

Forecast for home market is sunny

Rebates, new rules helping to fuel interest for owners

Mark Shaffer

The Arizona Republic

Nov. 25, 2006 12:00 AM

Harold "Rusty" Weaver of Mesa said it really wasn't a tough decision to shell out an extra \$16,000 for the flat, black, 4-kilowatt solar-electric panels atop the tile roof of his new home.

After all, Weaver said he was spending up to \$500 a month on electricity at his previous home, which is 1,000 square feet smaller than his new house. The solar panels come billed as cutting his electric bills in half. Weaver figures that he will pay back his investment in about seven years with all the rebates and tax credits he will receive. Solar cells have a life of about 30 years.

"Cutting costs in the long term and doing something good for the environment seems like the thing to do," Weaver said.

Proponents of solar energy hope that will become the prevailing mind-set as the state goes into uncharted territory with a mandate that regulated electric utilities have to generate 15 percent of their energy from renewable resources by 2025. Solar energy is expected to be the heavy hitter in that effort.

Earlier this month, solar proponents recorded one major breakthrough when VIP Homes announced that it was offering incentive-laden deals for prospective homeowners to tack on solar panels to their new-home purchase in five subdivisions in the southeast Valley. VIP is the first Valley builder to incorporate solar-generated electricity into its construction projects on what could become a mass scale.

Between one-time rebates from Salt River Project and Arizona Public Service Co. of \$3,000 for each kilowatt unit purchased and tax credits from the state and federal governments, the cost of a 2-kilowatt system would be about \$5,000 and a 4-kilowatt system like Weaver's about \$13,000,

"With the way the rebates and tax credits are now, we've finally struck the balance between efficiency and affordability," said Warren Petersen, construction manager of VIP Homes.

Petersen said that if more than half of VIP's home buyers between now and the end of the year opt for the solar units, photovoltaic cells will be installed on the roofs of a 193-home subdivision the company is building in Queen Creek next year.

A different picture

But critics of solar say that this could be a short-lived honeymoon if the cost of photovoltaic cells doesn't decrease dramatically during the next decade.

The cost of the panels, excluding rebates and tax credits, is still about double about what is considered economically worthwhile for homeowners to pay and cover return on their investment over an eight- to 10-year period.

Mike Gleason, an Arizona Corporation Commission member and frequent critic of renewable energies, said he doesn't envision a day when solar will be cost-effective.

"It's just going to appeal to a small number of people with money, and beyond that, there are serious questions," Gleason said.

This is also the high-water mark for rebates and tax credits, which gradually will be eliminated by 2015 as the price of solar units is expected to fall because of the anticipated mass production and scientific

advances in efficiency.

"Solar is perfectly positioned now in Arizona to explode, and I think it will," said David Saltman, one of the nation's top experts on solar energy and CEO of Solar Energy Corp. in Solana Beach, Calif. "With the utility rebates and state and federal support and consumers wanting to get beyond oil, it's a perfect storm for this industry to thrive."

Saltman also said that refining of pure silica, a key component in solar panel construction, has been "bottlenecked" by integrated circuit chip manufacturers over the years.

"But that's going to change rapidly because a tremendous amount of money is now flowing into the capital markets trying to find a hedge against the rising prices of oil and natural gas," Saltman said. "And as more silicon finds its way to the solar industry, the price of the units will drop dramatically."

Sean Seitz, owner of Scottsdale-based American Solar Electric Inc., is gearing up for that.

Seitz said his business has more than doubled in each of the past three years and American Solar moved its construction division to 35,000 square feet of space in Tempe last month.

"The cost of the units is about half of what it was five years ago, primarily because they don't require batteries any more, the technology is more efficient and they cost less to install," Seitz said. "There also have been significant improvements in how that energy is deployed to the grid."

But one significant problem remains for solar-panel owners in APS' service area: the issue of "net metering," or how much credit they receive for power they put on the grid during peak periods.

APS customers claim that the Valley's largest utility pays only lower, off-peak prices for solar-generated energy, and that issue has been part of the proposed APS rate-hike case before the Arizona Corporation Commission.

Seitz said photovoltaic cells have been getting 1 to 2 percent more efficient each year and that the "economy of scale" in production should drive that percentage even higher in coming years.

"The computer-chip industry has been getting more and more out of the same package for years," Seitz said. "The key thing for our industry ultimately is determining what is the limit of how much we can generate from 1 square foot of solar module."

Opportunity now

According to a U.S. Department of Energy research report on solar released last year, the technology has a huge window of opportunity because world demand for energy is expected to double by 2050 and triple by the end of the century. The \$7.5 billion solar industry, 70 percent of which domestically is in California, has been growing at a rate of 35 to 40 percent annually, according to the report.

The key challenge for solar researchers is producing chemical fuels from sunlight in "storable, dispatchable thermal energy . . . new materials that withstand the high temperatures of solar thermal reactors are needed to drive applications of this technology," the report states.

That's where Neal Armstrong, a chemistry professor at the University of Arizona and solar-cell researcher, comes in.

On a recent afternoon, Armstrong was working on a generation of cells, eight of which are on a 1-inch diameter chip, which is expected to have application years down the road.

"I'm working on organizing solar cells in conjunction with inexpensive dyes and turning them into

semiconductor materials that can be turned into energy conversion," he said.

Armstrong feels that government and private-sector incentives will continue well past 2015 because "all the renewable energies are going to have to be in play because of the competition with India and China and the rest of the industrialized world for fossil fuels."

"Arizona has a combination of free sunshine and growth," Armstrong said. "And, just as soon as we have a machine where you can put sand in one end and pure silicon cells come out the other, that's when we'll know that solar energy has really arrived."