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: Parade of Homes Solar Installation

Type: Solar hot water installations

Location: Denver, Colorado

Background: Kurowski Development Company president, John Kurowski, founder of the Green Builder Program in Colorado, has been building energy efficient homes since 1974. He was instrumental in making energy efficiency a part of the 1994 Parade of Homes. Keeping with this tradition, every home in the 1998 Parade of Homes was built to reflect environmentally friendly and energy efficient techniques, including solar energy systems.

Over the next several years, builders and developers plan to build and/or retrofit ten thousand "green" homes in Colorado. Among the techniques/technologies included will be the use of recycled concrete and solar technologies.

System Description: In 1998, the Denver annual Parade of Homes featured homes with solar hot water heating and PV systems. For the purposes of this case study we will focus on the solar hot water systems. The homes constructed by Kurowski builders and Windham Custom Homes featured solar hot water heating systems manufactured by Heliodyne. The closed loop systems use anti-freeze and each system has one 4 by 10 foot collector and a 65 gallon tank. The Windham built homes also featured a closed-loop drainback system manufactured by Radco. These systems were comprised of two 4 by 8 panels and an 80 gallon storage tank. The systems were designed to provide approximately 60% of the hot water needs of each household.

Financing information: Each of the Heliodyne systems cost approximately $4,400 and the Radco systems cost about $4,100 (installed cost). All of the systems were paid for by the Colorado Office of Energy Conservation. As a condition of the purchase of these systems, each of the homebuilders agreed to offer solar as an optional feature of their new homes.

Climate: The systems will be operating in Denver, Colorado, which has good solar radiation.

Total Installed Cost: $4,400 per Heliodyne system; $4,100 per Radco system.

Optimum Maintenance Costs: $40- $50 per year per system. This cost is based on a system check by a technician once every three years ($80 each) and having one major repair, such as replacing a pump, once every 10 years. The estimated total repair costs are approximately $400 over ten years.

Environmental Benefits: The hot water systems installed on the Parade of Homes in Denver should displace about 3,760 kWh of electricity annually for a family of four. This is assuming that the system could provide about 60% of the hot water for an average family of four. This would translate to about 5,170 pounds of carbon dioxide displaced (assuming 1.375 pounds of CO2 per kWh).

Contact: This project was coordinated by the Governor's Office of Energy Conservation and the Home Builders Association of Metro Denver.

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