

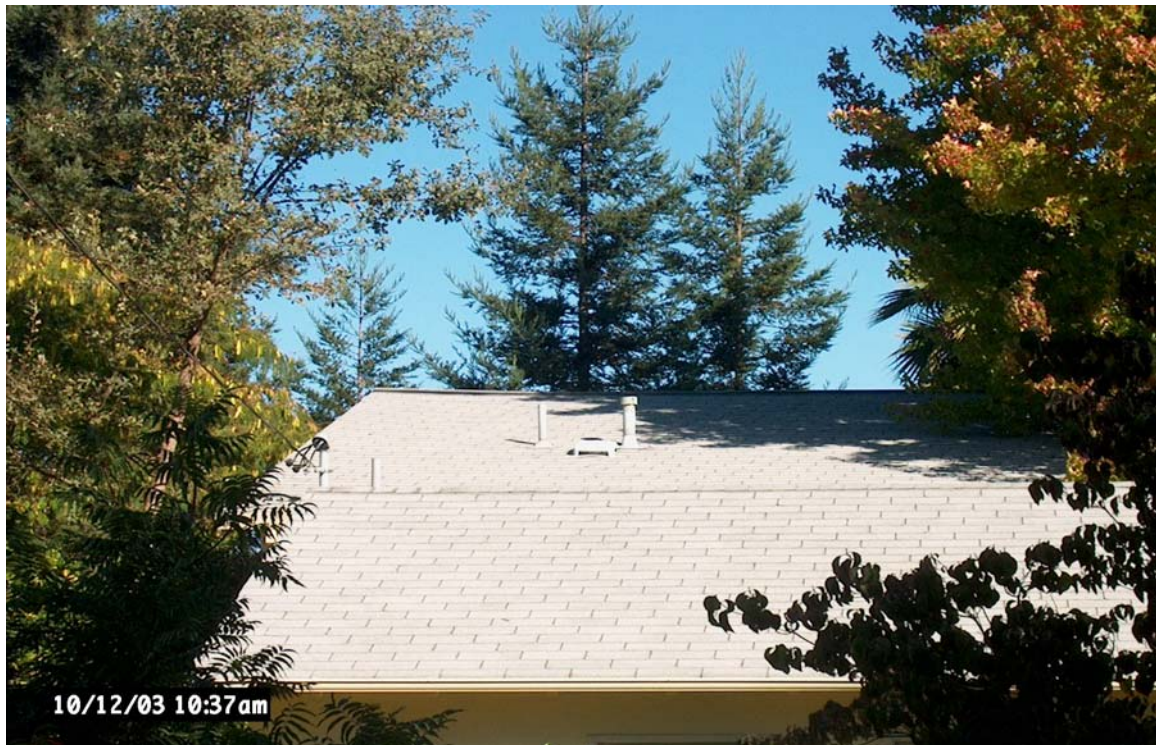
New Family Addition!

After significant soul searching, encouragement from my son Oren, and removal of a large tree, a 2500 watt photovoltaic (PV) power system was finally installed at our house on February 22, 2004. Each solar panel produces a maximum of 150 watts at optimal (cold) temperatures and measures 30 x 62 inches. Twenty panels are configured in two “strings” providing about 9.7 A (max) at 275 volts DC for our location. An inverter transforms this power at 94% efficiency into 240 volts AC, feeding about 2.5 KW directly into our house circuit breaker panel at midday during the summer.

The system provides far more power than we use during the day, and the excess is fed back into PG&E’s power grid, spinning our power meter backward. During non-daylight non-producing hours, we draw power back out. Our system has no off-line energy storage capability (batteries) so PG&E serves as our energy “bank.” Expected PV system lifetime exceeds 25 years and requires no maintenance except occasional rinsing with the hose during rain-less summers. Typical panel degradation reduces power production by less than 1% per year.

The total cost of our solar system was just over \$21,000 including installation, Santa Rosa city permit fees, and PG&E metering changes. It will pay for itself in about 13 years at 2004’s interest rates and cost of energy. Two critical factors weigh heavily in the economic viability of PV systems. First, the State of California has made a commitment to reduce dependence on fossil and nuclear power by providing PV system purchase rebates. In our case, this amounted to \$3.80/watt, or a \$9500 purchase rebate. A tax credit provides another \$1500 cost reduction for a final, out-of-pocket cost of \$10,000.

The second factor is PG&E Time-of-Use (TOU) metering that pays us about 31.5¢/KWh between Noon and 6 PM on weekdays from May 1 through October 31 when solar power production is highest. This also corresponds to periods when power grid demand is highest and PG&E needs the energy production. At other times, we buy back power at rates between 8 and 11¢/KWh. We only pay a \$6/mo. minimum power/metering charges during the year. Charges for any excess power usage are paid once per year in late February (when our service changed to TOU metering). PG&E does not pay us for any surplus power we may supply to the grid.



Before installation: note the large tree shading the roof in the morning hours.



The Solar Pathfinder maps out panel shading during the year to evaluate PV system efficiency.



With the tree gone, the roof is ready for panel installation.



Mounting rails are installed and awaiting the panels.



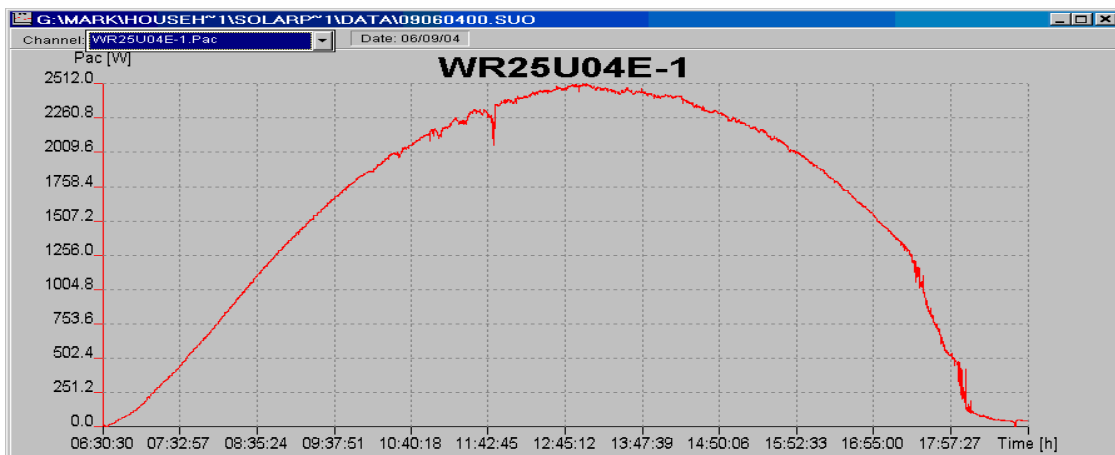
Twenty installed panels facing south (note N. roof access to clean gutters).



A new digital Time-of-Use Meter was installed.



DC PV array cut-off switch and inverter.



Typical power output on a clear June day is nearly 20 KWh. Four months of power production from February to June has produced about 1900 KWh.