

Oregon Department of Energy

Reduces the long-term costs of energy for Oregonians



Santiam Valley Ranch owner inspired by the possibility of energy independence

Five miles east of I-5 just south of Salem and near the City of Turner sits Santiam Valley Ranch, a family-owned farm that breeds, rears and harvests fish, wildlife and crops, and uses renewable energy. Locals often refer to it as the “old buffalo farm” because in the 1950s and 60s ranchers raised buffalo.

Today, Kathy Bridges, a first-generation farmer, owns and manages the 150-acre property with her husband Ken Dunder. They also live on the farm. Four of their six sons – Luke, Andy, Jake and Nils – also help run the farm, which has 96-acres devoted to the USDA Natural Resource Conservation Service/Wetland Reserve; 35-acres for warm-water aquaculture pond stocking; duck hunting during winter months using the aquaculture ponds; lamb production; and 18-acres for certified organic crops. Luke plans to take-over ownership of the aquaculture side of the business.

Santiam ranch strives for energy independence

The “talk” about renewable energy during the early days of the Obama Administration inspired Bridges to set a goal to make the ranch energy independent.

“It wasn’t easy but we were determined,” says Bridges. “Although we had to pay for the entire project upfront and before incentives kicked in, it eventually paid off.”

In 2010, Bridges hired Kardon Construction from nearby Lyons to install a wind turbine. The crew used 8,000 pounds of rebar and 50 yards of concrete weighing 200,000 pounds to anchor the turbine in a field south of the old barn, with easy access to the PGE transmission lines. By that September, they completed installation of the 20-kilowatt turbine that weighs 9,350 pounds.

Based on the area’s potential and previous windy years, Energy Trust of Oregon provided wind projections, expecting the system to generate about 24,000 kilowatt-hours of energy a year or most of the farm’s energy. However, wind is an intermittent resource and changing weather patterns impact wind energy output.

Further research re-invigorates wind project

During the 2012-2013 wind data readings, for example,

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the Turner area experienced an unusually mild winter. This and additional research by Bridges and Dunder motivated the couple to explore other renewable resources to offset the turbine's slow days. In 2012, they installed solar panels. Both renewable sources provide a sufficient source of energy.

Wind energy incentives

- The farm received support from the Oregon Department of Energy's Business Energy Tax Credit program, using the pass-through option for \$30,788.
- Additional funding came from USDA's Rural Energy of America Program in the form of a \$20,000 grant; a U.S. Department of Treasury grant for \$36,087 and \$35,250 from Energy Trust of Oregon.
- The PGE Net Metering Program tracks excess energy and transfers it to the grid, giving the farm a credit on utility bills.

Adding solar brings electricity cost to zero

Oregon State University's Energy Efficiency Center performed an energy assessment funded by the USDA Rural Development Program. The assessment suggested that installing a solar system could offer up to 70 percent of the farm's energy use and reduce CO₂ emissions by 36,441 pounds per year.

"We also wanted to expand our aquaculture facility to allow tilapia fish growth in indoor heated tanks with water temperatures between 82-86°F and welcomed the reduction in our electricity bills," says Bridges.

Bridges and Dunder hired Solar Ki, LLC a certified solar consultant, designer and contractor that began the work in December 2012.

Engineers first reinforced the barn structure then Dunder and son Luke replaced portions of the roof on both barns. The engineers also upgraded the 50-year-old, archaic electrical panel in the equipment barn and installed rooftop solar panels.

Within three months, the solar system produced



Next generation farmer Luke Fitzpatrick plans to take-over ownership of the ranch's aquaculture business.

10,405 kilowatt-hours. After four months, it exceeded expectations showing a total output of 13,000 kilowatt-hours. During this period, the farm's electric cost dropped to zero for the first time in 31 years of operation. The farm uses 100 percent renewable energy, saving the family about \$4,000 annually on electricity bills.

"We expect this to change during the winter months with wind increasing and solar decreasing, but for now, the current output of both systems provide a maximum benefit," says Bridges. "We don't depend on non-renewable coal for our power source."



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Contractor with Solar Ki LLC

Bridges says if she had to do it again she hopes that funding organizations can offer farmers more help with the application process and upfront costs.

“At the end of the day we all want what’s best for our communities,” says Bridges.

Bridges and her family plan to purchase an electric vehicle they can charge, using both renewable energy sources. Bridges says she would also like to install a small hydro system and a ground-source heat pump.

“But this is way in the future,” she says. “Hopefully I’ll see this through in my lifetime.”

Solar energy incentives

- The total cost for this solar project was \$82,843, of which the Oregon Department of Energy provided \$28,000 from its Renewable Energy Development grant program.
- The farm also received \$20,400 from Energy Trust of Oregon, \$10,351 from USDA-REAP.

Energy Incentives Program

The Oregon Department of Energy’s Business Energy Incentives program includes tax credits for small premium projects, energy conservation and alternative fuel vehicle infrastructure, along with grants for renewable energy development.

The [Oregon Department of Energy’s website](#) offers details on each of these programs, projects that qualify, opportunity announcements and a link to sign up for regular email updates.

Also visit online the [U.S. Department of Energy](#), [Energy Trust](#) and local utilities for other possible incentives.



20-kilowatt wind turbine at Santiam Valley Ranch