Solar Leases Attracting New Demographic

The sun is shining on homeowners in less affluent neighborhoods who are discovering they can afford solar energy after all — by leasing rather than buying the panels on their roofs.

Kyle Travis (left) and Jon Jackson (right) of Lighthouse Solar install microcrystalline PV modules on top of Kevin Donovan's townhome in Arvada, Colorado.

The new business model lets homeowners save money the very first month, rather than breaking even a decade after an initial investment of $5,000 to $10,000.

Analysts with the U.S. Department of Energy's (DOE) National Renewable Energy Laboratory (NREL) found that the solar lease business is surging in southern California. And the model is being adopted in less affluent neighborhoods that had avoided customer-owned systems.

The NREL study found a positive correlation between customers outright buying solar energy systems and customers living in neighborhoods where the average household income was $150,000 or more.

But for third-party-leased solar panels, that positive correlation appeared in neighborhoods where the average household income was just $100,000 or more.

The study did not look at individual adopters, who can have many different reasons for installing solar. Still, the study strongly indicates an attraction for third-party leasing in neighborhoods with less affluence than those most likely to go for the customer-owned option.

If what's true in southern California proves true for the nation, it means that rooftop solar power could attract an additional 13 million Americans — and that could push solar energy into the mainstream.

Leasing Opens Solar to New Markets

NREL's Easan Drury is the lead author of the *Energy Policy* report "The Transformation of Southern California's Residential Photovoltaics Market through Third-Party Ownership [1]."

"What is so interesting about the southern California data is that the strong decrease in PV prices — from lower retail costs and stronger federal incentives — didn't pick up a new demographic," Drury said. "But a new business model — leasing — did pick up a new customer demographic."

Repackaging the value of photovoltaics (PV) as a simple savings on the monthly electric bill is an attractive alternative to the pitch that it will pay for itself in a decade, he said. "If someone comes up to you and says you can make money next month and forever, that totally changes how people see the value of solar."

Heather, Kit, and Grace Lammers check out their new net meter that measures the solar power generated against the power use for their solar lease. They expect their $107 average electric bill to drop to about $41 per month now that they've leased solar panels. The lease is costing them $64 per month.

Immediate Savings is a Lure

The differences in upfront costs are stark between buying and leasing. Heather and Kit Lammers put $3,000 down for a 5.64-kilowatt system that is providing 62% of the electricity for their two-story home in Erie, Colorado. If they had bought the system outright, they would have had to pay more than $9,000 with incentives, or as much as $20,000 without incentives.

The Lammers had been averaging $107 per month for electricity. Now, they're paying $64 per month to lease the solar panels, plus $41 per month to utility Xcel Energy, which represents the 38% of their electricity use that won't be offset by solar energy.

That gives them only $2 per month in savings the first year. But the real benefits come over the next two decades, when that $64 lease payment stays constant while, presumably, the price of fossil-fuel-powered electricity rises with inflation. When their two-year-old graduates from college, the Lammers will still be paying the equivalent of 12 cents per kilowatt-hour through their solar lease arrangement.

Estimated total savings for the Lammers, after recouping their original $3,000 down payment, is more than $9,000, according to their solar provider, Solar City.

NREL Employees Bring Their Work Home

At NREL, where scientists and researchers are on the cutting edge of renewable energy and energy efficiency, an unofficial motto is "walk the talk."

Heather Lammers is one of several NREL employees who are embracing the solar lease model, in which the company keeps the state and federal incentives, but the customer enjoys the lower total electricity cost.

"Solar on our home was something we've wanted but thought we'd never be able to afford because of the upfront costs — even with the incentives," Lammers said. "When we first heard about solar leasing, we jumped at the opportunity. It has made something we thought to be unreachable a reality."

NREL analyst Michael Mendelsohn signed on with Solar City and selected the company's "$0 Down Plan" with no upfront cost. He pays just $22 per month to lease a 3-kilowatt system, which covers most of his electric bill and already gives him a net savings each month. Mendelsohn is something of an energy miser: he never runs air conditioning, has installed efficient lights, has all ENERGY STAR [2]® appliances, and hangs the laundry to dry.

On the other hand, "I have a giant TV and kids who never turn off the lights," he said. "It's a great feeling to get free electricity on a sunny day."

NREL market analyst Lori Bird bought her system outright two years ago before third-party leasing was much of an option. Namasté Solar installed a 5-kilowatt system on her family's two-story house in Boulder. "It covers most of our electricity

use," she said. "We refinanced our house and rolled it into the new mortgage. We save more from the PV system than we pay extra in mortgage."

Sun Can Power Electric Cars

My wife and I put $5,000 down for a system that will provide 120% of our current electric needs. The panels, designed by SunPower and provided by Independent Power Systems, fit on our steeply pitched detached garage, facing south.

Our monthly lease payment is $13.

There is room for two more panels on the garage, but 120% of current electricity usage is the limit set by most utilities, including ours. We will get a small check back from our utility once a year because we'll send more power onto the grid than we use.

Our long-term plan is to buy an electric vehicle that has a range of about 80 miles and can be recharged in the garage each night. Once that extra draw of electricity starts to appear on our electric bill, we'll be eligible to install a couple more panels. With the help of light-emitting diode (LED) light bulbs, we hope to get all our household electricity needs and about two-thirds of the electric car's fuel needs via the sun.

Solar Prices Dropping Sharply

The steep drop in the prices of solar panels also has played a significant role in the growth of the solar market. Solar cells are being made for fewer dollars, and the costs of putting together the rest of the system and installing it are dropping, too.

The average installed cost in 2008 was about $9 per watt. That dropped to about $7 per watt by early 2011 — and now there are indications that the latest residential installs are costing less than $6 per watt.

In 2008, there was a shortage of polysilicon, a main ingredient in many solar cells — so demand outpaced supply, driving up costs. Since then, silicon prices have dropped.

Among Drury's other findings:

- Third-party leasing usually eliminates the need for home-equity-style financing and thus the need for significant equity in the home. Without the hurdle of financing, more people can adopt solar, Drury said. "Not just the people who buy Priuses or who are the first to buy the latest electronics." The benefits provided by third-party ownership — lower upfront costs, secured financing, less complexity and risk, immediate savings on the monthly electric bill — can entice a broader base of customers to adopt PV,

he said.

- Along with the lower income threshold, Drury found a surge in solar leasing in neighborhoods with younger families.

- In the Los Angeles and Orange County markets, customer-owned PV was five times more prevalent than third-party-owned PV in 2009. In 2010, the ratio had dropped to 2:1. And for the first quarter of 2011, the ratio was almost even.

Prices Vary, So Shop Around

Drury notes that lease terms vary significantly between different companies, so it is best to shop around.

What makes most sense to you? A low down payment with higher monthly lease payments? A down payment just high enough to start saving month to month?

Find out whether the lease terms will stay the same for 20 years or, say, rise 3 percent a year to counter inflation.

Prices have dropped so much in the past three years that some traditional price comparison websites might be out of date.

Homeowners contemplating leasing solar panels should read what they can and then make sure they compare prices offered by several solar lease companies, Drury said. "You do see a wide range of prices, so you want to be sure you're getting a good deal.

"Definitely do as broad a search as you can to see what the different offerings are," Drury added. "And make sure you understand the terms of your lease."

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