ORGAN MOUNTAIN
SOLAR & ELECTRIC

Understanding Solar PV Production

Understanding how your system performs is important. This document provides an overview of your system's basics, including important concepts such as what a "grid-tied system" is and how "net metering" works.

Please watch the following video illustrating the basic operation of a standard grid tied PV system:
How do grid-tied solar power systems work? - YouTube

The overall production (and overall offset of your energy usage) from your system will vary throughout the year – day to day and month to month. Each system will be designed to offset a different estimated percentage of your annual electrical usage that was determined at the time of the initial design. In order to achieve the estimated percentage offset with a grid tied system, we need to understand the concept of net metering.

Please watch the following video regarding net metering:
How does net metering work? - YouTube

Key things to understand about net metering and the estimated percentage offset for your home:

• The system was designed with a target for estimated annual production. Because we are working with the sun, these estimates can vary from what we actually experience any given year by as much as +/- 10% due to variations in weather patterns.
• The home's annual electricity consumption will likely change with time – along with the total percentage offset. At the time of design, the estimated percentage offset was likely extrapolated based on the 12 months prior, meaning that as your electrical usage changes, so will the percentage of offset provided by your PV system.
• Individuals and powered appliances use electricity differently. The number of kilowatt hours (kWh) used month over month and year over year fluctuates based on how and when electricity is used, how many people are occupying a home, if electrical appliances are added or changed, and so on. If you purchase a PV system calculated to offset 100% of the home's estimated usage and then you add appliances, add occupants, or change the way you use electricity in the home, it will impact the realized percentage of offset that was built to in the original PV system design.
• Each utility treats net metering slightly differently. Some credit any excess production (PV produced kWh's that exceed the kWh usage of your home) at a kWh level while others may

monetize the value of the kWh at the time the kWh's were produced to credit your account. These policies also change over time. It's important for you to work directly with your utility to fully understand current practices and options that you have.

Impacts to production:

• Production estimates are based on the site at the time of install. Given that solar PV systems last for a long time, it is important to maintain clear and consistent sun exposure for your system. As trees grow, neighboring housing units or fixtures change, additions to your home or changes to rooftop obstructions (like vent stacks, chimneys, etc.), so will the overall production of your system change.
• Degradation: Just like the plastic lawn furniture out on the deck, your solar system will slowly degrade over time. As degradation occurs, your system will produce less over time. Current module manufacturers typically warrant that solar panels should be producing at least 80% of what they did on day one – after 20-25 years. Please refer to your solar panel manufacturer website to find specific details about the warranty terms and conditions that apply to your solar panels.
• Snow, dust, and smoke do impact production. Consider it as another version of an obstruction keeping sunlight from fully reaching your solar modules.