Solar systems: Energy from sun can pay for panels in about 10 years

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Ben Cuker lives what he teaches as a professor of marine and environmental science at Hampton University in Hampton, Va.

Max Buzard lives what he sells and installs through Royer Technical Services, also in Hampton.

Both are solar power enthusiasts, living in houses that make the energy they use. Instead of just paying electric bills, they can get checks back from clean-energy brokers and the power company.

"Photovoltaic solar panels actually start paying for themselves right after installation," says Buzard. He estimates 10 solar panels in 235-watt sizes cost about $14,000 installed; add in a 30 percent federal credit, register for renewable energy credits and you pay for the system in less than 10 years.

"Our home has 25 solar panels of various sizes. We went from $225 per month on the budget plan to $70 a month - a savings of $155. In addition, we receive solar payments of $200 per megawatt generated. Last quarter, we received $400."

For the Cukers, the savings and payback are just as great.

"Dominion (Dominion Power Co. in Virginia) charges us about $8.25 a month for staying tied to the electrical grid, so we spend just under $100 per year on our electric bill," says Cuker, who shares the house with

wife, Dawn.

"However, even though we use almost all the energy we make, we sell the credits for the renewable energy on the SREC (Solar Renewable Energy Credit) market. Since installing the first systems in 2009, we have made $1,940, which leaves us about $800 to the good each year, after subtracting what we pay Dominion."

SRECS are a way for utilities to buy the clean energy produced by anybody who makes solar energy and is tied to the grid, according to Cuker.

"Even though the homeowner uses most of the energy produced, the fact that it was done without burning dirty fuels is what is traded," he says.

"Current rates for SRECs are about $200 per megawatt."

Buzard's solar lifestyle includes a 33-foot-tall wind turbine that spins with the breezes at his waterfront home. But, he's not sold on wind turbines for individual homeowners.

"The bang for the buck just isn't there," says Buzard, 54. "I only get wind from 180 degrees because homes in the neighborhood block it at this height.

"For homeowners, solar panels are the way to go."

Buzard's solar panels are small, attractive units he installed on short poles camouflaged by shrubbery. Some are located on the roof of his boathouse. Microinverters attached to the panels convert the solar energy to power the house can use. The number of solar panels a house needs is based on its energy use, so cost varies from house to house. Typically, a turnkey installation with ten 235-watt solar panels runs about $14,000;

add in a 30 percent federal tax credit and your cost is about $10,500, said Buzard.

Cuker, 57, wholeheartedly agrees about the solar panels, but he's taken it a step further, making some innovations on his own.

Living in their 1936-built house since 1988, Cuker wanted to showcase how an old house, not just a new house, can become near energy neutral, meaning it generates at least as much energy as it uses.

In 2009, he worked with Solar Services of Virginia Beach, Va., to install solar cells. Encountering a problem because the roof on the main structure has a roof line with east-west slopes, and not the desired southern slope, he designed and built a five-part solar awning on the south side to carry the solar panels. Each awning section supports two 215-watt panels, for a total of 10.

"We adjust the slope of the awning with the changing seasons to get the best angle on the sun and maximize production of electricity," he says.

The first year, the Cuker household made about 60 percent of their electricity needs. In 2010, Solar Services installed 10 additional panels on the east-facing roof of an addition on the house. Combined, the solar panels produce about 100 percent of the home's electricity needs now, including air conditioning for summer.

In addition, the Cukers installed a solar hot water system. He also designed, built and installed a 20-foot-long "solar heat wall," using acrylic panels that heat a back room; it costs about $500 in materials. A fourth system is a solar-powered attic ventilator he created with two small solar panels and two engine cooling fans for less than $200.

The Cukers' cost for all this solar is offset by a 30 percent federal tax

credit for the $38,000 spent on the photovoltaic system, meaning it cost them about $26,600. The solar hot water system, which cost just under $7,000, also got the 30 percent credit, as well as $4,000 from a special Virginia fund that encourages clean energy, helping the hot water system pay for itself within a year, according to Cuker.

During winter, the Cukers heat the house with a ventless natural gas log fireplace for about $250 for the season; they save about $30 per month by having the gas service stopped in April and restarted in November.

"The electrical system is tied to the grid," says Cuker. "So we don't store the energy we make, but share it with the Dominion system of distribution."

Which means the house has a "net meter" installed on an exterior wall.

"It's one that counts backward when we make more energy than we use," says Cuker.