

Clean and Diversified Energy Initiative



WESTERN GOVERNORS' ASSOCIATION



Solar Task Force Report

Executive Summary
January 2006

Western Governors' Association Clean and Diversified Energy Initiative

Solar Task Force Report

Executive Summary

The Western Governors' Association's Clean and Diversified Energy Advisory Committee (CDEAC) commissioned this task force report in February 2005. Members of the Task Force are listed below. This is one of several task force reports presented to the CDEAC on December 8, 2005 and accepted for further consideration as the CDEAC develops recommendations for the Governors. While this task force report represents the consensus views of the members, it does not represent the adopted policy of WGA or the CDEAC. At their Annual Meeting in June, 2006, Western Governors will consider and adopt a broad range of recommendations for increasing the development of clean and diverse energy, improving the efficient use of energy and ensuring adequate transmission. The CDEAC commends the Task Force for its thorough analysis and thoughtful recommendations.

Members of the Solar Task Force

Glenn Hamer (Chair)	First Solar (CDEAC member)
Fred Morse	Morse Associates, Inc.
Steve Chadima	Energy Innovations, Inc.
David Kearney	Kearney & Associates
Don Aitken	Donald Aitken Associates
Mitch Apper	Sunergy Systems
Rajiv Arya	Oregon Renewable Energy Center
Jon Bertolino	Sacramento Municipal Utility District
Sara Birmingham	Pacific Gas & Electric
Bill Blackburn	California Energy Commission
Bruce Bowen	Pacific Gas & Electric
Dave Cavanaugh	Bureau of Land Management
Mike D'Antonio	Public Service Co. of New Mexico
Kevin Doran	University of Colorado
Todd Foley	BP Solar
Lisa Frantzis	Navigant Consulting
Shannon Graham	Navigant Consulting
Gordon Handelsman	Shell Solar
Thomas Hansen	Tucson Electric Power
John Hargrove	Sierra Pacific Power Company /Nevada Power
Herb Hayden	Arizona Public Service Company

Mike Henderson	R.W. Beck, Inc.
Scott Jones	Sandia National Laboratory
Scott Kane	Creative Energies/Wyoming Outdoor Council
Golam Kibrya	California Energy Commission
Hal LaFlash	Pacific Gas & Electric
Bob Liden	Stirling Energy Systems, Inc.
Barbara Lockwood	Arizona Public Service Company
Ben Luce	Coalition for Clean, Affordable Energy
Ravi Malhotra	International Center for Appropriate & Sustainable Technology
Tom Mancini	Sandia National Laboratory
Kate Maracas	Red Mountain Energy Partners
Robert Margolis	National Renewable Energy Lab
Michael McDowell	Rocketdyne
Jan McFarland	Americans for Solar Power /PUMA Solar
Mark Mehos	National Renewable Energy Lab
Les Nelson	California SEIA/Western Renewables Group
Chris O'Brien	Sharp Solar
Craig O'Hare	New Mexico Energy Department
Laurie Park	Navigant Consulting
Terry Peterson	Electric Power Research Institute
Steve Ponder	Florida Power and Light Company
Rhone Resch	Solar Energy Industries Association
J.P. Ross	Vote Solar
Sol Shapiro	Consultant
Ed Smeloff	Sharp Solar
Tim Tutt	California Energy Commission
Michael Wheeler	National Renewable Energy Lab
Tex Wilkins	U.S. Department of Energy

Facilitator

Kate Kopischke	Policy Consensus
Will Singleton	The Keystone Center

Quantitative Working Group

The quantitative working group was created by the CDEAC to compare the analysis of data among task forces in order to ensure consistency in assumptions across the reports.

The following members contributed to this report:

Doug Arent	National Renewable Energy Laboratory
John Tschirhart	Department of Economics, University of Wyoming
Dick Watson	Quantitative Working Group

Continued prosperity of the West depends on strong economic growth, which in turn requires a secure and predictable energy supply. The recent volatility of wholesale natural gas prices, which have risen from under \$3.00/MBTU in 2001¹ to more than \$14/MBTU in October of 2005², are having a dramatic impact on natural gas and electricity prices facing citizens in the Western states, prompting many to look for alternative sources of energy to meet their needs. The solar radiation in the West is the most abundant of all the renewable sources and a practical energy resource of great economic value. Solar energy can make a major contribution to the 2015 goal of 30,000 MW of clean energy adopted by the Western Governors' Association in 2004. In fact, we project that as much as 8,000 MW of capacity could be installed with a combination of distributed solar electricity systems and central concentrating solar power (CSP) plants by 2015, and an additional 2,000 MW_{th} of solar thermal systems could be installed in the same timeframe. At that point, the cost of electricity from future CSP plants should be on a par with that from plants burning costly natural gas, and distributed systems should have declined in price to the point that they should be able to produce electricity below retail utility rates in most parts of the West. Best of all, the fuel source for these systems is free. Once the systems are installed, all price volatility is removed, yielding the secure and predictable energy supply so critical to the region's growth.

Initial system expense is currently the single biggest barrier to widespread deployment of solar. Worldwide experience has shown, however, that these costs can be driven down through accelerated growth sparked by temporary economic-development policies. The recently enacted two-year, 30 percent federal investment tax credit is a case in point. For distributed solar technologies, this credit will provide short-term help to increase the number of systems installed throughout the states of the Western Governors' Association. It will have little effect on central-station solar installations not already well underway, however, because the two-year duration is too short relative to the time needed to develop projects and bring them into operation. It is imperative, therefore, that Western Governors use their considerable leverage in Washington to ensure that this credit is extended for a full 10 years. Without the assurance of this support, large central systems will find it difficult to attract financial backers, and manufacturers of components used in distributed solar systems will not have the confidence to make investments to expand production capacity that will ultimately drive down costs for everyone.

This report outlines additional initiatives needed at the state and federal level to unleash private investment in solar. Many involve changes in policies or regulations with little or no budgetary impact. Where direct incentives are involved, they are designed to decline over the next 10 years to the point that they are no longer needed to sustain a rapidly expanding industry.

The Solar Task Force offers the following set of recommendations to the Governors that, if enacted, will enable solar technologies to make a meaningful contribution to the 30,000 MW of new clean, diversified energy.

¹ http://futures.tradingcharts.com/hist_NG20013.html

² <http://www.wtrg.com/daily/gasprice.html>

- Work aggressively with Congressional delegations to extend the 30% federal investment tax credit to a 10-year term and remove the \$2000 cap on residential systems.
- Expand the deployment of central solar plants by encouraging 30-year power purchase agreements and aggregation of utility plant orders and project bids to accelerate scale-up cost reductions.
- Encourage widespread adoption of distributed solar by creating incentives either in the form of declining up-front rebates that help reduce the “first cost” challenge in purchasing a solar system or by establishing ongoing performance-based incentives that pay for production of electricity, both of which have been adopted in certain WGA states. Incentives should be available to both solar thermal (space heating and cooling as well as water heating) and solar electricity systems and apply equally to residential and commercial buildings.
- Reward solar production and encourage conservation during critical peak periods by facilitating simplified interconnection standards, net metering, and rate structures that will benefit distributed solar systems.
- Exempt both CSP plants and distributed solar systems from state and local sales and property taxes. The loss to state treasuries of these taxes will be more than compensated by increases in tax revenues through growth in personal and corporate income taxes, gross receipts taxes from equipment sales, compensating taxes on imported equipment and other taxes specific to electric utilities. In addition, some of the money that now leaves states’ economies for energy purchases will instead remain at home.
- Integrate solar into existing state policies such as a Renewable Portfolio Standard, which can help develop central and distributed solar markets when structured properly.
- Consider adopting target tariffs that reflect the value of solar energy for peak periods and that adjust for natural gas price changes.

With these policies implemented, an additional 32,500 jobs will be created and a new solar energy manufacturing industry will emerge in the West.

Broadly speaking, there are two technology market segments that can take advantage of the West’s abundant solar resource: central station and distributed generation. Central station solar fits the typical power-production model employed throughout the grid, generating electricity at an often remote location and wheeling that energy across the grid to recipient utilities and other customers. In contrast, distributed solar systems are installed on rooftops or on land adjacent to buildings, enabling homeowners, businesses, schools and government buildings to generate their own electricity and/or heat.



Central – Kramer Junction (CA) Solar Electric Generating Station



Distributed – Rooftop PV system at Swinerton, Inc. offices in Concord, CA

Both central station and distributed solar can be successfully deployed in the West, and both will be needed to help meet the Governors' target of 30,000 MW of new clean, diversified energy by 2015. However, the barriers to widespread adoption and consequently the policies needed to overcome them are in most cases as different as the two deployment strategies themselves. For these reasons, the full report from the Solar Task Force is divided into two sections, one covering central station solar and the other distributed solar. Beginning with the executive summary, each section presents the various types of solar systems that can be deployed; specific barriers they face; the policies and programs the task force recommends that the Governors consider to overcome those barriers; and the potential impact in energy production, jobs and other economic and environmental benefits that the WGA states will enjoy as a result.