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Silicon Valley Smart Home

GRID/HYBRID CASE STUDY

SYSTEM SPECIFICATIONS	
Location	Silicon Valley, California
System Power	16kWh capacity
Components	• 8kW Radian Series inverter/charger • (12) EnergyCell RE batteries in IBR-3 • OPTICS RE system monitoring and control

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."

CHALLENGE

- Ensure secure, independent living and back-up a fully equipped "smart home"
- Reduce electricity bills in a high-cost area while helping reduce peak load to the grid
- Make a strong innovative technology statement with a practical, cost-effective solar installation benefiting from both California's SGIP and NSHP programs

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01/2020

SOLUTION

After finalizing on OutBack Power as the best source for critical hybrid system components, Brent teamed with Jason Andrade at West Coast Sustainables 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 inverter/charger, which, according to Jason, "provides a super smooth transition along with adding energy storage capability to the system, using OutBack batteries." The battery complement of three strings of OutBack EnergyCell 200RE batteries is housed in the OutBack UL-listed 3-shelf Integrated Battery Rack commented Jason, "I love the rack, it's very clean!"

As Jason explains the system design, the energy storage provides load shift using OutBack's FLEXtime intelligent AC input modes to remove loads from the grid during peak hours, taking full advantage of the California's 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. The system was designed with an eye towards 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."

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