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October 18, 2013 90598.00004

VIA ELECTRONIC MAIL

The Honorable Mary D. Nichols
Chairman
California Air Resources Board
1001 "I" Street
Sacramento, CA 95814

Re: De Minimis Use Of Conventional Energy At Solar Thermal Facilities; Proposed Amendments To California Cap-and-Trade Regulation

Dear Madam Chairman:

On behalf of the Concentrating Solar Power Alliance ("CSP Alliance"),[1] we write regarding an important issue related to the California Air Resources Board ("CARB" or the "Board") Cap-and-Trade Regulation (the "Regulation"), which may impact the deployment of solar thermal electricity generating facilities in California in the furtherance of the State's renewable portfolio standard ("RPS") and its underlying greenhouse gas ("GHG") goals. For the reasons described below, we respectfully request that CARB staff propose amendments to the Regulation, for the Board to consider at its October 24, 2013 hearing, or soon as possible thereafter, to afford a limited exemption to solar thermal electricity generating facilities that use a minimal amount of conventional fuel to support facility operations. Maximizing the efficiency and output of renewable energy from such facilities will result in less use of electricity from conventional power sources and, thus, reduce GHG emissions statewide.

Executive Summary

The use of solar energy to generate electricity is favored by the State of California, in part, because of its ability to replace GHG-emitting generation with non-GHG-emitting generation. Certain solar thermal electricity generating facilities utilize minimal amounts of natural gas for various functions, some of which, in turn, further reduce the need for GHG-emitting generation. The amount of natural gas consumed is small in comparison to similar sized, standalone natural gas-fired facilities, but large solar thermal facilities (e.g. with more than one power block and total capacity greater than 250 MW) may emit over 25,000 metric tons of carbon dioxide equivalents annually, even though the amount of natural gas used results in less than a two percent share of a facility's annual generation. It would be consistent with State GHG and RPS policies to exempt *de minimis* use of conventional fuel at solar thermal facilities and would simply be fair not to burden large projects with direct compliance costs and complications, especially when scale can result in desirable environmental effects, GHG-related or otherwise.

[1] The CSP Alliance is an advocacy group whose membership is drawn from the world's leading concentrating solar power ("CSP", or alternatively, "solar thermal") development companies and their suppliers.

Introduction

There are a limited number of solar thermal facilities licensed within the past five years ("non-legacy facilities") in late stage development and under contract with California utilities.[2] To efficiently utilize the capabilities of the technology, some solar thermal facilities intend to use a small amount of conventional (i.e., nonrenewable) fuel to assist in the efficient operation of such facilities during morning startup, end of day shutdown, and periods of temporary cloud cover, as well as to maintain critical equipment overnight. As a result of project scale and the Regulation's definition of "facility," certain solar thermal facilities may have GHG emissions associated with such operations that will exceed the applicability threshold under the Regulation for electricity generating facilities. Consistent with State law allowing for a *de minimis* use of nonrenewable fuels to count as RPS-eligible generation,[3] we request that CARB exempt *only* certain emissions from nonrenewable fuel at solar thermal facilities from any compliance obligation under the Regulation, consistent with existing statutory and regulatory determinations. Providing such a limited exemption would increase the amount of renewable energy on the grid (thus mitigating statewide GHG emissions) by furthering the preparation and management of critical equipment each day to maximize the availability of solar fuel, and by reducing the frequency and magnitude of output fluctuations from large solar thermal facilities that would otherwise need to be balanced by conventional, GHG-emitting power sources. Further, given that there are only a handful of non-legacy solar thermal facilities under construction or planned for construction in the foreseeable future, a limited exemption of the GHG emissions associated with such facilities would not undermine the integrity of the GHG emissions cap set forth in the Regulation and will advance the GHG emissions reduction goals of AB 32 by increasing the amount of renewable energy delivered in California.

I. Unique Attributes Of Solar Thermal Facilities Can Require *De Minimis* Use Of Conventional Power To Operate Critical Equipment

Solar thermal facilities use mirrors to collect sunlight and produce steam to drive turbines for generating power. However, solar thermal facilities can, and some do, utilize a small amount of conventional fuel to operate boilers to (i) maintain steam turbines or other critical equipment at night, (ii) assist with morning startup and end of day shutdown of the facility, and (iii) maintain heat levels during periods when solar "fuel" availability is diminished. The use of such conventional energy sources improves overall facility efficiency and maximizes the environmental benefits derived from solar thermal facilities. Specifically, during morning start-ups, facility equipment cannot be safely utilized until it reaches a minimum temperature. Without the aid of auxiliary boilers (typically natural gas-fired) or grid electricity (if designed accordingly) to warm up facility equipment, the sunlight hours for utilizing the sun's energy would not be fully utilized to generate solar thermal electricity. Using conventional energy sources prior to sunrise shortens the startup time and allows for greater utilization of the solar resource at a solar thermal facility once synchronized with the grid, which immediately displaces, or avoids, electricity production from GHG-emitting facilities. Similarly, auxiliary boilers can be used to control the cooling down of critical equipment during daily system shutdown, in lieu of utilizing solar-generated steam to do such functions, thereby extending solar thermal generation and prolonging the displacement of generation from GHG-emitting facilities. As a result of natural gas used for startup and shutdown activities, system-wide GHG emissions

[2] *E.g.,* Mojave Solar Project Power Plant, Genesis Solar Energy Project, Ivanpah Solar Electric Generating System, Palen Solar Energy Generating System, and Rice Solar Energy Project.

[3] Pub. Util. Code § 399.12(h)(3)(A); Assembly Bill 1954 (Skinner; Stats 2010, ch. 460) ("AB 1954").

can be reduced by more than the amount of the facility's GHG emissions during these periods, depending on facility design and other factors.[4]

A solar thermal facility's renewable energy production can be aided by conventional fuel by minimizing the system operating and GHG impacts of intermittent cloud cover. In particular, minimal use of conventional fuel during cloud cover maintains or increases steam conditions at the facility, which provides for a more consistent, less variable facility output to the grid. By using small quantities of natural gas for this purpose, the output of solar thermal facilities is more dependable, predictable and reliable, which improves the ability of the grid operator to integrate this renewable energy generation.

II. Solar Thermal Facilities Are Critical To The State's Efforts To Meet Its Renewable Portfolio Standard And GHG Reduction Goals Set Forth In AB 32

The Governor's Executive Order establishing the RPS recognizes that an "increased use of renewable electricity is one of the most promising means to reduce [GHG] emissions in the transportation sector and meet California's 2050 greenhouse gas reduction goals."[5] As stated in Executive Order S-14-08, "increased development of renewable electricity sources, energy efficiency and demand response are needed to meet the GHG goal of 1990 levels and 80 percent of the 1990 levels by 2050, *making the success and expansion of renewable energy sources a key priority for California's economic and environmental future*."[6]

To meet the ambitious GHG emission reduction goals set in AB 32, the State must encourage innovative technologies that maximize the capabilities of renewable energy generation technologies. The California Legislature and the California Energy Commission ("CEC") have accordingly recognized the important role that conventional fuel sources serve to enable increased output from solar thermal facilities, thereby reducing system-wide GHG emissions. Specifically, a *de minimis* quantity of nonrenewable fuel (typically less than two percent of annual generation from a facility) can be utilized in creating renewable energy credits ("RECs") in furtherance of the State's RPS program.

In addition, an increasing concentration of California electricity generation will come from variable energy resources ("VERs") in order to meet current and future RPS and other renewable energy targets. As the GHG emission reductions required by AB 32 constrain the availability of conventional generators to integrate VER generation, the deployment of solar thermal technology will be in greater demand because of its cost-effective synergy with thermal energy storage, which, in certain applications, could also utilize a minimal amount of conventional fuel. The limited exemption from the Regulation requested herein would avoid forestalling solar thermal technologies and facility design options, which help further AB 32's GHG emission reduction goals.

III. Exempting Solar Thermal Facilities Is Consistent With Other Exemptions From The Regulation And Similarly Furthers The State's GHG Reduction Goals Under AB 32 And The RPS Program

While the Legislature and CEC recognize that solar thermal facilities should not be penalized for the use of minimal amounts of nonrenewable fuels, the Regulation does not contain similar protections. Specifically, if the annual GHG emissions at a solar thermal facility, associated with *de minimis* use of nonrenewable fuel, exceed

[4] The magnitude of system-wide GHG reductions will depend, in part, upon the heat rate of the marginal conventional generating capacity coincident with each startup and shutdown of the solar thermal facility.

[5] Executive Order S-21-09 (September 15, 2009).

[6] Executive Order S-14-08 (November 17, 2008) (emphasis added).

25,000 metric tons of carbon dioxide equivalents ("CO_2e") annually, the facility will qualify as a covered entity under the Regulation. However, CARB exempted emissions from geothermal power plants from a compliance obligation under the Regulation, notwithstanding the non-anthropogenic GHG emissions associated with this renewable energy source. In doing so, CARB recognized that this method of generation is preferred over fossil fuel-based generation. Like geothermal facilities, solar thermal facilities displace fossil fuel energy production resulting in an overall *decrease* in GHG emissions from power generation. In addition, under the Regulation, GHG emissions from natural gas hydrogen fuel cells are exempt from a compliance obligation. With this exemption, CARB has similarly recognized the importance of furthering this technology in light of its overall GHG emission effects. It would accordingly be appropriate for CARB to provide a similar, but more limited, exemption for certain solar thermal facilities' emissions from a compliance obligation, consistent with existing statutory and regulatory determinations. Without a limited exemption from the Regulation for such emissions, solar thermal facilities will be forced to incur unrecoverable costs that will substantially burden and possibly jeopardize the successful deployment of this technology, which is important to the State's ability to reach its goals under AB 32 and the RPS.

Conclusion

Successful deployment of renewable energy is an integral part of California's ability to reach its goal of reducing statewide GHG emissions to 1990 levels and procuring 33% of its power from renewable sources by 2020. Certain solar thermal facilities utilize small amounts of conventional fuel to operate critical equipment necessary to ensure the proper and efficient operation of such facilities. Reducing the time to reach synchronization during morning startup, extending generation before daily facility shutdown, and avoiding inefficiencies associated fluctuations in facility output will increase the amount of renewable energy available to the grid, thereby reducing utilization of higher GHG-emitting sources of electricity. Consistent with other exemptions from the Regulation, such a limited exemption would clearly advance the State's GHG emission reduction goals set forth in AB 32 and the related RPS.

Consistent with this letter, included as Exhibit A are recommended amendments to the Regulation to exempt solar thermal electricity generating facilities in this regard.

We would welcome the opportunity to meet with CARB staff in the near term to discuss this important issue.

Respectfully submitted,

/s/ Peter H. Weiner

Peter H. Weiner
of PAUL HASTINGS LLP

cc: All Board Members of the California Air Resources Board
Richard Corey, Executive Officer
Rajinder Sahota, Branch Chief, CARB Cap-and-Trade Program

Concentrating Solar Power Alliance

Exhibit A: Recommended Cap-and-Trade Regulation Modification To Address Solar Thermal Electricity Generating Facilities

§ 95802. Definitions.

(a) Definitions. For the purposes of this article, the following definitions shall apply:

* * * *

(xxx) "Solar Thermal Electricity Generating Facility" shall have the same meaning as "solar thermal powerplant" defined in Section 25140 of the Public Resources Code.

§ 95852.2. Emissions without a Compliance Obligation.

Emissions from the following source categories and from the combustion of the following fuel types count toward applicable reporting thresholds, as applicable in MRR, but do not count toward a covered entity's compliance obligation set forth in this article unless those emissions are reported as non-exempt biomass-derived CO_2 under MRR. Emissions without a compliance obligation include:

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(d) Emissions from equipment used at a solar thermal electricity generating facility at or below a de minimis quantity of nonrenewable fuel for an individual facility that results in the creation of a renewable energy credit as established by the California Energy Commission pursuant to Public Utilities Code section 399.12(h)(3)(A) or that does not contribute to direct electricity generation. Only emissions associated with any quantity of nonrenewable fuel above a de minimis quantity contributing to direct electricity generation for an individual facility shall count toward a solar thermal electricity generating facility's compliance obligation set forth in this article.