

DOE SOLAR ENERGY TECHNOLOGIES PROGRAM PEER REVIEW

Denver, Colorado
March 9, 2009

Technical Track:

Market Transformation - State Technical Outreach

Project Name:

Solar State Technical Outreach Partnership Project

Principal Investigator:

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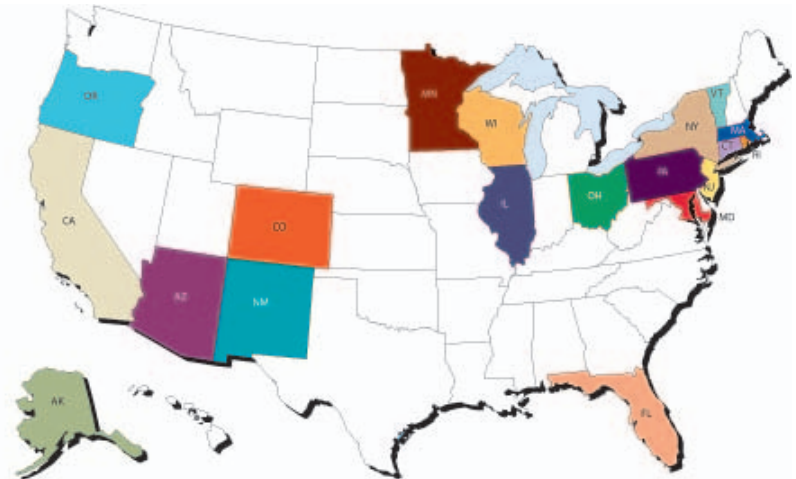
STATESADVANCINGSOLAR
AN INITIATIVE OF CLEAN ENERGY GROUP

Project Team

- **Clean Energy Group:** Nonprofit organization advancing clean energy technologies in the U.S. and internationally through innovative financing, business partnerships, public policy and advocacy. www.cleanegroup.org
- **Council of State Governments:** Premier multi-branch state government organization. Through education, research and information services, CSG provides an effective forum for outreach and communication with state legislators and executive branch officials on solar issues and policies in all fifty states. www.csg.org.

Project Team

- **Clean Energy States Alliance:** National nonprofit coalition of leading state clean energy programs. CESA provides information sharing, technical assistance, and a collaborative network for states on implementing effective clean energy programs. www.cleanenergystates.org.




Project Premise: States Key to Solar Market Making

State-Led Revolution in Clean Energy in U.S. – 1998-2009

- State are key locus to accelerate development of solar energy and the green economy
- Solar energy *is* economic development – programs emphasize local resources and markets
- Rapid state-based bottom up learning – allows for innovation and experimentation
- New financing models – performance based incentives, feed in tariffs, solar RECs, leasing, loans

Project Objectives

- Assistance to states to establish/expand solar programs
- Advance state solar program best practices & innovation
- Foster strategic partnerships between states and stakeholders
- Convince more states to get into solar game

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States Alliance

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State Leadership
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New Jersey Board of Public Utilities Office of Clean Energy


SOLAR RENEWABLE ENERGY CERTIFICATE PROGRAM


New Jersey has made a significant long-term commitment to solar energy and the Solar Renewable Energy Certificate (SREC) Program is an innovative way to help the state meet that commitment. The Board of Public Utilities (BPU) first instituted SRECs in 2004. Three years later, after successfully developing a market for SRECs, the BPU established an SREC-Only Pilot Program as an efficient, more market-based approach to providing solar developers and building owners with financial incentives to install solar electricity systems without reliance on rebates. The program has 39 MW of solar capacity in the pipeline, and 7 MW installed, demonstrating the effectiveness of this approach. This pioneering program followed an in-depth stakeholder process ensuring market acceptance and broad public benefit.

Origins of the SREC Program
Unlike most other renewable portfolio standards (RPS), the one in New Jersey specifies that a certain share of electricity must come specifically from solar-powered generation. This solar set-aside was established in 2003 because New Jersey wanted to grow a local solar industry and be a national leader in implementing solar, and the state recognized that solar systems are currently more expensive per installed kilowatt than some other clean energy technologies. The state's RPS requires that 2.12% of the state's electricity come from solar by 2021.

New Jersey BPU established the SREC to facilitate compliance with the RPS's solar set-aside and to help provide financial assistance for the installation of solar systems. In 2004, the BPU established an SREC trading platform to facilitate SREC trading between solar generators and electricity suppliers and demonstrate retirement of SRECs toward RPS compliance. Along with state rebates, federal tax credits, and net metering, the SREC helped spur the growth of New Jersey's solar market. The total installed capacity at the end of 2008 exceeded 65 MW.

The BPU then began to look for a more efficient, more sustainable method than a conventional rebate program to incentivize electricity customers to install solar systems. After an

 **New Jersey**
Clean Energy
PROGRAM

 The Atlantic City Convention Center is one of the largest roof-mounted solar PV systems in North America, rated at 2.36MW of dc capacity. Higher valued SRECs enable profitable investments in solar without large rebates.

Key Elements for Project Effectiveness

- State Peer to Peer Dialogue
- Employ Strategic Partnerships
 - Clean Energy States Alliance: leading state solar programs
 - Council of State Governments: new state recruits
 - Lawrence Berkeley Lab/CESA case studies
 - SmartPower: renewable energy marketing experts
 - National collaborative with 30 RPS State Programs
 - Industry partners: SEIA, Vote Solar, Solar Alliance

Our Technical Approach

- Real-time program experience through CESA leading solar states
- Continual survey of state solar program developments
- Deliver state peer-to-peer information exchange
- Identify solar energy policy/program best practices
- Provide low cost analysis, program design assistance, and market information services to states on solar policies
- Maintain state program database to show real results
- Recognize & publicize state program innovation

Resources and Budget Status

Clean Energy Group – 3 year cooperative agreement

- DOE funds obligated to this project: \$247,500
- CESA matching funds: \$122,00
- FY 09 budget: \$123,166 with cost share
- Through January 31, 2009, \$161,077 has been expended
- Consultant budget: \$40,140

Accomplishments

- **PV Peer network: 85 members & growing**
- **Active project website: www.statesadvancingsolar.org**
 - Total hits on CESA site: 6600 since launch in Feb. 2008. Over 5500 unique visitors as of mid-Feb. 2009
 - Total hits to SAS website from CSG site: 1103 as of January 2009
- **Comprehensive state solar program survey**
- **Quarterly webinars on state solar program innovation**
 - Integrating Clean Energy in State Air Quality Plans and Climate Policies
 - Mainstreaming Solar Electricity: Strategies for States to Build Local Markets
 - State Solar Policy Initiatives: Recent Developments and Lessons Learned
 - CT Solar Lease Program
 - Tracking the Sun: The Installed Cost of Photovoltaics in the U.S. from 1998-2007

Accomplishments

- **Publications:**

- *Mainstreaming Solar Electricity: Strategies for States to Build Local Markets*
- *Property Tax Assessment: New Solar Finance Vehicle*
- *Implications of ITC Changes to State Solar Programs*
- *State Strategies to Foster Solar Hot Water System Deployment*

- **State/Federal RPS Collaborative:**

- Multi-state dialogue to advance RPS policies (30 states)

- **State Leadership in Clean Energy Awards**

- Recognizing innovation in solar and other RE technologies

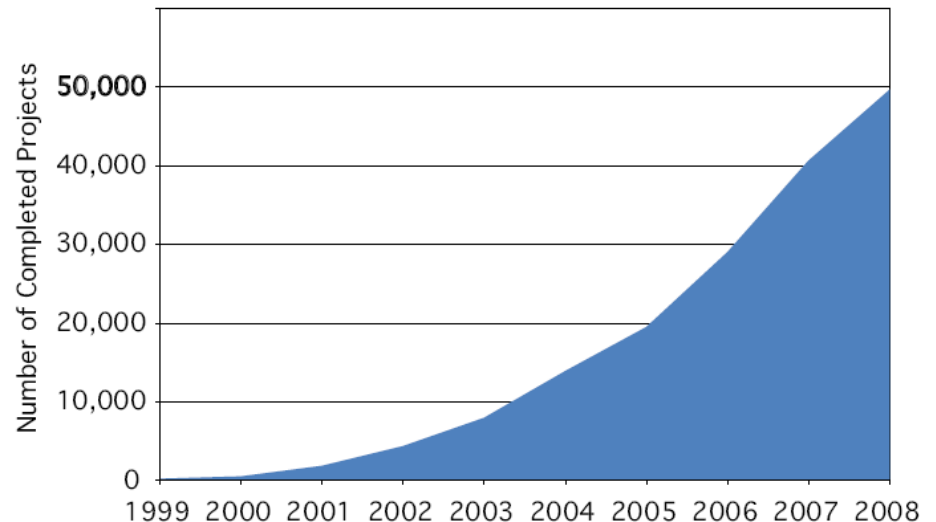
- **Individual State Policy Assistance:**

- NJ, CT, MA, NH, VT, MD, AL, NM, CO, IL, OH, MI, WI, FL, etc.

New CESA RE Database: Results that Matter

- States with dedicated funds to finance clean energy projects
 - Invested \$1.5 billion in last 10 years
 - Investment leverage: more than \$2.5 billion in other investment
 - Over 50,000 RE projects
 - 1.7 GW clean energy capacity installed
 - Primary driver for grid-connected PV; in 2007, more than 75% of installed systems were installed in states with funds
 - \$6 billion state funding for next 10 years plus new federal stimulus funding (\$3 billion for State Energy Programs)

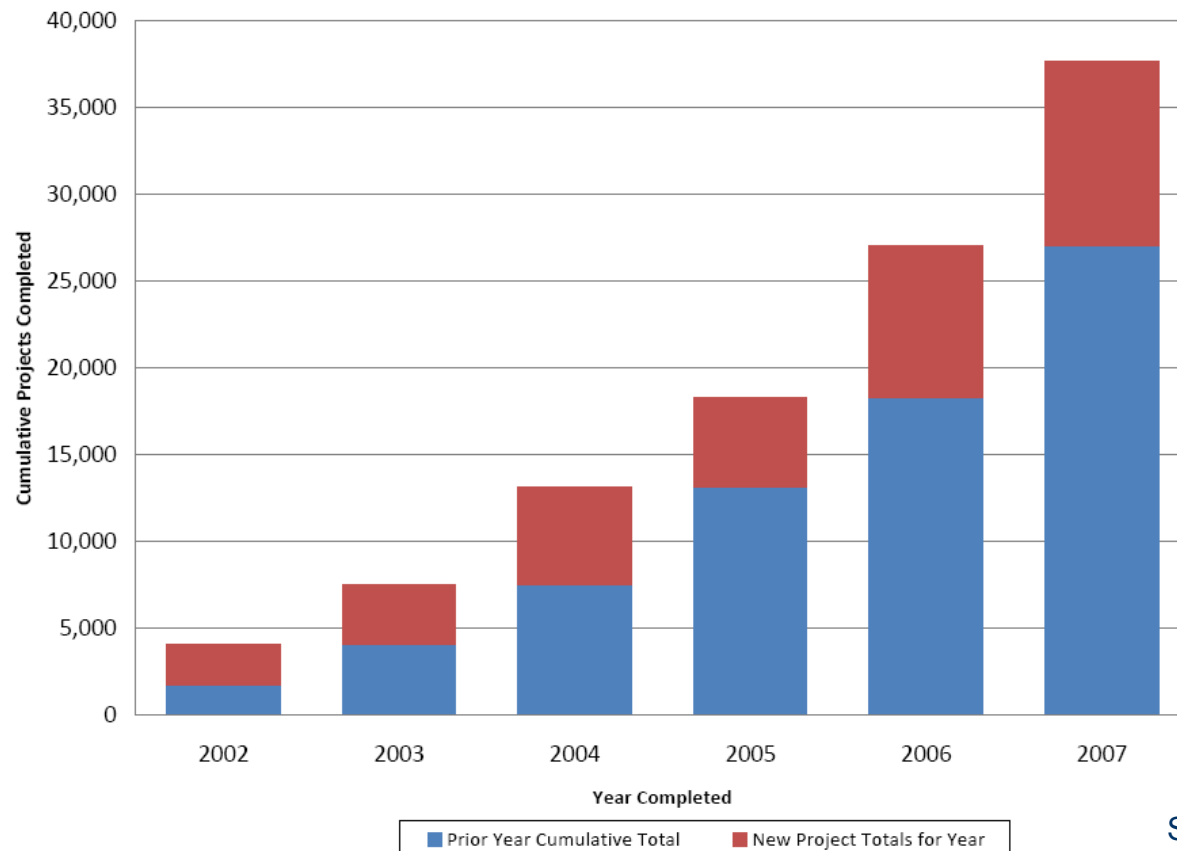
FIGURE 1B Cumulative Number of State Clean Energy Fund Projects



Source: CESA

PV Projects Installed: 2002-2007 by States with Clean Energy Funds


PV Projects Installed: 2002 - 2007



Source: CESA

Relevance/Impact of Results

- Increasing number of state officials participating in project
- States announcing bold, new, longer-term solar programs: enables significant PV cost reductions
- Ensuring effective solar program design fosters PV cost reduction and builds markets
- States are important educators and market-makers for PV

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Massachusetts Renewable Energy Trust

SOLAR ENERGY FOR GREEN AFFORDABLE HOUSING

Program Highlights

- Massachusetts has developed an approach that can allow solar electricity systems to be implemented widely on affordable housing.
- Third-party ownership allows nonprofit and public housing projects to benefit from federal solar tax credits.
- Nine affordable housing projects are receiving systems with a total capacity of 1.2 megawatts.
- The program has significantly increased interest in renewable energy on the part of Massachusetts affordable housing developers, owners, and regulators.


Massachusetts Renewable Energy Trust

The Massachusetts Renewable Energy Trust has worked with and provided grant funding to leading affordable housing developers and financiers to help them pioneer third-party ownership of solar energy systems for affordable housing. Nine systems with a total capacity of 1.2 megawatts are being installed at affordable housing projects, reducing their electricity bills. The program is attracting significant interest from other affordable housing developers, owners, and public agencies in the state. Along with Commonwealth Solar—a new state rebate program that doubled the installed megawatts of solar power in Massachusetts in its first year—the green affordable housing initiative is part of an ambitious and comprehensive effort to expand the use of renewable energy across the Commonwealth.


Rationale for Focusing on Solar for Affordable Housing

It is important for the future of solar energy to show that it can benefit low and moderate-income households, as well as wealthier ones that can afford the high initial cost of an installation. Moreover, because the majority of new rental properties being developed in Massachusetts are part of affordable housing projects, affordable housing represents a large potential market for solar.

Unfortunately, a number of factors present challenges to implementing solar energy in affordable housing. For one thing, nonprofit and public owners of affordable housing cannot take advantage of federal solar tax credits. In addition, the financing process for affordable housing development can be so complex that even the best-intentioned developer can have difficulty figuring out how to make a large photovoltaic solar installation work financially, legally, and logistically as part of a project.



A 92-kilowatt solar system was installed at the Washington Elms affordable housing development in Cambridge. It will provide approximately 30% of the 145-unit facility's electricity.

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TECHNOLOGY
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Future Plans/Strategic Bets

- Continue webinars & workshops
- Publish state solar marketing report
 - solar message development
 - education & marketing strategies
- State solar program innovation case studies
 - i.e. CA Low Income Solar Program
- Facilitate national RPS collaborative
 - Foster RPS strategies for solar & DG
 - Assist effective federal RPS implementation



Future Plans (cont'd)

- Develop model solar legislation toolkit
- Develop primer on effective state renewable energy financing mechanisms
- Assist states to deploy federal economic recovery funding for RE projects
- Advance solar in affordable housing/low income sector (state housing agencies, HUD)
- Advance solar with home builder community

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