MILLION Solar ROOFS

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: Sacramento Zoo Gift Shop Solar Roof Installation

Type: PV Grid Connected Net Metered Solar Roof

Location: Sacramento, California

Background: In April, 1998, an array of photovoltaic cells were installed on the roof of the Sacramento Zoo gift shop. This project was financed by the Sacramento Municipal Utility District's (SMUD) Community Solar program, one of the options customers have under SMUD's Greenergy Program. The Greenergy Program began in June 1997 and allows customers to buy electricity produced by renewable energy and to contribute to the purchase of rooftop PV systems for community facilities. The Sacramento Zoo project was the first Community Solar project undertaken. The Zoo project will generate 8,000 kW of solar produced electricity per year, which is about the average amount consumed by a residential SMUD customer.

System Description: The 4.1 kW (AC) rated system is comprised of 90 Solarex polycrystaline modules arrayed in 15 panels. The DC output from the panels is fed to a Trace 4048 power maximizing inverter unit that in turn feeds 240 volt single phase AC power to the Zoo's side of the utility power meter.

Financing: The system was purchased through SMUD's Community Solar program (a Greenergy program option) in which customers volunteer to pay one cent per kilowatt-hour above their current rate to purchase and install PV units on community buildings. Both commercial and residential customers may participate.

Climate: Sacramento has a long and remarkably clear "dry season" stretching from April to October. Summertime has hot, dry days with nights cooled by a "Delta" breeze. This leads to a pronounced summer daytime peaking power demand, a good fit for solar derived resources. On average for a south facing non-tracking PV system, arrayed at a 30 degree pitch, is a 20% annual capacity factor.

Total Installed Cost: The installed cost to Community Solar Customers for this system was $18,273. This was helped substantially by the federally funded Utility Photovoltaic Group (UPVG) TEAM-UP buydown.

Optimum Maintenance: Maintenance will be minimal. After all, the only "moving parts" are a relay in the inverter and AC and DC breakers.

Environmental Benefits: Compared to a coal fueled plant, during its 30 year lifetime, the PV system will prevent 600,000 pounds of carbon dioxide and one ton of sulfur and nitrogen oxides from entering the environment.

Contact: For additional information on SMUD and its Greenergy and Community Solar program view their website at www.smud.org/green or call (916) 452-7811. Donald Osborn is the supervisor of the SMUD Solar Program and can be reached at dosborn@smud.org.

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