

Recent Developments in the Southeastern Solar Industry

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Historic Growth in PV



Source: PVNEWS



Total Solar Megawatts



Annual (2008)

- #1 Pacific Gas & Electric Co. CA (84.9)
- #2 Southern California Edison CA (32.4)
- #3 San Diego Gas & Electric Co. CA (16.0)
- #4 Public Serv. Co. of CO (Xoel Energy) -- CO (14.2)
- #5 Public Service Electric & Gas Co. NJ (5.5)
- #6 Artzona Public Service Co. AZ (3.56)
- #7 Hawaiian Electric Co. HI (3.54)
- #8 Portland General Electric OR (3.538)
- #9 Sacramento Municipal Utility District -CA (2.9)
- #10 Long Island Power Authority NY (2.5)

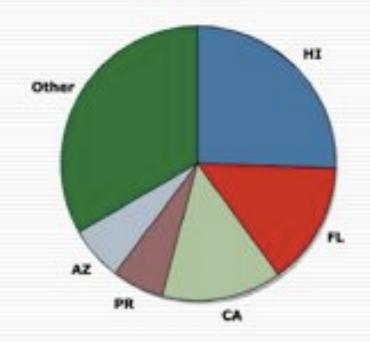
Total Solar Watts per Customer



Annual (2008)

- #1 San Francisco PUC CA (2696.3)
- #2 Kauai Island Utility Coop. Hi (47.1)
- #3 Palo Alto Utilities CA (44.4)
- #4 Maul Electric Co. HI (32.7)
- #5 Pacific Gas & Electric Co. CA (16.4)
- #6 Hawaii Electric Light Co. HI (13.6)
- #7 Burbank Water & Power CA (12.9)
- #8 Black Hills Energy CO (12.5)
- #9 Hawaiian Electric Co. HI (12.0)
- #10 San Diego Gas & Electric Co. CA (11.8)

Solar Hot Water+ Capacity by State





Based on analysis of EIA Data for 2006-2007



The New York Times

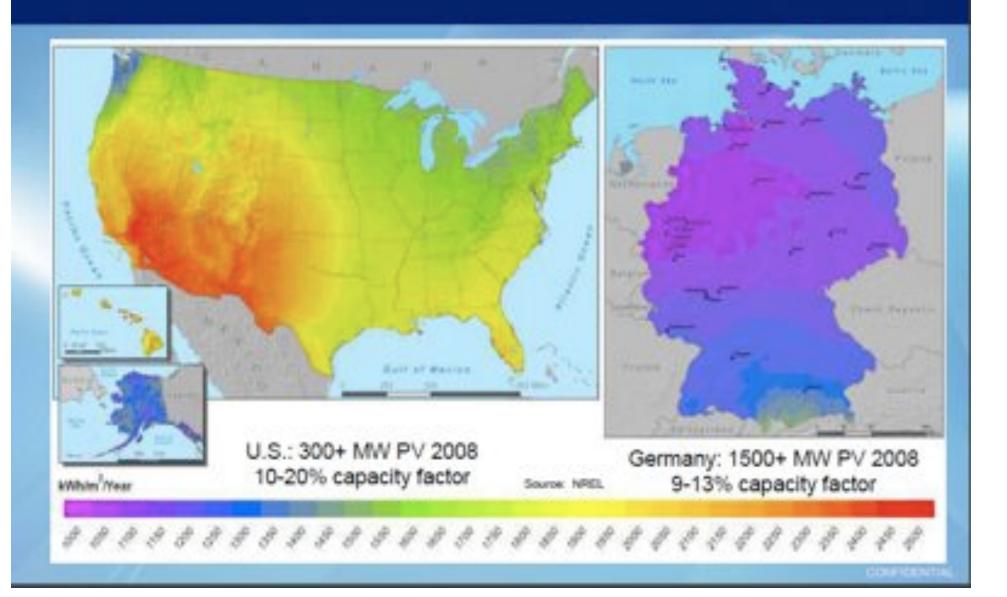
Solar Power Advocates Hopeful for 2010

By ROBERT P. WALZER January 19, 2010

- Between 500 and 600 megawatts of solar power will be built this year across the United States about double the figure of last year according to Larry Sherwood, who compiles and studies such data as a consultant to the Interstate Renewable Energy Council, a nonprofit industry group
- But according to a statement on the IREC web site from Sherwood, that number should be more like 700-900 MW for 2010. Among states, California is expected to maintain first place, and New Jersey is likely to come in second, with Florida making a strong showing for the first time. "There will be quite a wider number of states than in the past," said Sherwood.

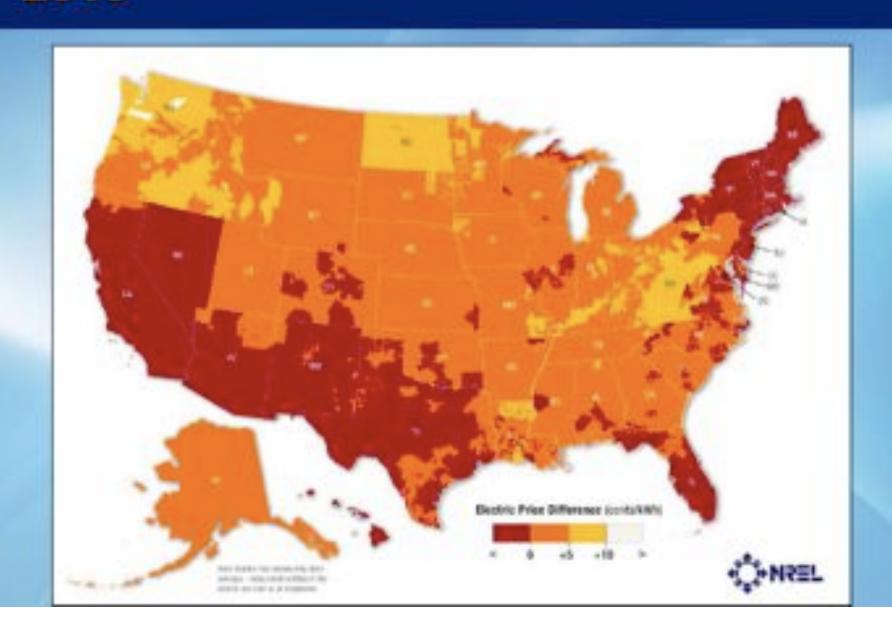
Solar Resource & Market Comparison





Photovoltaic vs. Grid Prices 2015





DSIRESOLAR



State Control



Database of State Incentives for Renewables & Efficiency

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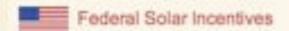
About Us

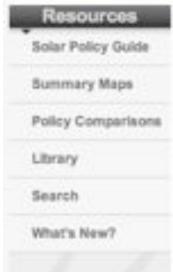


DSRE SQLAR is a comprehensive source of information on state, local, utility, and federal incentives and policies that promote the adoption of solar technologies. Funded by the U.S. Department of Energy's Solar Energy Technology Program, DSRE SQLAR is a new component of the DSRE project that provides solar-specific policy information to consumers, policy resisters, program administrators, the solar industry and other state-holders.

Search for incentives for one or both technologies:

Solar Electric # Solar Thermal







www.dsireusa.org/solar/



Tennessee









Manufacturing (built and announced)

AGC Asahi Glass Corporation, Kingsport Sharp Solar, Memphis

Hemlock Semi-Conductor Group,

Clarksville

Wacker Chemi, Cleveland Confluence Solar, Clinton



Major installations

50 kW - Sharp Solar, Memphis

50 kW - ORNL, Oak Ridge

24 KW – Dixie Roofing, Knoxville

27 kW – Carnes E.S. Memphis

25 KW – Apollo M.S. Nashville

85 kW - Finley Stadium, Chattanooga

51 KW - Franke's, Smyrna

21 kW – Unicoi,

29 kW - Life Line Foods, Pikeville

21 kW - Brentwood

24 kW - Sparta

45 kW - Cookeville

A graphic of the growing Tennessee Solar Supply Chain

Manufacturers

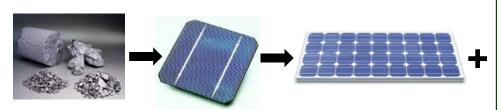












- Distribution
- Sales
- System Design
- Installation
- Maintenance
- Other Components

TN Jobs not easily outsourced















Other



Experienced NABCEP Certified PV Installers



Stimulus Money -Tennessee

- Tennessee intends to invest its entire award of \$62.5 million in ARRA funds in a proposed Volunteer State Solar Initiative, a comprehensive solar energy and economic-development program to advance job creation, education, research, and renewable-power production. The proposed initiative consists of two related projects:
- The creation of a Tennessee Solar Institute at the University of Tennessee, which will focus on basic science and industry partnerships to improve the affordability and efficiency of solar products.
- A West Tennessee Solar Farm near Brownsville, a five-megawatt 20-acre power generation facility at the Haywood County industrial megasite that would be one of the largest installations in the Southeast and serve as a demonstration tool for educational, research and economic development purposes.
- For more information, see the State Energy Program website of <u>Tennessee's Office of Economic and Community Development</u>.



Proposed Timeline for West Tennessee Solar Array

Qualified Contractors Short List Determined/ Notification

Meeting with Qualified Contractors **2010**

Request for Proposal Issued (Estimated)

Mandatory Site Walkthrough

Proposals and Preliminary Design Due

Selection of Contractor

Award of Contract (Estimated)

Array Operational and Commissioned

January 22, 2010 January 27,

February 1, 2010 February 3, 2010 March 1, 2010 March 10, 2010

March 17, 2010

December 15, 2010

SOLAR FARM SITE LOCATION



Goals of the West Tennessee Solar Array

- Demonstrate utility-scale solar power production.
- Demonstrate connectivity to power grid.
- Educate the public on solar.
- Integrated with TDOT interstate
 Education & Welcome Center to be co-located with Solar Farm.

Tennessee Solar Institute

A partnership between ORNL and UT Knoxville

Encourage growth of Tennessee's solar industry

\$14.5M in Innovation grant funds

- Technical Assistance
- Facilities and Equipment
 Improvements
- Renewable Energy Products
- Process Improvements
- Technology Improvements
- Workforce Development

Speed the deployment of solar Energy

\$9M in grant funds

Eligibility (?):

- For-profit retail, industrial or commercial business
- Farms (51% income generated by farming Operations)

Eligible Systems(?):

- PV systems installed on or adjacent to existing buildings
- Appropriately sized for structure or
 60kW systems Maximum Award (?): 75,000.

Other Planned Activities:

Create and Maintain a database of industry resources and contacts
Conduct partnering retreats, meetings and seminars
Provide "on the ground" assistance to industry partners
Provide workforce certification Opportunities
Cutting edge research and demonstration (outside the scope of Stimulus funds).



Georgia



Manufacturing

Suniva, Inc., Atlanta





342 kW Georgia Tech Aquatic Center, Atlanta

1.2 MW (planned) Smith and Godbey, Savannah

112 kW Cox Enterprises, Atlanta

135 kW Dalton, GA

25 KW Georgia Skin & Cancer Clinic, Savannah

20 KW EPA - Athens

20 KW ASHRAE - Atlanta

20 kW Mineral Bluff, GA

31 kW Dalton, GA



28 KW NW Unitarian Universalist Church Atlanta

Stimulus Money -Georgia

- Georgia has received approval for its State Energy Plan, which will allocate over \$82 million for various energy projects.
- \$4 million will be awarded based on competitive applications to large-scale renewable energy projects, which were available for online application beginning August 17th, 2009.
- GEFA will also be developing guidelines to distribute \$4,495,000 towards its Clean Energy Property Rebate Program, which will offset approximately 35% of the cost of qualified renewable energy equipment, up to a cap which varies by technology. Solar water heating, solar PV and active solar heating technologies will qualify. Only commercial, industrial and non-profit entities will qualify for this program. More
- information is available at <u>GEFA's website</u>.
- Source: SEIA.org

Solar Projects to Receive Clean Energy Property Rebates

\$4.5 Million in Stimulus Rebates to Support Solar Power Installations

For more information regarding the energy efficiency and renewable energy opportunities available through GEFA, please visit www.gefa.org. The recipients of the Clean Energy Program Rebates are provided below.

Applicant Name	Rebate Amount	
Atlanta National League Baseball Club Inc.	\$500,000.00	
Atlanta Northside Aviation Inc.	\$496,930.00	
Atlanta Property Group	\$500,000.00	
Brian Grogan, Haven Farms	\$205,100.00	
Centennial Park West, LLC	\$49,000.00	
Cox Enterprises (Walter Way Location)	\$490,000.00	
Cox Enterprises (West Peachtree Location)	\$225,320.14	
403 Dividend, LLC	\$168,000.00	
Edgewood at the Beltline, LLC	\$85,050.00	
880 Glenwood, LLC	\$208,695.76	
JLWA, LLC	\$497,079.45	
McClellan Products	\$500,000.00	
Mossland Farms Inc.	\$69,824.65	
Sterling Planet Inc.	\$500,000.00	
Total	\$4,495,000.00	

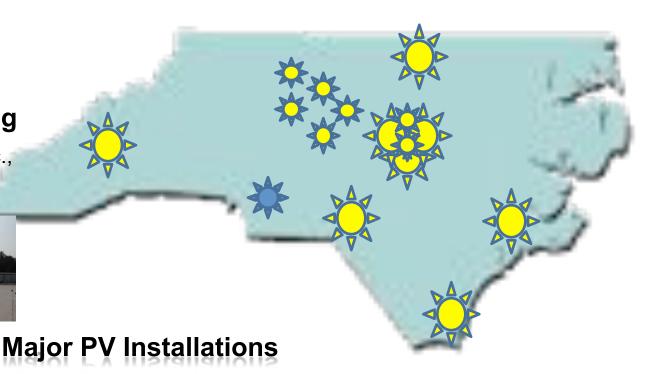
Consider the form

North Carolina



Sencera International, Inc.,
Charlotte





NC Green Power large PV systems

240 kW Mayfair Plaza Shopping Center, Cary

104 kW Carolina Solar Energy, Asheboro

20 kW Sun Capital, Summerfield

33 kW Decision Support LLC, Matthews

35 kW Leon's Beauty School, Greensboro

25 kW Delta Products Co., Morrisville

75 kW Carolina Solar Energy, Raleigh

Progress Energy's Solar Power Plant contracts

2.3 MW Scotland County,

1.3 MW City of Raleigh.

1.2 MW Craven County, N.C.

1.2 MW Sutton Plant, New Hanover County, N.C.

1 MW SAS, Wake County, N.C.

650 kW Person County, N.C.

550 kW Haywood County, N.C

224 kW CPU2 for Green Co., Arden

Stimulus Money –North Carolina

- North Carolina was awarded nearly \$76 million in stimulus funds under the State Energy Program, and a total of \$58 million in Energy Efficiency and Conservation Block Grants for state and local programs. Within this \$75.9 million:
- \$11.5 million will go towards supporting small businesses and industry through energy savings, such as commercial renewable energy system grants, nonprofit energy management programs, and implementing energy saving measures.
- About \$8.85 million will go towards a "Jobs Now" green workforce program,
- \$18 million for a Revolving loan fund for renewable energy projects.
- \$9.5 million for improving government energy efficiency.
- \$10 million for promoting residential renewable energy and energy efficiency projects.
- \$13.5 million will go towards fostering renewable energy technology and resource innovation.
- For more information, see the <u>North Carolina State Energy Office summary</u>.
- Source: SEIA.org

South Carolina





Major installations

100 kW General Electric Facility, Greenville

33 kW Carolina Ingredients, Rock Hill

13 kW Grid Homeowner, Yemasee

15 kW Kent Wool, Pickens

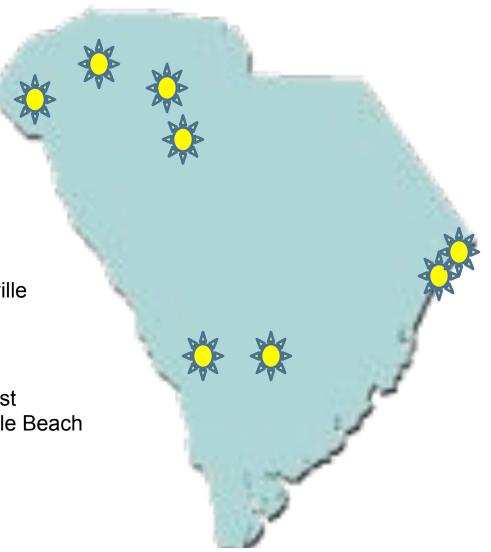
11 kW Furman University, Travelers Rest

16 kW Coastal Carolina University, Myrtle Beach

10 kW Homeowner, Murrells Inlet

15 kW Clemson University, Flour-Daniel

Engineering, Clemson



Stimulus Money-South Carolina

- South Carolina has already received more than \$25 million of its SEP award of over \$50 million.
- \$6 million will fund two programs that will promote the development of solar and other renewable energies, with each program receiving \$3 million.
- The first is the South Carolina Clean Green Investment Incentives, which will support manufacturers of energy efficiency and renewable energy products in the state, and support the deployment of on-site renewable energy infrastructure at these companies.
- The second is the Competitive Renewable Energy Grants program, which will fund renewable energy projects by non-profit entities that are not eligible for funding through other stimulus programs.
- Details are available at the website for the South Carolina Energy Office.

Source: SEIA.org

Grants total 2.8 Million Awards from 15,000 to 500,000 Were due on Oct. 30, 2009

Technology	Anticipated Number of Awards
Biomass	1-4
Solar	1-5
Wind, Small Hydro, Geothermal and Other	1-5
Advanced Vehicle Technologies	1-5

Florida



Manufacturing (PV and SHW)

Thermal Conversion Technology, Inc., Jacksonville Alternate Energy Technologies, Jacksonville



Major Installations

10 MW Space Coast Next Generation Solar Energy Center,

FP&L,

Kennedy Space Center (dev)

75 MW Martin Next Generation Solar Energy Center, FP&L,

Hybrid

CSP system, Martin County (dev)

75 MW Babcock Ranch Project, FP&L (dev)

25 MW DeSoto Next Generation Solar Center, FP&L, Arcadia

(opnl)

25 MW Energy 5.0's Florida Solar 1 Project, TECO, Polk

County (apvd)

15 MW Brandy Branch site, PSEG Solar to run proj. started

by Juwi Solar, JEA, Jacksonville (dev)



Project Facts and picture from FPL web site:

Construction commenced December 2, 2008, with completion scheduled for the end of 2010. The first hybrid solar facility in the world to connect to an existing combined-cycle power plant. At 75 megawatts, the Martin Next Generation Solar Energy Center is the largest solar thermal plant outside of California. Located at FPL's Martin Plant near Indiantown

Martin Solar Thermal Project

Artist's Conception



Project facts and picture from FPL web site:

Construction began in June 2009, with completion by early 2010. Innovative public-private partnership with NASA that will leverage engineering, design and operating expertise. Annual estimated generation will be about 16,000 megawatt hours or enough power to serve about 1,100 homes. Located at Kennedy Space Center.

Space Coast Next Generation Solar Energy Center

Artist's Conception



Project facts and photo from the FPL web site:

Construction commenced in late 2008 and was completed in October 2009. At 25 megawatts, the **DeSoto Next Generation Solar Energy Center** is the largest solar photovoltaic plant in the country. Annual estimated generation is about 42,000 megawatt-hours or enough power to serve about 3,000 homes. Located on FPL-owned property in DeSoto County, Fla. Plant consists of more than 90,500 solar panels



Solar Stimulus Money — Florida

Of Florida's \$126 million in State Energy Program ARRA stimulus funding:

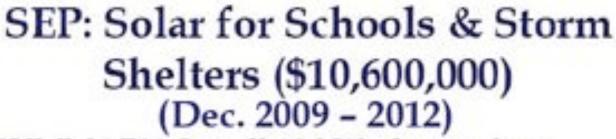
•	\$10 million	Grants for 10 kW PV systems on 90 schools (storm shelters)
•	\$10 million	Solar Energy Loan Program – residential solar hot water systems
•	\$14.4 million	Solar Energy Rebate Program – more small PV system incentives
•	\$10 million	Clean Energy Grants, including RE programs, equipment and market transformation activities – possibly some solar
•	\$19.5 million	·
•	\$ 1 million	Solar for state government facilities; 200 kW PV system
•	\$36 million	Energy Opportunity Fund – help develop clean energy business: new EE & RE equipment, technology and demonstrations

For more information, please see Florida Energy and Climate Commission and Florida SEIA's helpful summary of stimulus funding for solar initiatives

Source: seia.org







- SUMMARY: Install 10 kW photovoltaic systems on 90 public schools
 - Strategically selected schools that also serve as emergency shelters
 - Battery back-up power on schools/emergency shelters
 - Solar energy educational component
- DOE REVIEW: Approved



 STATUS: Contract has been vetted through EOG Procurement and Legal; negotiations with FSEC continuing

\$10M & \$1M UCF Match for Program

 \$2.3 Billion in tax credits to clean energy sector announced Jan 8, 2010

- Recipients in SACE region:
 - Sharp Electronics. Memphis, TN. \$1,650,000
 - Sharp Electronics Corp will expand current solar manufacturing operations by installing a new crystalline photovoltaic module production line (E-Line) within its current solar facility. The resulting product will be a cost-efficient source of renewable solar energy.

- Recipients in SACE region (cont.):
 - Suniva, Inc. Norcross, GA. \$5,700,000
 - Suniva Inc. will manufacture monocrystalline silicon-based solar cells. The resulting technologies will aid the domestic solar power industry.

- Recipients in SACE region (cont.):
 - Wacker Polysilicon North America LLC.
 Cleveland, TN. \$128,482,287
 - Wacker Polysilicon's manufacturing plant will produce roughly 10 metric tons of pure polysilicon annually. One hundred percent of the output will be for the photovoltaic solar cell market.

2009 Updates and Trends Interstate Renewable Energy Council

 In addition to the federal stimulus bill's \$2.3 billion incentive program for renewable energy manufacturers, five states (Arizona, Kansas, Louisiana, Tennessee and Utah) created new incentives to attract renewable energy companies.

A sample of PBIs, FITs, and REC-purchase programs created or modified over the last year (A total of 22 such programs were created or modified between September 2008 and September 2009).

TVA – Green Power Switch Generation Partners Program	AL, GA, KY, MS, NC, VA, TN	\$0.12/kWh plus retail rate (approximately \$0.22/kWh total); 10- year contract	Production Incentive
Program Name	State	Rate, Terms	Incentive Type
Gainesville Regional Utilities – Solar Feed- in Tariff	Florida	\$0.26-\$0.32/kWh (higher incentive for building or pavement- mounted systems); 20-year contract	Feed-in Tariff

Tax Credits for Renewables

www.dsireusa.org / October 2009

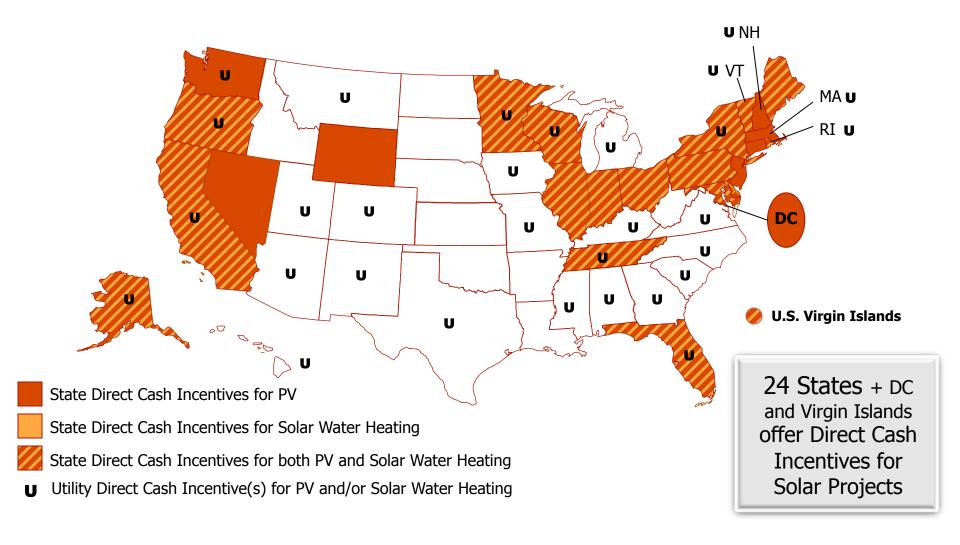


Personal + corporate tax credit(s)

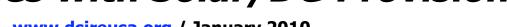
Notes: This map does not include corporate or personal tax deductions or exemptions; or tax incentives for geothermal heat pumps.

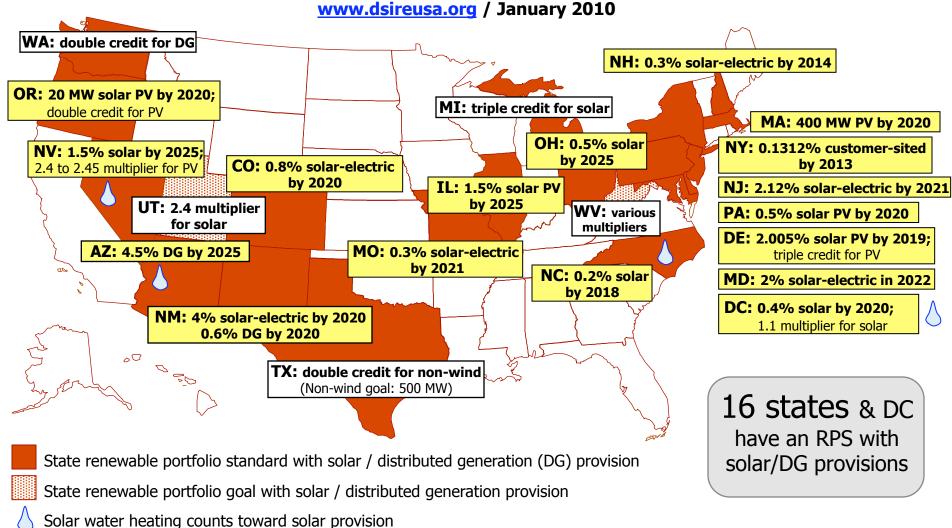
Direct Cash Incentives for Solar Projects

www.dsireusa.org / September 2009

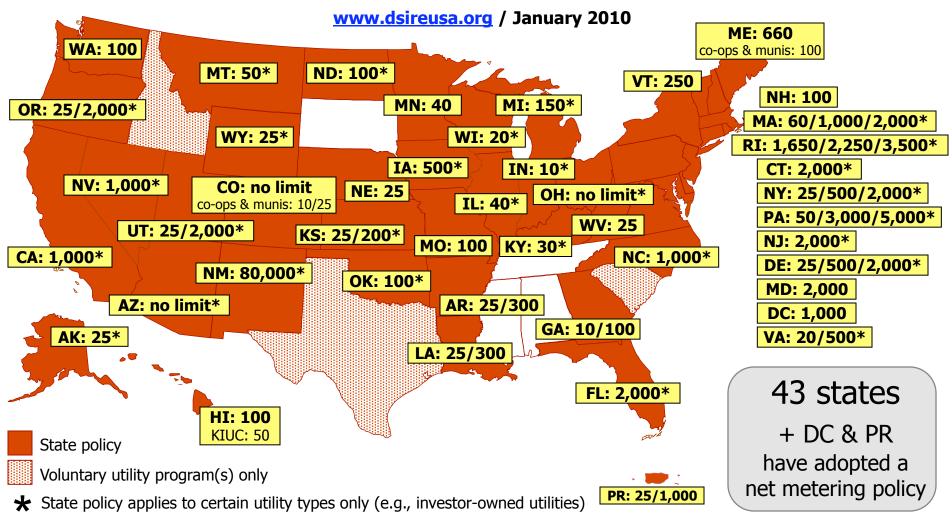


RPS Policies with Solar/DG Provisions





Net Metering



Note: Numbers indicate individual system capacity limit in kW. Some limits vary by customer type, technology and/or application. Other limits might also apply.

Good links for more information on Solar:

The North American Board of Certified Energy Practitioners (NABCEP) certifies both SWH and PV installers. www.nabcep.org

Interstate Renewable Energy Council (IREC) The Interstate Renewable Energy Council http://www.irecusa.org/

Database of solar and energy efficiency incentives www.dsireusa.org

The U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy - Solar Energy Technologies program

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

National Renewable Energy Laboratory - Solar Energy Technologies Program http://www.nrel.gov/solar/

The U.S. Green Building Council has local chapters, and now has a LEED™ (Leadership in Energy and Environmental Design) program for homes. www.usgbc.org

The Solar Energy Industries Association (SEIA) is the national trade association http://www.seia.org/

The Southern Alliance for Clean Energy

www.cleanenergy.org

Find Solar www.findsolar.org

For more Information:

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