant; no supplementary energy source (e.g., natural gas combustion to generate electricity) is proposed. The project would utilize two auxiliary boilers fueled by natural gas to reduce startup time and to keep the temperature of the heat transfer fluid above its relatively high freezing point (54 degrees Fahrenheit (°F)). In order to fuel the boilers, a new 17.6-mile, eight-inch gas pipeline would be constructed (entirely within already-disturbed rights of way) to connect the project to an existing Southern California Gas Company pipeline west of California City.

Water Supply: The project would use a wet cooling tower for power plant cooling. Water for cooling tower makeup, process water makeup, and other industrial uses such as mirror washing, would be supplied from onsite groundwater wells, which also would be used to supply water for employee use (e.g., drinking, showers, sinks, and toilets). A package water treatment system would be used to treat the groundwater to meet potable standards for employee use and a septic system and onsite leach field would be used to dispose of sanitary wastewater.

It is estimated that the project would use approximately 1,600 acre feet per year of groundwater. According to pumping test data provided in the AFC, groundwater supply wells on the plant site have sufficient capacity (at least 2,000 gallons per minute) to meet the project's water supply requirements. According to the AFC, the project's groundwater usage would slow down (by less than 20 percent) the rate of groundwater level recovery in the area over recent years that has resulted from the cessation of agricultural activities on and around the project site.

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Air Quality & Emission Controls:

The project would be a source of criteria pollutants (NO_x, SO_x, VOC, PM₁₀ and CO) associated with the operation of two auxiliary boilers, an emergency fire water pump engine, a wet cooling tower and the heat transfer fluid (HTF) expansion tanks. According to the AFC, controlled emissions from these sources would not exceed major source thresholds for any pollutant, and do not exceed the threshold above which emission offsets would be required for the project.

Kern County Air Pollution Control District (KCAPCD) rules require that Best Available Control Technology (BACT) be applied to any new or modified source that results in an emission increase of nitrogen oxide (NO_x), sulfur oxide (SO_x), particulate matter (PM₁₀), or volatile organic carbon (VOC). Beacon Solar has proposed ultra-low-NO_x burners with natural gas fuel as BACT for the project boilers, a Tier 3-compliant engine with ultra-low sulfur diesel fuel as BACT for the fire water pump, a high efficiency drift eliminator as BACT for the cooling tower, and carbon adsorption as BACT for the HTF expansion tank vent.

Project construction emissions were modeled by Beacon Solar to determine impacts during the construction phase and project impacts (without background) showed no exceedances of the California Ambient Air Quality Standards (CAAQS). The project's estimated emissions during the commercial operations phase were also modeled to determine air quality impacts. Modeled concentrations, when added to background concentrations, are projected by the applicant to be below the Federal and State standards for all criteria pollutants with the exception of 24-hour and annual PM₁₀. The daily and annual PM₁₀ exceedances are projected to occur because the monitored background concentrations, by themselves, are reported to be greater than the standards even though the modeled 24-hour and annual PM₁₀ impacts for the project are less than one percent of the applicable CAAQS.

Although new PM₁₀ emissions are estimated to result from the project, Beacon Solar believes the project would likely actually reduce overall PM₁₀ emissions in this region. The applicant's discussions with personnel at the Honda Proving Center facility located immediately to the east of the project site indicate that the exposed open fields on the project site are currently a large source of wind blown dust. By its nature, a solar energy project must keep dust to a minimum through the use of dust control measures because a film on the mirrors would reduce their efficiency for power production. According to the AFC, experience at the existing Solar Electric Generating System (SEGS) facilities at Kramer Junction and Harper Lake has been that PM₁₀ emissions from driving in the solar field are necessarily negligible. Dust control is achieved by a combination of soil stabilizers, water from the mirror washing, and compaction of the driving surface over time; these mitigation measures would be utilized by the proposed project.

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Wastewater: Project cooling water blowdown would be piped to double-lined and monitored onsite evaporation ponds; no liquid waste would be discharged offsite. Pond residue eventually would be disposed at an appropriate offsite landfill as non-hazardous waste. No offsite backup cooling water supply is planned at this time; the use of multiple onsite water supply wells and redundancy in the well equipment would provide an inherent backup in the event of outages affecting one of the onsite supply wells.