The Porto Protocol

More than just a commitment.

Case Study

Epona Wine - *Striving for Sustainability*

1. The project was to evaluate, and implement and measure the benefits of, a solar power system for the Epona Winery in Woodland, WA, USA, towards the goal of reaching renewable energy independence.
2. Motivation: Although electricity prices in this area are low, due to the primary source of generation being hydropower, we wanted to make the property fully energy-independent, using a renewable energy source. Wind is too mild here for wind power, and we don't have enough moving water on the property for hydropower. So we focused on solar panels.
3. Activities: We researched the competing solar panel installers/providers, and chose Green Light Solar for its clear advantage in satisfied customers. Green Light advised that a 6kw system (18 panels) is right for our property. This is a fairly small system, because our farmhouse/winery is already very energy-efficient: The entire building is earth-sheltered and highly insulated. Water comes from an on-property well, and there is no natural gas or propane on the property, so the solar power would provide energy for light, heat, cooling, water, hot water, appliances, water supply, and telecommunications.
4. Activities, Part 2: The cost of the solar system was US$20,000 ($17.7k Euros). There is a 30% federal tax credit, paid as a credit from the next year's income taxes, and also a 40% Washington state incentive, which is paid over an eight-year period. Assuming we keep this system and continue owning this property for the coming eight years, the after-incentive cost of the system will be about $7000 (6.2k Euros). Payout for the project will take about eight years. It would be six years, but for the local electric utility's (Cowlitz PUD's) customer-unfriendly program whereby they will purchase and pay for only for the amount of power that you use (i.e., we cannot be a net power seller over the course of a year). If we had been permitted to be a net seller of electricity into the grid, we could have enlarged our solar system (there is plenty of room on the south-facing roof for more panels), and we could have supplied the broader power grid with low-cost, highly-sustainable solar power. Payout was calculated based on the cost of the power we otherwise would have purchased from Cowlitz PUD; the PUD has a fixed $19/month (17 Euros) meter fee, which is our only cost from the PUD.
5. Results: The solar system is working beautifully. We have generated about 6% of the total solar energy production in the Cowlitz PUD service territory! Peak power is generated at 1:15pm on sunny days, and about 90% of the power is made between 10am and 4:30pm. We are marketing the winery as fully self-sustaining in its energy usage. In summer, we are a net seller of power into the grid. In winter, we are a net purchaser from the grid. We do not yet have the ability to operate independently from the grid, but that will be possible once a practical energy storage system is available (such as dual tanks of aqueous salt solutions, operating as a battery).
6. Lessons Learned: If you can afford the up-front construction cost (we paid cash, but we could have taken out a loan from Green Light Solar), and if you plan to remain in the property for at least eight years, then a modern solar panel system can provide your electricity needs, when tied to the local utility's grid.

7. This is a great addition to our “sustainability story,” where one of our biggest achievements is growing and making wine from modern varieties of grapes, which have great disease resistance, and therefore do not require anti-fungal sprays, which are expensive and can sicken vineyard workers and damage the soil’s health.

Sources:

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c. https://greenlight-solar.com/
d. https://www.cowlitzpud.org/efficiency/community-solar/