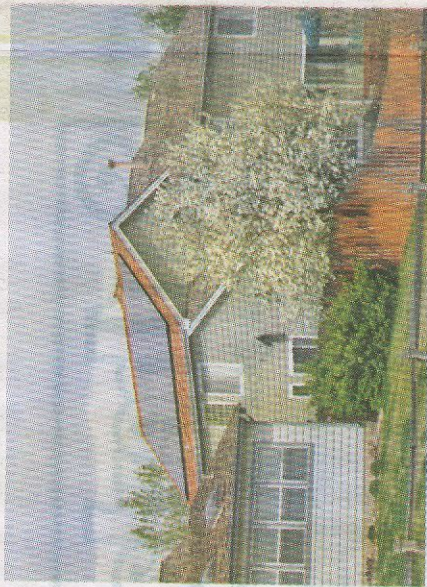


Solar Energy's Cutting Edge

John Avenson need only say "temperature please" to Rex, his voice-activated computer, to get 24 different temperature readings around his Westminster home. A self-admitted science-fiction fan and Star Trek "Trekkie," Avenson lives in a highly energy-efficient home originally designed by the National Renewable Energy Lab. In the Spring of 2006, Avenson was ready to take the next environmental step and brought in Denver-based SolSource Inc. to design and install a 4.76 kW solar photovoltaic system on his home.



SolSource of Denver designed and installed this 20 air module 3.74 kW solar PV system to cleanly integrate with the wood shake roof of this Thornton home.

"My goal was to be electricity-free from the grid. I'm pleased to be just barely above a net zero home," he said. Since its installation, his solar system has produced 19,410 kW hours of energy from the sun and prevented over 24,000 pounds of greenhouse gas emissions from entering the atmosphere. Avenson is one of a growing number of Coloradans who are choosing solar energy for both their environmental and economic benefits.

New Technologies

While the financial savings make solar PV systems exceptionally affordable, recent developments in technology are opening new windows not previously available for residential solar systems.

Homeowners can now put solar panels on awnings for their home which double to provide shading. Solar Village Homes (SolarVillageHomes.com), a Boulder company that specializes in sustainable architecture and green building, designs custom homes and has developed a new line of modular solar homes with awnings composed of solar panels.

Another new product from a company called Enphase now makes it possible to install a solar PV system on roofs that have partial shade or have variable roof pitches. With this technology, each solar panel has its own micro-inverter. If one panel is shaded, only that panel has reduced power production, rather than affecting the whole line of panels. An additional advantage, homeowners can monitor real time and historic energy output of their system from their home or office computer 24 hours a day.

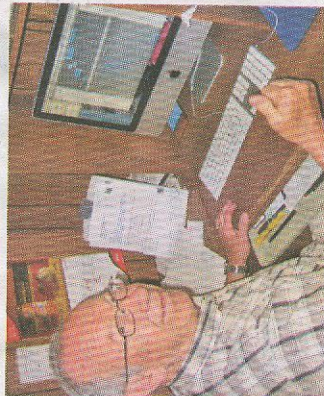
Louis Lamberson, 71, had SolSource install an Enphase system on his home in Littleton in June 2009. Even though a walnut tree was partially shading his solar panels, his 5.29 kW system of 23 Sharp modules and 23 Enphase micro-converters produced 17 percent more energy than he used.

"I'm pleased that from the moment the first rays of sunshine hit the panels until the moment the sun goes down my system is generating energy," said Lamberson. He makes his home energy production and carbon offset data available for public viewing on the SolSource website in the residential portfolio section, SolSourceinc.com.

Looking ahead to what we can expect in the future, "cheaper solar cells, larger storage capacity and smarter grids," says Dr. Bryan Willson, founder of the Engines and Energy Conversion Lab at Colorado State University. Willson's Fort Collins lab is simulating large-scale SmartGrid technology projects, such as



John Avenson stands next to a solar air heater attached to his home, installed by SolSource of Denver, which heat outside air for his home.



Louis Lamberson at his home computer where he monitors the real time and historic energy production of the solar panels on his Littleton home installed by SolSource Inc. based in Denver.

help utilities manage peak power loads.

If you want to reduce your contribution to greenhouse gas emissions and help lower our society's dependence on fossil fuels, PV systems offer an excellent return on investment for your home. Solar systems typically have a payback period between eight and 10 years. The current utility rebates are at a high now. However, reliable sources within the solar industry report Xcel may be lowering the rebate as early as Sept. 1, 2009. Consider acting now!

~ Neshama Abraham

Neshama Abraham is a freelance writer based in Boulder, who writes about renewable energy and living a more sustainable lifestyle.