

CASE STUDY

Solar Installation| Home owner reduces energy dependence, generates economic payback

Profile

Scott Scharpen and his family live in a 3,000+ square-foot home on three acres in Wildomar, Calif. Located in the heart of Southern California's rapidly growing Inland Empire, Wildomar is a rural area, yet close to Los Angeles, Orange County, and San Diego. It also is in close proximity to the Mojave Desert and its climate tends to be hot and dry. Wildomar averages only six inches of rain per year and experiences 272 sunny days annually. July temperatures reach upward of 98 degrees and the January low is 37 degrees. The comfort index, based on humidity during the hottest months, ranks Wildomar 18 out of 100 (higher numbers equate to greater comfort). The U.S. average on the comfort index is 44.

Situation

When Scott and his family made the decision to relocate to Wildomar in the fall of 2008, he knew that the energy demands to keep his home at a comfortable temperature would be far greater than their previous home near the coast. He also anticipated that energy costs would increase higher than the rate of inflation. In addition, the previous owners of his property had shared with him that they were spending hundreds of dollars per month with their local electricity provider.

As a former healthcare consulting firm executive, Scott is a numbers person. After the first few months of paying energy costs of nearly \$1,000 per month, he knew that his numbers had to come down, and quickly.



Scott began by researching alternative energy sources, including wind, solar and geothermal. He found that for his needs, the benefits of solar energy outweighed any other renewable energy source because of the ease of installation and relatively low cost of entry. In addition, both the state of California and the Federal government offered rebates which would pay for over 50% of the system cost.

In many ways, renewable energy is still in its Wild West phase of development; with little education available and even fewer guidelines to draw from, virtually anyone can sell and install a solar system. However, as Scott was dismayed to learn, few organizations understood the industry well enough to provide the expertise he was looking for to ensure that he was selecting the right solution for his needs. That is, until he met with Ambassador Energy.

The founders of Ambassador Energy are passionate about helping the planet, and want to help raise people's consciousness about solar so that people use energy in a conscious, thoughtful way. While most solar energy solution providers simply sell solar panels through an uneducated sales force, Ambassador Energy's agents, or Earth Ambassadors, never simply count roof space; they are armed with the ability to deliver real solutions that match the end users' real needs. Before Ambassador even installed the first solar panel, they worked with Scott to take a broader approach to cutting his energy costs. For example, they helped him to change out his water heaters and add dimmers to all of his light switches.

For the solar installation, Ambassador selected its 9-kilowatt (K) solar array system. While the design of the system incorporated many variables, the 9K system was chosen primarily because Scott wanted to offset a significant majority of his electric bill, representing Southern California Edison's Tiers 3-5 (22-32 cents/watt). To achieve this offset, Scott required 9 kilowatts of solar power generation.

In a solar array system, even if a small area of an array is shaded, the entire array will cease to produce energy until the panels are again in full sunlight. Therefore, configuring Scott's system to fit on a single roof, avoiding shading issues and maximizing sun exposure, while producing 9K of solar power, Ambassador recommended a solar system comprised of 42 solar panels, split into three arrays and connected to three inverters. The three solar arrays were configured to house 10, 10, and 22 solar panels, respectively. Each array was then connected to a single inverter. The result - on any given day, under all conceivable circumstances, no more than 25% of the entire system will go offline at one time.

Scott chose to use the roof of his RV garage, which worked out well due to its optimal southern exposure. The entire installation process took three weeks, longer than a typical installation, because he wanted to maintain the integrity and aesthetics of the building by concealing the cables, and reduce shade exposure by topping some of the surrounding trees.

Objectives

- Drastically reduced energy costs
- Attractive return on investment
- Maintain the aesthetic integrity of the home
- Reduce the amount of energy he and his family was using

Results

Scott's solar system was activated on January 22, 2009. He regularly checks his inverter readouts, meters and energy bills to determine how much energy and money he is saving.

The digital readouts on his inverters display kilowatt hour usage and the number of pounds of carbon dioxide (CO₂) the system has prevented from going into environment. Over four months (from January to May 2009) Scott and his family have saved 5,100 Kilowatt hours and 8,700 lbs. – well over four tons – of CO₂.

A quick look at his electric meter also reminds him that “there’s nothing more satisfying than to see my meter spinning backwards.” To date, Scott has slashed his energy costs by approximately 60 percent since the installation of the solar system.

Reaction

“My awareness of how much energy I consume on a daily basis is higher than it’s ever been. I didn’t install solar to save the planet or to “do something green.” I did it primarily because of the clear economic payback. That said, I do take satisfaction in knowing that there’s less pollution being generated because of our decision to install solar. Now, I’m able to set a great example for my kids to be more conscious of their electricity usage and to be more self-sufficient, and what it’ll mean in their lives.”