



# U.S. Department of Energy Energy Efficiency and Renewable Energy

Bringing you a prosperous future where energy  
is clean, abundant, reliable, and affordable

## Technical Partnerships: Solar America Cities, Solar America Showcases, US Government Solar Installation Program (GSIP)



**DOE Program/Peer Review  
Denver, Colorado  
March 9-10, 2009**



Vipin Gupta, Sandia National Labs

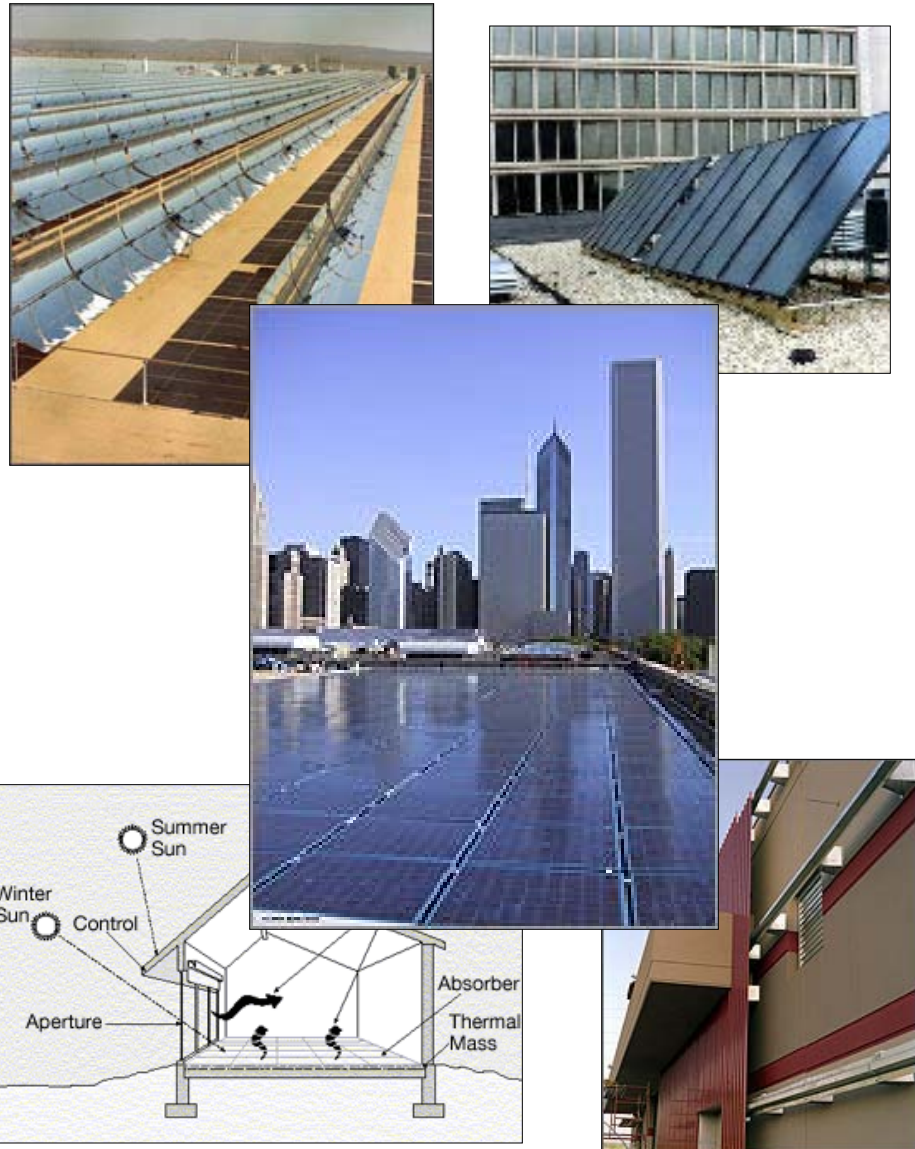
Cécile Warner, NREL

**This presentation does not contain any proprietary or confidential information.**



**CH2MHILL**

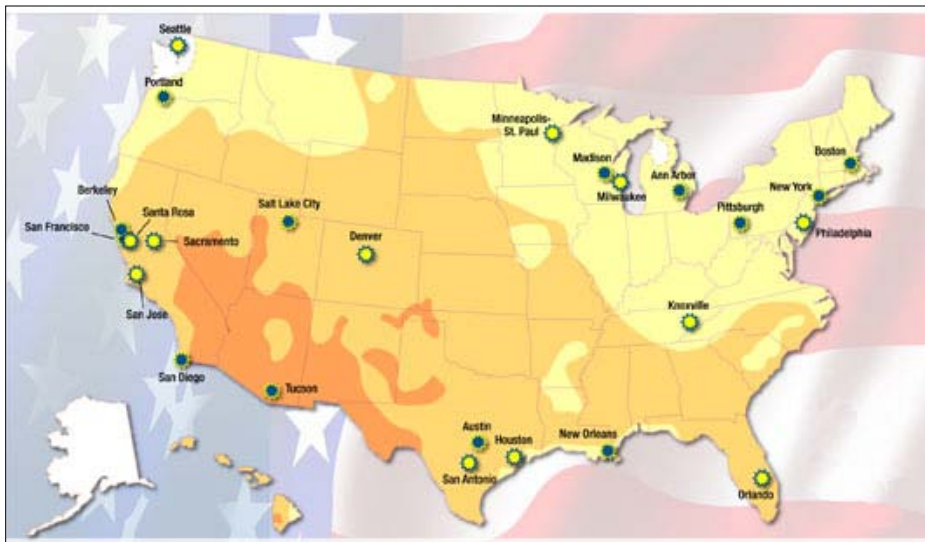
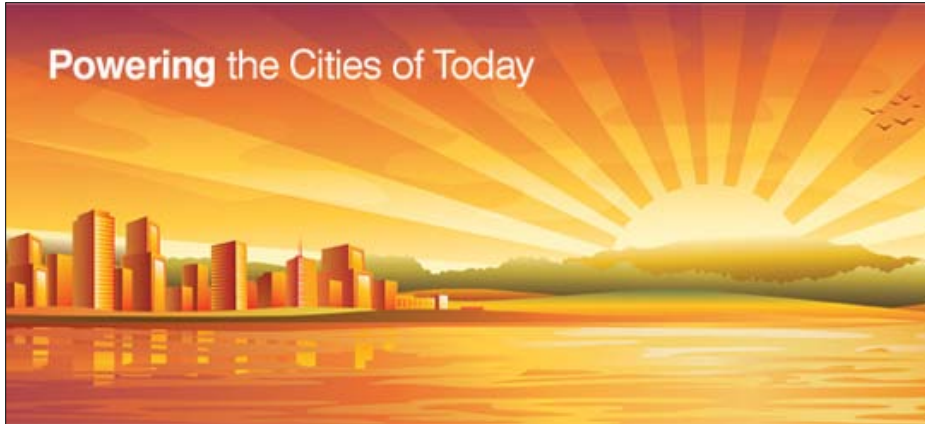




A multi-institutional group of subject matter specialists who provide solar technical assistance

- Photovoltaics (PV)
- Solar water heating (SHW)
- Concentrated solar power (CSP)
- Solar water/air heating technologies (SWAH)
- Solar resource assessment
- Financing, procurement, policy

**A Government-University-  
Industry-Laboratory Team**



- Assembled a solar technical assistance team with 100 engineers and technologists from six distinct technology institutions
- Dispatched solar technical assistance teams for DOE-awarded winners of highly competitive solicitations: 25 Solar America Cities, 9 Solar America Showcases, and 9 GSIP projects
- Held 1st Annual Solar America Cities Meeting in SAC Tucson with 2nd Annual SAC Meeting in SAC San Antonio planned for late March/early April 2009



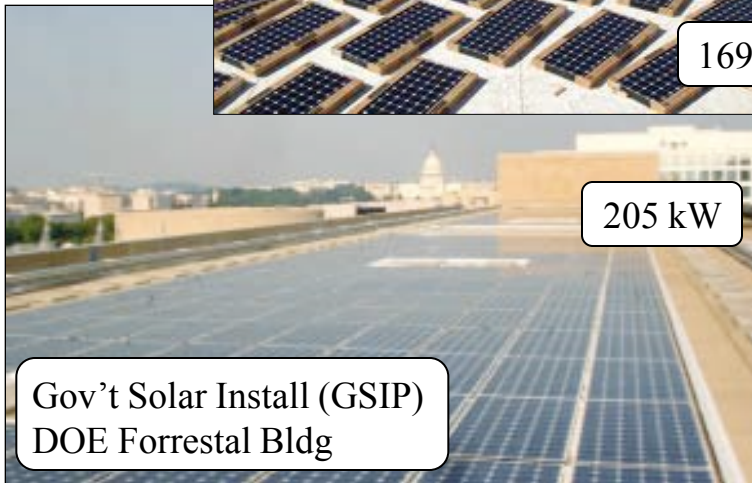
Solar America Showcase  
Forest City

107 kW



Solar America City  
San Jose

169 kW




205 kW

Gov't Solar Install (GSIP)  
DOE Forrestal Bldg

- Completed main solar technical assistance for three DOE Solar America Showcase awardees: Forest City HI, San José, and NE Denver Housing Ctr
- Completed main solar technical assistance for seven DOE GSIP Projects: SI Zoo, US Capitol, Top Gun in Fallon NV, Sandia Solar Site Survey, DOE HQ, Kauai Test Facility, and Kennedy Center
- Conducting major solar technical assistance in all 25 Solar America Cities, including:
  - Solar performance monitoring in SAC Tucson
  - Solar site assessments w/training in SACities Ann Arbor, San Francisco
  - SHW and PV training in SAC Pittsburgh
  - Network grid analysis in SAC New York



# Accomplishments (cont'd)



Big Sue, PV Case Study  
Brooklyn, Solar  
America City NYC

40 kW

- NYC tech assistance team, NYC SAC team, and ConEd are collaborating to investigate issues surrounding high PV penetration in NYC, with application to grid in other urban networks.
- Key changes to Utah net metering laws as a result of SAC Salt Lake City tech assistance team, includes 20% peak demand cap and excess generation valuation.
- Developing cogent, defensible easement language for developers of 20-year PPAs to facilitate PV on federally-owned building rooftops (NREL).
- Implemented PV Installer training for low-income neighborhood residents of the Northeast Denver Housing Center.
- Assessment of solar resource mapping tools underway, helping cities to identify best approach for their needs.



300 kW

Denver Convention Ctr.  
PV Network Case Study



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# FY08 Budget, Resources, and Cost Share



\$2.35M



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\$0.4M



\$0.4M



\$0.06M



Sandia  
National  
Laboratories

\$1.75M

SAC financial assistance awards have 1:1 cost share



## SAC Tucson



DOE MT Director  
Tom Kimbis at  
SAS Forest City



SAC San Francisco

- Select projects in competitive process done through DOE GO merit review criteria:
  - Cohesive team
  - Comprehensive solar plan
  - Novel solar technologies/application
  - Clear role for DOE solar tech assistance
  - Large-scale replication potential
- Focus on top three barriers to solar adoption:
  - High cost
  - Lack of technical expertise
  - Lack of consumer awareness
- Combine trustworthy technical assistance on the ground with DOE solar vision from above
- Cross-fertilize technical assistance and share solar adoption experiences amongst ourselves and between awardees
- Bring solar field experience back to the R&D lab



Inverter installation  
at SAS Forest City



- Have identified 31 key solar technology adoption barriers — our tech assist matrix; our tech assistance is focused on breaking each one of these down
- Have empowered DOE Solar awardees with technical info, analysis, training, & experience to adopt solar and replicate on an ever larger scale
- Have formed six x-cut tech assist teams that are developing “Best Practices” for widespread adoption of solar technologies
- Have helped build solar capacity in private sector through active and equal participation in solar tech assistance teams
- Have built working partnerships with SAC governments, SAS awardees, and GSIP recipients



San Francisco Mayor  
Gavin Newsom  
and DOE Solar Program  
Manager John Lushetsky



Uni-Solar PV thin film  
installation at SAC  
Ann Arbor



- Prepare series of solar technology adoption (or rejection) case studies detailed in technical papers and presentations at future ASES, IEEE, and Solar 20xx Conferences



- Build transformational solar community at the 2nd Annual SAC Meeting and on the new DOE “Facebook-like” solar market transformation intranet



- Collect field data that will help solar technology development achieve 2015 performance goals



- Formation of new x-cut solar tech assist teams to break down common barriers found in multiple SAC, SAS, and GSIP projects

- Opportunities for TPP adoption by SAC, SAS, and GSIP partners

- Development of a suite of models to help urban planners develop specific plans for solar adoption, assist local decision makers in making informed solar decisions, and guide the public on exactly what they need to do to adopt solar technologies

