



Case Study: Silicon Valley Smart Home

OutBack Grid/Hybrid Power System Installation with Energy Storage



Overview

Nestled next to Palo Alto and Stanford University, the phrase “high tech” thoroughly understates lifestyle expectations in Menlo Park, California. It was with the center of this hub for green living and home technology as a backdrop that aspiring home builder Brent Brown laid out his ambitious plans for a more intelligent home even by local standards. Brent envisioned a new home for himself and his family (which includes 4 children) that would get as close to net-zero living as possible in a dense suburban setting.

His goals were clear: He wanted secure and independent living along with the ability to save on energy costs. And he wanted to achieve it with as strong a cultural fit as possible in a neighborhood where trying out any and all new, cool and viable technologies is viewed as part of daily living. With over 300 days of sunshine available annually, Brent’s alternative energy research started and ended at solar electricity, which, he observed, “had come a long way and was more affordable and cost-effective than ever.”

Above all, Brent wanted off-grid capability in the suburbs for a very pragmatic as well as an economic reason. After all, even the smartest home conceivable, loaded with all the latest in control, lighting HVAC, networking and entertainment technology, is helpless without a source of power. “Without off-grid capability, when the grid is down you have to leave all your solar electricity up on the roof—that was very eye opening for me when I did my research” noted Brent. “With a hybrid system, for a few dollars more you have an insurance policy against storms and third-party disruptions, which otherwise are a real concern. With electricity production on-site to run your home, you create independence.”

System Specifications

Location: Silicon Valley, California

Components: 8kW Radian Series Inverter/Charger, (12) EnergyCell RE Batteries for 16kWh capacity housed in an IBR-3 and OPTICS RE System Monitoring and Control



Today, most homes have the potential to become their own power producers, and when interconnected with the grid the sun is an awesome source of power! With OutBack Power’s technology I can take full advantage of it.”

Brent Brown
Homeowner





Objectives

- Ensure secure, independent living and back-up a fully equipped “smart home”
- Reduce electricity bills in a high-cost area
- Make a strong innovative technology statement with a practical, cost-effective solar installation benefiting from both California’s SGIP program as well as NSHP program (New Solar Home Partnership)

Solution

After finalizing on OutBack Power as the best source for critical hybrid system components, Brent teamed with Jason Andrade at West Coast Sustainable for design and implementation. One condition was minimizing the systems visible rooftop profile from the road, and with multiple roof lines and angles defining the striking 8,000+ square foot residence, Jason chose an AC-coupled approach using rooftop microinverters to extract the maximum output possible from the 24 individual panels without resorting to tilting. The rooftop inverters interface through an 8kW OutBack Radian 8048A Grid/Hybrid inverter/charger, which, according to Jason, “provides a supersmooth transition along with adding energy storage capability to the system, using OutBack batteries.” The battery complement of three strings of OutBack 200RE EnergyCell batteries is housed in the OutBack UL-listed 3-shelf Integrated Battery Rack (IBR-3) commented Jason, “I love the rack, it’s very clean!”

As Jason explains the system design, it is “back-up primarily, to take full advantage of the California Self-Generating Incentive Program (SGIP) rebate—16kWh provides half the required rating. It took a bit of paperwork since this was our first SGIP application, but it all went well. And we also designed for system expansion, with a provision to add between 6-8 more panels based on the energy produced over during the first year, so as to stay in California Tier 1 pricing.” This was with an eye toward future needs. The home includes two electric vehicle (EV) charging stations, but Brent does not own an EV yet—as he said, “this is great reason to get one!” Another future load will be an irrigation well, with drilling just started, contributing to the home’s “urban independence” technology theme.

In order to accurately monitor system performance, production and health, Jason and Brent are taking advantage of OPTICS RE system monitoring and control which is now a standard feature in new OutBack solutions. Explained Jason, “OPTICS RE is both a valuable homeowner feature plus really aids the installer. Our company is in Redding, which is a nine hour round trip, so being able to dial-in for troubleshooting and preventative maintenance is invaluable.” Homeowner Brent Brown agreed, adding “I really like interacting with OPTICS RE; in fact I probably use it too often! It’s great, it gives me a more granular view of the system’s performance; I especially like watching for demand load spikes in consumption.” Brent’s sense of satisfaction extends to the rest of the system: “You don’t notice it, it basically maintains itself. It is not time-consuming, the home just kind of operates. I couldn’t be happier.”