

Memorandum

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To: **Commissioner Karen Douglas**, Siting Committee Chair
Chairman Robert B. Weisenmiller, Siting Committee Associate Member
Kourtney Vaccaro, Hearing Officer

From: **California Energy Commission - Craig Hoffman**
1516 Ninth Street Compliance Project Manager
Sacramento, CA 95814-5512

Subject: **CALICO SOLAR PROJECT AMENDMENT (08-AFC-13C)**
ISSUES IDENTIFICATION REPORT

Attached is staff's Issues Identification Report for the Calico Solar Project Amendment. This report serves as a preliminary scoping document that identifies issues that Energy Commission staff believes will require careful attention and consideration. Energy Commission staff will present the issues report at the Informational Hearing and Site Visit separately noticed by the assigned Committee for the project on April 20, 2011.

This report also provides staff's proposed schedule for the amendment process.

Attachment

cc: Docket 08-AFC-13C

CALICO SOLAR PROJECT AMENDMENT

(08-AFC-13C)

ISSUES IDENTIFICATION REPORT

CALIFORNIA ENERGY COMMISSION

Siting, Transmission and Environmental Protection Division

**ISSUES IDENTIFICATION REPORT
CALICO SOLAR PROJECT AMENDMENT**

(08-AFC-13C)

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ISSUES IDENTIFICATION REPORT

Energy Commission Staff Report

PURPOSE OF THE REPORT

This report has been prepared by the California Energy Commission staff to inform the Committee and all interested parties of the potential issues that have been identified in the case thus far. These issues have been identified as a result of our discussions with federal, state, and local agencies, and our review of the Petition to Amend filed by Calico Solar, LLC on March 22, 2011.

The Issues Identification Report contains a project description, summary of potentially significant environmental and engineering issues, and a discussion of the proposed project schedule. The staff will continue to address the status of issues and progress towards their resolution in periodic reports to the Committee.

AMENDMENT PROCESS

The purpose of the Energy Commission's review process is to assess the impacts of this proposal on environmental quality and public health and safety. The review process includes an evaluation of the consistency of the proposed changes with the Energy Commission's Decision and, if the project, as modified, will remain in compliance with applicable laws, ordinances, regulations, and standards (Title 20, Calif. Code of Regulations, section 1769).

The Calico Solar Project Amendment will be processed as an amendment to the Calico Solar Project Final Decision that was certified by the Energy Commission on December 1, 2010. Staff will review only the proposed changes to the project, not the entire approved project.

PROJECT DESCRIPTION

On March 22, 2011, Calico Solar, LLC filed a petition with the California Energy Commission requesting to modify the Calico Solar Project (CSP). The 663.5-megawatt project was certified by the Energy Commission on December 1, 2010. The proposed project will be constructed on an approximate 4,613-acre site located in San Bernardino County, California. The project site is approximately 37 miles east of Barstow, 17 miles east of Newberry Springs, 57 miles northeast of Victorville, and approximately 115 miles east of Los Angeles (straight line distances).

The Calico Amendment does not propose to change the size, boundary, or generating capacity of the Energy Commission-approved project. It proposes a modification in the solar collector technology used on the site. The proposal would generate 100.5 megawatts of power using SunCatcher technology and 563 megawatts using single-

axis tracker photovoltaic (PV) technology. Both the SunCatchers and the PV collectors will be integrated components of the power plant, operate from a single control room, utilize the same transmission interconnection system, access a common water system and road network, and depend upon the same construction and operation personnel.

The amendment proposes to alter the phasing of the project to reduce access issues associated with the northern portion of the site. Phase 1 will be located primarily south of the Burlington Northern Santa Fe (BNSF) railroad line and will include the main access road, the main services complex, the on-site substation with a shorter transmission line interconnecting with the Pisgah Substation, a water well (located north of the railroad), a water line and a portion of PV solar collectors. Phase 2 will be located entirely north of the railroad and will include the remainder of the PV solar collectors and the SunCatchers. The SunCatchers will be located toward the center of Phase 2 to reduce the noise impacts on wildlife and the glint and glare concerns.

Calico Solar Project approved by the Commission on December 1, 2010

The Calico Solar Project approved by the Commission included the following components:

Phase 1 of the approved project, which is located primarily north of the railroad and is comprised of 1,876 acres, includes the following elements:

- main access road;
- bridge constructed over the railroad;
- main services complex (including temporary lay down area);
- on-site substation and two-mile transmission line to the Pisgah Substation;
- water well and an approximately one-mile waterline to the main services complex;
- solar field comprised of SunCatchers producing up to 275 MW; and
- hydrogen generation, storage, and distribution system for SunCatchers located north of the railroad.

Phase 2 of the approved project, which is located south of the railroad and south of Phase 1, is comprised of 2,737 acres, and includes the following elements:

- solar field comprised of SunCatchers producing up to 388.5 MW; and
- hydrogen generation, storage, and distribution system for the SunCatchers located south of the railroad.

Proposed Modification (Calico Solar Project Amendment)

Calico Solar proposes changes to the approved site layout and technology associated with the approved project.

- The proposed technology to be utilized on the modified project would be modified to include 563 MW of PV modules mounted on single-axis trackers, and 100.5 MW of SunCatchers.
- The phasing of the modified project would include construction of Phase 1 primarily south of the BNSF railroad and Phase 2 north of the railroad.

Phase 1 of the modified project, which is primarily located south of the railroad and comprises approximately 2,144 acres, would include the following elements:

- main access road;
- relocated main services complex (including temporary lay down area);
- relocated on-site substation and shortened transmission line to the Pisgah Substation;
- water well located north of the railroad, and waterline to the main services complex (same source and well location, with a longer waterline crossing under the railroad); and
- solar field comprised of single-axis tracking PV modules producing up to 275 MW.

Phase 2 of the modified project, which is located north of the railroad and comprises 2,469 acres, would include the following elements:

- bridge constructed over the railroad;
- continuation of the main access road north of railroad;
- solar field, comprised of up to 288 MW of single-axis tracking PV modules and 100.5 MW of SunCatchers, to be located toward the center of Phase 2; and
- hydrogen generation, storage, and distribution system for SunCatchers.

Proposed Modifications to Site Technology

Calico Solar is proposing to use a combination of PV technology and the permitted SunCatcher technology to achieve the approved 663.5 MW electrical generation for the modified project. Approximately 2,140 PV tracker blocks are proposed to produce a total of 563 MW of the total 663.5 MW permitted. SunCatchers would provide the remaining 100.5 MW.

The tracker blocks are made up of approximately 19 rows containing approximately 48 PV modules, totaling over 900 modules per tracker block. A basic tracker block will measure approximately 280 feet by 170 feet and occupy a space of approximately 1.1 acres. The size of each tracker block may be reduced as required by site characteristics such as boundaries, roads, topography, or similar constraints.

These PV tracker blocks are the basic building blocks of the PV arrays. Each basic tracker block would be similar in configuration and capability. The tracker blocks are each controlled by a single tracker motor and control system which rotates all of the modules within a tracker block in unison around a north-south axis as they follow the daily movement of the sun from east to west.

The PV modules that make up the tracker blocks have the capability to convert the sun's energy into direct current (DC) electricity, each producing a relatively small amount of electricity, about several hundred watts each at rated conditions. Modules are electrically connected in series and parallel arrangements. A series arrangement increases the collective output voltage and a parallel arrangement increases the current to the desired levels for the DC collection system.

The modules being considered for this modified project are produced by a number of companies in this industry. Among them are SunPower, Suntech, Yingli, Q-Cells, Trina, and other manufacturers of silicon crystalline modules. For reasons of availability to support the modified project delivery requirements, multiple sources might be utilized, which is a common practice in the industry. Modules are generally quite similar in their physical and performance characteristics. They tend to be about 77 inches tall, 40 inches wide, and 2 inches thick and weigh approximately 55 pounds. Each module is encapsulated with tempered glass (or similar transparent material) on the front surface, with a protective and waterproof material on the back. The edges are sealed for weatherproofing, and there is often an aluminum frame holding everything together in a mountable unit. On the back of the module, there is a junction box, or wire leads, providing electrical connections.

A typical row consists of 48 PV modules attached to a horizontal steel shaft. These shafts are supported by 4.5-inch-diameter vertical steel posts that are spaced approximately 12 to 15 feet apart. The steel shafts are connected by a main drive shaft, which is supported by 6-inch-diameter steel posts. Both the 4.5-inch and the 6-inch steel posts generally project 5 to 6 feet above the ground and are vibrated to a roughly equivalent depth into the ground. To account for minor ground surface differences, instead of grading, the steel posts would vary in height above the ground surface more than the 5 to 6 feet mentioned above in order to create a level tracker block. At maximum tilt, the modules will be at least 3 feet from the ground surface as well as 3 feet above the shaft, for a total height of approximately 9 feet.

The energy produced by each tracker block is directed to one of the approximately 282 inverter pads. Each 2 MW inverter pad is approximately 33.5 feet by 15 feet and will contain two or more inverters, one step-up 450 volt to 34.5 kV transformer, and one main line distribution switchboard mounted on a foundation. As a result of the recent increases in the size of PV projects, inverter suppliers are actively developing larger units to allow fewer inverters per MW. The inverter pads have been selected to take advantage of this trend. The inverters not only convert the DC energy from the modules to 60 Hz but they also provide the power quality functions of voltage regulation, power factor control, low-voltage ride through (LVRT), and supervisory control function, in accordance with SCE system and California Independent System Operator (CAISO) requirements. From the inverter pads, the electricity runs through underground wires and on posts to the on-site substation where it is stepped up to the 230 kV required for the SCE interconnection. The collection system would be very similar to the Approved Project's mid-range collection system used with the SunCatcher.

Summary of Construction Activities and Methods of the Modified Project

While the construction activities and methods proposed for the modified project would be similar to those described under the approved project in the Commission Decision, the intensity of the construction activities would be reduced under the modified project. Installation of steel posts to support PV modules would not require the same heavy equipment as is required for SunCatcher pedestal and dish installation. Also, because PV technology does not require intense on-site assembly, the size of the workforce required during construction of the modified project would be reduced from the workforce required under the approved project. As a result, fewer construction vehicles would be needed for the modified project. The construction of the modified project is expected to take approximately four years, however, power could be available to Pisgah Substation as each tracker block or group of SunCatchers is completed. As with the approved project, temporary power would be supplied by generators during construction of the modified project.

Calico Solar would access Phase 1 project features north of the railroad at a crossing to be agreed upon with BNSF. A temporary crossing agreed upon by BNSF may also be utilized during construction of the above-grade permanent bridge crossing, which would be one of the initial activities of Phase 2. Calico Solar is currently in negotiation with BNSF regarding access, and would obtain all necessary approvals and permits for this proposed access. After completion of the bridge, the bridge would provide the permanent access point to the modified project area north of the railroad for the completion of Phase 2 construction activities, as well as during operation of the facility.

Summary of Modified Project Operations

The modified project would operate 7 days per week, generating electricity during normal daylight hours when solar energy is available. PV technology requires lower maintenance (e.g., fewer moving parts and fewer periodic replacements of parts) and less washing than the SunCatcher technology. Therefore, the modified project would employ a reduced permanent workforce during operations. Under the approved project, the height of SunCatchers (approximately 40 feet above the ground surface) and the frequency of washings (monthly), would necessitate washing trucks with a mounted boom travelling on improved maintenance roads treated with soil stabilizer. Under the modified project, the SunCatcher operations and maintenance would remain the same as the approved project. For the operation and maintenance of the PV portion of the modified project, no roads within the tracker blocks would be needed. Instead, up to four times a year, small vehicles would travel on unimproved module access points that would alternate with areas of native soil between every other row of PV modules.

POTENTIAL MAJOR ISSUES

This portion of the report contains a discussion of the potential issues the Energy Commission staff has identified to date. The Committee should be aware that this report may not include all of the significant issues that may arise during the case, since discovery is not yet complete, and other parties have not had an opportunity to identify their concerns. The identification of the potential issues contained in this report is based on comments of other government agencies and on our judgment of whether any of the following circumstances could occur:

- Potential significant impacts which may be difficult to mitigate;
- Potential areas of noncompliance with applicable laws, ordinances, regulations or standards (LORS);
- Areas of conflict or potential conflict between the parties; and
- Areas where resolution may be difficult or may affect the schedule.

The following table lists all the subject areas evaluated and notes Biological Resources, Soil and Water Resources and Traffic and Transportation / Visual Resources as areas where potentially significant issues have been identified. Identification of an area as having no potential issues does not mean that an issue will not arise related to the subject area during the course of the amendment review process.

This report will not limit the scope of staff's analysis throughout this proceeding, but it acts to aid in the analysis of the potentially significant issues that the Calico Solar Project Amendment proposal poses. The following discussion summarizes the potential issues, identifies the parties needed to resolve the issues, and where applicable suggests a process for achieving resolution. At this time, staff does not see these potential issues as non-resolvable.

The table on the following page lists all the subject areas evaluated and notes that Biological Resources, Soil and Water Resources and Traffic and Transportation / Visual Resources have currently identified potentially significant issues. The table also indicates the subject areas in which staff, at the present time, expects to issue Data Requests (DRs). DRs in additional areas may become necessary as the case progresses.

Major Issues	DRs	Subject Area	Major Issues	DRs	Subject Area
No	Yes	Air Quality	No	No	Project Overview
No	No	Alternatives	No	No	Public Health
Yes	Yes	Biological Resources	No	Yes	Reliability
No	No	Cultural Resources	No	No	Socioeconomics
No	No	Efficiency	Yes	Yes	Soils and Water Resources
No	No	Facility Design	Yes	Yes	Traffic and Transportation
No	No	Geological Hazards	No	No	Trans. Line Safety & Nuisance
No	No	Hazardous Materials Handling	No	No	Transmission System Design
No	No	Land Use	Yes	Yes	Visual Resources
No	No	Noise	No	No	Waste Management
No	No	Paleontological Resources	No	No	Worker Safety

DRs – Data Requests

Overall Project Compliance and Timing

The Calico Solar Project that was approved by the Commission in late 2010 had previously been submitting compliance items to satisfy the conditions of certification. These compliance submittals took place between mid 2010 up to January 2011. Compliance submittals have ceased for the past 3 months.

The Calico applicant must continue to ensure that compliance activities continue. Many of the conditions of certification will be required if the proposed amendment is approved. There are numerous conditions of certification that will remain unchanged that require the applicant's attention.

Although this is not an issue that affects the processing of the proposed Petition to Amend, it is an issue of which the applicant must be aware.

Biological Resources

The Renewable Energy Action Team (REAT) agencies (Bureau of Land Management, California Department of Fish and Game, US Fish and Wildlife Service, and Energy Commission) are currently discussing discretionary changes to the desert tortoise translocation plan and the biological opinion for the Calico project. These proposed changes to the translocation plan and biological opinion are allowed under the current approved translocation plan and based on new available information regarding tortoise translocation and the availability of additional acreage in the Pisgah Area of Critical Environmental Concern (ACEC) for translocation of animals. The Pisgah ACEC is considered a potentially superior translocation area to the Ord-Rodman Desert Wildlife Management Area (DWMA) identified in the approved translocation plan. To accommodate these discretionary changes, the translocation plan will need to be edited and approved by the agencies prior to the start of hearings on the amendment so that the public can have adequate review of the revised plan. The proposed translocation

plan edits have been generally discussed with the applicant and they are proceeding with making edits for review and approval by the permitting agencies. The agencies will require a survey of the proposed translocation area in the spring of 2011 and subsequent blood testing of any tortoise found during surveys under the amended translocation plan and biological opinion. The requirements for survey of the proposed translocation area and blood testing of the resident population within the proposed translocation plan in the spring of 2011 is already required in the approved translocation plan. Therefore, this measure is not a change with the exception that testing would occur primarily in the Pisgah ACEC instead of both the Pisgah and the Ord-Rodman DWMA. In addition, the agencies have suggested that the applicant conduct spring surveys for tortoise, including blood testing, within the new Phase 1 area of the project. The surveys within the project area may allow the applicant to complete the tortoise translocation process in September of 2011 rather than holding animals over the winter in pens. Holding animals in pens during winter months is currently allowed in the approved translocation plan and biological opinion, but is not biologically preferable. The survey of the new Phase 1 within the project area is being left to the discretion of the applicant with the understanding that they may not be able to complete the translocation process in September of 2011 without conducting spring surveys and blood testing.

Due to changes in the phasing design between the approved project and the project amendment, portions of the new Phase 1 area did not have fall plant surveys conducted in the fall of 2010. Fall plant surveys will be required for those previously unsurveyed portions of the new Phase 1. This could impact the construction schedule for 2011 depending on when the surveys can be conducted and whether the surveys find additional special-status plants within the Phase 1 project area. Construction within portions of Phase 1 that have been previously surveyed for fall plants would be allowed to proceed.

Commission staff will need detailed information on how impacts to state waters were calculated under the proposed amendment and if they represent all potential impacts to jurisdictional features from project construction and operation. It was the previous understanding of staff that PV modules would be less likely to avoid impacts to state waters as compared to the selective placement of SunCatchers. The applicant is currently estimating that the impacts to state waters will decrease under the amendment as compared to the approved project. Depending on the outcome of the data requests for this item, additional fieldwork may be required to complete the final impact calculation for state waters from the proposed amendment. The applicant can perform this work at any time of year, so they should be able to schedule any needed fieldwork so as to avoid impacting their construction schedule for the fall of 2011.

Soils and Water Resources

The project site is traversed by numerous drainages that convey intermittent flash flood flows. Site development could affect these flows and result in downstream erosion and sedimentation that could have significant impacts on environmental resources. Flood flows could also impact solar panel and SunCatcher foundation elements, assembly and

maintenance buildings, vehicle access roads and potentially impact the BNSF railroad. Detailed grading and drainage control plans need to be developed for the project that address these potential impacts and provide mitigation measures that will render these hazards less than significant, both as a protection to the environment and to existing infrastructure (BNSF), while assuring the continued dispatchability of the renewable energy source. Due to unsuccessful attempts by the project owner to satisfy these issues in the initial project, staff is concerned about the time required to develop the detailed final drainage, erosion and sediment control plan required for project development. Staff has and will continue to address these issues through data requests to the applicant.

The identified water supply for the project is a groundwater well located on the north side of the BNSF railway. Phase one of the project is proposed for an area south of the BNSF railway. Currently, there is no access agreement between the project owner and BNSF that allows the project owner to access the BNSF right-of-way. Therefore, there is no access by the project owner to the project's water supply well. Similarly, there is no agreement allowing a water conveyance pipeline across the BNSF right-of-way. The project owner has filed a lawsuit with the California Public Utilities Commission requesting forced access of the railroad right-of-way, and independent negotiations between the project owner and BNSF are ongoing. However, at this time, the access issue has not been resolved.

Traffic and Transportation / Visual Resources

Glint and glare could result from reflections of the sun on the surfaces of the PV modules and SunCatcher mirrors. Staff is concerned about potential significant impacts of glint and glare on users of the nearby traffic and transportation system. BNSF's railroad tracks run through the Calico project site, potentially exposing train engineers to glint and glare impacts. Motorists using Interstate 40 and National Trails Highway, just south of the project site, and any other roadways within view of the project, could also be impacted by glint and glare from the PV modules and SunCatchers. Potential glint and glare impacts include retinal burn, flash blindness, veiling reflections and distracting glare, which could interfere with the train engineers' and motorists' abilities to safely operate trains and vehicles, respectively.

To explore these potential impacts, staff is requesting that the project owner provide a glint and glare study. Staff included in the data request details of the required study and will work with the project owner and BNSF to support the development of the study.

STATUS CONFERENCES

Staff requests that the Calico Solar Project Amendment Committee hold teleconference / Web Ex status calls every four weeks to stay apprised of staff and applicant progress, beginning the week of May 9, 2011.

This will be an opportunity to verify how the project is meeting critical time frames and if the schedule is being met.

ELECTRONIC FILING

Staff requests that the Calico Committee allow the staff documents to be served electronically. Parties also wanting a hard copy may request it in addition to the electronic copy. This is in an effort to reduce the amount of paper used and time spent duplicating paper documents in this proceeding.

PROJECT SCHEDULE

On the following page is staff's proposed schedule for the key events of the project. Meeting the proposed schedule will depend on: the applicant's timely response to staff's data requests; determinations by other local, state and federal agencies; the submittal of required applications and approval of permits by federal agencies; and other factors not yet known.

The key driving force behind the proposed schedule is the submittal of a thorough and complete hydrology study and a glint and glare study along with other data requests.

STAFF'S PROPOSED SCHEDULE

Calico Solar Project Amendment - (08-AFC-13C)

ACTIVITY	DAY	DATE
Applicant files Calico Solar Project Amendment	--	3/22/11
Staff files Notice of Receipt	--	3/25/11
Staff files Issues Identification Report	--	4/14/11
Staff files data requests	--	4/15/11
Informational Hearing and Site Visit	--	4/20/11
Applicant provides data responses (last response)	Day 1	May 9
Data response and issue resolution workshop	Day 14	May 23
Staff Assessment (SA) published	Day 46	June 24
Staff Assessment Workshop	Day 64	July 12
Staff Assessment (SA) – 30 day comment period ends	Day 77	July 25
* Evidentiary Hearing	Day 84	August 1
+ Revised Staff Assessment	Day 100	August 17
Response to comments on the SA	Day 100	August 17
* Committee Recommendation to Commission	Day 106	August 23
* Commission Business Meeting	Day 121	September 7

+ Significant comments or additional analysis could require a 30 day comment period.

* The assigned Committee will determine this part of the schedule.