



Case Study

Pokolbin – winery in the Hunter Valley

Archetype

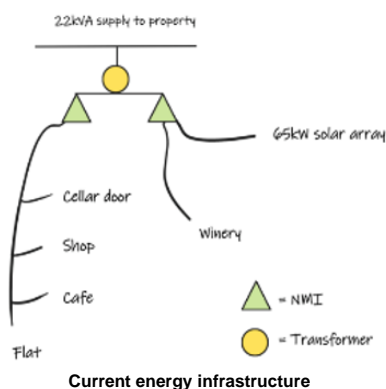
The **Single Enterprise** archetype is defined as having all energy assets and consumption contained and simply configured within a single geographic property.

Background

This Hunter Valley winery is certified carbon neutral and crushes approximately 120–150 tonnes of grapes per harvest a year. The business spends approximately \$20,000 annually on power with its largest energy loads include crushing and processing equipment and refrigeration.

The winery has already installed 65kW of solar which covers 70% of the energy use of the farm, but must export excess power to the grid, rather than share it across the property.

Energy cost reduction and sustainability are key drivers for this farm business. Particularly as the landholder considers the associated energy costs to expand operations and support increased electrification.



Challenges

- Increasing cost of energy
- Limited energy data transparency
- Exporting excess solar rather than sharing between existing on farm meters
- Reliability risk during the vintage season of insecure supply of electricity
- Site constraints



Keith Tulloch
Wines in the
Hunter Valley

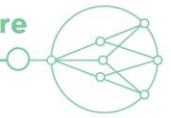
Feasibility findings

The site is not suitable for a stand-alone microgrid due to prohibitive capital costs outweighing non-financial value drivers. A grid connected microgrid is marginally feasible and would require more solar and a battery which encroaches on productive land use. Unless agrivoltaics are of interest, a microgrid is not feasible.

Several other energy interventions can help alleviate energy challenges and serve the value drivers of the winery. However, utilities currently lack fit for purpose products and services to deliver value. For example, meter consolidation is likely the best 'lowest cost' way to optimise on farm generated energy and reduce energy costs. Yet few retailers facilitate meter consolidation and large customer tariffs that won't break the business model of smaller ag enterprises.

Motivators

- Carbon negative goal
- Resilience to black outs
- Resilience to extreme weather events
- Expanding the scale of production



Recommended solution

Four non-microgrid options are recommended for consideration:

- Meter consolidation or virtual net metering
- Modest solar and battery purchase
- Virtual Power Plant (VPP) participation
- Agrivoltaics trial

The ideal solution depends on the farmer's strategic priorities and value drivers. Land availability for solar PV installation remains a considerable constraint for this case study and so the winery has chosen to proceed with meter consolidation.



Wine making facility

Our assumptions

If space was readily available, a grid connected microgrid could offer marginal benefit by comparison to 'business as usual' in a strict financial sense. However, once reliability, resilience, and sustainability benefits (e.g. competitive advantage from decarbonisation) are factored in, the benefit to the winery increases.

Unless considerable non-financial returns also underly the business case, a microgrid is a marginally beneficial solution for single enterprises of a similar size.

Opportunities to reduce barriers

Consumer energy data is difficult to access from utilities. Ag producers want to better understand their consumption behaviour, verify billing and tariff suitability, and integrate their data into external smart enabled farming programs. As power of choice and the internet of things plays a bigger role in farming simple real time consumer data access will become a necessity.

Developing products and services suited to consumer needs are critical to the energy transition. Again, meter consolidation and virtual net metering are simple products and services that could help ag producers optimise existing energy assets and reduce the need for additional investments resulting in reduced network utilisation.

Tariffs that reflect local production and use of energy should be factored into the development of products and services relating to consumer energy resources and ag productivity.

Additional value streams

Non-financial value drivers that strengthen the business case of microgrids include:

- **Reliability:** grid outages disrupt production, degrade equipment
- **Back-up supply:** motivated by disaster risk or remote geography
- **Asset optimisation:** many farmers have oversized their solar across multiple meters due to export limits
- **Decarbonisation:** increasing market pressures for carbon reduction
- **Local grid:** farmer interest in sharing between farms, community energy

These values are often hard to measure, vary in importance from one business to another, and the farmer is sometimes not the only beneficiary. Networks can be beneficiaries of the additional services microgrids offer, however, market regulators and utilities do not provide adequate mechanisms to value and reward benefit received.

More information

For further information please visit qff.org.au/projects/microgrids or email Madie Sturgess, madison@qff.org.au.

