

NO to DRECP, YES to Appropriate Distributed Technology / DRECP NEPA / CEQA

James Negley [jlnegley@gmail.com]

Sent: Friday, December 05, 2014 8:08 AM**To:** Energy - Docket Optical System

Cc: governor@governor.ca.gov; jerry.brown@governor.ca.gov; sue.kateley@asm.ca.gov; davina.flemings@asm.ca.gov; kelly.roberts@asm.ca.gov; senator.wolk@senate.ca.gov; barbara.boyle@sierraclub.org; nathan.landars@sierraclub.org; dhayes@bullitt.org; Hochschild, David@Energy; McAllister, Andrew@Energy; Douglas, Karen@Energy; Minh Le@ee.doe.gov; david.danielson@ee.doe.gov; Jennifer.DeCesaro@ee.doe.gov; nkornze@blm.gov; director@blm.gov; jkrauss@blm.gov; jkenna@blm.gov; timothy_wakefield@blm.gov; James Negley [jlnegley@gmail.com]; Boykin, Richard [Richard.Boykin@blm.gov]; Joe McCabe [energyideas@gmail.com]; Nell Smith [nell@jlnsolar.com]; Alan Kost [akost@arizona.edu]; Jeffrey Lipkin [repjal@att.net]

Attachments: NegleyResponsetoDRECPDecem~1.pdf (489 KB)

California Energy Commission

DOCKETED

09-RENEW EO-1

TN # 74149

DEC 05 2014

All,

My comments are attached to this email as a pdf. The text of my comments is copied below.

The comments here will focus on how California can concentrate on the use of underutilized land for electricity production. I am opposed to locating industrial complexes in the fragile desert. The Desert Renewable Energy Conservation Plan should not be approved.

Two excellent articles have already been published on why the Desert Renewable Energy Conservation Plan should not be approved. Julie Cart questions "Will renewable energy ruin an 'irreplaceable' Mojave desert oasis?" in her L.A. Times article (see <http://www.latimes.com/science/la-me-solar-silurian-20141109-story.html#page=1>) and Chris Clarke discusses how California's Renewable Energy Plan misses the point on renewable energy (see <http://www.kcet.org/news/define/rewire/commentary/californias-renewable-energy-plan-misses-the-point-on-renewable-energy.html>).

Several important points were not addressed in these two articles, which demand attention: (1) water, (2) under performing concentrating solar power (CSP), (3) distributed generation from rooftop and single and dual axis tracking photovoltaic (PV) installations and (4) arcane and inefficient California renewable energy regulations.

1. Water: According to the DRECP [reports](#), "Solar thermal systems can be wet cooled, hybrid, or dry cooled. Wet-cooled systems use annually up to 14.5 acre-feet of water per megawatt (AFY/MW) (see http://www.drecp.org/draftdrecp/files/e_Volume_IV/IV.06_Groundwater_Water_Supply_and_Water_Quality.pdf).

Hybrid systems use dry cooling for much of the year, but switch to wet cooling when air temperature rises above approximately 100° F; hybrid systems use 2.9 AFY/MW. Dry cooling further reduces the amount of water used, but also reduces efficiency and output capacity, particularly in hot desert climates. Dry-cooling systems use 1.0 AFY/MW." My contention is that no water should be used for cooling of any industrial site in the desert since water is at a premium to maintain wildlife habitat and wildlife.

2. Poor Power Factor: Forbes has recently highlighted the under performance of concentrating solar power plants (see <http://www.forbes.com/sites/jamesconca/2014/11/11/thermal-solar-energy-some-technologies-really-are-dumb/>). My contention is that the desert should not be used for the continued research and development of these industrial solar systems.

Photo 1: November 1, 2014 Satellite Image of Ivanpah industrial solar system.

3. Distributed Generation from PV: A 2006 California Energy Commission report found, "The potential for locating PV systems on commercial buildings using 2005 building numbers indicates the state wide potential at 37,000 MW of electricity" (see <http://www.energy.ca.gov/2005publications/CEC-500-2005-072/CEC-500-2005-072-D.PDF>). This doesn't include parking areas, agricultural lands or brownfield sites, which are not being used but could benefit from highly valued distributed generation from PV.

A German rooftop study called Sun-Area looked at all the rooftops in Osnabruck; this simple approach can be applied to California. With today's satellite technology it is possible to look at all buildings, parking areas and agricultural properties for underutilized space that is an economic fit for distributed electricity from PV. I propose that California look at alternatives to desert installations with a focus on locations that are closer to urban cities, subdivisions, established industrial parks and agricultural lands.

4. Unused Agricultural Lands:

In California, there are portions of farm and ranch lands that remain unused and are available for solar installations because they are odd shaped, at the edge of irregular shaped tracts or border public right-of-ways and easements. There is also unused land surrounding water pumps, sheds, barns, cattle pens and other improvements. This unused land could amount to 4% of the 27 million acres of farm and ranch land in California, which is approximately one million acres of land available for solar installations. If two-axis trackers were installed on these one million acres of land, over 134,000 MW or 134 GW of electricity could be generated.

5. Arcane and Inefficient California Renewable Energy Regulations:

In Germany, permitting of rooftop or commercial solar is a highly efficient process, typically requiring no more than one page of paperwork and/or one page of permitting for the end user and is granted with no delay. California seems to be just the opposite: the permitting process is highly inefficient, requiring pages and pages of documents and long delay periods for the permitting of rooftop solar installations or Community Solar Gardens (see www.solargardens.org), or practically any solar installation. The Obama Administration has recently passed regulations trying to ease the permitting process for Community Solar Gardens. The state of California and the state legislature has done precious little to change the highly inefficient process of permitting distributed solar in the state. This leads to some projects never being completed and others never being started because of the paperwork and regulations that benefit only a bloated bureaucracy. _

Permitting Suggestions:

I suggest that:

1. The state of California should study and learn from the German model of efficient permitting and abandon the inefficient present system for permitting of residential and commercial solar installations, including Community Solar Gardens.
2. No permits should be given for desert solar installations on protected state or federal lands.
3. The permitting process for solar installations should be streamlined for farm and ranch lands, to include the allowance of the Community Solar Garden concept for farmers and ranchers that wish to participate. Participating farmers and ranchers should receive monthly cash payments from utilities for the energy (kWh) produced at the rate charged to the end user.
4. The permitting process for residential solar installations should be streamlined.
5. The permitting process for commercial rooftop installations should be streamlined. The required permitting paperwork for numbers 3-5 above should not exceed one page and should be approved or not approved in short order.

Appropriate Technology for California:

A PV system that can greatly improve the amount of square miles available for solar developments in the state of California with increased daily and annual performance is a robust two-axis tracker system that optimizes flat plate PV. This has all but been ignored in the United States and other areas. The increase in efficiency from single digits to 15-20% with the latest USA made PV advancements makes the two-axis tracking system viable for the first time in history. A standard robust two-axis tracker such as the USA made Electric Butterfly™ can be deployed quickly, interconnected and immediately provide daytime electricity to the local grid. As shown, it can be placed inside orchards and made to run efficient water pumping operations. When grid connected, these PV systems can be dedicated to helping the California grid, especially with the new functionality of inverters and storage coming out of the Rule 21 proceedings (see <http://www.cpuc.ca.gov/PUC/energy/rule21.htm>).

Pictured above is the USA made Electric Butterfly™, located on an almond orchard in Butte County, California. This is a robust two-axis tracker that can be installed in orchards, parking lots or other underutilized land spaces throughout California. The Electric Butterfly™ meets Category 5 earthquake requirements and Category 3 hurricane wind requirements in the stowed position.

Advantages of robust two-axis trackers:

- Increase the amount of kilowatt hours generated annually compared to a single axis or fixed PV system
- No water required or used for cooling
- Not a threat to birds or other wildlife
- Require no transmission grid, only a distribution grid
- Support energy, demand, voltage, frequency and power factor on a distributed grid
- Create local jobs all across the state of California, not just in the desert
- Two-axis tracking PV has excellent proven capacity factors
- Vandal and theft proof
- The scalability of the robust two-axis tracker for PV has the potential to equal the sites that are presently built or contemplated in the Mojave Desert in terms of acreage and capacity.
- The two-axis solar installations don't have to be so densely installed as with fixed and single-axis tracking systems.
- Wild animals can graze and pass through the solar fields without being blocked, injured or killed.
- The solar fields can be built on hillsides and rolling lands unlike large fixed and single-axis installations, which require grading to flat land and the total destruction of animal and bird habitat (for example, solar fields that are located in California, Arizona and Nevada).
- There is forage and light agricultural potential in the space between the two-axis trackers since all wires can be buried underground and below plowed depth.

Teddy Roosevelt would want better for the public lands he helped to preserve that are now being considered for

industrial energy projects. He said, "**We have fallen heirs to the most glorious heritage a people ever received, and each one must do his part if we wish to show that the nation is worthy of its good fortune.**"

I'm not opposed to development. I'm not opposed to solar. I'm opposed to solar in protected state and federal lands especially when more local economically proven solutions are available. The Desert Renewable Energy Conservation Plan should not be approved.

Sincerely,

James Lutchter Negley
P.O. Box 1028
Mill Valley, CA 94942
jlnegley@gmail.com

MEMORANDUM

To: Desert Renewable Energy Conservation Plan Team

From: James L. Negley

Date: December 5, 2014

Re: Comments on Desert Renewable Energy Conservation Plan (DRECP)

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