Solar Energy Technologies Program

May 2008

Furthering Energy Security

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

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 an exciting and challenging environment for solar energy.

Since the inception of the Solar America Initiative (SAI), launched by President Bush in his 2006 State of the Union address, the U.S. Department of Energy (DOE) implemented a broad-reaching change in program strategy with one clear purpose: to make electricity from photovoltaics cost-competitive with grid electricity by 2015.

Program Basics

Through public and private partnerships with industry, academia, and national laboratories, DOE's Solar Program sponsors research and market transformation activities that reduce the cost of solar power.

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

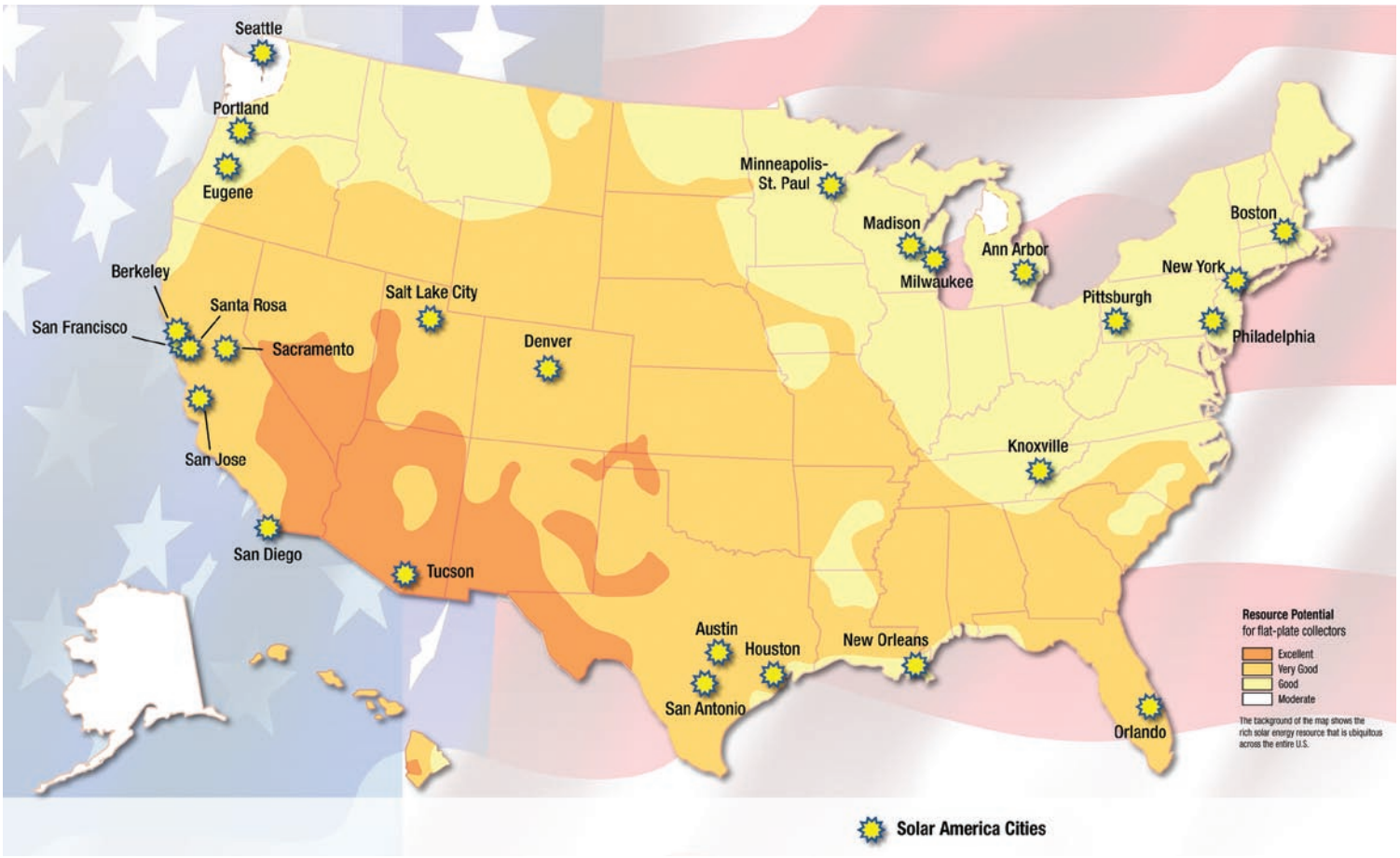
Multiple Markets, Multiple Solutions

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. SAI will focus on PV technology pathways that have the best chance of reaching cost-competitiveness by 2015.

The second category of research in the Solar Program is CSP. A key attribute of CSP systems is thermal storage which allows these systems

SAI Across America



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 two years, with Spain and the U.S. enjoying explosive growth.

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.

64-megawatt solar plant in Boulder City, Nevada.

Reliable, Affordable Energy
The mission of the Solar America Initiative is to make electricity from photovoltaics cost-competitive with grid electricity by 2015.

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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