
Federal Solar Activities & Policies: Update on Strategic Areas of Focus

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For More Information:

http://www.eere.energy.gov/solar/solar_america/

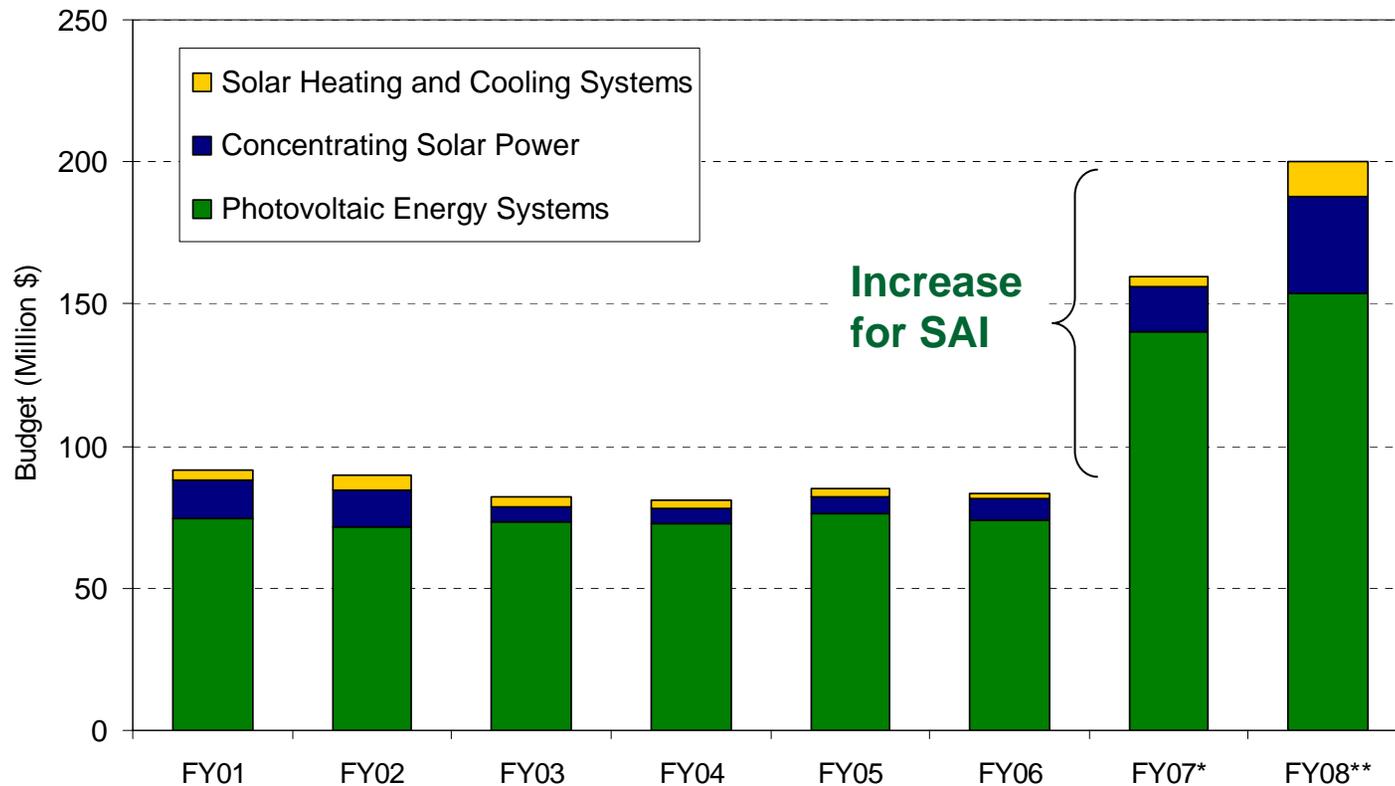
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With growing budget, Solar America Initiative is accelerating supply & adoption of PV/CSP technologies



Solar Energy Technologies Funding, FY01 – FY08

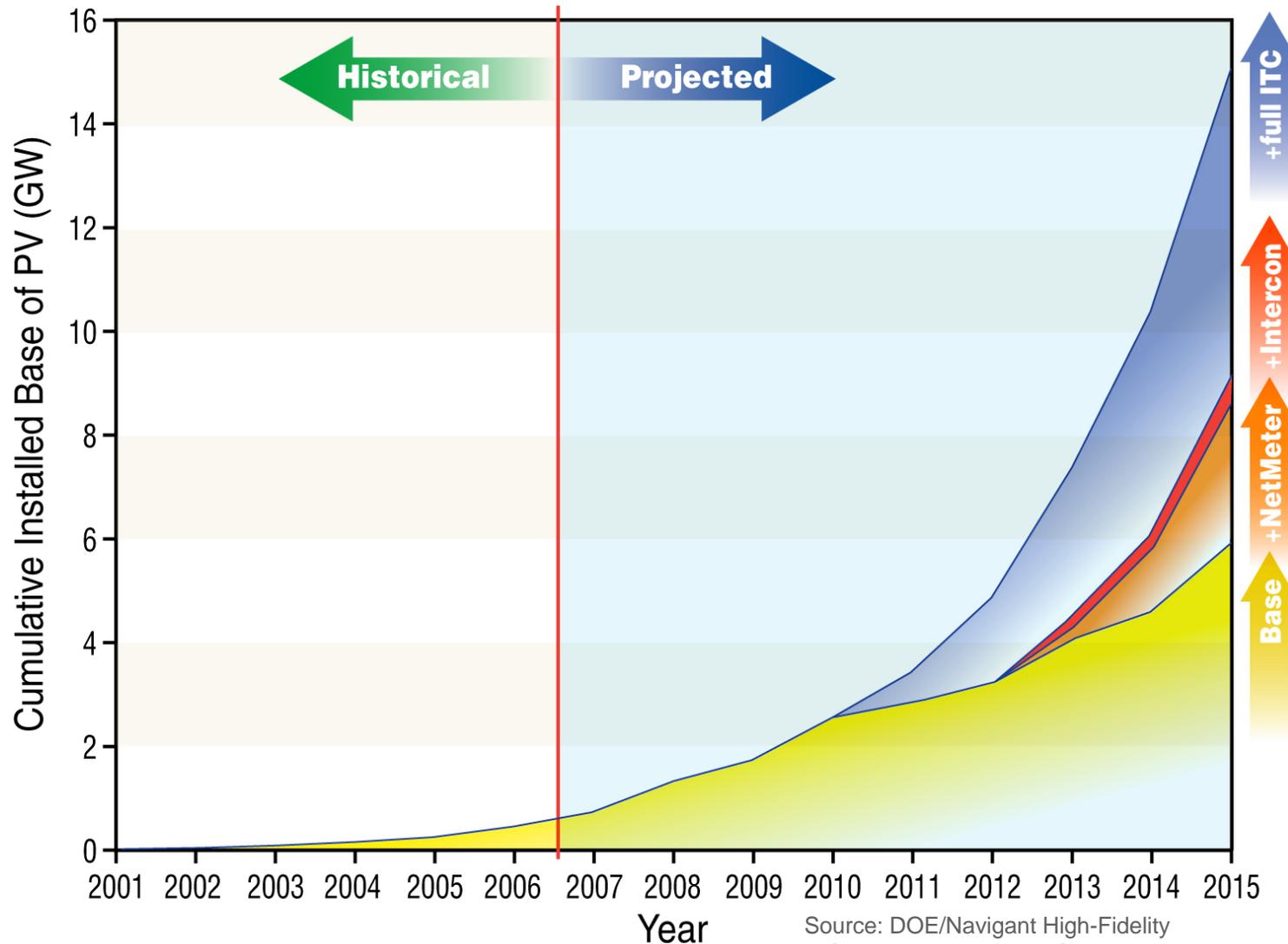


Support from industry has been critical in demonstrating the value of budget increases to Administration and Congressional officials.

* President's Request for FY07 was \$148M, final FY07 CR provided \$159M.

** President's Request for FY08 was \$148M, current House mark for FY08 is \$200M.

If SAI price reduction trajectory is realized, with tax stimulus extension and improvements to grid policy, U.S. market could grow to absorb >15GW of installs by 2015



Source: DOE/Navigant High-Fidelity U.S. Market Penetration Scenario Model



U.S. Department of Energy
Energy Efficiency and Renewable Energy
 Bringing you a prosperous future where energy is clean, abundant, reliable, and affordable

Solar America Initiative Across America



Resource Potential for flat-plate collectors

- Excellent
- Very Good
- Good
- Moderate

The background of the map shows the rich solar energy resource that is ubiquitous across the entire U.S.

Activities:

Transforming Markets and Creating Demand

- Codes and Standards:** Solar America Board of Codes and Standards (NM)
- Utility Technical Outreach:** Solar Electric Power Association (DC)
- State Technical Outreach:** Clean Energy Group (VT), National Assn of Regulatory Utility Commissioners (DC), National Conference of State Legislatures (CO)
- Solar America Cities:** Ann Arbor (MI), Austin (TX), Berkeley (CA), Boston (MA), Madison (WI), New Orleans (LA), New York (NY), Pittsburgh (PA), Portland (OR), Salt Lake City (UT), San Diego (CA), San Francisco (CA), Tucson (AZ)

The Solar America Initiative (SAI) is accelerating the development of solar technologies, including photovoltaics (PV) and concentrating solar power (CSP) systems, with the goal of making them cost-competitive across all sectors by 2015. This work could not be successful without the collaboration of all stakeholders in the solar community. This map illustrates the location of several SAI participants...from Solar America City awardees who will be developing solar projects and building awareness in their respective communities to multinational corporations who will work in strategic alliances with other companies, national laboratories, and universities to tackle solar manufacturing challenges. It is truly a nationwide effort to create a Solar America.

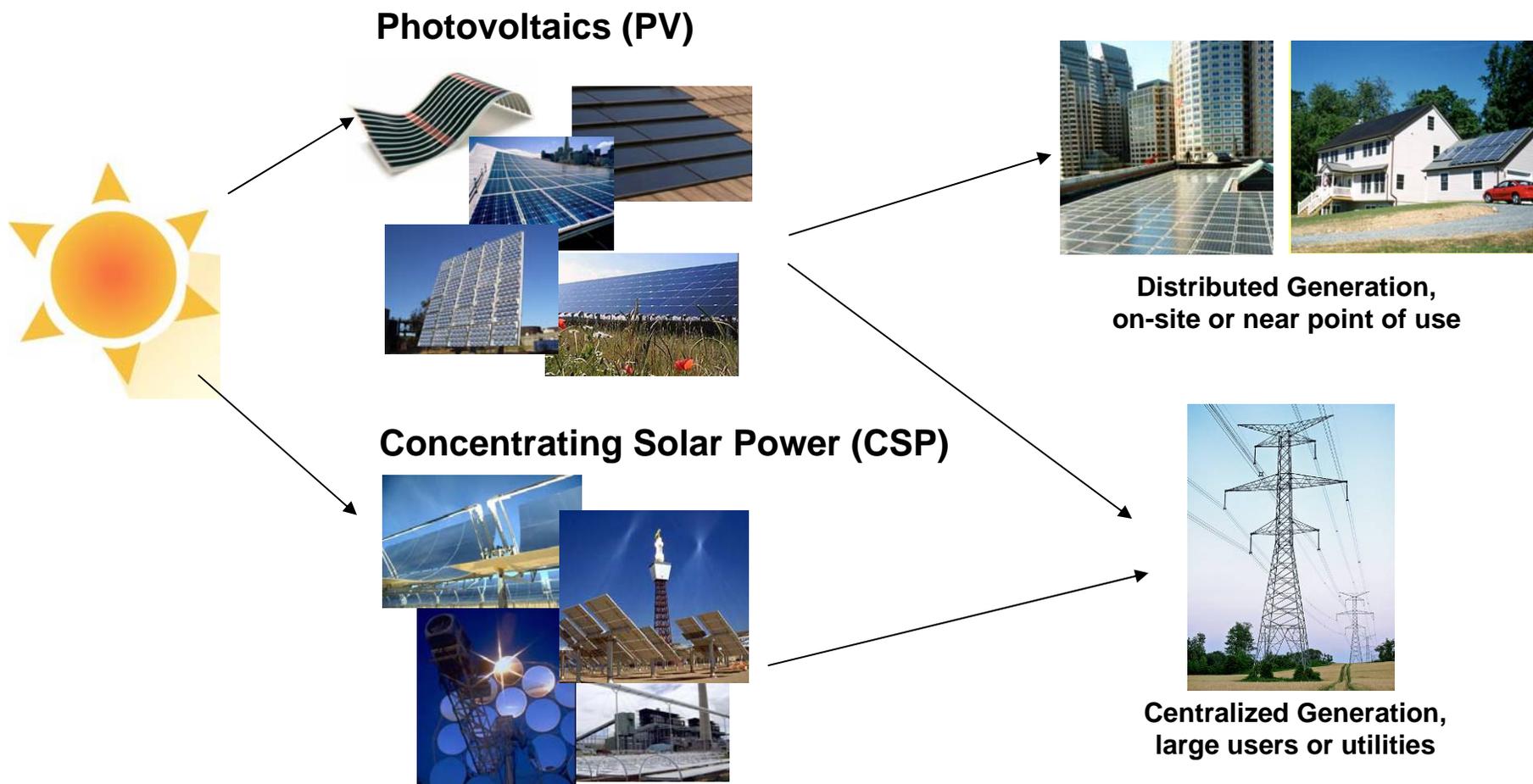
- Solar America Showcases:** City of San Jose (CA), Forest City Military Communities (HI), Orange County Convention Center (FL)
- PV Capacity Credit Valuation Study:** State University of New York (NY), Tucson Electric Power (AZ)
- SAI Federal Projects:** Architect of the Capitol (DC), Smithsonian Institution (DC)

Developing Products and Building Supply

- Technology Pathway Partnerships:** Amonix (CA), Boeing (CA), BP Solar (MD), Dow Chemical (MI), General Electric (DE), GreenRay (MA), Konarka (MA), Miasolé (CA), Nanosolar (CA), Soliant (CA), SunPower (CA), United Solar Ovonic (MI)
- PV Module Incubator:** AVA Solar (CO), Blue Square Energy (MD), CaliSolar (CA), EnFocus Engineering (CA), MicroLink Devices (IL), Plextronics (PA), PrimeStar Solar (CO), Solaria (CA), SolFocus (CA), SoloPower (CA)



In the next years of the SAI, the DOE's Solar Program will focus on achieving price-parity and scale for solar electricity generation from *both* PV *and* CSP



PV program will target >30% market share for annual new capacity additions, CSP program will target baseload price/dispatchability and GW-scale.



Aiming for >1 GW installations and baseload power, a more aggressive DOE CSP program will have “room” for any technology showing competitive potential

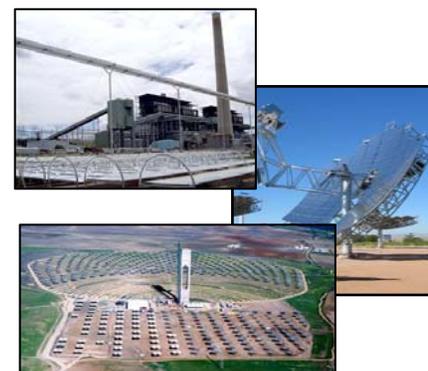
Troughs

- Optimize receiver and concentrator designs
- Develop next-generation collector designs and supply chain
- Scale-up plant size and increase operating temperatures



Advanced Concepts (CLFR, Towers, Dish-Stirling)

- Test new CLFR concepts in a power plant configuration
- Demonstrate new tower plant designs to evaluate costs
- Address Dish manufacturability and Stirling engine reliability issues



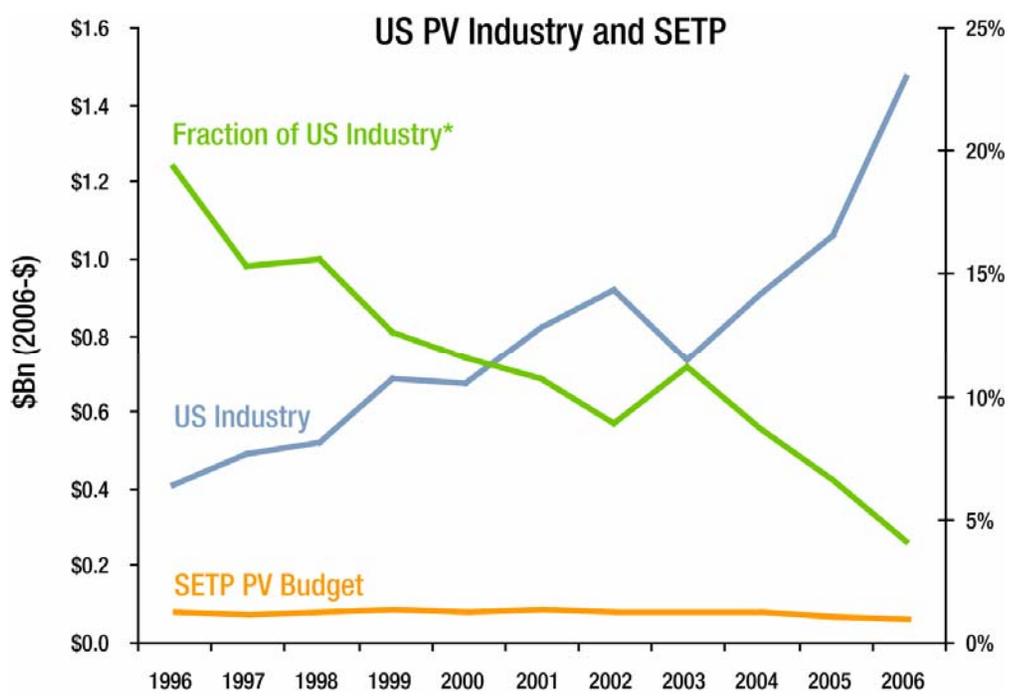
Storage

- Develop advanced heat transfer fluids for more efficient operation at high temperatures with molten salt
- Test innovative designs for low-cost storage options, including thermocline tanks and new fluids for fields





To maintain relevance in an expanding industry, DOE is focused on “validating” new technology and accelerating change in supply chains and business models



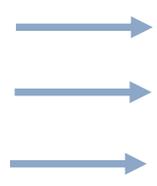
TECHNICAL IMPROVEMENT OPPORTUNITIES		METRICS	
TEIR 1 TIOs	TEIR 2 TIOs	Performance	Reliability
Modules	Module	High	Moderate
	Absorber	High	Moderate
	Cells and Contacts	High	Moderate
	Interconnects	High	Moderate
	Packaging	High	Moderate
Inverters & BOS	Manufacturing	High	Moderate
	Inverter	High	Moderate
	Inverter Software	High	Moderate
	Inverter Components	High	Moderate
	Inverter Packaging/Manufacturing	High	Moderate
Storage	(Consideration)	Moderate	Moderate
	SEI	Moderate	Moderate
SER	Systems Engineering & Integration	High	Moderate
	Manufacturing/Assembly	High	Moderate
	Installation/Maintenance	High	Moderate

Legend: ■ = High-Impact Opportunities, ■ = Moderate-Impact Opportunities



Implications For DOE:

- Market viability eclipsing “science” results
- Private funding now available for R&D
- Cost trajectories are increasingly secure



Response by DOE:

- Focus R&D on cost and production scale-up
- Validate technologies, align Lab R&D with industry
- Create/prepare markets for new product:
 - Regulatory environment & grid integration
 - Application “showcases”, gov’t purchasing

MARKET TRANSFORMATION ACTIVITIES



Solar America Board of Codes and Standards

Winner: New Mexico State University (collaborative)

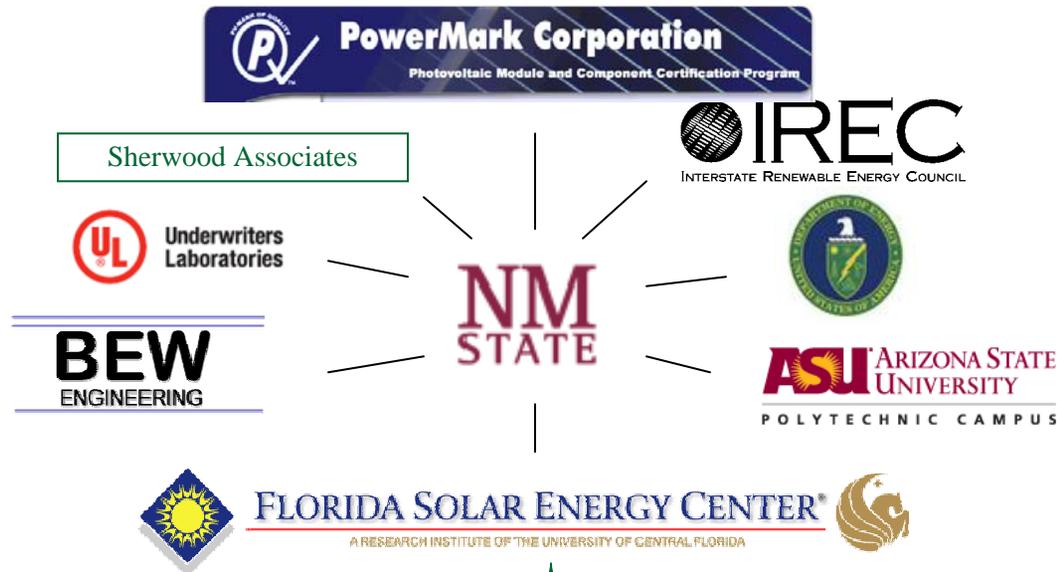


Activity Objectives:



- Improve the responsiveness, effectiveness, and accessibility of codes and standards in all markets (federal, state, local, utility).
- Codes and standards are the backbone of the success of SAI. Without consistent support for codes and standards development, solar cannot be deployed on a large-scale.

New Mexico State University Solar America Board of Codes and Standards



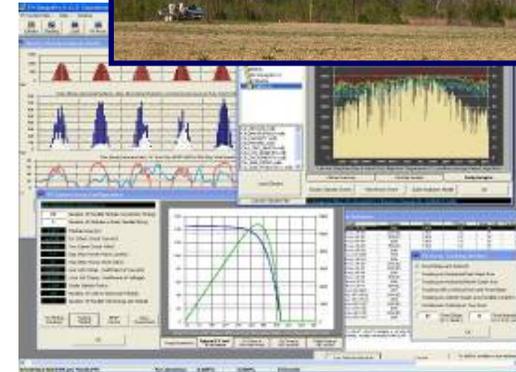
- Building and Electrical Codes**
Article 690 Guidance
- Product Safety**
*Reconcile UL1703/IEC61730,
UL 1741/IEC32109*
- National Standards Coordination**
Revise IEEE 1547
- Interconnection, Net Metering**
Create Model Local Codes
- International Standards Coordination**
*Monitor International Codes and Standards;
Centralize U.S. participation*

www.solarABCs.org



Utility Technical Outreach

Winner: Solar Electric Power Association



Activity Objectives:

- Deliver key technical and informational assistance to utilities to promote their acceptance and use of solar.

Solar Electric Power Association (SEPA)

Utility Technical Outreach



www.SolarElectricPower.org



Solar America Cities



Activity Objective:

Partner with cities of 100,000 or more **committed** to

- achieving a **sustainable solar infrastructure**
- through a **comprehensive, city-wide approach**
- that **facilitates mainstream adoption** of solar
- and **serves as a model** for other cities to follow.

Project Overview:

Cities receive a combined \$2.6M in **financial assistance** plus approximately \$3.25M in **technical assistance**.

FY 2007 Solar America Cities



The 13 Solar America Cities selected in 2007 are:

- Ann Arbor, MI
- Austin, TX
- Berkeley, CA
- Boston, MA
- Madison, WI
- New Orleans, LA
- New York, NY
- Pittsburgh, PA
- Portland, OR
- Salt Lake City, UT
- San Diego, CA
- San Francisco, CA
- Tucson, AZ

**Eight are among the largest 50 cities in the U.S.
Solar America Cities are located in 11 states.**

State Technical Outreach

Winners:

National Conference of State Legislatures

Clean Energy Group

National Association of Regulatory Utility Commissioners



Activity Objectives:

- Build relationships with State decision-makers responsible for enacting policies, programs, and plans that are key drivers for solar technology market transformation.
- Provide state policymakers with best practice and current data about solar technology, so they can make informed solar policy decisions.

National Conference of State Legislatures
Clean Energy Group
National Association of Regulatory Utility Commissioners
State Technical Outreach



State Legislatures



Public Utility Commissioners



State Public Benefit Funds



www.irecusa.org





For More Information:

DOE Solar Program: http://www.eere.energy.gov/solar/solar_america/

Sign up for our Newsletter and Market Analysis: Send email to solar@ee.doe.gov

Questions on this Presentation:

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