



Community
Environmental
Council

Solar Case Studies

CEC's Solarize Programs make solar simple and affordable.

Susan and Frederick Powell

SANTA BARBARA, DOWNTOWN



System size: 2.88 kW DC STC

Type of system: 12 REC 240-watt PE modules and SMA 3000S 240v Inverter

Year installed: 2011

Installer: REC Solar

Estimated solar production/year: 4,015 kWh

Baseline utility energy use: 6,000 kWh

Portion of electricity demand met by system: 67%

Average utility cost at time of installation: 16 cents/kWh

Average cost of solar electricity over 20 years: 12 cents/kWh

Cost of system before rebate and tax credit: \$16,856

State Rebate: \$2,600

30% Federal Tax Credit: \$4,276

Final Cost to Homeowner: \$9,980

Susan and Frederick Powell had been considering switching their home to solar electricity for several years. However, it was not until the Powells heard about the Community Environmental Council's Solarize Santa Barbara program that they began to seriously examine options for solar electricity at their home. After the Powells learned of the benefits provided through the Solarize SB group purchasing program, they were quick to act and signed up for Solarize the day after the program launched. As Susan describes, "We were impressed by the reduced rate for solar panels and the vetting process for solar installers. So we just said to ourselves, 'Well why not? Let's do it!'"

The next day, the Powells met with REC Solar, one of the vetted Solarize SB installers, to discuss and design the optimum system for their roof and electrical needs. They signed a contract that same day. Within five weeks, the Powells began enjoying the benefits of solar

power from a 2.88 kW system installed on their red tile roof. The Powells were the first homeowners to install solar in the inaugural Solarize Santa Barbara program. Additionally, the City of Santa Barbara recognized the Powells and REC Solar with a 2011 Solar Design Recognition Award for the integration of their solar array into a tile roof.

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Susan says the primary motivation to go solar was the environmental benefit. "Going solar is a pretty major thing to be able to do for the environment. It does a lot more than many of the things that we do on a regular basis like recycling." In addition

to her "green-motivation", Susan notes that the decision to go solar had to make economic sense. "Over time, the decision to go solar offers great financial savings to us." Through Southern California Edison's net metering program, "in the summer our electric bills go to zero and we actually get credit for the excess electricity we create."

The Powells experience with Solarize Santa Barbara demonstrates how quick and easy going solar can be. Once they signed the contract, the system was designed, permits were approved and their solar panels were installed within just 39 days. Reflecting back, Susan says "I do think the program really served as an impetus for us to move forward. We were already planning on going solar, but the program made it so easy!"

Chris and Stacey Ulep

SANTA BARBARA, SAN ROQUE



System size: 3.29 kW DC
Type of system: 14 Yingli Energy 235-Watt panels and a SMA SB3800US Inverter and a SMA SB5000US inverter
Year installed: 2012
Installer: REC Solar / Sun Run Lease
Estimated Annual Production: 5,362 kWh
Down Payment on Solar Lease: \$5000
Average Monthly Electric Bill Before Solar Lease: \$125
Average Monthly Electric Bill After Solar Lease: \$70.25
Estimated Savings over 20-year term*: \$27,738
* Assumes 5% escalator on SCE electricity rates, consistent with historical averages

For Santa Barbara residents Chris and Stacey Ulep, the decision to solarize their home “was just the natural decision.” They’ve always been conscious of their environmental impact by recycling and turning out lights that aren’t in use. However, as a family of musicians, they use a lot of energy to power instruments, amps, and other gear.

When the Uleps began a re-model of their home in October 2011, they started thinking about how they could make their home as energy efficient as possible. Since the house was built in 1931, they incorporated upgrades to improve the energy efficiency of the property, such as new windows, denim insulation, and Energy Star appliances.

They also began considering solar so they could generate their own energy and offset the electricity used by their musical gadgets. However, they were concerned; the upfront price was prohibitive, and they had other re-model costs to consider. When Chris and Stacey heard about the Community Environmental Council’s Solarize Santa Barbara Program and reviewed a cost analysis, they decided to lease their solar

panels instead of owning them outright. This option minimized the upfront costs, set them up with a predictable electricity bill, and allowed them to produce clean energy for their home. They also appreciated how smoothly the process went with Solarize Santa Barbara. They didn’t have to research companies or figure out which technology was best; they just had to sign on the dotted line.

Beyond the financial savings, the Uleps have tracked the environmental benefits of their solar panels using Sun Run’s monitoring software. Each year the Uleps solar panels prevent the emissions of 8,150 pounds of carbon dioxide.

The Uleps completed the remodel and had their solar panels installed in February, 2012. Chris says the solar panels were well worth the initial investment. Before the re-model, their

electricity bill was averaging \$125 per month. They now pay a flat rate of \$70.25 per month -- a rate that is locked in for the length of their 20-year contract. Based on projected energy costs of electricity, the Uleps will save nearly \$28,000 over the 20-year term of the lease.

Beyond the financial savings, the Uleps have tracked the environmental benefits of their solar panels using Sun Run’s monitoring software. Each year the Uleps solar panels prevent the emissions of 8,150 pounds of carbon dioxide. Put another way that figure equates to the offset of 8,418 vehicle miles driven or the planting of 91 trees. In order to go solar, the Uleps needed to cut down a backyard tree that was shading their roof. Fortunately, tracking the positive environmental impacts of their system and enjoying financial savings every month has made the tradeoff of removing the tree to go solar an easy one.



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Robert and Ellen Lilley

EAST GOLETA VALLEY



System size: 7.2 kW DC STC

Type of system: 32 SunPower SPR 230 modules and SunPower SPR 7000m (240V) watt inverter

Year installed: 2011

Installer: Sun Pacific Solar Electric

Estimated solar production/year: 9,100 kWh

Baseline utility energy use: 13,200 kWh per year

Portion of electricity demand met by system: 69%

Average utility cost at time of installation: 30 cents/kWh

Average cost of solar electricity over 20 years: 17.2 cents/kWh

Cost of system before rebate and tax credit: \$51,120

State rebate: \$6,348

Federal tax credit (30%): \$13,432

Final Cost to Homeowner: \$31,140

Robert and Ellen Lilley were considering purchasing an electric vehicle to reduce their carbon footprint. However when Robert, an electrical engineer, began crunching numbers, the couple realized that an electric car would significantly increase their electricity consumption. Thus Robert and Ellen began considering going solar to power both their 2,500 square foot home and the electric vehicle they planned to buy.

In addition to their power requirements, the Lilleys wanted a system that was inconspicuously “in-set” flush with their red-tile roof. Ultimately, the Lilleys chose Sun Pacific Solar Electric, as they were impressed by the company’s knowledge, proven track record and ability to accommodate their custom design requirements. The Lilleys were also impressed with the price that Sun Pacific could offer because of the company’s participation in the Community Environmental Council’s Solarize Santa Barbara program.

Robert and Ellen were active participants in selecting and sizing their system. The Lilleys worked with Sun Pacific representatives to model and predict the monthly and yearly electrical output of their system. They eventually decided on and installed a

7.2 kW SunPower system. Once installed, the Lilleys took advantage of the system’s remote monitoring technology; in the first month Robert checked the system’s output, “on almost a minute by minute basis.” He was proud to discover their system’s peak power output occurred near noon on the summer solstice and was within 100 watts of the maximum output he and Sun Pacific predicted.

“It neatly took money out of the decision making process. We could simply go with the company that offered the highest quality installation.”

In just eight months, the Lilleys’ solar array produced over 7,600 kWh of clean electricity and offset 12,000 pounds of carbon dioxide. Over that same period, the Lilleys consumed 9,000 kWh of electricity, meaning the solar array met an impressive 84 percent of their energy demand.

While the Lilleys have always practiced energy conservation, now they pay attention to when they use electricity. After installing their solar array, the Lilleys opted into Southern California Edison’s time of

use (TOU) billing. Under TOU billing not all kilowatt hours are created equal; electricity costs more during peak-demand hours and less at night and in the early morning. In response, the Lilleys have shifted their heavy electrical-use activities such as laundry to the nighttime. This allows them to sell excess power to the utility during the day and purchase cheaper power in the evening – maximizing their financial savings.

Reflecting on his family’s experience using CEC’s Solarize Santa Barbara program to install solar electricity, Robert said, “CEC did an outstanding job of selecting the installers to participate in the program. When we boiled it down, we found the two companies that Solarize Santa Barbara chose really looked the best.” He also said that because the companies participating in the CEC program offered such consistent and attractive pricing, “It neatly took money out of the decision making process. We could simply go with the company that offered the highest quality installation.”

Robert offers the following advice to homeowners considering Solarize Santa Barbara, “By all means look into it. It’s a serious program that makes a difference!”

Carol Vesecky

OJAI



System size: 4.6 kW DC

Type of system: 20 Sunpower 230 Watt NE modules and SunPower SPR-4000M Inverter

Year installed: 2012

Installer: California Solar Electric

Estimated solar production/year: 6457 kWh

Cost of pre-pay lease: \$18,091

Annual Electric Bill Savings (year 1): \$1720

Total Electric Bill Savings over 20 year lease term: \$56,873*

*Assumes 5% annual increase in utility rates consistent with historic data

When Carol Vesecky moved from Palo Alto to Ojai in 2007 to farm two acres of fruit orchards with her daughter, she didn't anticipate that she would be spending as much as \$300 dollars a month on electricity. Pondering what to do, Carol — who has spent much of her life working in Russian-speaking countries on sustainable mini-farming strategies — was reminded of a design group she worked with in Siberia in the mid-1990's. The researchers were developing plans for well-insulated, passive solar, off-grid dwellings powered as much as possible by solar panels.

Knowing that California has far more sunshine than Siberia, Carol began thinking of solar power as a viable solution for herself. "I've always considered myself an environmentalist, and alternative energy has always been an attractive option," she says. "Although I had solar panels for hot water in Palo Alto, I realized it would be difficult to add solar photovoltaic panels therewith large trees shading the rest of my roof. Also, the technology was so expensive back then." Increased usage in her new home, declines in the cost of panels and the 2012 Solarize Ojai Valley group discount program helped make solar a viable option for Carol. She heard about the Solarize program through the Ojai Valley Green

Coalition, which partnered with CEC to offer Solarize Ojai Valley.

Despite the discounted Solarize price, Carol thought that going solar might be a challenge because the roof space on her property is shaded by large oak trees. A second challenge was that Carol's limited tax liability prevented her from taking advantage of the federal tax credit — a significant financial incentive on the cost of a solar array. Fortunately, Carol was able to work with California Solar Electric, one of the vetted solar installers for Solarize Ojai Valley, to address both challenges.

Adjusting for predicted increases in utility rates, Carol's switch to solar will save her \$56,873 over 20 years.

California Solar Electric designed a 4.6 kilowatt, ground-mounted solar array that was placed on an un-shaded, south-facing plot of Carol's property. The company also helped design a pre-paid solar lease to pay for her system. The leasing company was able to capture both the federal tax-credit and the state rebate, and then applied the savings from both government incentives into Carol's pre-paid lease price. Carol

was thus able to take advantage of the incentives and will enjoy 20 years of clean generation from the solar array.

Before going solar, Carol's annual electric bills totaled nearly \$2,764. Now through her pre-paid solar lease, Carol will see her annual electric bill fall to just \$1,044 dollars. Adjusting for predicted increases in utility rates, Carol's switch to solar will save her \$56,873 over 20 years.

After her experience going solar Carol extolls the benefits of Solarize Ojai Valley, "Because CEC and Ojai Valley Green Coalition vetted the installer I could have total confidence in who I was working with and know I was getting a great price." She continues, "I wholeheartedly recommend the program. Everyone from the Solarize program and California Solar Electric was easy to work with, knowledgeable and very responsive. They listened to my concerns and helped me find the ideal solar solution!"