

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. President Clinton announced the Initiative on June 26, 1997 in a speech before the United Nations Session on Environment and Development. 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: Newton Middle School Solar Installation

Type: PV Grid-Connected School Installation

Location: Littleton, Colorado

Background: Two solar school programs were established in Colorado: Governor Roy Romer's Rooftop for Schools Program, part of the Office of Energy Conservation (OEC); and the Public Service Company of Colorado's Renewable Energy Trust Solar Schools Program. These plans complement each other and together they will install PV on schools throughout the state.

The Public Service Company's Renewable Energy Trust was established in 1993 to develop renewable resources. In 1998, the fund began to focus on PV installations on schools in order to provide students a way to learn about renewable energy. Approximately 20 Colorado schools will be selected to receive PV systems by the end of 1998. Another 20 schools should receive PV systems by the end of 2000. The first four Colorado schools have been selected, one of which, Newton Middle School, is the focus of this case study. It was the first school to receive its system, which was installed in October 1998.

The Governor's Colorado Rooftop for Schools Program also helps make these installations possible. It was recommended by the Governor's Renewable Energy Task Force as a way to increase awareness of renewable energy in Colorado. The OEC helped fund the first four schools and plans to provide financial assistance to twelve more PV school installations.

System Description: Newton Middle School received a 2.2 kW system comprised of Siemens SP-75 modules and an Omnion 2400 series inverter complete with monitoring equipment, so that students can monitor output during the day. The system is grid-tied and net-metered, although



it is unlikely that the school will sell any power back to the utility. Altair Energy, a contractor to the Public Service Company of Colorado, will install and provide maintenance for this system and the other schools' systems.

Financing: Systems are being partially funded by the Colorado OEC and Public Service Company of Colorado. Specifically, the OEC is providing grants of up to \$9,000 for schools to purchase grid-tied PV systems, and the remainder of the system costs are being covered by Public Service Company through the Renewable Energy Trust. Public Service Company customers fund the Trust by rounding up their monthly energy bill to the nearest dollar or by providing direct tax-deductible donations. The US Department of Energy, through Utility Photovoltaic Group's (UPVG) TEAM-UP program, is also providing matching funds. Today about 14,000 Public Service Co. customers participate in the Renewable Energy Trust Program.

Climate: The system is operating in Denver, Colorado which has good solar radiation.

Total Installed Cost: Each of the 2.2 kW systems, including Newton Middle School's, cost about \$34,000 installed, including the equipment students will use to monitor the output of the systems.

Environmental Benefits: Each system will prevent more than 5,500 pounds of CO2 from entering the atmosphere each year.

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