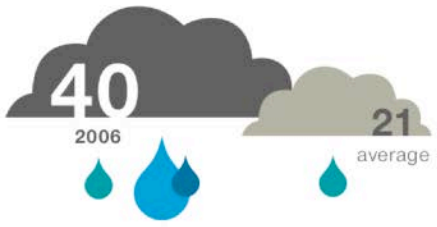
Monitoring your sunbandit® Energy For Everyone Solar H2O System

Targeting System Performance

Determining estimated system performance is not an exact science.

We aim to provide you with a realistic range of your system's expected performance. Many variables unique to your home are considered in our calculations. Knowledge of how we determine your system's estimated production will help you understand production fluctuations and maintain reasonable expectations of your system's performance.



A weather anomaly in Mar-Apr 2006 produced 40 days of rain. On average, Honolulu experiences 21 rainy days during these months.

Seasonal Production Curve

Depending on the time of year, your ACTUAL monthly PV production will differ from the AVERAGE monthly PV production estimated for your system size. Actual production varies month-to-month and fluctuates with seasonal changes in sun angle, length-of-day and weather conditions. Additionally, expected system production may vary from year-to-year. For example, a rainy month this year may be a sunny one next year. In general, you will see higher production in summer months and decreased production in the winter.

One way to confirm proper operation is by using the temperature gauge located on the hot water tank. The system uses two separate heating elements to maintain proper temperature.

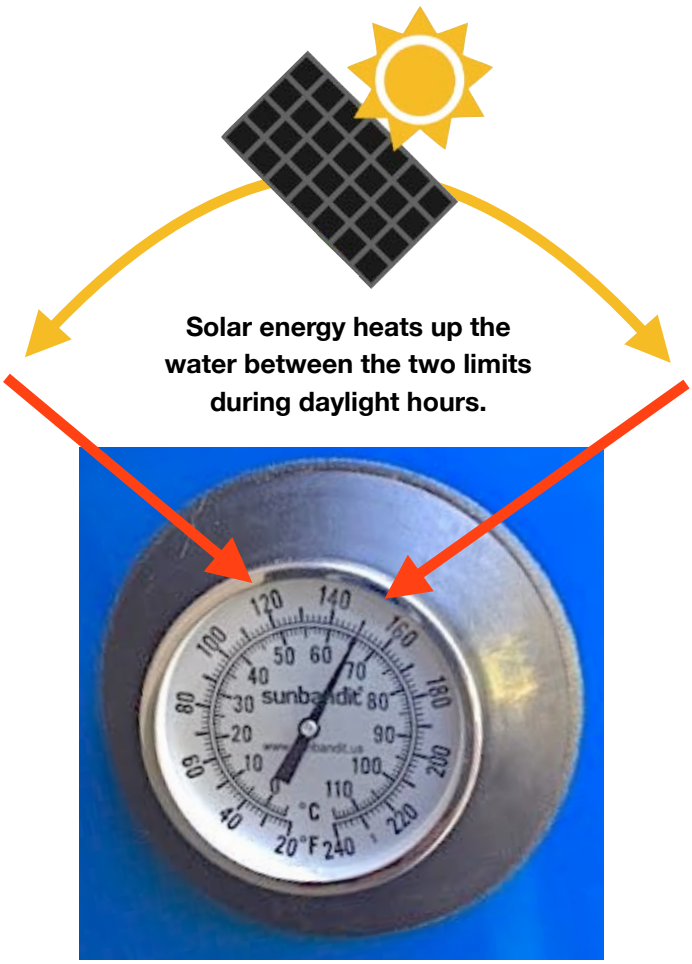
The **lower limit** heating element is set to approximately 120 deg F. and is supplied by the Utility (grid power). It is designed to only turn on if the water temperature falls below a minimum setting so you never run out of hot water. This may occasionally happen during days of poor weather or if you exceeded the solar resource your tank collected that day.

The **upper limit** heating element is powered by the solar PV panels and set to the maximum thermostat temperature. This will show as 140 - 160 deg. F on the temperature gauge. Be aware that the PV panel production and solar monitor may occasionally shut off if the water temperature exceeds the upper limit.

You should notice that the tank temperature will rise during solar daylight hours and fall during the evening. If the temperature stays above the lower limit, that is an indication that you are only using solar PV power to heat your water.

Don't forget about how seasonal and poor weather conditions may affect system performance. Long summer days with clear weather will always provide more hot water and higher tank temperatures than short winter days or poor weather conditions.

Lower Limit:
Grid power is used below this temperature so you don't run out of hot water during poor weather events or if you run out of reserve capacity during the night.



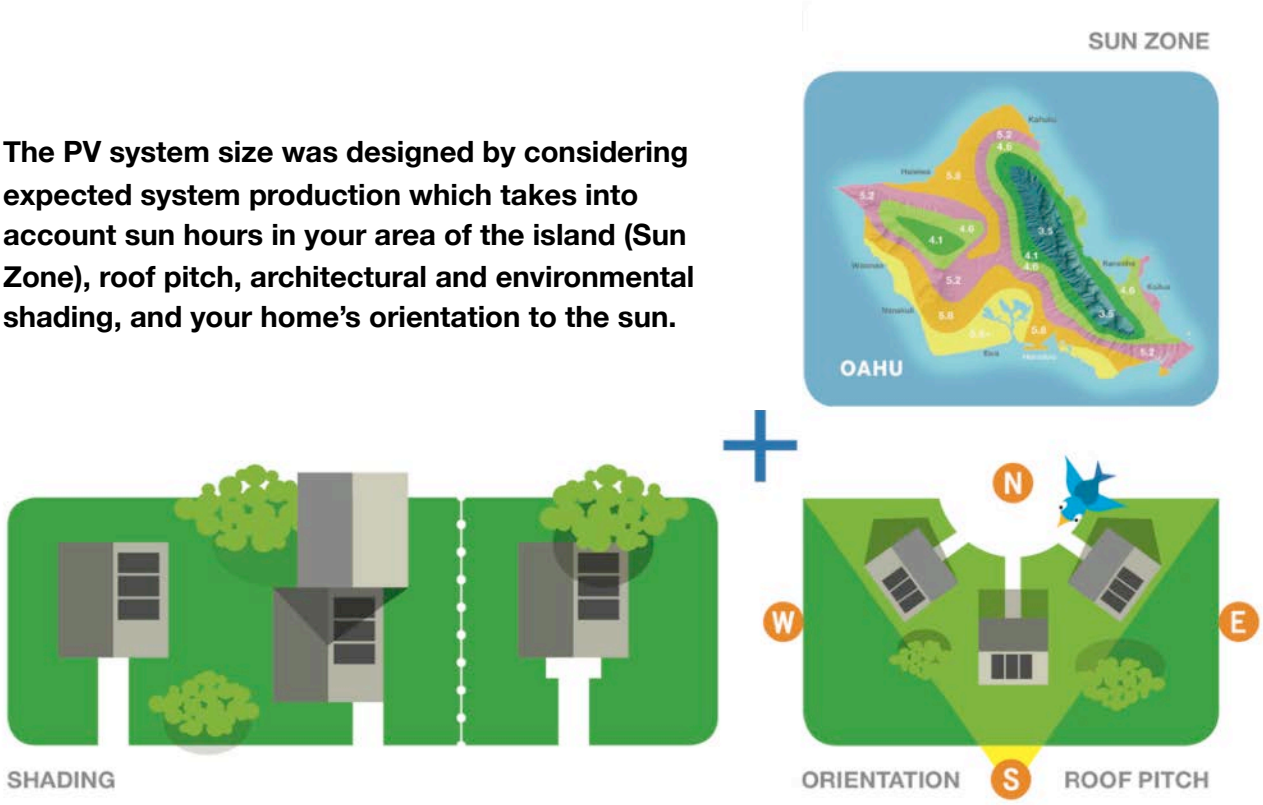
Upper Limit:
Automatically turns off solar power when it reached this temperature.

You can also use the PV energy monitor to track the solar PV system production. Just like how tank temperatures may fluctuate on a daily and seasonal basis, so will solar PV production.

The solar PV monitor that came with your system tracks accumulative solar PV energy production in kilowatt-hours (kWh).

Accumulative Solar PV kWh Production

The PV system size was designed by considering expected system production which takes into account sun hours in your area of the island (Sun Zone), roof pitch, architectural and environmental shading, and your home's orientation to the sun.



Based on the amount of PV modules that were designed with your system and the Sun Zone your home is located in, we can estimate the expected AVERAGE kWh production of your system. You can then use this estimated production number against the solar PV monitor to track system production.

In the spirit of this not being an exact science due to all of the variables described above, we put together the following AVERAGE daily PV kilowatt hour (kWh) production chart as a guide. **Simply find the appropriate Row and Column that best fits your system specifications to find the AVERAGE daily PV kilowatt hour (kWh) production.**

Summer production can be up to 20% higher than average, while winter production can be up to 20% lower (please refer to the Seasonal Production Curve).

	Windward Low Sun Zone areas	Central Avg. Sun Zone areas	Leeward High Sun Zone areas
4 Panel System	**4.6 kWh/day**	**5.8 kWh/day**	**6.4 kWh/day**
6 Panel System	**7 kWh/day**	**8.7 kWh/day**	**9.7 kWh/day**
8 Panel System	**9.3 kWh/day**	**11.6 kWh/day**	**12.9 kWh/day**

Example:
Your solar PV monitor read 300 kWh at the beginning of the month and 576 kWh at the end of the month. That means that the PV system produced 276 kWh for that particular month.

576 kWh minus 300 kWh = 276 kWh

Now let's say there were 30 days in that month (or the amount of consecutive days between readings).

276 kWh divided by 30 days = **9.2 kWh/day** AVERAGE system production.

Compare the actual daily system production again the chart above making sure to factor in any seasonal (+/- 20%) or recent weather conditions. Also, keep in mind the production can be affected by non-use (i.e. vacation) or solar capacity being reached which will shut off the solar PV resource when the tank reaches maximum temperature.