



## SUCCESS STORIES

The goal of the Million Solar Roofs Initiative is to install one million solar energy systems on U.S. buildings by 2010. The Initiative focuses on two types of solar energy technology — photovoltaics that produce electricity from sunlight, and solar thermal systems that produce heat for domestic hot water, space heating or heating swimming pools. The U.S. Department of Energy leads this effort in partnership with the building industry, other federal agencies, utilities, the solar energy industry, financial institutions, state and local governments, and non-governmental organizations.

These partnerships concentrate on removing market barriers and developing and strengthening demand for solar energy products and applications. As progress is made toward the goal of one million solar roofs, greenhouse gases and other harmful emissions will be reduced, high tech jobs will be created, and the U.S. solar energy industry will retain its competitive edge.



**Project:** BJ's Wholesale Club

**Type:** Grid Connected PV Electricity Generating Plant

**Location:** Middletown, Rhode Island

**Background:** In July 1999, a 43 kW photovoltaic array was installed in Rhode Island on the roof of a BJ's Wholesale Club, a members-only wholesale club with more than 5 million members and 101 locations throughout the Eastern United States. The installation was Rhode Island's first sun-powered electricity generating plant, and the third such project completed by Sun Power Electric, a Massachusetts-based, not-for-profit developer of large scale photovoltaic systems. Sun Power Electric has installed similar PV systems on BJ's Wholesale Clubs in North Dartmouth, Massachusetts (December 1998) and Conshohocken, Pennsylvania (May 1999).

BJ's Wholesale Clubs donate the use of their roofs to Sun Power Electric, and in return BJ's receives a minimal, indirect reduction in their electric costs. These systems are unique because they are specifically installed to generate energy to serve the green power market created under electricity restructuring. Sun Power Electric builds, owns, and operates these systems, selling the electricity to power marketers who add it to their green power products.

Sun Power is the nation's first solar utility that produces all of its power from the sun and sells it in the newly deregulated electricity market. Sun Power's systems reduce the cost of solar-generated electricity by standardizing the design plans and building techniques for installing solar panels on flat commercial rooftops. This standardization has helped to capture great cost reductions. In the first year alone Sun Power has been able to decrease the cost of PV generation from \$11/watt to \$6/watt.

**System Description:** Sun Power Electric of Westborough installed a 43 kW photovoltaic system, consisting of 176 4"x6" ASE Americas photovoltaic panels, on the rooftop of BJ's Wholesale Club in Middletown, Rhode Island. The Middletown system will generate 55,900 kW hours of electricity yearly, meeting the electricity needs of 10 average-size homes



for 20 years. Sun Power Electric sells the power generated from the system to AllEnergy of Waltham, Massachusetts. AllEnergy sells this power under its “ReGen” banner, which also markets electricity generated from landfill gas. AllEnergy then sells this electricity to individuals and companies who are interested in purchasing “green” energy.

**Financing:** This project was the first in the state to use funds from the Rhode Island Renewable Energy Collaborative, which contributed \$1.50/watt. Founded in 1997, the Rhode Island Renewable Energy Collaborative was formed as a direct result of the enactment of Rhode Island’s electricity restructuring legislation. The legislation stipulated that a public benefit charge, or surcharge, was to be collected for every kWh of electricity sold in order to fund renewable energy programs. The Collaborative is comprised of electric utilities, staff of the Rhode Island Division of Public Utilities, and the Conservation Law Foundation and is responsible for administering the funds.

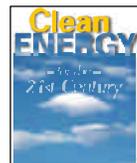
Additional funding was provided through the U.S. Department of Energy’s UPVG Team-Up program, which contributed approximately \$1.75/watt.

**Climate:** Rhode Island averages approximately 4 peak hours of sunlight per day.

**Optimum Maintenance Costs:** Sun Power Electric budgets approximately \$500 per month for maintenance, but the actual costs have been about half of this amount. The actual costs have been spent mostly on travel expenses to the site. Sun Power cleans the system’s modules on a monthly basis to ensure maximum output.

**Environmental Benefits:** Sun Power Electric estimates that the solar plant will avoid production of 1,672,415 pounds of greenhouse gases over its lifetime. This includes 2,906 pounds of smog-producing nitrogen oxide; 10,397 pounds of sulfur dioxide which contributes to acid rain; and 1,659,112 pounds of carbon dioxide.

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