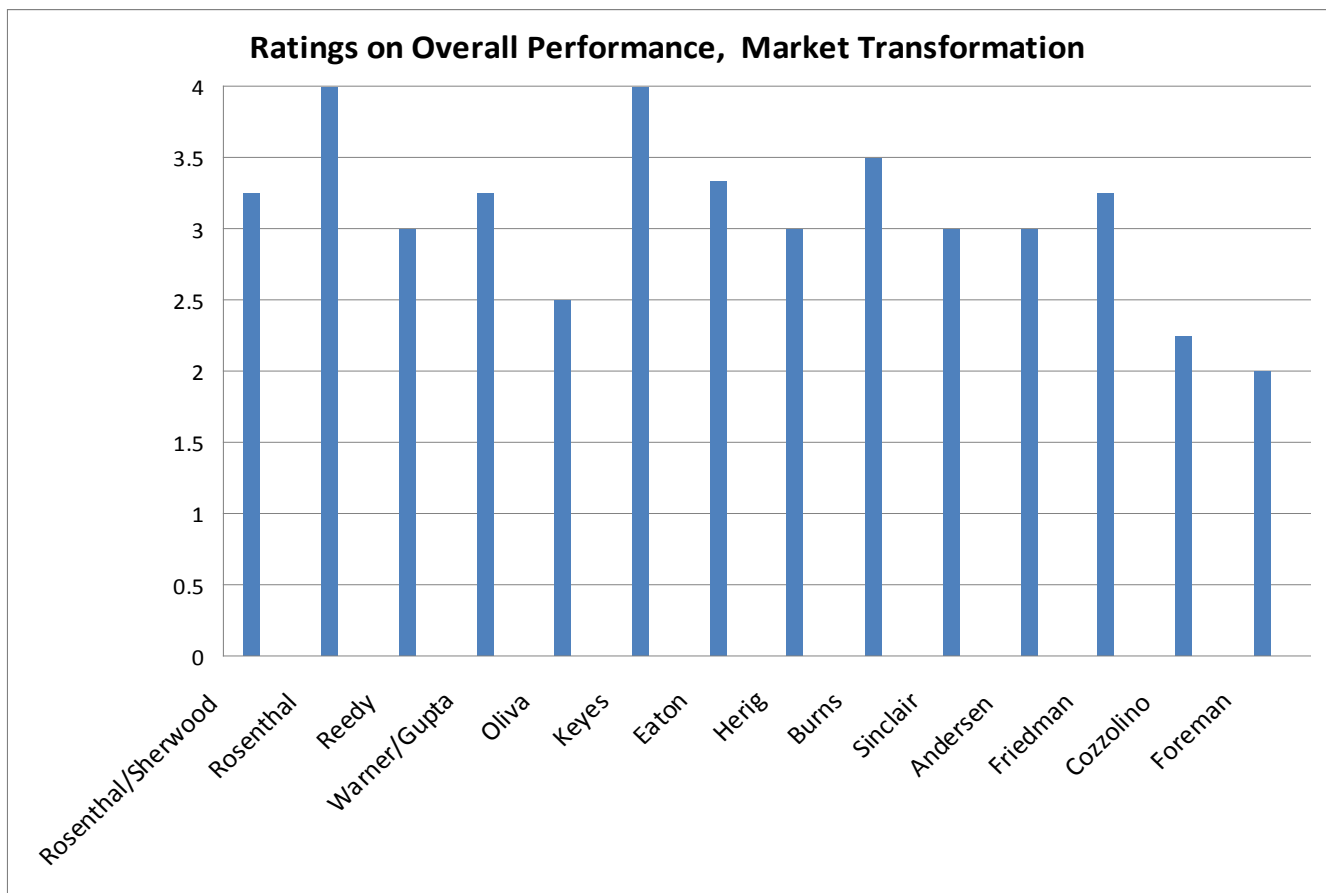


2009 Solar Program Peer Review Overview of Results for Market Transformation

Figure 1 below shows the rating each project received from the peer reviewers in terms of their “Overall” performance. The ratings are an average of the scores given by the four peer reviewers in this panel. They provide a broad comparison between the projects.

- A rating of 4.0 is an *Outstanding* project, i.e., world-class in nearly all aspects
- A rating between 3.0-4.0 is a *Good* project, i.e., strong and deserving of priority attention
- A rating between 2.0-3.0 is a *Weak* project, with one or more significant deficiencies requiring management attention
- A rating of 2.0 or lower indicates a project with serious deficiencies which warrant careful re-evaluation

All of the ratings in the *Market Transformation* track fell between 2.0 and 4.0. Two projects stood out with the highest rating possible: RES Support, Andy Rosenthal; and State and Stakeholder Outreach, Jason Keyes.



Summary Observations and Recommendations

Market Transformation

The reviewers convened in two afternoon sessions, for the purpose of identifying important points, discussing them, and relaying preliminary conclusions to the presenters and to DOE staff in attendance. Reviewers stated that the Market Transformation program appears to be very good, and there were many compliments on the quality of the peer review, its organization and execution.

The reviewers were not entirely comfortable providing immediate feedback to the presenters, feeling that would be best done by DOE following reflection and summary. Rather, the two sessions were used mostly to elicit additional input from the presenters, identify important themes, and discuss overall impressions about the program.

This summary is organized by the areas that saw most the most comment and discussion.

Legislation & Regulators

Based on discussions at the review, there is an apparent need for better rate information, transparency, coordination between legislatures and PUCs. Given limited opportunities for legislators and legislative staff to attend technical conferences or to meet with PUCs to elevate solar, it would be useful to create a package of recommendations and principles for PUCs to adopt. Reviewers believe PUCs should publicize tariffs in a standard format and give prompt notice of changes in plain language.

One audience member was not clear about the state of relationships between the Solar Electric Power Association (SEPA) and regulators, which is important in the process of transforming markets to be more accepting of solar. Is there a gatekeeper for all information exchanged in such relationships? The Solar America Cities program was mentioned as a possibility for this responsibility.

Reviewers believe both positive and negative regulations, i.e., the “carrot and the stick,” are necessary for effective market transformation.

Public Policy

A reviewer felt that including the true cost of all operations connected to nuclear fuel is necessary to calculate accurate comparisons with solar. If this were done, comparative cost models might actually favor solar. Similarly, costs of defending oil interests are left out of total cost comparisons – included, they would likely provide a more favorable cost comparison for solar.

Reviewers felt jobs created per megawatt of solar capacity would be a useful and significant criterion. Solar is more net jobs-intensive, even as some displacement in quality and skills may occur.

The consensus is that tradable Renewable Energy Credits (RECs) are needed to create a “currency” that promotes investment in solar. The government can serve a useful function in this market by purchasing RECs or by providing other financial incentives. Several participants stressed the need for government reforms to deliver price and rate transparency.

Both PV and Solar Thermal systems need integrators. If Solar Cities now focus only on PV, then a more balanced program would include solar thermal in a more practical mix. There is no recognized U.S. national standard for thermal metering; this is a significant barrier to market penetration.

DOE Program Design & Balance

One PI commented that many industry participants are looking for relief from an avalanche of calls from various constituents who are considering solar. The potential role for DOE is to establish telecommunications services to field these calls, and to staff the call lines with tailored teams that can offer clear and interactive responses to these inquiries. Another PI echoed that utilities and their customers would also appreciate this resource, while a third said that such assistance is of limited value if callers do not have a plan the development of a sustainable program; interest in solar alone is not enough. A reviewer observed that clearer goals are needed, such as economic, carbon reduction, displacement of oil, oil independence, pollution reduction, more amorphous “greening” goals, etc.

One participant objected to the Program’s concentration on selected Solar Cities, wanting instead for DOE to make resources available to put solar into public buildings, and in other regions. Stronger linkages should be established between energy efficiency and solar, beyond just guidance – i.e., real technical assistance, like a solar SWAT team, for maybe 250 cities. States need quick templates on developing a renewable energy program, with solar as an important element. Another PI would advocate adding to 25 Solar America cities in increments of the 10 largest cities in every state.

Cost is still considered the biggest barrier for solar. Cost transparency is still lacking, partly because of the absence of clear effects of tariffs and rates. One wondered if there is a way to avoid PUCs and extensive rate cases in getting to a more solar-friendly environment. One observer feels that sometimes is simply easier for DOE to send money to the national laboratories than to recruit other, and sometimes better, researchers via major RFPs.

One question that arose was whether there is a better and more strategic way to transfer the information developed in a single program, like Solar America Cities, to other cities, regions and programs. Some participants said relevant metrics for project viability could be as simple as MW generated, but others may be important to other cities. Others hold that “fuzzy” metrics are ultimately of little value compared to “hard” metrics like MW generated.

Some participants questioned why DOE supports solar cities in California, where the environment for solar projects is already favorable compared to many other states. The question was posed whether DOE efforts might be better focused in regions where the barriers are larger, but the national payoff greater. California’s receptivity to solar energy projects and its relatively high electricity cost, makes solar more competitive with conventional sources in the state. It was suggested that the best opportunity for California is as a model, allow successes to be viewed by others and replicated.

Providing more frequent mechanisms for discussion among PIs and DOE would be considered very valuable. It was suggested that perhaps a solar conference and the peer review could be dovetailed into a single meeting.

Reviewers restated a need to quantify the results of each project. It was believed DOE should pay more attention to transfer and dissemination of results, either by requiring projects to develop individual outreach plans, or through a collective program that encompasses several projects. One suggestion was the use of cable TV programs, similar to the home & garden model.

It is a common theory that earmarking projects surrenders control of the siting of demonstrations, leading to sub-optimal results. It was acknowledged that attempts to change this, however, are probably futile.

Solar Manufacturing and Installation - Industries

Industry must do a good job in monitoring and assuring data quality, especially for reliability. Industry AND utilities both have data quality problems.

Participants wondered if it might be sensible to require certified installers to train others. Certification would help foster trust – and, therefore, acceptance. It was agreed that training is fine - in the end, though, on-the-job experience is essential.

A reviewer from NY observed that PV applications are growing in spite of economic difficulties. The long-term stability of the business environment for solar products depends on incentives for business development. Factors such as work force characteristics, needed training, etc., must match demand to supply for adequacy in quality and size.

Potentially toxic materials in panels raise the hazard in fires. It was agreed that this should be a priority for all stakeholders in the solar industry.

Utilities and Utility Infrastructure

PV can play an increasing role in the design of new distributions systems, especially given its variety of requirements and availabilities.

Data acquisition by utility monitoring systems is ubiquitous, but the quality should be upgraded to “revenue-grade data acquisition.” Attributes of such data systems would be high scalability and frequent sampling of a wider range of parameters.

End Users and the Buildings Industry

In the current market, the investment risk for solar technologies and products more frequently falls on the end user, rather than on the utility for conventional generation. Typically, the person who owns the solar generator is responsible for maintenance. The question raised was whether this should be the responsibility of utilities, as is the case with conventional power sources. Currently, diffuse responsibility for solar equipment increases the risk of installations.

There was a feeling that the economics of building integrated photovoltaic (BIPV) solar electric roofing systems remain weak. Unisolar installations are unreliable, according to one of the reviewers. However, it was suggested there may be special environments in which BIPV approaches are suitable and competitive, such as in hurricane- or lighting-prone areas.

For cities considering solar projects, participants feel an audit should precede the development of a plan and applications for funding.

Remarks on Projects Presented at this Review

The remarks below capture oral remarks by the reviewers at the project presentations and at the afternoon feedback sessions that related to the projects.

One reviewer wondered how big the Solar Tour can really get in its current format. One suggestion was for the project to create a worldwide virtual tour, using Web-based technical tools that already exist.

Tiger teams appear to comprise a good mix of contractors. One concern is that Tiger Teams do not really follow a formal programmatic approach, but are instead more reactive in nature. Perhaps these teams ought to provide a “top three” suggestion list of solar initiatives a city might investigate, rather than leaving an inexperienced city to start from scratch. The city can then adapt and expand these suggestions based on its specific issues, constraints and barriers.

The Work Flow Process is a good context within which to consider Tiger Team activities. Tiger Teams need to couple with local development resources to identify specific local barriers in the workflow process. Determining where the roadblocks are in solar initiatives – i.e., permits – would provide a starting point from which to focus efforts and simplify the workflow process. CH2MHILL can do some aspects of the work for the Tiger Teams, but probably not all.

One reviewer advocated that the Solar America Cities Program should track progress more widely against identified program goals, such as cost per watt for the components, difficulty/cost of permitting, cost of controls, panels, interconnections, and necessary legal costs. The program should have targets for energy and cost savings, and should identify a staff person to oversee the entire program and track progress against goals. Benchmarks and metrics may be challenging, but are necessary to evaluate progress and define future actions. There was a question as to whether the current programs concentrate on technical factors and the cost of components to the exclusion of factors like legal and permitting obstacles, public relations, etc.

It was suggested that the Solar Cities Program put energy planning on an equal basis with planning for water, sewer, and transportation infrastructure components of cities. Participants felt the finance community should also be included for long-term projects.

While the peer review is an essential part of SETP's evaluative process, the results are not considered the sole indicator of any particular project's success or failure, nor does the review alone determine whether a project will receive continued, additional or reduced funding. The review is a critical opportunity to gain insight from external peers and industry professionals and to open discussion about areas of continued and future focus for the program. It is not a solitary measure of progress, however, and this report is intended to be read with that in mind.