

## Solar Energy Technologies Program Newsletter

# 4<sup>TH</sup> QUARTER 2009

Solar Technologies Boosted by

# Solar Technologies Boosted by \$87 Million in DOE Support

Energy Secretary Steven Chu announced in October up to \$87 million in funding to support the development of new solar energy technologies and the rapid deployment of available solar energy systems. Of this amount, \$50 million is from the American Recovery and Reinvestment Act (Recovery Act). Secretary Chu made the announcement at the opening of the U.S. Department of Energy (DOE) Solar Decathlon.

The 47 projects selected for funding will help further DOE's goal of making solar electricity cost-competitive by 2015 through accelerated commercialization of solar technologies.

Projects were selected in four categories: high penetration solar deployment, Solar America Cities special projects, solar installer training, and DOE national laboratories projects.

"I applaud each of these award winners, who are vital to moving our country towards a sustainable solar infrastructure."

ENERGY SECRETARY STEVEN CHU

#### **High Penetration Solar Deployment Projects**

These projects focus on research and development to accelerate placing solar energy systems into the electrical grid. The award recipients are listed below:

Arizona Public Service (APS) Company – APS will develop, construct, manage, and study 1.5 megawatts (MW) of distributed photovoltaics (PV) in Flagstaff, Arizona.

Commonwealth Edison Company – This project will evaluate consumer reactions to advanced metering and price signals for power with and without PV and with both PV and storage.

Florida State University – Researchers will characterize the variation and impact of PV as a function of system size, location, type, and technology.

National Renewable Energy Laboratory (NREL) – NREL will utilize modeling, simulation, laboratory testing, and field demonstrations to determine the effects of up to 500 MW of commercial-scale rooftop PV on distribution systems.

\$87 Million in DOE Support
PROGRAM HAPPENINGS & HIGHLIGHTS
Team Germany Takes Top Honors at 2009 Solar Decathlon3
Results of Solar Program Peer Review Published4
Open PV Mapping Resource Introduced4
DOE Funds Innovative Solar Research from Small Businesses5
EVENT NEWS
Program to Participate in International Builders' Show5
Solar Program Exhibits, Presents at Solar Power International5
Solar ABCs Stakeholder Meeting Held6
Solar Program Hosts IEA PV Power Systems Meeting6
State Legislatures Focus on Solar in the Southeast7
Utility-Scale PV Variability Workshop Held7
SOLAR AMERICA CITIES NOTES
DOE Representatives Join Cities in Announcing Funding8
Philly School Flips the Switch on City's Largest Solar Array9
STATE & INDUSTRY UPDATES
California Expands Feed-In Tariffs and Net Metering10
New Solar Panel Achieves 20.4% Total Area Efficiency10
Solar Technology Acceleration Center Powers Up10
DOE Solar Program & Partner Publications11
Solar Program Funding Opportunities12

Sacramento Municipal Utility District – This project will use utility-collected data to evaluate the value of advanced metering infrastructure, PV, and storage for homes using these technologies.

University of California San Diego – UCSD will develop advanced modeling tools and electric power control strategies to optimize power value while reducing any impacts of PV on existing microgrids.

Virginia Polytechnic Institute and State University – This project will evaluate existing and prototype data to identify cost-effective approaches to issues associated with high-penetration PV.

#### **Solar America Cities Special Projects**

Sixteen selected Solar America Cities will expand existing projects to overcome specific barriers to urban solar energy use. DOE will share lessons learned and best practices from these efforts with other cities through outreach activities beginning in early 2010. (See article under "Solar America Cities Notes" on page 8 about how four cities will use their funding.)

Austin, Texas

Berkeley, California

**Boston, Massachusetts** 

Madison, Wisconsin

Milwaukee, Wisconsin

Minneapolis - St Paul, Minnesota

New Orleans, Louisiana

New York City, New York

Portland, Oregon

Salt Lake City, Utah

San Diego, California

San Francisco, California

San José, California

Santa Rosa, California

Seattle, Washington

Tucson, Arizona

#### NATIONAL LABORATORY UPDATES

#### Solar Program Seed Fund Projects Announced for NREL and SNL

Financial support from the Department of Energy (DOE) Solar Program was announced recently for fifteen select projects at National Renewable Energy Laboratory (NREL) and Sandia National Laboratories (SNL). The projects will receive more than \$2.7 million in total funding.

The NREL/SNL Seed Fund effort supports projects that foster new research directions within existing DOE Solar Program activities and have the potential to drive transformational changes in the photovoltaic (PV) industry. Projects selected for the coming year include innovative work in disruptive technologies such as next-generation organic and quantum dot solar cells.

Seed Fund projects are evaluated annually by a technical review panel that includes participants from DOE headquarters, NREL, SNL, academia, and private industry.

#### **Solar Installer Training**

Nine colleges, universities, and local organizations have been selected to lead regional solar installation programs. These "train-the-trainer" programs are part of the DOE Solar Program's Solar Installer Instructor Training network, designed to increase the number of qualified, local workers needed for the installation of solar energy systems.

Awardees are as follows:

The Pennsylvania State University

**North Carolina State University** 

Midwest Renewable Energy Association, Inc.

Kennebec Valley Community College

**Hudson Valley Community College** 

Salt Lake Community College

**Houston Community College** 

**University of Central Florida** 

**California Community Colleges Board of Governors** 

In early 2010, DOE will release a funding opportunity announcement for a National Administrator to both coordinate the activities of the nine awardees in the Installer Instructor Training network and to serve as a central, national coordinating body to address solar workforce development issues. Visit the Solar Program's current financial opportunities page for updates.

#### **DOE National Laboratories Research Projects**

Projects at DOE national laboratories will foster advancement in both the PV and the Concentrating Solar Power (CSP) industries.

The selected labs are listed below (click name to visit laboratory Web site):

**Argonne National Laboratory (3 projects)** 

Los Alamos National Laboratory (2 projects)

National Renewable Energy Laboratory (6 projects)

Oak Ridge National Laboratory (1 project)

Pacific Northwest National Laboratory (2 projects)

Savannah River National Laboratory (1 project)

To view additional funding opportunities with the DOE Solar Program, visit www.solar.energy.gov/financial\_opportunities.html.

For information about the Recovery Act, visit: www.energy.gov/recovery/.

# **Program Happenings and Highlights**

## Team Germany Takes Top Honors at 2009 Solar Decathlon

The National Mall in Washington, D.C., was transformed into a renewable energy village recently, as the 2009 Solar Decathlon brought 20 unique homes to the site. This bi-annual event challenges 20 university teams from the United States and around the globe to design, build, and operate solar-powered, energy efficient homes.

"The ingenuity that comes from individual effort is the promise of our future."

DEPUTY SECRETARY OF ENERGY DANIEL PONEMAN

Team Germany's "Cube House" took top honors, propelled by a perfect score in the net metering category and a demonstrated ability to produce energy through several days of rain. This is the Technical University of Darmstadt's second consecutive Solar Decathlon victory. The University of Illinois at Urbana-Champaign received second place, followed by Team California. Several other teams, including University of Minnesota and University of Louisiana at Lafayette, placed first in individual competition categories.

Continued on following page

#### NATIONAL LABORATORY UPDATES

### NREL's CSP Team Receives Two Awards from DOE's National Laboratory Call

The Concentrating Solar Power (CSP) team at NREL has been awarded funding in a recent DOE call for foundational PV and CSP research and development at national laboratories. DOE specifically requested CSP proposals for: 1) research on advanced heat transfer fluids and novel thermal storage, and 2) enhancing capabilities for testing and evaluating advanced concepts. NREL received funding in both categories.

The laboratory's first project will upgrade and add equipment and facilities capable of characterizing new optical reflector and absorber materials, heat transfer fluids, storage fluids, and storage materials, as well as storage and collector systems and subsystems. Funded equipment and capabilities will be integrated into NREL's Energy Systems Integration Facility (ESIF) and the Solar Technology Acceleration Center (SolarTAC), a public-private partnership (see story on page 10).

NREL's second project under this funding is the development of new nanomaterials and encapsulation strategies aimed at substantial improvements in thermal energy storage density for CSP systems. This research leverages NREL's existing fundamental materials research program.

For further information about ongoing CSP research at NREL, contact Mark Mehos, mark.mehos@nrel.gov.



Crowds of visitors gathered on the National Mall to view houses at Solar Decathlon. Photo courtesy Stefano Paltera, U.S. Department of Energy Solar Decathlon.

The teams competed in 10 contests, ranging from subjective attributes such as architecture, market viability, communications, lighting design, and engineering, to technical measurements of how well the homes provided energy for heating and cooling, hot water, home entertainment, and appliances. For the first time, this year's competition included a net metering contest, worth a critical 150 points toward the total score.

For an event recap, photos, and videos, visit the Solar Decathlon Web site: www.solardecathlon.org.

## **Results of Solar Program Peer Review Published**

The DOE Solar Program has released the results of its 2009 Peer Review Meeting. The summary report and individual project reports are available on the Program Review Web site: www1.eere.energy.gov/solar/review\_meeting/program\_review\_meeting\_2009.html.

## **Open PV Mapping Resource Introduced**

NREL and DOE recently announced the beta release of the Open PV Mapping Project, a collaborative effort of government, industry, and the public. The project will provide a Web-based resource for users to evaluate the progress and current status of PV systems throughout the United States based on user-entered PV installation data. NREL will continue to enhance and expand the data to provide further analysis of the PV market.

The project already has received more than 50,000 entries. To view the database, visit http://openpv.nrel.gov.

#### NATIONAL LABORATORY UPDATES

### Sandia National Laboratories Expands Collaboration with EPRI

SNL Photovoltaic (PV) Group has announced an expanded collaboration with Electric Power Research Institute (EPRI) and its inverter communications effort. SNL's role will focus on the development of validation and test protocols for performance and interoperability of PV inverters.

Sandia will use the grid-tied inverter facilities at its Distributed Energy Technologies Laboratory to develop a system to evaluate inverter communication and power interfaces simultaneously.

EPRI is an independent nonprofit that conducts research and development related to the generation, delivery, and use of electricity. For more information, visit the EPRI Web site at www.epri.com.

# DOE Funds Innovative Solar Research from Small Businesses

Energy Secretary Steven Chu announced in November more than \$18 million from the Recovery Act to support innovative small business research, development, and deployment of clean energy technologies through DOE's Small Business Innovation and Research (SBIR) and Small Business Technology Transfer (STTR) programs.

Through SBIR and STTR, federal agencies with large research and development (R&D) budgets set aside a portion of their funding to be issued annually through competitive solicitation to small businesses. The Recovery Act funding is in addition to the regular annual SBIR/STTR Awards.

In the first phase of DOE's SBIR Recovery Act funding, 125 grants of up to \$150,000 each will be awarded to more than 100 small technology firms across the United States. This funding applies to ten topic areas, some of which have subtopics related to advanced solar technologies, including hybrid solar systems, distributed CSP, and organic and nano PV.

The Solar Program hosted an online meeting in October during which the current SBIR solar technologies awardees presented information about their projects. The webinar provided a progress update for Solar Program staff and offered an opportunity to identify synergies for possible integration of the SBIR awardees' R&D with core Solar Program projects.

For more information and a list of awardees, visit: www.science.doe.gov/sbir/Awards.html.

## **Event News**

#### **UPCOMING EVENTS**

## Program to Participate in International Builders' Show

The Solar Program will participate in the International Builders' Show (IBS) in Las Vegas, NV, January 19-22, 2010. Charles Hemmeline, acting team lead for the Market Transformation subprogram, will present information about new trends in residential solar installation. The IBS is the largest annual building industry tradeshow in the United States. Information and registration details can be found at: www.buildersshow.com.

DOE's Building Technologies Program will exhibit at the show.

#### **PAST EVENTS**

# Solar Program Exhibits, Presents at Solar Power International

In October, the Solar Program participated as a sponsor and exhibitor at Solar Power International, the largest solar conference and exposition in the country. More than 25,000 registrants and exhibitors attended the Anaheim, California,

#### NATIONAL LABORATORY UPDATES

### NREL Hosts International Energy Agency PV Hybrid and Minigrid Meeting

NREL recently hosted the Task 11: PV Hybrid and Minigrid Working Group to discuss progress on this effort, which is sponsored by the International Energy Agency (IEA). Representatives from Australia, Canada, Germany, France, Spain, Japan, and the United States reviewed the working group's activities in design and control, penetration of PV in mini-grids, and sustainability. Each area specifically addresses PV hybrid systems and mini-grids.

Staff members from NREL presented at the meeting the state of research in PV hybrid and microgrid research and projects in the United States. The laboratory is working on a report to detail more than 40 PV hybrid power systems that have been installed nationwide over the last 30 years.

The goal of the IEA effort is to foster international research and development collaboration and the assembling and dissemination of international knowledge on hybrid systems. Work in hybrid systems may also support studies in high-penetration, grid-connected systems, given the high levels of PV typically associated with hybrid systems.

event, representing all sectors of the solar industry. Sustainable building materials manufacturers and installers, industry associations, testing and certification organizations, and national, local, and international government organizations all had a presence at the conference.

Solar Program Manager John Lushetsky and a number of representatives from the Program and from DOE national laboratories spoke during the conference sessions. The annual event is organized by the Solar Electric Power Association (SEPA) and the Solar Energy Industry Association.

For videos and a conference recap, visit: www.solarpowerinternational.com.

## Solar ABCs Stakeholder Meeting Held

The Solar America Board for Codes and Standards (Solar ABCs) held a Stakeholder Meeting on Friday, October 30, at the conclusion of the Solar Power International conference (see previous article). Members reported on progress toward developing codes and standards for new and existing solar technologies.

Topics discussed included local codes, building electrical codes, safety, and grid interconnection. Stakeholders were also able to hear how they can get involved in the Solar ABCs process.

To view the meeting presentations, see the Solar ABCs Web site: www.solarabcs.org (click "October 30 Stakeholder Meeting").

## Solar Program Hosts IEA PV Power Systems Meeting

In conjunction with Solar Power International in October, the DOE Solar Program hosted the 34<sup>th</sup> Executive Committee meeting of the International Energy Agency Photovoltaic Power Systems (IEA PVPS) Programme. IEA PVPS is a collaborative effort that focuses on joint projects designed to drive the application of PV to electricity. The Programme currently has six ongoing research activities, or tasks, under the following topics:

- Exchange and dissemination of information on PV systems (Task 1)
- Very large scale PV systems in remote areas (Task 8)
- PV services for developing countries (Task 9)
- Urban-scale grid-connected PV applications (Task 10)
- PV hybrid systems within mini-grids (Task 11)
- \* PV environmental health and safety (Task 12)

Two new tasks were formally initiated at the meeting: performance and reliability of PV systems (Task 13), and high penetration of PV into the grid (Task 14). The United States will participate in both of these five-year tasks.

Additional task information, including work plans and deliverables, are available on the IEA PVPS Web site: www.iea-pvps.org.

#### NATIONAL LABORATORY UPDATES

### NREL's New Reflectomer Expands Specular Reflection Characterization

A Large Aperture Near-Specular Imaging Reflectometer (LANSIR) instrument is being designed and built at NREL. The LANSIR will provide complete specular reflection function for any material, over a range of sampling sizes. These more concise measurements of specular performance may advance the use of alternative optical materials for CSP systems.

The first prototype is scheduled to be operational by the end of February 2010. The goal is to find optical materials with performance characteristics and durability similar to current glass mirror technology but at a lower cost.

The concept for the LANSIR was presented at the SolarPACES
Task III (Solar Technologies and Applications: Development of Acceptance Test Guidelines for CSP Systems) Reflectance
Characterization/Standards Working
Group meeting in September.

### State Legislatures Focus on Solar in the Southeast



Jenn DeCesaro of SENTECH, Inc., a contractor to DOE's Solar Program, joined Georgia State Senator Ross Tolleson (right) and Alabama Representative W.F. McDaniel outside Cornell University's Silo House at Solar Decathlon. Photo courtesy Solar Program staff.

The National Conference of State Legislatures (NCSL) held its Southeast Solar Institute meeting October 8-9 in Washington, D.C. The meeting brought together legislators from the Southeast United States with legislative staff and representatives from DOE, SEPA, utilities, and industry to address developments in solar power, including technology advancements, financial issues, federal and state policy, and environmental impacts. The meeting included a tour of homes at the Solar Decathlon.

Meeting presentations are available at: www.ncsl.org/?tabid=18749.

## **Utility-Scale PV Variability Workshop Held**

The Utility-Scale PV Variability Workshop in October brought together more than 60 national laboratory researchers and members of industry to discuss the impact of variability on utility planning and operations at large PV power plants. The workshop was sponsored and hosted by DOE, NREL, SEPA, Sandia National Laboratories, and the Utility Wind Integration Group.

Presentations are available at: www.uwig.org/pvworkshop-presentations.html.

#### NATIONAL LABORATORY UPDATES

### Sandia and SES Begin Power Generation at Dish Stirling Plant

SNL and Stirling Energy Systems (SES) have begun power generation with the first dish system at Maricopa Solar near Phoenix. This is a key milestone in the commissioning process for the plant.

Sixty production systems at the Maricopa plant will generate 1.5 MW of electrical power into the grid. The 60-dish field is a basic building block for the planned large installations in California and Texas. The SunCatcher™ system is designed for manufacture, and is a substantial improvement over prior systems in terms of structural efficiency, assembly time, serviceability, and cost.

Sandia Laboratories has been closely supporting SES in the development and deployment of these systems, particularly in the areas of optics and controls. Four of the production systems have been installed and are operational at SNL. Significant refinement has been accomplished and factored into the installation at Maricopa. The Systems are fully funded by SES through private investment.

At Maricopa, 60% of the dishes have been assembled. Alignment, commissioning, and grid integration are progressing and the company expects full operation by January.

## **Solar America Cities Notes**

For information and updates about Solar America Cities activities, visit the appropriate city's page at: www.solaramericacities.energy.gov.

## **DOE Representatives Join Cities in Announcing Funding**

Representatives from the DOE joined officials from cities in Minnesota and Wisconsin to announce funding from recent DOE and Recovery Act grant opportunities. The grants will help the cities, which are among 16 Solar America Cities nationwide that received funding, to advance efforts to develop local solar energy.

#### Minneapolis-St. Paul

Minneapolis and Saint Paul, Minnesota, are teaming up to jumpstart the widespread deployment of solar technologies. Together, the Twin Cities will use the funding received to launch their Solar in the Cities initiative, a program that aims to build a solar infrastructure leading to five times more solar capacity in the cities by 2010.



(L to R) Jason Coughlin, NREL analyst; Anders Rydaker, president, District Energy St. Paul; Mayor Chris Coleman, City of Saint Paul; Mayor R.T. Rybak, City of Minneapolis; Charlie Hemmeline, acting team lead for Market Transformation at DOE Solar Program; Joe Lucas, project officer, DOE. Photo courtesy Bruce Schnack Photography.

Continued on following page

#### NATIONAL LABORATORY UPDATES

### NREL Researchers Develop Tool to Assess Thin-Film Solar Cells

NREL scientists Dave Albin and Joe del Cueto presented their studies on the stability and transient behavior of polycrystalline thin-film PV cadmium telluride (CdTe) and copper indium gallium diselenide (CIGS) cells and modules at a recent SPIE conference. SPIE is the international society for optics and photonics.

The study examines metastable and transient behavior in CdTe and CIGS cells and modules in an effort to determine appropriate standardization of stabilization criteria.

The accompanying article, "New Diagnostic Tool to Assess Thin-Film Solar-Cell Reliability," is available at: http://spie.org/x36691. xml?ArticleID=x36691.

#### Milwaukee, Madison and Midwest Renewable Energy Association

Milwaukee, Wisconsin, will use its Solar America Cities Special Project grant award (see story, page 1) to expand the Milwaukee Shines initiative and establish a Solar Hot Water Business Council. Madison, Wisconsin, will use grant funding to expand its MadiSUN solar project, which seeks to double the use of solar energy in the city over a two-year period.

Milwaukee is also home to the new office of the Midwest Renewable Energy Association (MREA), which will receive funding from DOE's Solar Installer Training grants for a Midwestern solar training initiative. For more about MREA, visit: www.the-mrea.org.



(L to R) Mayor Tom Barrett, City of Milwaukee; Paula Kiely, director of Milwaukee Public Library; Wisconsin Governor Jim Doyle; Mayor Dave Cieslewicz, City of Madison; Steve Palmeri, project officer, DOE; and Tehri Parker, executive director of MREA. Photo courtesy of Donald Murphy, Milwaukee Public Library.

# Philly School Flips the Switch on City's Largest Solar Array

Springside School, a pre-kindergarten through grade 12 school for girls in Philadelphia, Pennsylvania, recently unveiled the city's largest solar array. The 94-kilowatt installation covers 10,000 square feet of roof at Springside's Vare Field House. The unveiling ceremony was held November 20.

#### NATIONAL LABORATORY UPDATES

### New SkyFuel Trough Module Tested at Sandia National Laboratories

SNL recently installed for testing a SkyTrough™ module, which is a high-efficiency parabolic-trough concentrating solar collector for utility-scale solar thermal power plants. The module, developed by SkyFuel, Inc., will be performance tested on the rotating platform at the laboratory's National Solar Thermal Test Facility in Albuquerque, New Mexico.

The trough will be tested in ambient temperatures up to 350°C. Tests will compare the performance of the SkyTrough to LS-2 trough modules previously tested on the platform that are now installed and operating in trough plants around the country.

The SkyFuel installation and testing is part of SNL's work with industry partners.

# **State & Industry Updates**

## California Expands Feed-In Tariffs and Net Metering

On October 11, California Governor Arnold Schwarzenegger signed two legislative bills to encourage utility customers to feed power from their renewable energy systems into the grid. The first bill expands the state's feed-in tariff (FIT) by doubling the maximum system size to 3 MW and increasing the statewide cap for FIT agreements to 750 MW. Utilities using the FIT to buy power will be eligible for credits under the state's Renewable Portfolio Standard (RPS),

The second bill's net metering provision offers the option for customers to either roll over energy credits or to transfer the excess power back to the utility at a predetermined rate. Again, the utility can receive credit for that power under the state RPS. The new law goes into effect January 2011. Both laws are aimed at helping utilities meet the RPS while encouraging utility customers to install renewable energy systems.

Summaries of both bills are available on the Web sites of the Database of State Incentives for Renewables and Efficiency (DSIRE) (www.dsireusa.org) and the California Public Utilities Commission (www.cpuc.ca.gov).

#### New Solar Panel Achieves 20.4% Total Area Efficiency

In October, California-based SunPower Corp. announced the development of a solar panel that provides a minimum cell efficiency of 23% and a total area efficiency of 20.4%. The rating has been verified by NREL.

The 96-cell, 333-watt solar panel is a full-sized panel prototype developed using DOE funds.

## Solar Technology Acceleration Center Powers Up

Members and supporters of the Solar Technology Acceleration Center (SolarTAC) recently convened in Aurora, Colorado, to mark the "Powering Up" of the 74-acre site's solar test and demonstration facilities. At the event, NREL and the Electric Power Research Institute (EPRI) announced that they had signed letters of intent to join SolarTAC.

SolarTAC is a public-private collaboration.

#### NATIONAL LABORATORY UPDATES

# Alcoa to Test Aluminum Collector at NREL

Alcoa, Inc. has been working with staff at NREL to develop a test plan and site to evaluate their aluminum intensive collector at the lab. Tests will include reflectance measurements, characterization of the parabolic shape using the Visual Scanning Hartmann Optical Tool (VSHOT), and testing at the Optical Efficiency Test Loop (OETL). NREL has also been working with Alcoa at their on-site facility to conduct VSHOT testing on interim versions of their design.

Alcoa was one of twelve CSP projects selected in November 2007 for DOE's Energy Efficiency and Conservation Block Grant awards to accelerate the adoption of renewable energy and move clean energy technologies into the marketplace.

## **DOE Solar Program & Partner Publications**

#### **Solar Energy Technologies Program Fact Sheets**

DOE Solar Energy Technologies Program, 2009

Photovoltaics: www1.eere.energy.gov/solar/pdfs/46660.pdf

Concentrating Solar Power: www1.eere.energy.gov/solar/pdfs/46661.pdf

Market Transformation: www1.eere.energy.gov/solar/pdfs/46662.pdf

Systems Integration: www1.eere.energy.gov/solar/pdfs/46663.pdf

# **Solar Powering Your Community: A Guide for Local Governments** *(online version)*

DOE Solar Energy Technologies Program, 2009

www.solaramericacities.energy.gov/resources/guide\_for\_local\_governments/

# Opportunities and Challenges for Development of a Mature Concentrating Photovoltaic Power Industry

National Renewable Energy Laboratory, 2009

www.nrel.gov/docs/fy10osti/43208.pdf

### The Effects of the Financial Crisis on Photovoltaics: An Analysis of Changes in Market Forecasts from 2008 to 2009

National Renewable Energy Laboratory, 2009

www.nrel.gov/docs/fy10osti/46713.pdf

# Model Interconnection Procedures and Net Metering Rules Incorporating Best Practices

Interstate Renewable Energy Council, 2009

http://irecusa.org/irec-programs/connecting-to-the-grid/

#### Connecting to the Grid Guide

Interstate Renewable Energy Council, 2009

http://irecusa.org/irec-programs/connecting-to-the-grid/

#### Freeing the Grid Report

The Network for New Energy Choices, 2009

www.newenergychoices.org/uploads/FreeingTheGrid2009.pdf

# **Solar Program Funding Opportunities**

## **Pipeline of Program Activities**



The Solar Energy Technologies Program conducts a range of research and development activities along the solar pipeline. Funding opportunities are available for photovoltaics, concentrating solar power, systems integration, and market transformation activities. The Solar Program provides opportunities for both financial and technical assistance.

To view all current opportunities, visit www.solar.energy.gov/financial\_opportunities.html.

To view all past opportunities, visit www.solar.energy.gov/past\_opportunities.html.

#### WE WANT TO HEAR FROM YOU

This DOE Solar Energy Technologies Program Newsletter is for you—the participants and stakeholders in the DOE Solar Program and the Solar America Initiative. We envision sending this newsletter at least every quarter. If you have any comments or suggestions about the newsletter, e-mail solar@ee.doe.gov.

#### For More Information

Contact the EERE Information Center 1-877-EERE-INF (1-877-337-3463) or visit eere.energy.gov/informationcenter.

