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## Something New Under the Sun

Cheaper Solar Technology Attracts More Homeowners; Larry Hagman's Tribulations

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When Bill and Margaret Oliver decided to take the plunge into solar energy earlier this year, the retired Long Beach, Calif., couple searched for months to find someone who could install 35 newfangled solar panels atop their three-bedroom home.

Despite the hassles -- and though the panels cost them \$39,000, after government rebates -- the Olivers say they're ecstatic to be escaping power bills that had soared to almost \$400 a month. The

panels contain a relatively new technology for the home called "photovoltaic cells," which convert direct sunlight into electricity. With the installation complete, their latest monthly bill totaled just \$1.34.

"We had a cake party when they finished the job," recalls the 85-year-old Mrs. Oliver.

For decades solar energy use was largely confined to a small fringe of diehard conservationists. And their sole option was typically a "solar thermal" system that stores heat from the sun to warm pools or appliances. But these days, solar power is going mainstream in many more homes, helped along by a proliferation of new solar technology like cheaper photovoltaic cells and new solar-powered gadgets.

Photovoltaic cells, most of which are made from silicon, have exploded in use around the country over the past five years as once-prohibitive costs for



Robert Noble | Envision Solar

home use of the technology have declined. Between 2002 and 2006, the number of new photovoltaic systems installed in U.S. homes nearly tripled to 7,446 from 2,805, according to the Interstate Renewable Energy Council in Latham, N.Y. Industry officials say that such installations are expected to top 11,000 this year.

The Sunray SX2, a solar-powered golf cart made by Cruise Car, retails for about \$7,000.

The number of solar gizmos for the home is skyrocketing as well. At last month's Solar Power Conference 2007 in Long Beach, a record 12,500 attendees -- including luminaries like media mogul Ted Turner -- crowded past aisles crammed with brochures and products, including everything from solar-powered water heaters to carports.

One of the products shown was the Sunray SX2 golf cart. Made by Cruise Car Inc. of Sarasota, Fla., the cart comes equipped with a 48-volt battery that is charged by electricity generated from a sheet of black solar cells on the roof. The cart can travel as long as three days without having to be charged again, the company says, and retails for about \$7,000 -- or \$6,000 after federal tax credits. That's in line with the average price of an electric golf cart.

Also on display were redesigned heating coils for swimming pools. Heliocol USA Inc., for instance, displayed plastic tubes that collect heat for pools and come battened down with high-strength alligator clamps to withstand winds from hurricanes and severe thunderstorms. For a typical backyard pool in, say, Arizona, the system runs around \$6,000, or \$5,000 after tax credits. Since it costs as much as \$650 a month to heat pools when the weather cools in the Arizona desert, Heliocol vendors say the system can pay for itself in two years.

But as the Olivers discovered when they tried to get their panels installed, the solar industry -- and especially the part centered on the new generation of cheaper photovoltaic cells -- is going through growing pains that can make the experience of going solar a headache. Two installers made appointments to come to the couple's house but never showed up. A third asked the Olivers to fax in their power bills, then dragged its feet. Three months later, the couple finally got a company, Akeena Solar Inc., to install the panels on their roof.

One problem is that there are hundreds of photovoltaic installers to choose from in states such as California and New Jersey, which are among the most aggressive in offering consumer credits to use solar. That makes it difficult to tell who's reliable. Officials with the Solar Energy Industries Association trade group advise consumers to check out installers through their Web site, [www.seia.org](http://www.seia.org), as well as to make sure they are certified by the North American Board of Certified Energy Practitioners.

Solar panels on the San Francisco home of Sun Run Generation CEO and founder Edward Fenster.

Former "Dallas" television star Larry Hagman, for one, also had problems with his solar installation. In 2005, he contracted with an installer to put in a \$750,000 array of photovoltaic panels at his 42-acre avocado farm in the mountains above Ojai, Calif. But Mr. Hagman says the installer faced the panels away from when afternoon sunlight was strongest. Another installer he hired took so long he had to fire him and hire another. In all, it took a year and a half before a job that was originally estimated to take six months could be finished, Mr. Hagman says.

"Oh my God, I had troubles," says the 76-year-old actor, whose installation of some 560 solar panels ranks as one of the largest on a residential property.

One of the biggest questions for homeowners is whether converting to solar power will really save money. Installers often say you can pay off a photovoltaic roofing system -- which typically costs \$30,000 to \$40,000, after rebates and other incentives -- in as little as 10 years by saving on the cost of traditional power, which can easily run \$300 or more a month. But some rooftop systems end up not delivering as much power as promised because the panels aren't installed properly, or because the electric-conversion equipment malfunctions.

Industry officials, for their part, say the new solar systems generally pay off over the long term. Sharp Corp. of Japan, a major photovoltaic manufacturer, estimate consumers spend as much as \$140,000 for conventional power over a lifetime. And that total could rise, since utility rates are soaring around the country because of deregulation. By contrast, a \$40,000 photovoltaic system can appear cheap.

For Mr. Hagman, the economics made sense. While

he paid \$750,000 in cash for his photovoltaic system, he says he got a \$320,000 rebate from his utility, Southern California Edison Co. He also slashed his annual power bill from \$37,000 to a mere \$13. Mr. Hagman says what motivated him to go solar was more his concern over power reliability, following the 2003 blackout in the Northeast.

"I felt if our infrastructure was so delicate, I better look to making my own electricity," Mr. Hagman said in a telephone interview from his farm.

To help make the high costs of solar systems more palatable, companies such as SolarCity Inc. have expanded their offerings to include remote monitoring of customers' solar production. That helps ensure everything is working and that customers are getting the biggest bang for their buck from their solar technology. The consumer can also monitor their own system's performance through a Web site, say officials of the Foster City, Calif., firm.

Another option for homeowners who find the installation cost prohibitive is to lease a solar system. A San Francisco startup called Sun Run Generation LLC launched a program in January under which a homeowner can prepay as much as \$8,000 for solar power, a fraction of the cost of a full \$40,000 photovoltaic system. The company then installs its own photovoltaic system on the property for the life of a 20-year lease contract.

Workers for Envision Solar build a model of a solar-powered carport at the 2007 Burning Man festival in Nevada.

Consumers who can't afford a full photovoltaic system may also be able to get solar for parts of their home. A San Diego firm called Envision Solar Inc., for instance, says it plans to start selling carports covered with photovoltaic cells to generate power for the home and hybrid cars late next year. The carports are expected to sell for between \$5,000 and \$8,000.

And there are also new products that use the older solar-thermal technology. Canada's EnerWorks Inc. is marketing a solar thermal water heater called the Space-Saver, which is designed to cut power bills while taking up less room than a traditional heater. Priced at \$6,000 -- or about \$3,000 after government and utility rebates in some states -- officials of the

company say the tank can pay for itself in as little as three years.

The most economical approach of all, industry officials say, is to buy one of the growing number of new homes already equipped with solar. Homebuilding giant Lennar Corp. is building about 2,500 homes in California in a partnership with SunPower Corp. of San Jose, Calif.

Officials of the Miami-based builder say they can sell the homes -- priced at \$450,000 to \$600,000 in the biggest tracts around Sacramento, Calif. -- without charging extra because of tax credits and the lower costs of installing solar equipment in a new home. In return, Lennar officials say the sales rate for their solar homes is running almost three times greater than conventional ones in a down market.