

Santiam Valley Ranch Solar Photovoltaic (PV) Project

2014 - 2016

Kathy Bridges
& Ken Dunder



In 2014, Santiam Valley Ranch applied for grants to begin implementing conversion from wood heat, supplemented by an HVAC heating/cooling system, to a solar photovoltaic system. The goal was to install a 6.6 kW solar electric system.

The purpose of the project is to support farm business expansion toward agri-tourism to attract customers interested in farm stays, renewable energy and naturalists seeking the opportunity to experience wetland prairie habitat and its unique birding/amphibians/reptile fauna and flora. To achieve this, the second home on the farm was in the process of being converted to visitor lodging. Installation of the PV system is consistent with other efforts on the farm to promote renewable energy.

We contacted Solar Ki, LLC, an Energy Trust of Oregon certified consultant and designer for solar electric systems. On June 16, 2014 we signed a contract with Solar Ki, LLC, owned by Laura Uhler, to provide a grid-tie solar electric design and installation for a 6,600 Watt system. The total estimated cost from Solar Ki was \$28,220; the completed cost in 2016 was \$29,796 with Santiam Valley Ranch providing \$3,624 toward the project.

Based on Laura Uhler's extensive solar electric system proposal and bid, we worked together to apply for grants and incentives. Laura received commitment from Energy Trust of Oregon for \$9,240 in incentive grants.⁽¹⁾ We also received agreement from PGE for net metering and interconnection service for the electrical system.⁽²⁾ Lastly, we received approval from Marion County for structural and electrical permits following submittal of an engineering review of the home and garage. Because the lodging structure was old, we hired Gerald Jaramillo, Professional Engineer from Eugene, to review the roof of the building. His findings noted that the existing roof was consistent with the intent of the Oregon's Structural Specialty Codes 3111.4.8 and 311.5. The cost to hire the structural engineer was \$660. The system also included "MyEnlighten" software allowing us to track production of the system. To install "MyEnlighten," we had to hook-up internet to the home at an additional cost of \$120 with Viser. With this preliminary information and investment, we ventured forward, applying for two grants: one from USDA and the other from Oregon Department of Energy.

(1) EnergyTrust of Oregon provides Oregon residents or businesses who use PGE or Pacific Power & Light and who chose to pursue renewable energy an incentive, and which is based on total cost of the system. Similar incentives are available from other utility vendors.

(2) Net metering allows the consumer of energy to work with the utility to interconnect with the electric distribution system. It allows the consumer to use energy created by the utility when needed, while also allows the consumer to provide surplus energy generated by the consumer to go into the electric distribution system. When receiving federal and/or State grant assistance, surplus energy generated by the consumer is "donated" back to the electrical grid. If one pays for the system outright, consumers can sell their surplus energy to the grid.

On July 1, 2014, Kathy prepared the grant for the USDA Rural Development for a REAP (Rural Energy for America Program) grant. Our request was for \$7,055. The proposal failed initial funding but was automatically carried over to the next round of funding. Additionally, USDA-REAP added new requirements for “Environmental Benefits,” which had to be substantiated with re-evaluation of the project. This information was submitted on April 7, 2015. The USDA-REAP request was funded September 21, 2015 for the amount of \$7,055.

On January 20, 2015, Kathy prepared the grant for the Oregon Department of Energy for a RED (Renewable Energy Development) grant. Our request was for \$9,877. ODE requires an application fee of \$500. The application passed the completeness review on February 11, 2015. ODE requires a technical review fee, which in our case the cost was \$296.31. The application passed the technical review on September 8, 2015 and the project was funded for the amount of \$9,877.

Throughout this process, Laura Uhler worked with Energy Trust, USDA-REAP and ODE-RED notifying them of the status of the project and updating them about improved equipment for the project. The new system size increased from 6.6 kW to 6.615 kW.

The solar electric system was installed on January 20-22, 2016. Marion County approved the structural and electrical inspection on January 26, 2016. Portland General Electric connected the meter on February 2, 2016. Energy Trust of Oregon finalized the system on February 8th at which time the system was turned on. ODE inspected the system on April 13, 2016.

Financing of the project must be paid up-front to the contractor. Energy Trust of Oregon’s payment went directly to the contractor, Solar Ki, LLC, upon completion following inspection by ETO. Funds from USDA-REAP was received on March 23, 2016. Funds from ODE-RED was received on August 18, 2016.



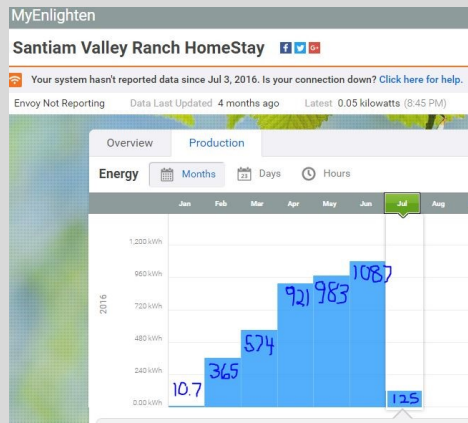


- Equipment installed:**
- * Twenty-one LG 315W Solar Panels
 - * Enphase S280W Microinverter System
 - *Combining Disconnect with Integrated Monitoring Hardware
 - *Ironridge Roof Mounting System
 - *S-5-S Clamp for roof mounting
 - *Enphase Envoy-S to Enphase Enlighten monitoring and analysis software for remote maintenance and management

Production Statistics Enphase Monitor

Feb 8-29 365 kW hrs
 March 574 kW hrs
 April 574 kW hrs
 May 983 kW hrs
 June 1087 kW hrs
 July 1-3 125 kW hrs

Average kW hrs for four complete months (March-June) = 891.25 kW hrs/month





Santiam Valley Ranch

Santiam Valley Ranch is committed to clean renewable energy.

There are 27,015 watts generated by solar panels and 21,000 watts generated by a wind turbine. Combined, these systems provide up to 48,015 watts that provide all the power necessary for ranch operations.

These efforts were supported by USDA - Rural Development, the Oregon Department of Energy, and the Energy Trust of Oregon.

Make a difference and make the change.

Solar Ki PV Designed & Installed by Solar Ki, LLC
 www.solarki.com (541) 602-6909 CCB# 171374



Sign at entry to driveway provided by Solar Ki, LLC

The Big Burn

On July 3, 2016, a pickup was parked on the north side of the home. It spontaneously caught on fire and spread quickly to ignite a tree resting above the vehicle. Wind from the north veered the flames to the home, engulfing the entryway. The fire department was called and appeared within 7 minutes even though the fire occurred around 10:00 p.m. The fire swept into the home. Fifteen fire trucks came from as far away as Lyons and Albany ensuring that the fire would not spread onto trees close by. The metal roof contained the fire within the home, however the home was destroyed by flame and smoke. Our insurance company, Countrywide Financial, did a fabulous job and has helped us through this horrible crisis. We are now in the process of replacing the home.



**Sincere appreciation is extended to our volunteer fire fighters and to
Turner Fire Department!**

When the fire department folks arrived, Ken urged them to protect the solar panels on the south side of the home. Because of the metal roof and because of protection afforded by the fire departments, only three solar panels were destroyed. Unfortunately, the new meter base and inverter base were destroyed by heat and smoke. A few weeks later, the solar panels and roof mounting system were taken down, tested by Solar Ki, LLC, and stored for reattachment on the new dwelling.



Laura Uhler, Solar Ki, LLC, testing solar panels and inverter.



Cleaning solar panels and stacking in garage for the winter.



Cost for replacing and reinstalling the electric photovoltaic project is covered by insurance with Countrywide Financial.

MOVING ON...

Since July, it has been a very painful process to bid farewell to our second home and its prospects for our agri-tourism endeavor. Demolition has occurred; today there is no sign of the cabin that brought years of joy to duck hunters, farm workers and to our own family. This was our home when we began Santiam Valley Ranch in 1980.

It has taken several months to design the new dwelling. It includes a south-facing garage which will become the future site for the 6.615 kW solar photovoltaic system. Construction should be completed by the summer in 2017. We will share the design and installation next year.

In the meantime ... **Make a difference and make the change. It is easy to switch from non-renewable to renewable energy systems. And make sure to insure your investment!**

Kathy Bridges & Ken Dunder
Santiam Valley Ranch, LLC