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July 27, 2012

California Energy Commission

DOCKETED
09-AFC-5C

TN # 66373

JUL 27 2012

Dale Rundquist
Project Manager
California Energy Commission
Siting, Transmission and Environmental Protection Division
1516 Ninth Street, MS 15
Sacramento, CA 95814

RE: Abengoa Mojave Solar Power Project, Docket No. 09-AFC-5C – Petition to Modify the Decision to clarify the required fire protection measures for the project’s solar fields

Dear Mr. Rundquist:

Enclosed please find Mojave Solar LLC’s petition to amend Docket No. 09-AFC-5C. The petition requests that Condition of Certification HAZ-7 and other language in the Commission’s decision be amended to clarify the required fire protection measures applicable to Abengoa Mojave Solar Power Project’s solar fields.

Should you have any questions or need additional information regarding this submittal, please contact me at (916) 447-2166 or cbk@eslawfirm.com, or Matt Stucky of Abengoa Solar, Inc. at (415) 391-1685 or Matt.Stucky@solar.abengoa.com.

Sincerely,



Chase B. Kappel
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Attorneys for Abengoa Solar, Inc.

**PETITION TO AMEND THE COMMISSION'S DECISION FOR THE
ABENGOA MOJAVE SOLAR POWER PROJECT**

09-AFC-5C

July 27, 2012

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1.0 Introduction and Overview of Proposed Amendment

Pursuant to Section 1769 of the Commission's Siting Regulations,¹ Mojave Solar, LLC hereby petitions the California Energy Commission ("Commission" or "CEC") to amend the Commission's Decision ("Decision") licensing the Abengoa Mojave Solar Project² to clarify the applicability of National Fire Protection Safety ("NFPA") Standard 850.³ Specifically, the Decision acknowledges the design of the project's fire protection system, and this design does not incorporate all aspects of NFPA Standard 850 in the solar array portion of the project. However, the Decision includes NFPA Standard 850 among the applicable fire protection and suppression requirements, and the Decision does not clarify the standard shall be followed beyond the extent described in the project description.

The complete description of the proposed amendment and its necessity are discussed below. The proposed amendment will improve the safety of the public and project personnel, will not adversely affect the environment, will continue to be in compliance with all applicable LORS, and will not affect nearby property owners or the public.

2.0 Description of Reason for Proposed Modification

This petition requests that the applicability of NFPA Standard 850 to the project site be clarified so that the Decision is consistent with the fire protection aspects of the project's design.

The project is comprised of two power islands and two independently-operable solar fields. Each power island is fed by a solar field. The power islands include the major electric generating equipment of the project, including the solar steam generators, steam turbine generators and condensers, electrical switchyards with step-up and auxiliary transformers, cooling towers, heat transfer fluid ("HTF") heat exchangers, and various water storage and treatment tanks. The power island portions of the site are the only areas of the plant that will be continuously occupied by plant personnel. The solar fields are made up of single-axis-tracking parabolic trough solar collectors, which heat the HTF circulating through the troughs in pipes.

The fire protection system proposed in Mojave Solar's Application for Certification ("AFC"), and repeated in the Decision, is as follows:

The AMS fire protection systems will include a fire protection water system and portable fire extinguishers. The fire protection water system would be supplied from a dedicated 360,000-gallon portion of the 1,930,000-gallon service water storage tanks located on each plant field. One electric and one diesel-fueled backup firewater pump, each with a capacity of 3,000 gallons per minute, would deliver water to the fire-protection water piping network on

¹ Cal. Code Regs., tit. 20, § 1769.

² Abengoa Mojave Solar Project Commission Decision, Doc. No. 09-AFC-5, CEC-800-2010-008-CMF, Sept. 2010.

³ NFPA 850, Recommended Practice for Fire Protection for Electric Generating Plants and High Voltage Direct Current Converter Stations, 2010 Edition, hereinafter "NFPA Standard 850."

each plant site. A smaller electric motor-driven jockey pump would maintain pressure in the piping network.

The piping network would supply fire hydrants located at intervals throughout the power island, a sprinkler deluge system at each unit transformer, HTF expansion tank and circulating pump area, and sprinkler systems in the operations and administration buildings. Portable fire extinguishers of appropriate sizes and types will be located throughout the plant site. Fire protection for each solar field would be provided by zoned isolation of the HTF lines in the event of a rupture that results in fire.⁴

The AFC further clarifies that “[a]s vegetation or other combustible materials will not be allowed in the solar field, the HTF will be allowed to extinguish itself naturally, since the remainder of the field is of nonflammable material (aluminum, steel, and glass).”⁵ In considering the AFC, Commission staff agreed that the “information in the AFC indicates that the project intends to meet the fire protection and suppression requirements of the 2007 California Fire Code, all applicable recommended NFPA standards (including Standard 850 addressing fire protection at electric generating plants), and all Cal/OSHA requirements.”⁶ Accordingly, the Decision and the exhibits it relies upon recognize that the project design proposal certified by the Commission does not include fire protection equipment in the solar field beyond the zoned isolation of the HTF lines.

However, the Decision also finds that “the project will meet the fire protection and suppression requirements of...all applicable recommended National Fire Protection Association (NFPA) standards (including Standard 850 addressing fire protection at electric generating plants).”⁷ “In addition to the fixed fire protection system, smoke detectors, flame detectors, high temperature detectors, appropriate class of service portable extinguishers, and fire hydrants must be located throughout the facility at code-approved intervals. These systems are standard requirements of the NFPA and the Uniform Fire Code (UFC).”⁸

NFPA Standard 850 provides that “[h]ydrant’s *should* be placed strategically about the solar field so as to provide coverage of all HTF piping associated with solar collection assemblies and HTF supply and distribution piping.”⁹ Therefore, there is a need to resolve the approved design for the solar field’s fire protection system and the Decision’s incorporation of NFPA Standard 850 and statement that fire hydrants must be located throughout the facility at code-approved intervals.

Pursuant to the Decision’s discussion of the project description and consistent with the AFC, Mojave Solar will strictly adhere to the NFPA Standard 850 recommendations in the power islands. However, application of all the NFPA Standard 850 recommendations in the

⁴ Decision at p. 19, citing AFC pages, p. 2.0-21.

⁵ AFC at 2.0-21.

⁶ Supplemental Staff Assessment -- Part A at 5.14-5.18.

⁷ Decision at 179.

⁸ Decision at 179, emphasis added.

⁹ NFPA Standard 850, §11.5.3, emphasis added.

solar fields, particularly the recommendations regarding placement of hydrants throughout the solar fields, will not enhance site safety or protect critical plant equipment.

First, an HTF fire is not effectively fought with water. As a result, the hydrants at issue do not enhance safety—indeed, for the reasons discussed below, use of the hydrants would be hazardous. Proper isolation and cutoff measures, however, can limit the damage from an HTF fire. The project will have HTF headers with shut-off valves, which allow the flow of HTF to the fire to be cut-off, limiting the scope of potential fire damage to a localized area within the solar array. Each loop is also provided with a manual shut-off valve, allowing the isolation of a loop from the rest of the solar array.

Second, placing hydrants to cover all HTF piping in the solar fields would result in greater risk to firefighting personnel if accessed during a fire. The solar fields contain extensive solar collector matrices, and there are therefore only certain viable exit routes. Swales are also often located between the loops, further endangering a safe exit during a fire. Should any additional fire or failure occur along an exit route, the firefighting personnel and equipment could be trapped inside the web of HTF piping in the solar field. Thus, if hydrants placed in the solar field were ever used in the event of a fire, it would result in extreme danger to firefighters. The San Bernardino County Fire Department has expressed its agreement with this belief.¹⁰ Presented with such a risk, hydrants in the solar field will never be used in the event of a fire and are therefore unnecessary.

Third, unlike the power block equipment, the solar collectors do not represent a critical component to the project's power production. Should a section of loops be inoperable, these can be bypassed or isolated allowing for continued operation until the damaged area can be replaced. The plant contains hundreds of loops to overcome this event, thereby adding to the reasons for discouraging firefighters from taking the unnecessary risk to fight fires in the solar fields. Undeniably, the risk involved in fighting a fire in the solar field with water from hydrants would not offset the marginal gain received by protecting the field.

For these reasons, placement of fire hydrants in the solar fields will not enhance safety and is unnecessary. Mojave Solar therefore petitions the Commission for the Decision to be clarified to expressly permit the project to employ fire protection in the solar fields as proposed in the AFC, and that the Commission not require strict adherence to all the recommendations of NFPA Standard 850 in the project's solar fields.

¹⁰ Discussions between Commission staff and San Bernardino County Fire Department representative occurred on June 27, 2010. During this call, a San Bernardino County Fire Department representative expressed that the department “would not use the hydrants as a fire in the field would pose little threat of spread off site or risk to the public and would pose significant risk to their personnel in entering the field to suppress it.” (Email from M.Layton of the Commission to M. Stucky of Abengoa Solar Inc., June 28, 2012.)

3.0 The Amendment is not based on information known at the time of the certification proceeding

Section 1769(a)(C) states that “if the modification is based on information that was known by the petitioner during the certification proceeding, [the petition must contain] an explanation why the issue was not raised at that time.” The proposed modification is not based on information known by Mojave Solar during the certification hearing as Mojave Solar believed that the Decision recognized and approved the fire protection measures for the solar field described in the Decision, in the Staff Assessment, and in the AFC. Mojave Solar did not interpret the Decision’s discussion of NFPA Standard 850 as applying in full to the solar fields, and thereby modifying the described fire protection measures for the project’s solar fields. Furthermore, no condition of certification clarifies that hydrants or all NFPA Standard 850 recommendations must be implemented in the solar fields. Therefore, during the certification proceeding, Mojave Solar did not perceive a conflict existed in the Decision on this issue.

Section 1769 (a)(1)(D) of the Commission’s Siting Regulations requires a discussion of whether the proposed amendment is based on new information that changes or undermines the assumptions, rationale, findings, or other bases of the final decision. This amendment is not based on new information, except to the extent that it is now clear that Commission staff interpret the Decision as requiring installation of hydrants in the solar fields. Regardless of whether this amendment is based on new information, the amendment does not undermine the assumptions, rational, findings, or other bases of the Decision. The Decision approved the fire protection measures proposed for the project, finding:

The risk of off-site HTF migration is minimal, and the risk of on-site HTF leaks and related fire hazards will be reduced to insignificant levels through the placement of an adequate number of isolation valves in the HTF pipe loops throughout the solar array. Specifically, these valves will be automatically, manually, remotely, and/or locally activated, and will allow individual loops to be closed if a leak develops without closing off the entire HTF system and shutting down the plant.¹¹

Therefore, the Decision bases the finding of an insignificant fire hazard risk on the implementation of isolation valves in the HTF pipe loops and not the implementation of all the NFPA Standard 850 recommendations in the solar fields. There is also no condition of certification in the decision that expressly requires hydrants in the solar fields.

4.0 Necessity of Proposed Amendment

Section 1769 (a)(1)(B) of the Commission Siting Regulations requires that a petition for modification provide a discussion of the necessity for the proposed modification. As discussed in section 2.0 above, this amendment is necessary to clarify that Mojave Solar is in compliance

¹¹ Decision at 198-199 (Hazardous Materials Management, Finding of Fact No. 4).

with the license, and to avoid the unnecessary and costly installation of hydrants in the project's solar fields, which would neither enhance safety nor protect critical project components.

5.0 Environmental Analysis of the Proposed Amendment and Compliance with Applicable Laws, Ordinances, Regulations and Standards

Section 1769 (a)(1)(E) of the Commission Siting Regulations requires that an analysis be conducted that addresses the impacts a modification might have on the environment and proposed measures to mitigate any significant adverse impacts. The proposed amendment will not result in any physical change to the natural environment, and considering that fires within the solar fields would not be fought with water from hydrants within the fields due to the risk this would pose to firefighters, there would be no change to air quality, water resources, or other areas as a result of this proposed amendment.

Section 1769 (a)(1)(F) requires a discussion of the impacts a modification might have on the project's ability to comply with applicable laws, ordinances, regulations and standards ("LORS"). The proposed amendment does not result in noncompliance with any applicable laws, ordinances, regulations or standards. The purpose of NFPA Standard 850 is to provide recommendations and guidance in the design, construction, operation and protection of electric generating plants.¹² NFPA Standard 850 therefore does not present absolute rules, but instead recognizes that "rigid uniformity of generating station design and operating procedures does not exist and that each facility will have its own special conditions that impact on the nature of the installation. Many of the specific recommendations [therein] might require modification after due consideration of all applicable factors involved."¹³ Accordingly, fire safety measures may differ from the recommendations of NFPA Standard 850, especially when such a deviation does not result in a greater risk to safety or the plant, and still comply with applicable LORS. This is the case for this proposed amendment.

6.0 Proposed Modification to the Decision

Consistent with the requirements of the Commission Siting Regulations Section 1769 (a)(1)(A), this section sets forth proposed modifications to condition of certification HAZ-7 and page 179 of the Decision to clarify that hydrants and facilities necessary for hydrants will not be installed in the solar fields.

HAZ-7 The project owner shall ensure that all pipes carrying heat transfer fluid (HTF); and all command and control systems; ~~and the fire water loop~~ that are required to cross Harper

¹² See NFPA 850 "Important Notices and Disclaimers Concerning NFPA Documents Notice and Disclaimer of Liability Concerning the Use of NFPA Documents," §§ 1.1, 1.2. Moreover, the standard explicitly defines its frequent use of the word "should," which within the standard "indicates a recommendation or that with is advised but not required." (NFPA 850 3.2.6.)

¹³ NFPA 850, § 1.3.3.

Lake Road or Lockhart Road will be placed underground for the crossing. The pipes and lines shall be installed in a protective structure underneath the road and the HTF pipes shall have expansion loops aboveground on either side of the road. The engineering design plans shall be provided to the CPM for review and approval prior to the commencement of the solar array construction.

Verification: At least sixty (60) days prior to the commencement of solar array piping construction, the project owner shall provide the design drawings as described above to the CPM for review and approval.

Decision page 179:

During operation, the project will meet the fire protection and suppression requirements of the California Fire Code, ~~all applicable recommended National Fire Protection Association (NFPA) standards (including Standard 850 addressing fire protection at electric generating plants),~~ and all Cal/OSHA requirements. The project will meet all applicable recommended National Fire Protection Association (NFPA) standards, including Standard 850 addressing fire protection at electric generating plants, within the power islands. Application of NFPA Standard 850 within each solar field is only required to the extent that application of this standard is necessary for the safety of project personnel and firefighters. Fire suppression elements will include both fixed and portable fire extinguishing systems. (Exs. 1, § 5.18.3.3;. 301, pp. 5.14-18 – 5.14-19.) The fire protection system will be designed to protect personnel and limit property loss and plant downtime in the event of a fire. In addition to the fixed fire protection system, smoke detectors, flame detectors, high temperature detectors, appropriate class of service portable extinguishers, and fire hydrants must be located throughout ~~the facility~~ each power island at code-approved intervals. These systems are standard requirements of the NFPA and the Uniform Fire Code (UFC). (Id.)

7.0 Potential Effects on the Public Related to the Proposed Amendment

Section 1769(a)(1)(F) requires that a petition discuss how the modification affects the public. This proposed amendment clarifies that the Decision does not require the unnecessary installation of fire hydrants within the project's solar fields, and therefore this petition poses no adverse impact on the public.

8.0 Potential Effects on Property Owners Related to the Proposed Amendment and List of Property Owners

Section 1769(a)(1)(H) requires a list of property owners potentially affected by the modification. The proposed amendment clarifies that the Decision does not require the unnecessary installation of fire hydrants within the project's solar fields, and therefore property owners will not be affected by the proposed amendment. A table showing the list of property owners will be provided under separate cover.

9.0 Conclusion

The amendment sought by this petition corrects an ambiguity in the Commission's decision that has only recently come to the attention of the applicant. It does not in any way change the design of the project as originally proposed and approved by the Commission. Most importantly, it does so in a manner that enhances public safety, assures compliance with all applicable LORS and has no adverse impact on the environment or any interested member of the public. For all these reasons, the Commission should approve the proposed amendment.