



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

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

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About the Solar America Initiative

Goals

President Bush launched the Solar America Initiative (SAI) early in 2006. The initiative aims to make photovoltaic technologies (solar electricity) cost-competitive with conventional forms of electricity from the utility grid by 2015. The U.S. Department of Energy (DOE) is working to accomplish this goal through work at its national laboratories and public-private partnerships with industry, universities, states, municipalities, and nongovernmental organizations. When federal solar energy research began in the 1970s, the cost of electricity from solar resources was about \$2.00 per kilowatt-hour (kWh). Technological advances during the last two decades have reduced solar electricity costs by more than 90 percent to about 20¢ per kWh, opening up new markets for solar energy. Due in large part to DOE-funded research, the cost of electricity from PV has dropped more than tenfold since 1976.

Benefits to the Nation

When SAI reaches its full potential in 2015, photovoltaic (PV) technologies could:

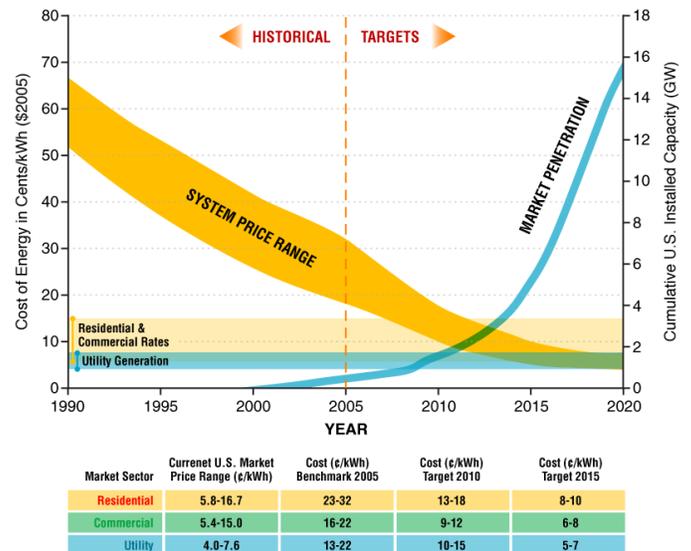
- Provide at least 5 gigawatts of electric capacity (equivalent to the amount of electricity needed to power 1.25 million homes)
- Avoid 7 million metric tons per year of CO₂ emissions
- Employ 10,000 new workers.

SAI benefits the U.S. economy even sooner than 2015—with partner companies achieving as much as a tenfold increase in production at 30% lower costs by 2010. Through these results, SAI will enhance U.S. energy security and improve the environment by:

- Diversifying electricity sources
- Displacing the costs of new electricity transmission infrastructure
- Utilizing safe and abundant U.S. solar resources
- Providing a clean source of electricity.

Capturing Economic Opportunity

As the cost of solar electricity has decreased over the last decade, solar has become one of the world's fastest growing high-tech industries. By adopting ambitious research and development strategies as well as strategies to transform solar technologies markets, SAI will help U.S. companies leapfrog international competition and regain dominance in this growing global marketplace.



Research and Development Strategy

DOE successes in fundamental research on PV cells (the basic “building blocks” of PV systems) now enable the Department to evolve its solar R&D strategy to focus on improving fully-integrated systems. Through the R&D activities of SAI, DOE funds industry and university-industry teams to reduce cost and scale up production across the PV value chain, delivering lower-cost systems to consumers. Four R&D activities are underway:

- **Future Generation PV:** This research focuses on new devices (cells) and the process for developing those devices. The objective is to create revolutionary future-generation PV technologies, with the goal of prototype PV cells or processes (or both) by 2015, and full commercialization by 2020 – 2030.
- **PV Incubator:** This research focuses on systems and system components. The demonstration of cost, reliability, or performance advantages is required. The emphasis is on overcoming the barriers these PV components and systems face to achieve commercialization by 2010.
- **Technology Pathway Partnerships:** These research activities focus on design of PV components and systems that are ready for mass production and are capable of delivering electricity at target costs.
- **University PV Product and Process Development:** This activity targets University research in materials science and process engineering to support industry-led teams that are developing PV systems for commercialization by 2010 – 2015.

DOE's partners in Future Generation PV R&D are:

- Arizona State University
- California Institute of Technology
- Massachusetts Institute of Technology
- Mayaterials
- Penn State
- Rochester Institute of Technology
- Solasta, Inc.
- Solexant
- Soltaix
- Stanford University
- University of California, Davis
- University of Colorado
- University of Delaware
- University of Florida
- University of Illinois at Urbana-Champaign
- University of Michigan
- University of South Florida
- University of Washington
- Voxel, Inc.
- Wakonda Technologies, Inc.



DOE's partners in PV Incubator R&D are:

- AVA Solar
- Blue Square Energy
- CaliSolar
- Enfocus Engineering
- MicroLink Devices, Inc.
- PlexTronics
- PrimeStar Solar
- Solaria
- SolFocus
- SoloPower

DOE's partners in Technology Pathway Partnerships are:

- Amonix
- BP Solar
- Boeing
- Dow Chemical
- General Electric
- Greenray
- Nanosolar
- Soliant
- Sunpower
- United Solar Ovonic
- Konarka

DOE's partners in University PV Product and Process Development R&D are:

- Arizona State University with SolFocus, Inc. and Soliant Energy, Inc.
- California Institute of Technology with Spectrolab, Inc.
- Georgia Institute of Technology with SiXtron Advanced Materials, Inc.
- Massachusetts Institute of Technology with CaliSolar, Inc. and BP Solar International, Inc.
- North Carolina State University with Spectrolab, Inc.
- Penn State with Honeywell International, Inc.
- University of Delaware Institute of Energy Conversion with Dow Corning and SunPower Corporation
- University of Florida with Global Solar Energy Inc., International Solar Electric Technology Inc., Nanosolar Inc., and Solyndra Inc.
- University of Toledo with Calyxo USA, Inc. and Xunlight Corporation

Market Transformation Strategy

In addition to SAI R&D efforts, DOE conducts complementary activities in the area of market transformation to lower market barriers and capitalize on large-scale solar deployment opportunities. Areas of market transformation work include: solar codes & standards, solar rating systems, education and training for installers, system financing options, and strategic stakeholder partnerships. DOE works with states, cities, non-profits, utilities, labor unions, and industry to address commercialization barriers and to educate solar stakeholders. DOE's specific market transformation activities include:

- **Solar America Board of Codes & Standards:** The board works to ensure the responsiveness, effectiveness, and accessibility of PV codes and standards to U.S. stakeholders at all levels.
- **Solar America Cities:** Cities are both the nation's population and electricity-load centers, so this activity focuses on increasing the adoption of solar energy technologies at the local level. Partner cities engage in cost-shared activities and receive technical assistance from DOE-identified experts to help overcome barriers to increased solar installations.
- **Solar America Showcases:** These showcases are large, public projects that demonstrate solar energy technologies to the public. Partners receive technical assistance from DOE-identified experts to assist in the implementation of these projects.
- **State Technical Outreach:** DOE partners with nongovernmental organizations to build relationships with and provide necessary information to decision makers to develop energy policies and programs.
- **Utility Technical Outreach:** DOE partners with nongovernmental organizations to provide technical assistance and information to utilities to promote their acceptance and use of solar technologies.



DOE's partners in its efforts to develop Codes and Standards for PV technologies include:

- New Mexico State University (lead)
- Arizona State University
- BEW Engineering
- Brooks Engineering
- Florida Solar Energy Center
- Interstate Renewable Energy Council
- National Renewable Energy Laboratory
- North Carolina State University
- PowerMark
- Sandia National Laboratories
- Sunset Technologies
- Underwriters Laboratories

DOE has developed partnerships with the following Solar America Cities:

- Ann Arbor, MI
- Austin, TX
- Berkeley, CA
- Boston, MA
- Denver, CO
- Houston, TX
- Knoxville, TN
- Madison, WI
- Milwaukee, WI
- Minneapolis – St. Paul, MN
- New Orleans, LA
- New York City, NY
- Orlando, FL
- Philadelphia, PA
- Pittsburgh, PA
- Portland, OR
- Sacramento, CA
- Salt Lake City, UT
- San Antonio, TX
- San Diego, CA
- San Francisco, CA
- San Jose, CA
- Santa Rosa, CA
- Seattle, WA
- Tucson, AZ

DOE's Solar America Showcases are:

- Forest City Military Communities, HI
- Orange County Convention Center, CA
- City of San Jose, CA

DOE's State Technical Outreach partners are:

- Clean Energy Group
- National Association of Regulatory Utility Commissioners
- National Conference of State Legislators
- Interstate Renewable Energy Council

DOE's Utility Technical Outreach partner is:

- Solar Electric Power Association

For more information about the Solar America Initiative: www.solar.energy.gov/solar_america

