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: Olney Elementary School Installation

Type: Grid Connected PV

Location: Olney, Maryland

Background: On March 27, 2000, the Maryland Energy Administration (MEA) and BP Amoco officially activated the first grid-connected PV system installed under the Maryland Solar Schools program. The system was dedicated at Olney Elementary School with the participation of students and faculty. Co-funded by BP Amoco and MEA, the Maryland Solar Schools Program seeks to install 1 kWp or larger PV systems on ten primary or secondary schools throughout Maryland. MEA and BP Amoco will fully fund six of the systems.

The primary purpose of the Maryland Solar Schools Program is to educate students about renewable energy resources. Under the program, MEA will assist interested schools with obtaining funding, finding the best available PV installers, and locating educational materials to comprise a curriculum package. BP Amoco, which joined MEA in sponsoring the program during October 1999, brings additional funding and a newly designed solar energy curriculum, which will be made available to classrooms throughout the state.

Olney Elementary School, the first solar school under the MEA and BP Amoco partnership, will host an enhanced solar energy education program, due to the unique "Solar Cents" promotion held at Bobby Fletcher's Amoco station in Olney. (The station is located about a half mile from the school.) On November 1, 1999 BP Amoco launched the "Solar Cents" campaign, which allowed customers of Fletcher's Amoco station to support the Olney Elementary School solar energy education program through their gasoline purchases. During that month BP Amoco donated a penny for every gallon of gasoline pumped at the station to the school's solar energy education program.

The station's fund raising campaign compliments its efforts to offset its own electricity supply with solar power. Bobby Fletcher's Amoco station was the first service station in the world to offset its regular electricity supply with thin-film solar modules. A total of 144 Solarex Millennia™ thin-film modules were installed on the station's canopy over the pumps, generating 6 kW of electricity, enough to replace fifteen percent of the station's traditional electricity supply with solar generated electricity. At the grand opening ceremony for the solar-powered service station, BP Amoco announced its sponsorship of the solar education program in Maryland.

System Description: A 1 kW Solarex system, consisting of 24 Solarex Millennia™ photovoltaic panels, was flush mounted to the south side of Olney Elementary School's angled roof. Typically, most schools have flat roofs, in which case, additional supporting pieces would have been necessary for installing the PV system installation. Olney Elementary had the ideal, pitched, residential-style roof.

Additional system components include an Omnion inverter and wiring kits. As part of the educational component, the school also received a solar electric meter to monitor the electricity generated by the system and a hallway display board showing the total electricity generated by the project.

Financing: The system and curriculum were made possible by contributions from several sources. These contributions enabled Olney Elementary School to receive its PV system and solar curriculum at no cost.

The solar equipment for the Olney installation was purchased through the Virginia Alliance for Solar Electricity (VASE) program. VASE is a partnership between BP Solarex; the U.S. Department of Energy; the Virginia Department of Mines, Minerals and Energy; Virginia Power; the North Carolina Solar Center; the Virginia Department of Environmental Protection; and the Virginia Center for Innovative Technology, and others. PV equipment purchased under VASE receives a substantial ($2.94/W) subsidy, the result of a grant from the US DOE Commercialization Ventures Program. The purpose of VASE is to accelerate the commercialization of the new Solarex Millennia™ tandem-junction amorphous silicon thin-film PV modules manufactured in the company's Virginia plant.

As part of its Solar Schools Program, MEA provided a $4,000 grant to assist in the purchase of the subsidized system. BP Amoco contributed $6,112 for the remaining system, installation, and educational component costs. A total of 255,073 gallons of gas were pumped at Fletcher's gas station during the "Solar Cents" promotion (mentioned above), raising $2550.73 for the Olney Elementary School education program.

Climate: The average yearly peak sun hours per day is approximately 4.5, with the most peak sun hours occurring during the summer months.

Installed Cost: The total installed project cost was $10,112, including the system and installation costs. The total VASE-subsidized system cost, including modules and balance of system components, was $6,000. The total installation cost, including labor, permits, electrical hookup, meter, and numerous site visits was $4,112.

Optimum Maintenance Costs: BP Solarex Millennia™ solar modules are designed to last thirty years and come with a twenty-year warranty. The only expected maintenance for the PV modules is occasional cleaning.

Of the balance of system components only the inverter, which converts the direct current coming from the panels to alternating current, may have to be replaced every five to ten years.

Environmental Benefits: According to the Environmental Protection Agency's solar environmental benefits calculator (found on the EPA website) this installation will avoid 4 pounds of nitrogen oxide emissions, 16 pounds of sulfur dioxide emissions and 2,251 pounds of carbon dioxide emissions annually.

Contact: For additional information contact the Maryland Energy Administration at 1-800-72-ENERGY or Dan Larson, BP Amoco at 410-494-3741.

DOE Regional Offices

Atlanta Regional Office
Dwight Bailey, 404/347-0234
730 Peachtree, NE, Suite 876
Atlanta, GA 30308
fax: 404/347-3098
Southeast Region: FL, GA, SC, NC, AL, MS, KY, TN, AR, USVI, PR

Boston Regional Office
Richard Michaud, 617/565-9713
One Congress Street
Room 1101
Boston, MA 02114-2021
fax: 617/656-9723
Northeast Region: CT, ME, MA, NH, NY, VT, RI

Chicago Regional Office
William Hui, 312/886-8586
One South Wacker Drive
Chicago, IL 60606
fax: 312/886-8561
Region: IL, IN, IA, MI, MN, MO, OH, WI

Denver Regional Office
Jamey Evans, 303/275-4813
1617 Cole Blvd.
Golden, CO 80401-2266
fax: 303/275-4830
Region: CO, KS, LA, MT, NE, NM, ND, OK, SD, TX, UT, WY

Philadelphia Regional Office
Susan Guard, 215/656-6965
1880 John F. Kennedy Blvd.
Suite 501
Philadelphia, PA 19103-7483
fax: 215/656-6981
Region: DE, DC, MD, NJ, PA, VA, WV

Seattle Regional Office
Curtis Framel, 206/553-7841
800 Fifth Ave., Suite 3950
Seattle, Washington 98104-3122
fax: 206/553-2200
Northwest Region: AK, WA, ID, OR, CA, NV, AZ, HI, Pacific Territories

Hawaii only:
Eileen Yoshinaka, 808/541-2564
300 Ala Moana Blvd.
Honolulu, HI 96813
fax: 808/541-2562

For more information:
By phone:
Efficiency and Renewable Energy Clearinghouse (EREC)
1-800-DOE-EREC (363-3732)

On the Internet:
Million Solar Roofs Website
www.MillionSolarRoofs.org