



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: SolarWise for Schools

Type: Grid-Connected PV System

Location: East De Pere High School near Green Bay, Wisconsin

Background: In September 1997, three high schools near Green Bay, Wisconsin were selected to participate in Wisconsin Public Service Corporation's SolarWise™ for Schools Program. In addition to East De Pere High School, which is featured in this success story, Mosinee High School and Waupaca High School also participated in the SolarWise™ for Schools program during the 1997-98 school year. The SolarWise™ for Schools Program, which began in 1996, places photovoltaic systems on Green Bay, Wisconsin area high schools selected by Wisconsin Public Service Corporation (WPSC). The SolarWise™ Program is supported by donations from over 2,600 WPSC customers and received funding from the Department of Energy's Utility Photovoltaic Group (UPVG) TEAM-UP program as well as the Wisconsin Renewable Energy Assistance Program. Ascension Technology of Waltham, Massachusetts partnered with WPSC as part of the TEAM-UP project. In addition to the actual solar-electric system, the schools receive a three-week renewable energy curriculum that includes audiovisual materials and laboratory equipment. Students also participate in Solar Olympics, an annual solar energy expo and competition.

System Description: A 4-kilowatt, grid-connected, roof mounted photovoltaic system was installed on East De Pere High School on June 29 and 30, 1998. East De Pere is located six miles south of Green Bay, Wisconsin. The system is made up of sixteen ASE Americas 300 watt PV modules and one 4 kW Omnion inverter. Campbell Scientific provided a data acquisition system to monitor the system.



Climate: Northeastern Wisconsin has very cold winters (average temperature of 23°F for November-March) and moderate summers (average temperature of 65°F for June-September). There is an average of 4.4 full-sun hours equivalent per day.

Financing: The East De Pere PV system is the sixth to be installed on high schools under WPS Community Foundation's SolarWise™ for Schools Program. In this program, Wisconsin Public Service Corporation customers volunteer to donate an extra amount on their bills each month, and the money is used to purchase and install PV systems on high school roofs. For the East De Pere Project, customers contributed roughly \$21,000 or 52% of the project costs. WPSC is a member of UPVG and received roughly \$16,000 (\$4 per watt) of support under TEAM-UP Round 1 for this installation. Wisconsin Energy Bureau offers a Renewable Energy Assistance Program that includes renewable energy construction grants for PV systems. WPS Community Foundation will receive a total of \$10,700 through this program for the three- 4kW systems installed on high schools in June, 1998. One-third, roughly \$3,567, will go toward the East De Pere installation.

Total installed cost: \$40,525

Direct Savings: \$300 per year (based on \$0.055 per kWh)

Environmental benefits: Environmental impacts are based on an analysis of a comparison with WPSC coal generated electricity. By using the PV system, 7,075 pounds of coal will not be used each year. This amounts to an annual reduction in emissions of 12,458 pounds of carbon dioxide, 58 pounds of sulfur dioxide emissions, 67 pounds of nitrogen oxide emissions, and 2 pounds of particulates.

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