

## **Workshop on Renewable Distributed Generation**

Comments at Workshop, June 8, 2004

By Joseph McCabe, Energy Ideas, LLC

First, I want to thank the Energy Commission for my ability to help PV be more market oriented with building integration photovoltaics (BIPV), as well as my other renewables project activities in PIER Renewables. I feel like the Luckiest Guy, and am most fortunate to have been here for the last 3.5 years. Today, I am representing Energy Ideas, LLC.

I hope to bring some vision to your quest in continuing the great successes from the Emerging account, as well as other opportunities for PV to supply solutions for investor owned utilities in California.

I need to disclose that I am a stockowner of Sempra, PGE and Edison, one share each. I think of it as a lifetime subscription to the annual reports and an ability to attend the stockholders meetings. Sempra seems very geared toward LNG, SCE is attempting to spend more than \$900 million of rate payer money on steam generator replacements at San Onofre (case at the CPUC A.04-02-026). PG&E is also seeking pre-approval for investments in excess of \$700 million for new steam generators at Diablo Canyon (A.04-01-009). Both utilities hope to change out the steam generators in the 2008-2009 timeframe. All these IOU's seem to be increasing threats of terrorist activities and are increasing geo-political stress shipping LNG around the globe. As Bruce Vincent of SMUD says, California continues to be one drought or one natural gas shortage away from its next energy crisis. Hopefully, my discussion will help recognize the value of photovoltaics as a distributed resource which can help to solve some of the energy issues California is facing. Amory Lovins can help with DG's value, my chapter in Advances in Solar discusses solar's values accruing to customers, businesses, utilities and government agencies, with values that are not mutually exclusive but complimentary.

Why BIPV instead of ground mounted systems?

I'd like to bring some awareness of opportunities to increase BIPV solar electricity in California:

- 1) CalEPA can work with mitigated negative declarations to require solar on new homes in such communities where developers do not perform full EIRs.
- 2) Allow IOU's to obtain RPS credits for grid connected PV; Sempra's Robert Resley, VP of Strategy & Resource Planning specifically asked for this in a CEC meeting on Zero Energy Homes. PV will not be a large MW player in the RPS by 2010, and will only be a player by 2017 if the state continues its commitment to PV as a DG resource.
- 3) PIER Renewables has successes from RD&D projects that are giant leaps forward in true aesthetically pleasing BIPV: "Batten Seam" by Uni-Solar, "Gecko" by GE Energy Solar Technologies, "Sloped Residential" by Powerlight, RWE Schott Solar's European system brought to California. More information on these projects is available at

smud.org/pier. Another project is Endecon's AC watts Packaged Systems evaluations; timely to have this research for potential performance-based incentives.

4) Imagine working in areas of California that have grid capacity issues (not power flow problems). For example, the San Bernardino and Riverside area is building new homes at a rate of 43,000 per year. This area has grid capacity constraints, but has an excellent solar resource. Zero Peaking Communities are possible in the Central Valley.

5) Solar Thermal flat plate collectors are 3 to 5 times more effective at converting solar into usable energy for homes than solar electric systems. A new SunEarth facility can produce solar thermal collectors at a rate of 50,000 / year, located in Riverside. Integrated collector storage (ICS) works very well in central valley locations with minimal system complexities.

6) What is the price of PV? Graphing price per watt of the REP Emerging Account installations provides a shotgun pattern, which can be as low as \$5 / watt and up. Moving averages, currently near \$8 / watt, fluctuate with Y2K, San Diego Blackouts and module price frenzies. California Construction Authority installs PV for an average \$4.64 / watt PTC, accounting for no incentives. Not an apples and apples comparison for typical Building Applied PV; no leak warranties, no overhead or profits, no project manager fees. Lowest Cost PV is close to the contractor's shop – a low slope, easy roof surface. Team Solar has simple designs and low cost installations for SMUD. Transaction and labor costs can be 50% of costs; the other 50% is hardware.

7) \$10 million is available in the REP that can be used for performance-based incentives. Vince Schwent gave excellent input on this opportunity at the last workshop. I would suggest that kWh bids be performed, similar to the way the REP administers the New and Existing accounts.

8) Leadership at the CEC where the Efficiency, REP and PIER work together to drive the lowest energy using buildings, to have energy generating surfaces, in places that the grid is optimized and strengthened. Climate based efficient HVAC, solar electric and solar thermal systems, installed during new construction. Three RD&D sections have great foundations on this subject; Buildings, Renewables, and Energy Systems Integration for interconnection issues.

Feed in tariffs allow solar generated electricity to reap a very large monetary value, which has increased Germany's PV industry to 300 MW. This has evolved from various combinations of low interest rates and feed-in tariffs. Interestingly, performance-based incentive eliminates many issues with PV's market acceptance. Japan has industrial will, Germany has environmental awareness, California had / has an energy crisis.

I will be happy to discuss these topics with anyone interested. Hope this helps your workshop efforts.

Best Regards,

Joseph McCabe

[energyi@mccabe.net](mailto:energyi@mccabe.net)

[www.energyi.mccabe.net](http://www.energyi.mccabe.net)