

Photovoltaic Installation Portfolio

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Commercial Office Building Roseville, CA



Summary and Benefits

System Size:	11.232 kW AC
Annual Production:	19,261 kWh
Old Electric Bill:	\$335
New Electric Bill:	\$151
Utility Cost Savings (25 years):	\$64,979
% Power Offset:	56%
% Electric Bill Offset:	45%
IRR over 25 years:	5.8%
Simple Payback:	10 yrs.

System Profile

Modules:	60 Green Power 230W
Inverters:	30 Enphase D380 Microinverters
Standoffs:	Conergy Flat Tile Hooks
Racking:	Ironridge

Site Profile

The office building owners required a PV system to offset their electric usage and provide a tax write-off for the year. We sized the system to accomplish this by utilizing all of the southern facing roof space on their building.

Components Profile

This PV system is a commercial 208 Amp interconnection into a 600 Amp service. It has a monitoring system from the local utility as well as through the Enphase Enlighten monitoring and analysis website.



Rollins Solar House Livermore, CA



Summary and Benefits

System Size:	2.787 CEC-AC
Annual Production:	4727 kWh
Old Electric Bill:	\$263
New Electric Bill:	\$129
Cost Savings (25 years):	\$88,027
% Electric Bill Offset:	51%
IRR over 25 years:	22.9%
Simple Payback:	8 years

System Profile

Modules:	18 Mitsubishi PV-UD-185MF5
Inverter:	Fronius 4000 kW
Racking:	Unirac

House Profile

The homeowner had predetermined which panels and which size system he had wanted to use. The system size was a bit unconventional. Mr. Rollins wanted a system size that would only get him out of the highest tier pricing, leaving him with a substantial electric bill, but a system that would maximize his return on investment. The home run electrical run was quite lengthy- over 100 feet. We walked the customer all of his option for the run. After careful consideration and explanation, we decided to have the conduit run occur on the roof line all the way to the other side. There were many obstacles to overcome on this path.

Components Profile

System install was without issues. However, after completion problems arose. After installing, we found the inverter overheating. After 16 hours of troubleshooting, it was determined the inverter company had mis-sized the inverter. We replaced the inverter (at no cost to the homeowner). At the same time, the homeowner decided he wanted to move the inverter. We moved the inverter to a different location at cost for the homeowner.



Lang Ground Mount

Los Altos, CA



Summary and Benefits

System Size:	7.56 kW STC – DC; 6.7 kW CEC-AC
Annual Production:	9440 kWh
Old Electric Bill:	\$600
New Electric Bill:	\$214
Cost Savings (25 years):	\$170,295
% Power Offset:	42%
% Electric Bill Offset:	64%
IRR over 25 years:	22.1%
Simple Payback:	8 years

System Profile

Modules:	36 Sanyo 210W NKHA
Inverter:	36 Enphase 210W Microinverters
Racking:	Unirac Ground Mount

System Profile

The Lang family had a large area in their backyard not being used. They decided to put the land to good use by installing a ground mounted solar system. We drilled all the holes, trenched the electrical run and navigated all the jurisdictional codes to install the Lang system in under 7 days. The electrical run was exceptionally tricky due to the distance, landscape, and multiple barriers to traverse. The Lang's were so happy with their install.

Components Profile

Because of multiple shading objects in the back yard (large trees), the Lang's decided on a microinverter system with full monitoring to track the daily and yearly output. The highly efficient Sanyo solar panels were the obvious choice to keep the array in a smaller area and minimize shading intrusion.

Inman Solar House

Redwood City, CA



Summary and Benefits

System Size:	7.60 kw STC PV
Annual Production:	10,931 kw
Old Electric Bill:	\$369
New Electric Bill:	\$42
% Power Offset:	65%
% Electric Bill Offset:	89%
IRR over 25 years:	26.2%
Simple Payback:	8 years

System Profile

Modules:	36 SunPower 210 W
Inverter:	SunPower 7000W
Standoffs:	SunPower
Racking:	Uinrac

House Profile

The Inman's have a brand new home in San Mateo County. They were looking to maximize the space they had on their roof with solar. Because of the intricate nature of their roof with many angles, shapes, and directions, the Inman installation was quite complex. They ended up with 5 separate arrays in 5 locations. Three of the five locations had different shading issues that required exacting measurements to give the customer an accurate portrayal of expected output. Had this system been installed after the summer of 2008, they would have been a perfect candidate for micro-inverters. However, they were forced to utilize a single inverter system. An inch or two either way or the system would put out substantially less production. We spent hours determining, following up, and measuring to maximize their efficiency.

Components Profile

Single inverter solar systems are put together using electrical strings. Because the system had 5 array locations, we had to determine the least intrusive way to run these lines to minimize voltage drop, wiring costs, and system aesthetics. After careful consideration of many options, we approved the best wiring diagram for the Inman's.



Hiebert Solar House San Jose, CA



Summary and Benefits

System Size:	PV@9.9 KW CEC/AC
Annual Production:	16400 kWh
Old Electric Bill:	\$388/mo
New Electric Bill:	\$0/mo
Cost Savings (25 years):	\$248,632
% Power Offset:	92%
% Electric Bill Offset:	100%
IRR over 25 years:	16.8%
Simple Payback:	10 years

System Profile

Modules:	54 Sunpower 210 BK-U
Inverter:	2 X Sunpower 6000W (SMA)
Standoffs:	Sunpower
Racking:	Unirac

House Profile

Because the solar system is on the front of the house, the physical look or the product was extremely important. We consulted with the home owner to determine the panels and system that had the best look. A symmetrical layout was designed and approved by the homeowner. The homeowner also decided he wanted to zero out his electrical bill and prepare for future plug-in hybrid and higher energy use in the future. The system was designed to meet these expectations for future energy expansion in the household.

Components Profile

The 11.3Kw DC system size is one of the largest systems you will see on a residential home. The system required 6 electrical strings and 2 inverters. The roof is a 50 year metal. The metal roof is laid over a wood shake roof. This is one of the tougher roofing surfaces seen in the residential solar market. 7 inch lugs had to be used to secure the system to the base structure. Because metal roofs dent easily, we had to be careful and minimize the amount of time on the roof to make sure the roofing structure stayed in "like new" condition.

