Hope and Larry Salzer
Green Home Features

Solar Panels

We have a 26 solar panel, 8.97 kW system mounted on our terracotta clay tile roof. The system was installed by West Coast Solar in early 2019. Our household now generates a surplus of electricity, even with an electric car as our primary vehicle. Every year since the installation of the panels we have received a multi-hundred dollar check from PGE/EBCE for the surplus electricity we provide to the grid. We pay a $10-11 monthly overhead fee on our electric bill to receive electricity from the grid at night when our panels are not producing (we haven't yet invested in a backup battery). We deliberately sized our solar system to generate a surplus initially because we wanted to provide for our electricity needs when our household is 100% electrified. We have yet to transition our home's gas furnace, water heater, and stovetop to electrical options but will do so as soon as our current fixtures conk out!

According to our solar PV system's tracking app, our solar panels have generated over 30 MWh (megawatt hours) of electricity thus far in their 3-year lifespan, which has saved over 55,000 lbs of CO_2 emissions-- the equivalent of planting over 400 trees.

Energy Efficient Heating

We are eager to replace our high-efficiency (installed in 2011) natural gas furnace with an electric heat-pump model when our furnace reaches its end-of-life. (We didn't know then what we know now!)

In the meantime, we have removed all of the legacy knob-and-tube wiring from our 1928 Spanish Mediterranean home and fully insulated all of the exterior walls, ceiling spaces and crawl spaces.

Next, as we await the death of our gas-powered furnace, we concluded that our home—the building itself—is not what needs insulation. Only our mammalian bodies feel cold and need to be insulated. Therefore, as a 'Poor-Man's Technique' for solving global warming (in our small way), we bought winter-weight down comforters, thick flannel sheets, floor-length down robes, boiled-wool or shearling booties, and fingerless wool gloves for each family member (and we sometimes wear wool beanies and thick wool knee socks, when necessary). We ratcheted our furnace setting as low as we could stand and ended up at a maximum setting of 58F during the day and 45F at night (though it rarely turns that cold in Northern California, even in the dead of winter). We turn our furnace completely off in May and keep it off until mid-November.

We have no air-conditioning/cooling other than 2 floor fans for the hottest nights in two of the bedrooms. Because there are lots of windows in our home, we open windows for cross-ventilation and the breeze cools down the house sufficiently for comfort. As global warming progresses, and if our area is subject to a 'heat dome', we have been thinking about how we might cool ourselves further. A heat-pump system will solve this problem because it both warms and cools interior air.

We've planted a deciduous, California native box elder tree about 15' from the southern-facing front façade of our home where we have a giant picture window. As this tree grows up and fills out, the expectation is that it will provide passive cooling by shading the façade in the summer time and, as the leaves drop in the fall, allow light and thermal energy to enter during the winter months.

LED lighting and Dark Skies at Night Principles
We have installed LED lights throughout the property, both interior and exterior. For the exterior lights we use low wattage, yellow 'bug' lightbulbs to minimize negative impacts on migrating birds, and moth fatigue and death. All exterior lights are kept OFF at all times unless we have a specific need for lighting that patch of property, and then we temporarily turn the lights on and off manually.

Electric vehicle charger
We have a Level 2 charger (non-Tesla) mounted on an interior garage wall which is used to charge our primary family car, a Kia Niro BEV (battery electric vehicle).

Electric clothes dryer and low-water consuming washing machine
When we renovated our laundry area we replaced an old, top-loading, water-hog washing machine and inefficient electric dryer with a high-efficiency, electric clothes dryer and a low water use (HE), front-loading, Energy Star washing machine. We wash as many clothes as possible in cold water, and use only bio-compatible or greywater-safe, laundry products because the laundry waste water ends up in our (native, wildlife) garden.

We dry as much as we can (sheets, clothes, table linens, masks, reusable bags, bulk bags, etc.) on two large, wooden folding drying racks. Thus, although our clothes dryer is electric, and powered by an on-site solar array, we still try to use as little electricity at home as possible so that we can 'donate' the excess green energy we produce to the grid for others to use.

Insulation, weather stripping and air sealing
Over time, we have removed the knob-and-tube wiring originally used to electrify our 93-year-old home. Removing all remaining knob-and-tube wiring allowed us to install blow-in insulation in all of the exterior walls.

MCE (Marin Clean Energy) or EBCE (East Bay Community Energy)
We are East Bay Community Energy customers (EBCE), and purchase our electricity through their 100% Clean Energy plan. We produce an annual surplus of electricity via our rooftop solar panel array so we don't use a lot of electricity from the grid except in real-time during the darkest quarter of the year when our panels don't meet our electrical use. It is then that we are dependent on EBCE to supply us with electricity from clean-energy sources.

Full-house greywater system

Dig Cooperative designed and installed our whole-house greywater system, which collects the drain water from 3 bathroom sinks, 3 tubs/showers, and the washing machine. Our greywater is collected in a 35-gallon greywater holding tank, which is located in an exterior utility closet. From the holding tank the greywater is pumped to 10 mulch-basins distributed in 2 areas of our back garden. There are 5 mulch-basins on each side of our back deck. Look for the lavender-colored capsules semi-submerged in the soil. This color indicates that recycled water is in use.

Rainwater catchment system

We do not yet have rainwater catchment cisterns installed on our property. However, we completed Phase I of a rainwater system installation in 2016. When the walls were open during bathroom renovations, we installed the interior rainwater supply lines which would supply rainwater to the toilets and the laundry machine (the interior uses where building codes allow rainwater to be used). The rainwater supply line is stubbed-out to the exterior of the house waiting for Phase II to proceed. Phase II is when we would install rainwater catchment tanks and a dedicated pump to move the rainwater from the tanks to the interior of the house. Any additional rainwater collected but not needed for allowable interior uses can be used for exterior landscaping irrigation during the dry season. We've minimized our irrigation watering needs by converting our landscaping to very low water use, mostly locally-native plants and trees, so that we use little supplemental potable water for irrigation.

Plastic Avoidance

Our family has aspired to send nothing to the landfill for decades. We haven't quite achieved that goal, but we have worked hard to significantly reduce our landfill recycling waste streams. It takes effort not to generate trash, but it's extremely important and we continue to find novel, creative solutions to improve.

We buy in the grocery store bulk section, choose plastic-free packaging, patronize the East Bay's four great refill stores (FillGood Refill Store, Re-Up Refill Store, Three Stone Hearth, and MudLab), take our own food containers and bags to restaurants to put our take-out food into, take our own refillable water bottles and drink containers (coffee, Boba, etc.) everywhere, use a SodaStream to make carbonated beverages, and lean into our local area Facebook 'Buy Nothing' group. We minimize our use of any amount of synthetic fibers, have our own backyard composting system for all of our food and yard waste (which we still endeavor to minimize), and 'Refuse' often. ("Refuse" is the first of the 4 Rs, with Reduce, Reuse, and Recycle secondary.) If online shopping is your addiction, there are also online purveyors of zero waste products. A couple of the sites I have patronized and have been happy with are: Life Without Plastic and EarthHero.

Food and Diet

Five years ago our family began shifting heavily to a plant-based diet. We started by choosing to be mostly vegetarian with the occasional 'pescatarian' meal. Then, as we read about the world's fisheries beginning to collapse and how ocean acidification (caused by global warming) continues to threaten sea life, we also limit our seafood consumption.

Now, as we continue to learn about our choices and their consequences, we are transitioning away from soy (a major driver of tropical deforestation) and moving toward vegan options for butter, plant-based milks, and so on. We choose organic, whole foods (not prepared or processed) to the extent possible, and purchase mostly locally-grown, in-season fruits and vegetables.

We read labels carefully and reject anything containing palm oil, as the palm oil industry heavily contributes to deforestation. We also avoid imported foods, as they have high transportation carbon footprints; because carbon emissions from international transportation are not accounted for in any country's emissions, no one is responsible for reducing them.

Kathy: I have listed the description of the green house features of my house in green, and my friend and fellow garden tour host Stefanie Pruegel's sustainable home features in blue.

Bird-friendly Features

We have "Dark Skies at Night"-approved lights and CollideEscape screen on our picture window to stop bird / glass collisions. Double hung windows were installed as they have exterior screens, which prevents the glare and reflection that result in bird/glass collisions. (Did you know that a billion birds a year are estimated to die from bird / glass collisions in North America every year? We have not had a bird collision since we installed the CollideEscape screening and the screens on the double-paned windows.)

MCE (Marin Clean Energy)

Marin Clean Energy is our non-profit energy provider. All electricity provided from clean, renewable sources through their Deep Green program & generous buyback program for excess energy generated from rooftop solar.

Skylights

We have skylights with solar-powered shades: because the shade is solar-powered, we received a 26% federal tax credit on the both the purchase and installation. This made the skylight / shade combination less expensive than the plain skylight. (Plus it is really nice to be able to close the shade to keep the light out on hot days.)

Induction range

30" GE, and a 5 year extended warranty. Plus $300 rebate from BayRen. Mike's recommendations for research and comparison shopping: Wirecutter, Consumer Reports, and Home Depot and Amazon reviews.

Read this article from Rocky Mountain Institute on the adverse health effects of cooking on gas stoves to learn why you might want to consider replacing yours (hint, it involves high asthma rates and lowered IQ in children, heart effects, and increased susceptibility to allergens, just to name a few):
https://rmi.org/insight/gas-stoves-pollution-health/?fbclid=IwAR2Yh0psJwOo18erqHzaZMQAf-oMCcnVZwrZ8s83h-Cst8oq33OlsBZEcf4

Heat pump for heating and cooling air

Ducted mini-split heat pump installed by EcoPerformance Builders. The compressor is located outside of a bedroom, in the setback on the side of their house. The air handler is in the attic. The system is very quiet. We received a $1,000 rebate from BayRen for sealing up the house. The cost was about $23,000 to provide a brand-new heating and cooling system for our 1,500 sq. foot house.

Reflective Roof

Our light grey roof reflects the sun rays, instead of absorbing them.

Foundation Materials

Our foundation was a special mix designed by Verdant Structural Engineers. The mix contained fly ash to offset the carbon footprint of the concrete.

LED lighting

LED lighting is used throughout the house.

Double-paned windows

Our windows are all double-paned, so they provide great insulation. In addition, we chose double hung, because their screens are on the outside (and not on the inside, like a casement window has) they prevent bird / glass collisions.

General Contractor

Our General Contractor for the major home remodel project was Sebastian Francese General Contractor

Architectural advice

Architectural advice was provided by Vol Carter, volcarter@gmail.com. 510-507-1379

Brondell 1000 bidets

The bidets save trees, the water needed to produce the toilet paper, the chlorine used to bleach it, and the energy needed to produce, package and transport it See this eye-opening Scientific American article on bidets. Plus, bidets are fabulous! Once you have had a bidet, you won't want to be without it!

Rooftop Solar Panels

Our 8KW solar panel system installed by SunWork, a non-profit that specializes in installing solar panels on homes with low electricity bills. Sunwork estimates that it can install solar on small homes for 30% less than for-profit companies. We received a Federal tax rebate of 22% and bought our system for $13,650 (after the tax credit). We estimate that it will have paid itself off in less than 5 years, after which we will be saving thousands of dollars a year. (Our heating and cooling system, clothes dryer, stove, and one car all run on electricity.)

E-mail me at Kathy@KathyKramerConsulting.net and ask how much power our panels have generated since they were installed! (As an idea, in the first two and a half months our panels generated 3.88 megawatt hours of energy.

This is the equivalent of:

The greenhouse gas emissions from 6,911 miles driven by a car, or,

The carbon emissions of 270 gallons of gas, or

the carbon sequestered by 45 tree seedlings grown for 10 years.

(This data came from here:
https://www.epa.gov/.../greenhouse-gas-equivalencies...)

Solar panel information:
Number: 23
Brand: Q Cells
Model: Q.PEAK Duo-G6+ 350
Power: 350W nominal (standard test conditions, 25C cell temp & 1000W/m2 insolation)
260W at nominal module operating temp (43C) & 800W/m2 insolation
Efficiency: 20.1%
Cells per panel: 120 (2 sets of 60)
Degradation: max 0.54%/yr
At least 85% power in 25 years

Inverters and Other
Brand: Enphase
Inverters: IQ7+
Max AC output: 295W
so, max array output: 6785W

Communication gateway: IQ Envoy

Electric vehicle charger

Electric clothes dryer

Electrical panel upgrade

Other? Please describe.

These features came from my friend (and fellow garden tour host) Stefanie Pruegel's home; her house was also on the East Bay Green Home Tour. I have listed Stefanie'ssustainable home feature descriptions in blue:

You can see Stefanie's home on the Green Home Tour here:
https://www.youtube.com/watch?v=fK4XL8jqMBQ

Energy Assessment (2016)
Getting an energy assessment was my first step, before any measures were taken. It was done by ELEM3NTS, a contractor on BayREN's energy auditor list. Alfredo Bacchari was excellent, and

the report very helpful to make decisions moving forward. Cost: $500 before a $300 rebate from BayREN (paid out when energy efficiency measures are taken.)

Insulation, weather stripping and air sealing (2016)

I got fiberglass insulation in the attic (R-38 batting), walls (R-38 loose fill, blown in through holes that were later sealed) and under the floor, accessed through the crawlspace (R-19 batting). Air sealing is very important (detect and seal cracks and air leaks in the attic and subfloor). Weather stripping includes door sweeps, sealing around doors and windows, etc. All was done by SDI Insulation. Cost: $4,113 before a $2,519 rebate from BayREN.

Solar Storage Battery (2021)

Electriq Power Pod model EPP-600-1004 (DC) 11.4kWh capacity, 7.6kW max output. Cost: $11,550 before the 26% tax credit ($3,003)

Smart Panel (2021)

Span Smart Panel 100A - 200A main breaker with 225A bus, 32 circuits. Cost: $4,000 before the 26% tax credit ($1,040)

Heat pump water heater

Heat pump hot water heater (2020): Ruud Ultra hybrid electric water heater, 45 gal. Installed by Eco Performance Builders. Cost incl permit etc. $6,350 before $1,250 in rebates from BayREN and East Bay Community Energy.

Washing machine

Washing machine (2016): LG WM3670HWA front load, Energy Star from Sears. $750 (incl delivery) before $150 rebate from PG&E.

Rainwater catchment system (2018)

I have three 1,000 gal Norwesco tanks, daisy-chained. Tanks from “Make a buck” Jeff (800-400-7932). Cost: $750 per tank incl. delivery. Installation by Gray Water Landscape Design. Cost: approx. $2,000.