Advancing Clean Energy Technology

Solar energy is a clean, abundant renewable energy source that is vital to our energy security and independence. Solar technologies use the sun to provide heat, light, hot water, electricity, and even cooling for homes, businesses, and industry. Record sales, increased consumer and utility demand, enhanced federal and state incentives, massive manufacturing growth, and large numbers of new jobs create an exciting and challenging environment for solar energy.

The U.S. Department of Energy (DOE) has implemented a broad-reaching change in program strategy with one clear purpose—to achieve high market penetration of solar energy technologies. To achieve that goal, DOE seeks to make electricity from solar technologies cost-competitive with grid electricity by 2015.

14.2-megawatt solar electric system at Nellis Air Force Base, Nevada

About the Solar Program

Through public and private partnerships with industry, academia, and national laboratories, the DOE Solar Energy Technologies Program (SETP) sponsors research, development, and market transformation activities that reduce the cost of solar power. These activities include:

- **Photovoltaics (PV) Research and Development (R&D)** to significantly improve the cost, reliability, and performance of devices, components, and systems.
- **Concentrating Solar Power (CSP) R&D** to improve utility-scale power systems and demonstrate effective storage technologies.
- **Systems integration** to facilitate connecting solar technologies to the electric grid.
- **Market transformation** to reduce market barriers to solar power through non-R&D activities, including infrastructure development, outreach, and technical assistance.

Multiple Markets, Multiple Solutions

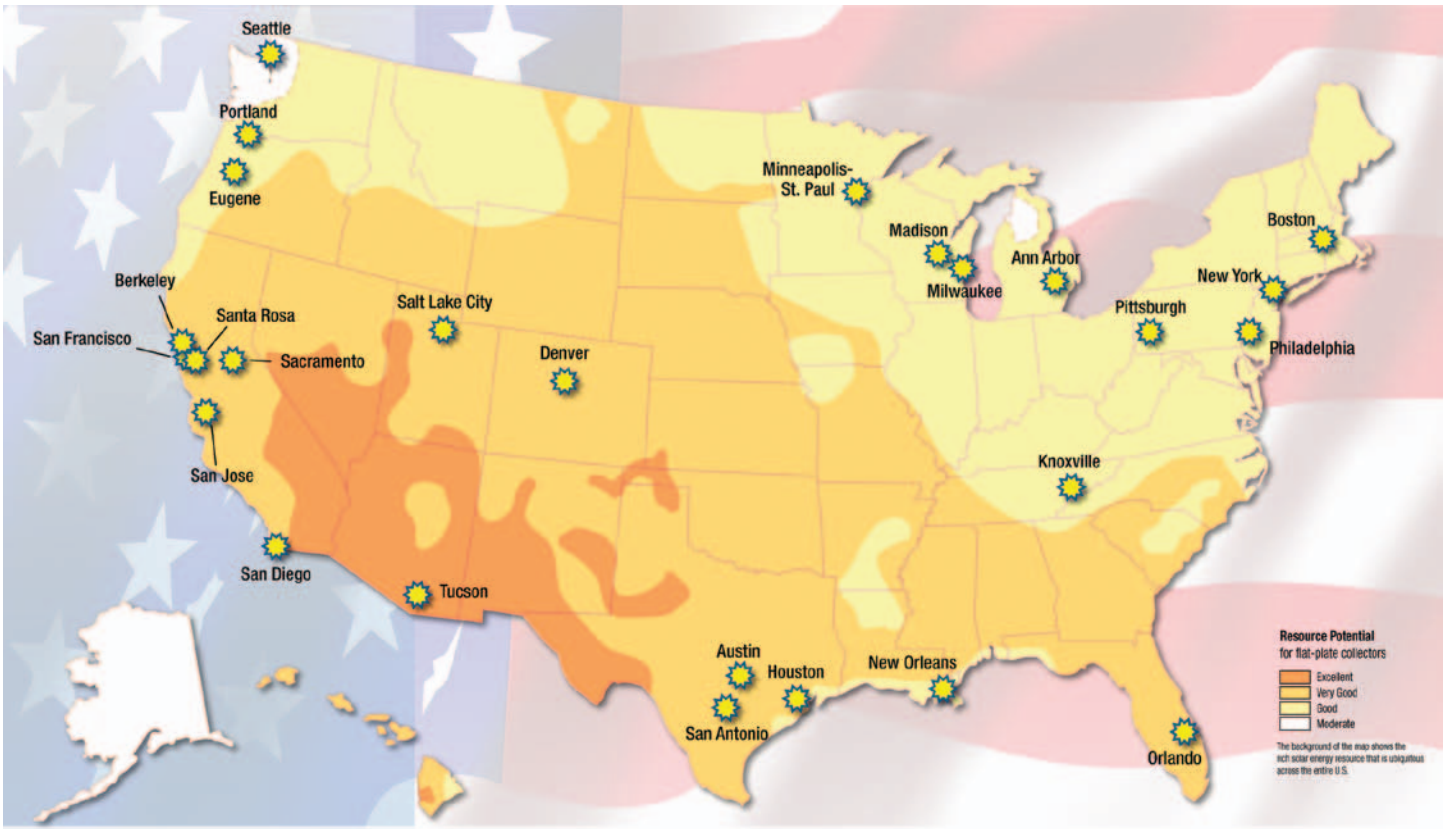
Improvements in performance and cost will continue to open new markets for solar technologies. International market growth is strong for PV, fueled by incentives in countries such as Germany and Spain. Domestic growth is also increasing as a result of the state incentives and federal tax incentives for residential and commercial use. As manufacturing costs decline, PV technologies are used increasingly for homes and businesses already connected to the grid.

Due in large part to the research funded by DOE, the cost of electricity from PV has dropped more than tenfold from 1976 to today. SETP will focus on PV technology pathways that have the best chance of reaching cost competitiveness by 2015.

Another category of research is CSP. A key attribute of CSP systems is thermal storage which allows these systems to generate electricity on demand, not just when the sun is shining. CSP technologies are best suited for utility-level power generation. DOE-sponsored improvements during the past 15 years have reduced the cost of this technology by two thirds. With DOE's continued support, industry hopes to achieve cost competitiveness with other intermediate power supplies by 2015 and with baseload power providers by 2020. CSP has seen a tremendous resurgence worldwide in the last 2 years, with Spain and the U.S. enjoying explosive growth.

As solar technologies provide a larger part of the U.S. electricity supply, it is important that they be integrated seamlessly into the electric power grid. This will require new ways of thinking about how the country generates and distributes electricity and new technologies that make it simple, safe, and reliable for solar electricity to feed into the grid. By working with utilities and the solar industry, the Systems Integration efforts focus on breaking down the regulatory, technical, and economic barriers to grid integration.

Solar Cities Across America



www.solaramericacities.energy.gov

A part of the Market Transformation activities, Solar America Cities is a DOE partnership that provides financial and technical assistance to 25 U.S. cities committed to accelerating the adoption of solar energy technologies.

In all of its forms, solar energy will provide a renewable energy option for the United States—an option that will last as long as the sun continues to shine.

For More Information

Contact the EERE Information Center 1-877-EERE-INF or 1-877-337-3463 or visit *www.solar.energy.gov* or *www.solaramericacities.energy.gov*

64-megawatt solar plant in Boulder City, Nevada

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U.S. DEPARTMENT OF ENERGY
Energy Efficiency & Renewable Energy

EERE Information Center
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Prepared by the National Renewable Energy Laboratory (NREL)
NREL is a national laboratory of the U.S. Department of Energy
Office of Energy Efficiency and Renewable Energy
Operated by the Alliance for Sustainable Energy, LLC

DOE/GO-102010-3057 • May 2010

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