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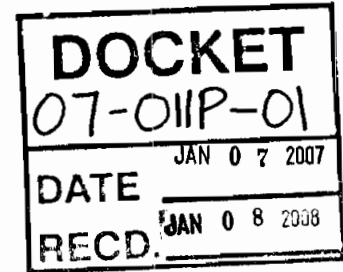
January 7, 2008

Joseph F. Wiedman

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**VIA E-MAIL AND OVERNIGHT DELIVERY**

California Energy Commission  
Docket Unit, MS-4  
1516 Ninth Street  
Sacramento, CA 95814-5504



**Re: Docket No. 07-OIIP-01 Opening Comments of the Solar Alliance on Modeling-Related Issues**

Dear Sir or Madam:

Attached please find an original copy of the Opening Comments of the Solar Alliance on Modeling-Related Issues to be filed in the above-referenced docket. Simultaneously with this mailing, an electronic copy of the above-referenced comments was e-mailed to the Energy Commission's Docket Unit.

Should you have any question with regard to the referenced filing, please contact the undersigned.

Very truly yours,

GOODIN, MACBRIDE,  
SQUERI, DAY & LAMPREY, LLP

By

A handwritten signature in black ink, appearing to be "JFW", written over a horizontal line.

Joseph F. Wiedman

cc: Karen Griffin (kgriffin@energy.state.ca.us)

**BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF CALIFORNIA**

Order Instituting Rulemaking to Implement the  
Commission's Procurement Incentive Framework  
and to Examine the Integration of Greenhouse  
Gas Emissions Standards into Procurement  
Policies.

*[Also filed at the California Energy Commission]*

Rulemaking 06-04-009  
(Filed April 13, 2006)

CEC Docket 07-OIIP-01

**OPENING COMMENTS OF THE SOLAR ALLIANCE ON MODELING-RELATED  
ISSUES**

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Order Instituting Rulemaking to Implement the Commission's Procurement Incentive Framework and to Examine the Integration of Greenhouse Gas Emissions Standards into Procurement Policies.

*[Also filed at the California Energy Commission]*

Rulemaking 06-04-009  
(Filed April 13, 2006)

CEC Docket 07-OIIP-01

**OPENING COMMENTS OF THE SOLAR ALLIANCE ON MODELING-RELATED  
ISSUES**

Pursuant to the Administrative Law Judge's Ruling Requesting Comments on Modeling-Related Issues (issued November 9, 2007 and modified by ruling dated November 30, 2007), the Solar Alliance submits these Comments on the Energy and Environmental Economics, Inc. (E3) modeling methodology and the California Public Utilities Commission (Public Utilities Commission) Staff workpaper on available emission reduction measures. These comments are also being filed in Docket 07-OIIP-01 of the California Energy Commission (CEC).

The Solar Alliance appreciates the opportunity to provide comments on the E3 modeling methodology as it affects the Commission's continued investigation of greenhouse gas (GHG) emission reduction measures. We are a state-focused alliance of solar photovoltaic (PV) manufacturers, integrators, and financiers dedicated to accelerating the deployment of solar electric power in the United States.<sup>1</sup> Our members have a strong interest in the adoption and

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<sup>1</sup> Current members of the Solar Alliance include American Solar Electric, Applied Materials, BP Solar, Conergy, DT Solar, Energy Innovations, Evergreen Solar, First Solar, Kyocera Solar, Mitsubishi Electric, MMA Renewable Ventures, PPM Solar, REC Solar, Sanyo Energy, Schott Solar, Sharp Electronics Corp.-Solar Energy Solutions Group, Solar City, Solaria, Solar Power Partners, Solar World, SPG Solar, Sun Edison, SunPower, Suntech, Trinity Solar, Uni-Solar and Xantrex.

implementation of far-reaching policies and programs that will accelerate the movement toward a low-carbon economy and stimulate the development and use of zero-carbon, renewable energy technologies such as solar PV. By taking the important steps of modeling potential emission reductions from the electricity sector, monetizing the global warming effects of fossil-fuel generation, and in creating a mechanism for rewarding non-carbon emitting energy resources, California is putting in place an important cornerstone of sustainable energy policy.

The Solar Alliance recognizes that key modeling assumptions and data inputs used by the State of California to estimate likely GHG emission reductions from the energy sector will be very consequential in driving future state energy policy. We view the E3 modeling effort as an important first step in determining the baseline for making long-term California portfolio investments in the State's low-carbon energy resource mix.

**I. SOLAR ALLIANCE DISCUSSION ON SPECIFIC QUESTIONS WITHIN THE RULING**

**Question 4: What means beyond policies currently adopted by the two Commissions hold potential for the integration of additional renewable resources into the grid?**

There are a number of public policies beyond those currently adopted by the two Commissions that hold potential in driving deployment additional renewable resources. They include:

- Minimum government procurement levels of combined PV and EE on public buildings and parking lots distributed throughout the state. This action would help reduce agency operating expenses through reduced electricity costs and would help lead California's renewable market transformation efforts by example.
- A GHG cap and trade program in the electric sector that compliments existing renewable incentive programs like the Renewable Portfolio Standard (RPS) and California Solar Initiative (CSI), both of which are in place to drive renewables for numerous policy

reasons that include, but are not limited to, air quality improvements. A well designed cap and trade program should recognize the emission reduction value of regulated and voluntary green power markets. There are numerous cap and trade program designs under consideration around the world. At a minimum a California cap and trade system should recognize and preserve the economic and environmental value of voluntary green power investments by consumers seeking to reduce their individual carbon footprint. This outcome can be achieved by reducing the carbon cap to reflect the carbon emission reduction contribution of voluntary green power purchases, or by retiring allowances associated with the amount of voluntary green power generation, or by allocating a share of available allowances to renewable generators. As the California cap and trade deliberations proceed, we urge the Commission to ensure close coordination and consistency between its RPS and GHG policy design proceedings, and to provide transparent and timely coordination between these Commission proceedings and related CEC and California Air Resources Board (CARB) proceedings.

**Q6. Does E3's modeling documentation adequately document the methodology, inputs, and other assumptions underlying its model? If not, what additional documentation should be added?**

The E3 model does not include utility scale solar PV in the demand curves or policy discussion on potential GHG emission reduction measures but, instead, evaluates strictly solar thermal under heading "19. New Concentrating Solar Power (CSP) Generation Resource, Cost, and Performance Assumptions". Considering the over 4,000MW of utility scale PV already in the CA ISO queue, this is a critical oversight.<sup>2</sup> Based on current solar PV cost reduction trends and industry targets, solar PV can be offered at comparable costs with other

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<sup>2</sup> See <http://www.caiso.com/14e9/14e9ddda1ebf0.pdf>.

utility scale solar providers by 2012. For instance, the Solar America Initiative (SAI), unveiled by President Bush in February 2007, estimates that 5 – 10 GW of PV solar electric generation will be installed in the United States by 2015.<sup>3</sup> Moreover, the SAI targets PV generation costs at 10-15 cents/kWh by 2010, and 5-7 cents/kWh by 2015 as a result of U.S. investments. Concurrent investments in PV by Japan and the European Union may drive these cost reductions further, particularly for large scale projects that are several hundred MWs in size.

The Solar Alliance recommends that going forward the State of California and the E3 model use the technology neutral term “Utility Scale Solar” generation, instead of “Concentrating Solar Power”, when evaluating the potential GHG emission reduction from solar power within the 13 state region considered by the Western Electric Coordinating Council (WECC) which is the E3 reference for California’s future resource supply region. The Solar Alliance also recommends that utility scale solar supply opportunities be more broadly deployed geographically across the WECC Region. The E3 model currently limits utility scale solar deployment to Arizona, Nevada, New Mexico and California. However, the States of Colorado, Montana, Wyoming, Utah and Idaho also hold important potential for utility scale solar deployment.

In sum, the Solar Alliance recommends two generic categories for solar to be considered in an E3 economic analysis: 1) distributed solar which is a customer owned resource and competes against retail electric prices and is captured by the CSI analysis, and 2) utility-scale solar which is a technology neutral term for solar projects that are sold into wholesale power markets either directly to electric utilities or by segmenting the RECs and electricity with the

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<sup>3</sup> Solar America Initiative: A Plan for the Integrated Research, Development, and Market Transformation of solar Energy Technologies, SETP -2006-0010, U.S. DOE, Energy Efficiency and Renewable Energy Division, February 5, 2007

RECs being sold to the load-serving entity (LSE) for RPS or GHG-reduction requirements and the electricity sold elsewhere (e.g. wholesale bulk markets or electric utilities).

**Question 10: Has the E3 model adequately accounted for the implications of increased reliance on preferred resources (renewables, efficiency) on system costs?**

The E3 model and CEC derived data inputs do not consider PV market transformation but, instead, assume PV remains at \$8/W (in 2006 dollars) between 2008 and 2018. The CEC load forecast projects 1,091 MW of PV based on the assumption that installations occur at the current pace with zero cost improvements. The CSI program was designed for the incentives to steadily decline in response to MW reservation rates, and, if no market transformation is occurs, it is impossible to maintain current customer-owned PV installation rates. For instance, between January 2007, when the CSI program was launched, and January 2008 the PBI incentive level has dropped 44% in PG&E's territory and 33% in the territories of SCE and SDG&E. Clearly, in order to continue offering cost-effective systems, PV costs must also decline otherwise system costs will dampen customer demand. Whether PV costs can decline more than 44% in a single year is unlikely, but certainly PV cost reduction is already greater than zero and market transformation is occurring. As PV costs continue to decline, this trend will impact the system costs of emission reductions, encouraging increased PV installation and generation. Sustained incentive support over the near term is critical to ensuring that market transformation over the next ten years continues in order to maximize the potential emission reduction contribution of zero-emission PV solar electric generation.

**Question 11: Should E3's model, in Stage 2, attempt to model potential market transformation scenarios, in the form of cost decreases, new technologies, or behavioral changes? What might be an appropriate way to characterize such potential for market transformation?**

In a word, yes. As noted above, it is not realistic to assume in the E3 model that over a ten-year period PV prices, for example, will not decrease. Not only will the increased

manufacturing volumes of traditional solar technology-based products around the globe tend to drive down prices, literally billions of dollars have been invested in new solar technologies over the last few years that will result in dramatic improvements in manufacturing efficiencies, capacity factors (the efficiency by which solar panels convert sunlight into electricity), and cost reductions. Many of these products are beginning to hit the market now; the continued impact of these developments will be substantial in the next ten years. In addition, considerable investment is being made in energy storage technologies that will affect the shape of the supply contribution of intermittent renewable electric generation resources such as solar and wind to the grid. Precisely how significant the impact of these various developments will be is an open question, but the fact that there will be an important impact is not. A conservative estimate of those impacts should be included in the conservative scenario, and a more aggressive one included in the more aggressive E3 scenarios

An additional aspect that should be incorporated into Stage 2 is to explore the integration of transportation sector emission reductions with electricity use. Most people agree that deployment of plug-in vehicles will occur, and that they hold the potential to deliver impressive GHG reductions within the transportation sector. It will be important to factor in the impacts to electricity emissions when plug-in hybrids are added to the resource mix and to consider the impact zero-emission renewable generating technologies could have in ensuring electric vehicles reduce total California carbon emissions.

## **II. SOLAR ALLIANCE CONCLUSION**

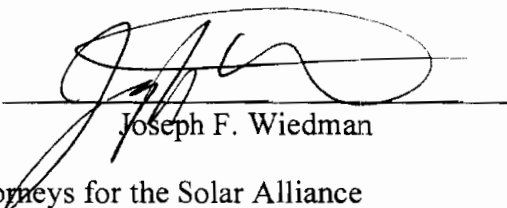
The Solar Alliance appreciates the opportunity to submit these comments on the E3 modeling methodology and the Staff workpaper on emission reduction measures. The modeling work done by E3 to date is impressive, and the Solar Alliance appreciates the opportunity to comment on this effort. These efforts hold the potential to have a significant



impact on state policy development designed to reduce emissions from the electricity sector as part of California's work to implement AB 32. The Solar Alliance looks forward to working with the Commission on this monumental and critical effort to reduce California greenhouse gas emissions in the future.

Respectfully submitted this January 7, 2008 at San Francisco, California.

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By   
Joseph F. Wiedman  
Attorneys for the Solar Alliance

**CERTIFICATE OF SERVICE**

I, Lisa Vieland, certify that I have on this 7th day of January 2008 caused a copy of the foregoing

**OPENING COMMENTS OF THE SOLAR ALLIANCE ON MODELING-RELATED ISSUES**

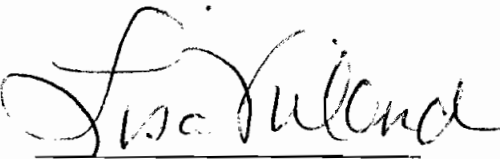
to be served on all known parties to R.06-04-009 listed on the most recently updated service list available on the California Public Utilities Commission website, via email to those listed with email and via U.S. mail to those without email service. I also caused courtesy copies to be hand-delivered as follows:

Commissioner President Michael R. Peevey  
California Public Utilities Commission  
State Building, Room 5218  
505 Van Ness Avenue  
San Francisco, CA 94102

ALJ Charlotte TerKeurst  
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ALJ Jonathan Lakritz  
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San Francisco, CA 94102

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct. Executed this 7th day of January 2008 at San Francisco, California.

  
\_\_\_\_\_  
Lisa Vieland

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