

# Update on the Southwest 1000 MW CSP Initiative

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# Update on the Southwest 1000 MW CSP Initiative

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## ABSTRACT

The 1000 MW CSP project was initiated in FY02 based on a Congressional request of the DOE to investigate the “feasibility of 1000MW of Concentrating Solar Power in the Southwest by 2006.” The original charge has grown and involved a number of activities including: outreach to the SW states, support of state-level activities in NM, CA, and CO, and analysis in support of the Western Governors’ Association (WGA) 30 GW Clean Energy Initiative.

### 1. Objectives

The focus of the 1000 MW CSP Initiative is to accelerate the commercialization of concentrating solar power generation technologies. Analysis shows that cost reductions needed for the technologies to be competitive in central power generation markets will result from a combination of R&D advances, system scale-up, and learning/deployment. The 1000 MW CSP Initiative addresses cost reductions resulting from deployment.

This project directly links to the Solar Energy Technology (SET) and Energy Efficiency and Renewable Energy (EERE) missions to “bring clean, reliable, and affordable energy technologies to the marketplace” and to “increase the viability and deployment of renewable energy technologies.” Cost reductions due to learning and deployment, the primary outcome of this project, directly support SET’s long-term goal of achieving wholesale, central power generation from solar energy at costs of \$0.05 - \$0.08/kwhr .

### 2. Technical Approach

The report on the potential of 1000 MW of CSP power in the West was completed and submitted to Congress in August of 2002. During the preparation of this report, the DOE formed a 1000 MW Team with the purpose of educating energy offices and professionals on the potential of CSP power in the SW states. This “road show” sought to provide information on the characteristics of CSP technologies, the potential in each of the states, and the benefits that would accrue from its implementation. In April of 2004 at the North American Energy Summit in Albuquerque, NM, the Western Governors’ Association resolved to evaluate diversification of Western energy resources. The mechanism for doing this is the 30GW Clean Energy Initiative for the West, which includes a declaration to “establish a stakeholder working group to develop options for consideration by the Governors in furtherance of the 1,000 MW initiative.” The April 2004 resolution “rolled up

the 1000 MW Initiative under the umbrella of the 30 GW WGA Study. In FY05, we have continued to support SW states and the WGA analysis efforts, through a combination of in-house and subcontracted technical, policy, and market analyses.

### 3. Results and Accomplishments

The technical work plan for FY05 included tasks in the following three areas:

1. Support for WGA 30 GW Clean and Diversified Energy Initiative Solar Task Force
2. Support to State of New Mexico’s Concentrating Solar Power Task Force
3. Development of a report defining the economic, energy, and environmental benefits of Concentrating Solar Power in California.

#### 3.1 Support of the WGA 30 GW Clean Energy Initiative

- Performed analysis of the current and future performance/ costs of CSP systems.
- Provided an assessment of the technical potential and economically feasible CSP capacity in the Western States. (Developed “supply curves” for further analysis by quantitative working groups.)
- Developed resource maps (NREL Resource Assessment Group) identifying most suitable locations for CSP installations. The CSP plant map shown in Figure 1 below was prepared to show some of the “best locations for CSP in the SW.

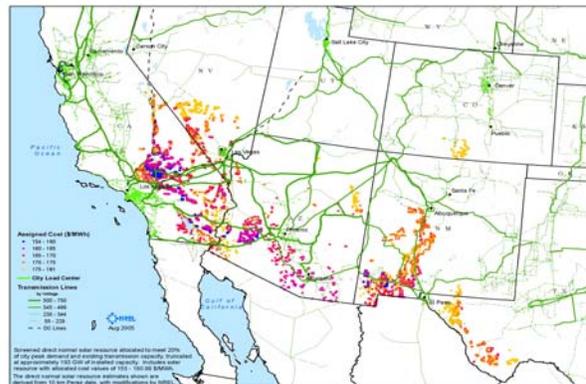


Fig. 1. Locations for CSP Plants in the SW

- Evaluated market barriers and an analyze potential policies to overcome barriers. The primary market barrier

is the gap between the cost of CSP power generation and that of fossil generation.

- Served as a technical resource for the solar task force, including participating in meetings of this task force. Staff from NREL (Mark Mehos) and Sandia (Tom Mancini) participated as members of the WGA Solar Task Force.

### 3.2 Support of the NM CSP Task Force

In 2004, Governor Richardson formed a Concentrating Solar Power Task Force to identify a viable commercial CSP project of 50 MW (or larger) for the State of New Mexico. The CSP Task Force was chaired by the Cabinet Secretary of the New Mexico Energy, Minerals and Natural Resources Department (EMNRD) and included with members from state agencies, all of the state's investor owner utilities, and representatives from industry groups and the national laboratories (Mark Mehos, NREL and Tom Mancini, Sandia). Black and Veatch was awarded a contract by the State to:

- Assessed the commercial viability of the full range of CSP technologies,
- Identified favorable siting opportunities in New Mexico, analyze the impact of a range of incentives on the cost of electricity from a CSP plant,
- Reviewed markets for CSP power in the state, and
- Examined a range of plant ownership options.

At this time the final report and recommendations of the Task Force has not been released.

### 3.3 Report on the Economic Impact of CSP in CA

A subcontract was awarded to Black and Veatch for analysis of the economic, energy, and environmental impacts of concentrating solar power in California. As defined in the scope of work for the effort, Black and Veatch was required to:

- assess the applicability of CSP technologies for CA,
- evaluate the DNI in CA,
- estimate the potential economic impact in terms of direct and indirect employment created by the manufacturing, installation, and operation of representative CSP technologies located in California.
- estimate the potential impact of tangible non-employment related benefits to state and local decision makers, i.e. property, sales, and income tax revenues, procurement of local goods and services during construction and ongoing operation, air quality improvement, and
- estimate the potential impact of non-tangible benefits that may be of interest to state and local decision makers, i.e. local air quality improvements, community distinction, etc...

This report has been completed and will be published soon.

## 4. Conclusions

The activities of the 1000 MW CSP Initiative have resulted in an increased awareness of the technologies by the energy decision makers in the SW U. S. With the consideration of the upcoming WGA Report, we anticipate opportunities to deploy these technologies in some states. While they cannot be directly attributed to the efforts of this project, one CSP company recently announced two projects totaling 850 MW in California.

## ACKNOWLEDGEMENTS

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