

Climate Change Research Strategy - Energy Efficiency Solutions

On-farm Energy Pilot Case Study – Rosnay Organic Wines, Canowindra

Rosnay Organic Wines is an organic vineyard and orchard situated in Canowindra, NSW. An on-farm energy system using solar panels, zinc bromine flow batteries and peer to peer energy trading were installed as part of NSW DPI's Energy Efficiency Solutions On-farm Energy Pilot program.

The NSW DPI Energy Efficiency Solutions Project implemented 7 pilot projects across 8 sites to demonstrate innovative technologies and practices to improve on-farm energy efficiency, energy security and productivity while reducing on-farm energy use, costs and emissions. The pilots were implemented at farms located across NSW in intensive sub-sectors including dairy, horticulture and feedlots. A rigorous evaluation process was undertaken to select proponents to participate in the pilot projects, with NSW DPI contributing 50% of total project costs. This case study summarises findings from the Rosnay Organic Wines pilot project.

Rosnay Organic Wines



Context

Rosnay Organic Wines is a family-owned winery and fruit growing business located in Canowindra, NSW, approximately 300 km west of Sydney. Certified organic wines, olives and figs have been produced at Rosnay by the Statham family since 1997 and sustainability is a key component of the business's ethos.

Rosnay's batteries and inverters



Pilot concept and results

To address energy security issues related to the farm's location at the end of power infrastructure and to improve sustainability at Rosnay, farmer Sam Statham has installed a grid connected 30 kW solar photovoltaic and 40 kWh flow battery storage system and connected to a peer-to-peer (P2P) energy trading platform. The total cost of the new energy system was approximately \$190,000 and the benefits of the system include:

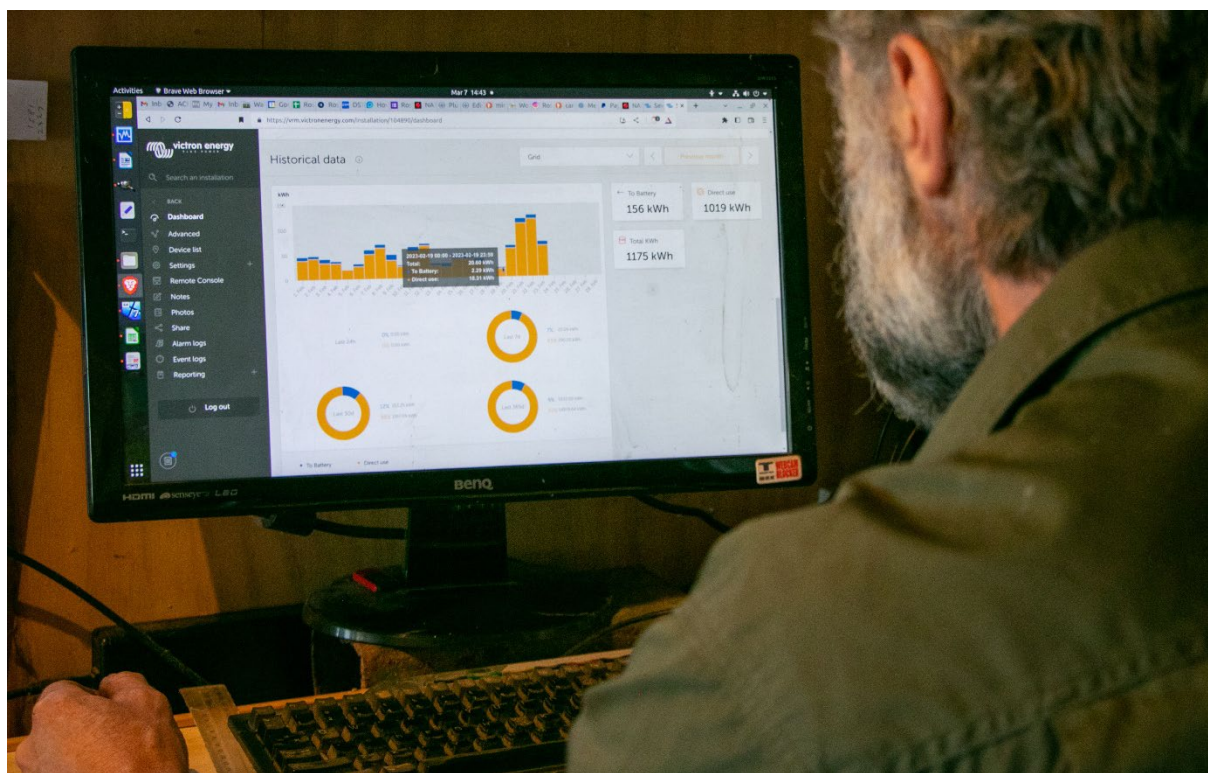
- Reduced energy costs and carbon emissions while improving energy security by minimising power outages and the financial impact of outages.
- The farm has transitioned to three phase power and retired the farm's unreliable, old diesel tractor which was running a power take off (PTO) generator. This has eliminated the tractor PTO fuel and maintenance costs and the increased power supply has allowed

more value adding activities to take place on the farm, reducing costs and improving product quality.

- Via a smart phone or computer, the system provides visibility of critical loads, battery storage levels (which back up the critical loads), non-critical loads and imports and exports of electricity to the grid. Using this data, Sam Statham analyses daily, weekly and monthly energy usage patterns to modify the farm's operations to further reduce dependence on grid electricity.
- The zinc bromine flow batteries provide continuous power even when the sun is not shining and have 100% depth of discharge range, are recyclable at end of life and do not present a fire hazard.
- Excess solar energy generation is traded via the P2P platform to other users, including to locations on the farm that are on separate meters, to minimise imports of energy from the grid and attain a better rate for generation that is exported than from a feed-in tariff.
- The farm has installed sub-surface irrigation, pumping during the day to utilise solar energy generation.

Commenting on the results of the project, Sam Statham said, "Overall, the system has provided great cost savings because a lot of our operations can be at no cost because we're doing them at the right time. When the sun is shining, our usage of power has increased because our production has increased in the last few years, but our bills have reduced and we've also got capacity to do a lot more than we had before".

Rosnay's energy monitoring system



A short video about this project can be viewed at <https://www.dpi.nsw.gov.au/dpi/climate/energy/clean-energy/on-farm-energy-pilot-projects>

Winemaking at Rosnay



Acknowledgments

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