

Market Transformation

Solar technology research and development (R&D) is a key activity of the U.S. Department of Energy (DOE). But beyond improvements to technology, it is equally important to address non-R&D issues and market barriers.

The Market Transformation subprogram is designed to facilitate the implementation of solar technologies by identifying and addressing significant non-R&D barriers. Within this effort, DOE is actively engaging key stakeholders and early adopters through a diverse portfolio of activities that includes education on important issues, policy analysis, and technical assistance.

Recognizing the Challenges

DOE is addressing the following obstacles to the widespread dissemination of solar technologies:

- Inconsistent interconnection, net metering, and utility rate structures and practices for solar systems
- Inconsistent financial incentives and policy drivers for developing solar projects
- Complex and expensive solar installation permitting procedures
- Lack of flexible, well-proven financing mechanisms for solar projects
- Shortage of well-trained solar installers for a growing industry.

Tackling the Challenges

DOE is successfully addressing these challenges through a combination of analysis, outreach, and partnerships, as demonstrated in the following Market Transformation activities.

Improving Codes and Standards

Solar ABCs. DOE established the Solar America Board for Codes and Standards (Solar ABCs) to ensure the responsiveness, effectiveness, and accessibility of photovoltaic (PV) codes and standards nationally and internationally. The board welcomes active



Credit: Sherri Shields, Florida Solar Energy Center/PIX 16606

DOE provides funding to regional training providers, such as the Florida Solar Energy Center (shown above), to increase the quality and availability of instruction for solar system installers.

participation from all stakeholders and serves as a point of contact for organizations working to transform energy and building codes and regulations. The board conducts targeted studies on the most pertinent issues, such as permitting, solar access, and fire codes. These studies and additional resources on solar codes and standards are available at www.solarabc.org.

Training a Solar Workforce

A well-trained workforce is critical to a successful solar market, ensuring high-quality installations, cost reductions, and continued consumer acceptance of solar technologies. In the fall of 2009, DOE awarded nearly \$10 million in American Recovery and Reinvestment Act (ARRA) funds to regional solar training providers throughout the United States, starting a 5-year, \$27 million dollar program aimed at increasing the quality and availability of instruction in PV and solar heating and cooling systems. DOE partners with the Interstate Renewable Energy Council to support outreach, accreditation of training programs, and certification of master trainers. In addition, DOE partners with the North American Board of Certified Energy Practitioners, the only nationally accredited organization in the United States to certify solar installers.

Assisting State and Local Governments

Solar America Cities. Local governments are critical allies in accelerating the deployment of solar electricity. DOE has partnered with 25 U.S. cities to promote comprehensive strategies for increasing solar energy use. These Solar America Cities are engaging decision makers such as city councils, tax boards, and planning commissions; exploring innovative solar financing options; streamlining permitting processes and updating building codes; and educating their residents and businesses on the benefits of solar energy. Through the ARRA, DOE awarded up to \$10 million for special projects in the Solar America Cities in fall 2009. These projects will bring innovative programs and concepts to scale for replication across the nation. Later in 2009, DOE plans to award up to \$10.5 million to one or more organizations to conduct outreach to hundreds of local governments on solar best practices.

State Outreach. DOE has established partnerships with the Interstate Renewable Energy Council, National Conference of State Legislatures, National Association of Regulatory

Utility Commissioners, and the Clean Energy Group to provide information on solar policies and technologies to state decision makers. DOE will expand its state outreach efforts through a new funding opportunity in 2010.

Engaging Utilities

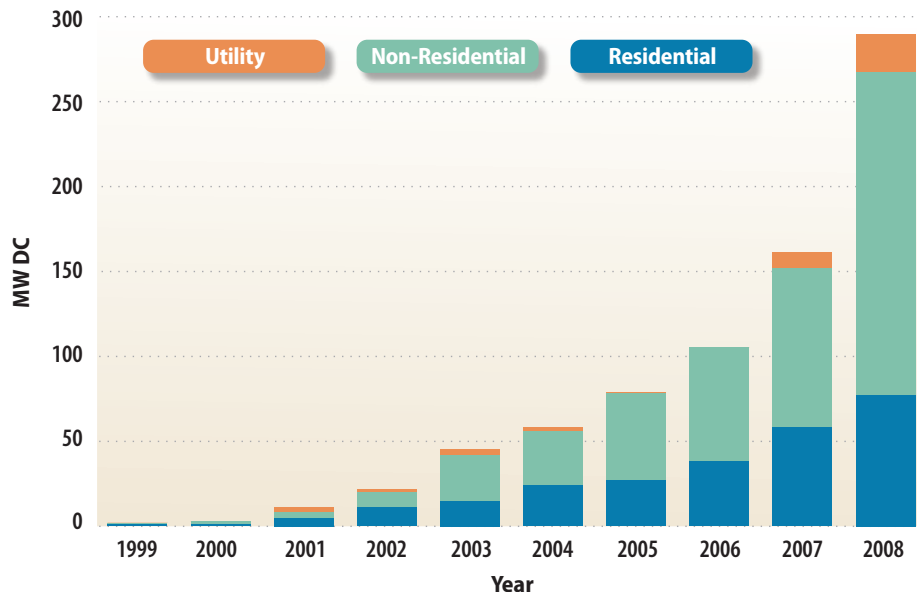
DOE has partnered with the Solar Electric Power Association to provide utility decision makers with information on innovative solar business models and integrating solar technologies into the electric grid. DOE will expand its utility outreach efforts, with an emphasis on municipal utilities and electric cooperatives, through a new funding opportunity in 2010.

Demonstration Projects

Solar America Showcases. DOE provides hands-on technical assistance for innovative solar installations that target a key challenge such as permitting, performance and reliability, financing or insurance mechanisms, or utility rate structures. Projects must be replicable and able to showcase PV, concentrating solar power (CSP), or solar heating and cooling technologies. Information about current Showcases and the application process is available at www.solar.energy.gov.

Government Solar Installation Program. DOE is working with the U.S. General

Annual Installed Grid-Connected PV Capacity by Sector



Annual Installed Grid-Connected PV Capacity by Sector (1999-2008)
Source: Interstate Renewable Energy Council

Services Administration to install PV systems on 26 federal buildings, and create a manual for solar installations on federal buildings so future projects can be streamlined.

Solar Program Priorities

Market Transformation is one of four subprograms in the DOE Solar Energy Technologies Program (SETP), along with PV, CSP, and Systems

Integration. The SETP subprograms focus on accelerating the advancement of solar energy technologies to make solar electricity cost competitive with conventional forms of electricity by 2015. To learn more about SETP activities, visit www.solar.energy.gov.

U.S. DEPARTMENT OF ENERGY

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Interconnection and Net Metering

Interconnection and net metering are two of the most fundamental policies to facilitate the development of solar markets. Interconnection standards govern how an electricity customer connects a solar system to the grid. Net metering allows customers to sell their excess solar power generation to the utility.

Many states have worked to develop straightforward interconnection standards, coupled with an equitable net metering policy, but a number of details remain and other states still have a long way to go. DOE provides technical assistance to states on the latest best practices as they develop or refine their interconnection and net metering programs. Here are the latest numbers and additional resources:

- Thirty-seven states and Washington, D.C. have interconnection policies in place.
- Forty-two states and Washington, D.C. have net metering policies; an additional 3 states have voluntary utility programs in place.
- *Freeing the Grid* is a report that provides analysis and rankings of the best and worst state interconnection and net metering standards in the United States. The report is available at www.newenergychoices.org.
- The Interstate Renewable Energy Council developed a model interconnection standard and net metering rule that states can use to assess their current standards or, in some cases, develop new standards. It is available at www.irecusa.org.