

# SOLAR ENERGY – SUNSHINE MAKES YOUR ACCOUNTANT SMILE

By Pat Rarus, Technology Writer for North Magazine

The late pop singer/environmentalist John Denver sang a love ballad with the key words, “Sunshine Makes Me Smile.” These days, California consumers and their accountants are smiling over sunshine, too, as tax credits and rebates abound from state-subsidized solar energy programs.

Jim Faaborg, president of Western Solar in Poway, who happily spends much of his workday on residential and commercial rooftops, urges both residential and commercial consumers to install a solar system now if their budgets allow.

“When we look back in time, we will see that the year 2003 was the time to get a solar energy system,” he says. “Residents benefit by getting an immediate rebate of 40% to 50%, plus a state tax credit of 15%. Businesses benefit even more by getting these reductions plus a 10% federal tax credit and accelerated depreciation.



“For either residents or businesses, this is the time to do it. Economics are driving solar sales right now. Soon the rebates will start falling off,” he says, “when the industry picks up steam. But, consumers can still get a good deal because prices should come down due to increased competition. This should allow the industry to stand on its own two feet.”

Mike and Carol Landry, who co-own Horizon Solar in San Marcos, agree. “Residential solar energy users can now get a rebate of \$4.00 a watt from the California Energy Commission’s (CEC) rebate program; that is about 40 to 45 percent of the cost of a system,” says Carol. “Every six months, the CEC decreases that amount by 20 cents. By July 1, the rebate will decrease to \$3.80 a watt; and then in January 2004, it will go down to \$3.60 a watt.”

While residential purchasers obtain their rebates from the CEC, commercial consumers may obtain rebates from either the CEC or the San Diego Regional Energy Office (SDREO).

The latter – whose commercial incentives are said to be higher than those from the CEC -- is a non-profit organization founded in 1996 as a result of the 1994 San Diego Regional Energy Plan. SDREO manages several public-interest energy programs funded through various sources, including the California Public Utilities Commission, the California Energy Commission, and the U.S. Department of Energy. SDREO also acts as a clearinghouse for energy information and public policy.

## \$30 Million in Sunshine Dollars



SDREO program manager Scott Anders (pictured at right) said they have \$30 million in funding to provide rebates for businesses who install on-site power generation, including solar photovoltaics. “The commercial market – with its economy of scale and lucrative tax incentives – *should* be our fastest growing segment, followed by new home construction,” he says. “However, in reality, we are seeing the most growth in residential retrofit systems, followed by government use of solar electricity.”



One such retrofit customer smiles as broadly as a circus clown whenever he receives his SDG&E bill. Bob Holliman, a retired Poway engineer, says, “The electric portion used to be about \$110 a month in the winter. My last bill was \$24.44.”

Last December, Bob and his wife Lorraine converted to a photovoltaic (PV) system based on the recommendation of a neighbor, who has yet to install his own unit. The Holliman’s’ 1,700-square foot, one-story house is equipped with 20 solar roof panels. These panels generate direct current (DC), which is fed through an inverter to convert it to alternate current (AC) to power home electric needs. The solar generated electricity then is fed into the home’s main service panel. After serving electricity needs in the home, any extra electricity goes back through the electricity meter – spinning the meter backwards – and fed back on to the utilities transmission and distribution grid. The ability to feed excess power back on the grid is called net metering.

When you sign up for net metering, San Diego Gas and Electric Company (SDG&E) allows you get retail credit for all the excess power back into the grid. When the sun is shining, and your solar system is producing more electricity than your home needs, the meter actually runs in reverse. At night and on cloudy days, the meter runs forward. If at the end of the month, you generated more electricity than you used, the utility company calculates your over-production and credits your account for the energy surplus. It is important to note that SDG&E will not compensate you for any excess power generated after a one year period. In other words, you cannot generate more power that you need in a one-year period.



For maximum energy efficiency, purchasers of solar energy systems should plan carefully, recommends Horizon’s Mike Landry. “They should install a system with just the right number of kilowatt hours or slightly under what they will be using.”

## Watts Your Lifestyle?

Kilowatt usage is determined by lifestyle rather than square footage of a house. How often is air conditioning used, for example? How often do electrical appliances, such as refrigerators, washers, dryers, televisions, CD players, VCRs and computers run each day?

A kilowatt (kW) is a unit of power or capacity equivalent to 1000 watts. Kilowatts refer to the amount of power a device can consume or generate. A 100-watt light bulb, for instance, will consume 100 watts when operating at full capacity.

A Kilowatt-hour (kWh), on the other hand, measures energy consumption or generation. For example, your electricity bill is measured in kilowatt-hours. A 100-watt light bulb that burns for 10 hours (100 watts X 10 hours) will consume 1000 watt-hours or 1 kilowatt-hour. On the energy generation side, a 1000 (1kW) watt PV system that operates at full capacity for 5 hours will produce 5 kilowatt-hours (1000 watts X 5 hours).

A residential system with 2.5 kW – which Anders estimates as the average household-sized solar system in the region – would cost about \$25,000. With the CEC rebate of \$10,000, the purchaser would pay \$15,000 out of pocket. Then with a State of California income tax credit of 15%, the final cost would be \$12,750.

Commercial examples are more complex. For a typical 30kW system, the total installed cost would be about \$270,000. The San Diego SELFGEN program administered by SDREO would reduce that cost by \$135,000. With a 15% state solar energy tax credit and a federal 10% investment tax credit, the net cost is \$101,250.

Then comes the depreciation savings, allowed only for businesses. A federal depreciation savings (\$128,250 x 34% tax rate) and state depreciation savings (\$114,750 x 8% tax rate) reduce the final after-tax cost to a mere \$48,465, after five years of depreciation, according to SDREO. “While the incentives are generous, SDREO encourages business customers to consult a tax professional to determine eligibility and applicability of the incentives,” says Anders.



Solar water heating is another viable technology for saving energy. Until state funding dried up last summer, rebates were also offered for residential solar water systems (\$750) and solar heating for pools (\$250).

San Marcos homeowner Debby Gearheart installed her solar water system in 1999 before incentives, and she still smiles about the savings. “I grew up in the ‘60s during the days of hippie activists,” she grins. “So, I have always been energy conscious. With two teenagers and their showers, my washing clothes, and other water uses, I think I

have saved between 25% and 45% off my utility bill. One summer my bill was only \$1.50.”

### **Wacky Prices Result in a Solar Solution**

Taking advantage of solar tax credits on the commercial side is Mark Collins, president of Evergreen Nurseries, which has five of its six landscape centers in North County: one in Rancho Bernardo, Oceanside, Del Mar, two growing grounds in the San Pasqual Valley and one packing house in North Escondido.

“Electricity prices started going wacky, so we decided to explore other options,” he recalls. “I was subscribing to a solar magazine, and we were looking at co-generation, especially because of the water costs. We have wells that run on electricity. Diesel power is cheaper but dirtier. Then, we decide to go solar; there is nothing cleaner than solar.”

Collins was led to Western Solar, who configured his systems. “Each site had different requirements,” he recalls, “We now have seven or eight systems on five properties.” In addition, Evergreen has solar panels in the refrigeration system at its Escondido packing house, where organic fruit is packed and trees are propagated.

Collins, who founded his nursery business 30 years ago, expects to recoup his \$800,000 investment in about four to five years. In addition to saving money on his electricity, he is also saving on his water bill by going against the tide, so to speak. In the summer when energy consumption peaks as consumers run air conditioners at full speed, Evergreen Nursery is making power, which goes back into the energy grid. Then, they use their sprinklers at night to keep down evaporation.



“After all the hassles with California’s energy crisis, it was a heart-thumping experience to watch our meters run in reverse,” Collins laughs.

### **Conservation is Key**

Despite his zest for solar systems, Anders admits, “There is no silver bullet to save energy. Conservation is still the most important approach that residential and business owners should take before buying a solar energy system.”

#####

*Pat Rarus is an Oceanside-based business and technology writer*