Mitchell Wines

Managing tariffs by managing demand

SOUTH AUSTRALIAN WINE INDUSTRY ASSOCIATION INCORPORATED

Prepared by 2XE

Supported by Government of South Australia, Green Industries SA

MITCHELL CLARE VALLEY

How Mitchell Wines is managing electricity costs by controlling annual load and remaining a small business customer

Mitchell Wines is a third-generation family winery producing red and white wines in the Clare Valley Region of South Australia. As the winery has grown, so have its electricity bills. Mitchell Wines is now taking control of their electricity consumption.

Over 2018-19, Mitchell Wines noted that the winery had consumed **158MWh** of electricity and that exceeding **160MWh** per year would move the business to a **large business tariff.**

Mitchell Wines participated in the **Winery Energy Demand Management Program**, funded by Green Industries South Australia (GISA) and managed by the South Australian Wine Industry Association (SAWIA). Through the program energy consultants 2XE were engaged to find out how changing tariffs would impact their electricity bill.

In South Australia, the **quantity** of electricity you use per year will govern **which tariff** you are allocated by **SA Power Networks (SAPN)** – either a **large** or **small** business tariff (Figure 1).

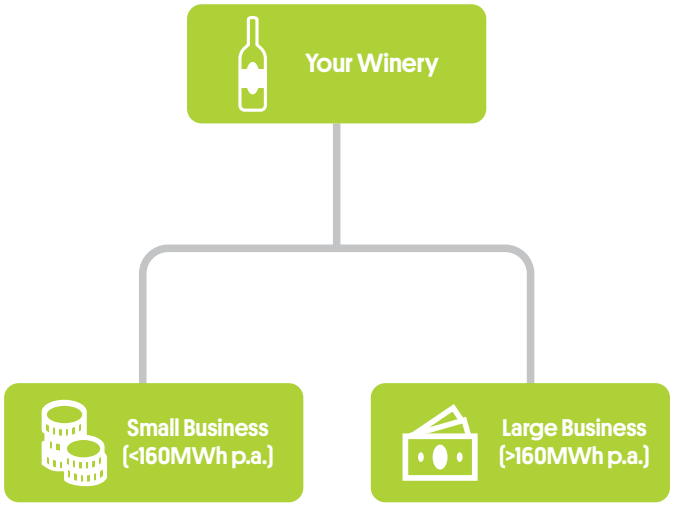

Figure 1: Categorisation of businesses

Small business tariffs are charged based on electricity **consumption (kWh)**. Large business tariffs are charged based on both **consumption (kWh)** and **demand (kVA).**

An analysis to understand the impact of Mitchell Wines moving onto a **large business tariff** found that Mitchell Wines' electricity costs would increase by **10.4% p.a.** if they transitioned to a large business tariff, with an **agreed demand.** However, Mitchell Wines could reduce this increase to only **1.8% p.a.** if they transitioned to a large business tariff, with an **actual demand.**

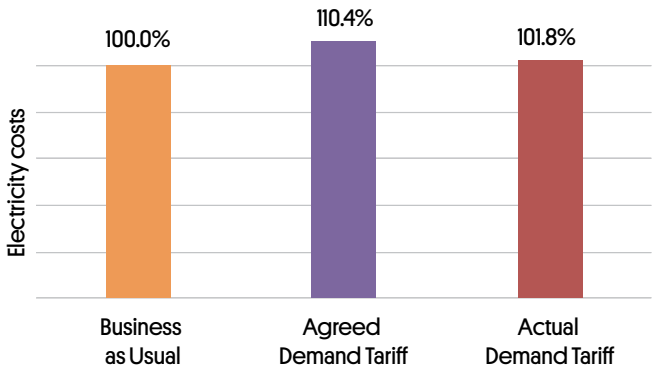

Figure 2: Forecast network cost increases

For Mitchell Wines, it is cheaper still to **remain on a small business** network tariff. The next question for Mitchell Wines is how could they reduce their grid consumption to ensure they **remained under the 160MWh per annum?**

One way to reduce grid electricity consumption is through the installation of **solar PV.** In addition to an existing 60kW solar PV system (Figure 3), Mitchell Wines recently installed another 40kW system and had its **existing panels cleaned** to further reduce grid consumption.

Figure 3: Solar inverters

This new system will reduce Mitchell Wines' annual electricity consumption by **~20%**, keeping the winery well below the small business consumption threshold.

Modelling of solar PV generation and Mitchell Wines' electricity use indicated that the 100kW solar system is **oversized**. A proportion of electricity generated by the solar PV system will be exported back to the grid outside of vintage.

Mitchell Wines is not paid for the electricity it sends back into the grid. It is now a priority for Mitchell Wines to negotiate a **feed-in-tariff** with an electricity retailer to further reduce electricity bills.

Another opportunity to reduce the winery's electricity consumption is to **replace** all **metal halide** high bay lights (Figure 4), with **LED** alternatives.

Figure 4: Metal Halide High Bay Lighting

The South Australian government currently supports the upgrade of high bay lights to LEDs through their **Retailer Energy Efficiency Scheme (REES).** The upgrade is undertaken through Trade Services South Australia (TSSA) and up to **19 high bay lights** can be replaced for about the same cost of scissor lift hire. For more information and conditions of this offer, head to the TSSA website.

The replacement of all winery high bay lights to LED alternatives will reduce electricity consumption by 6.6% and costs by 5.1%.

The third way that Mitchell Wines can reduce electricity consumption is by changing how it uses an on-site **refrigeration system (Figure 5).** By shifting refrigeration loading to **overnight during vintage**, Mitchell Wines can make the most of cheap off-peak power and high refrigeration efficiency due to cooler ambient air. This is expected to reduce the chiller's vintage energy use by 5-10% and provide a 4.4% annual energy cost saving.

Figure 5: Mitchell Wines Refrigeration System

The potential savings of these actions are:

Additional Solar PV (40kW)

- Expected energy savings 35 MWh p.a.
- Expected cost savings $13,600 p.a.
- Return on investment < 5 year
- GHG emissions savings 25.2 tCO_2e
- KVA load eliminated from grid 8-12 KVA

LED High Bays

- Expected energy savings 10.3 MWh p.a.
- Expected cost savings $2,900 p.a.
- Return on investment < 1 year
- GHG emissions savings 5.3 tCO_2e
- KVA load eliminated from grid 15 KVA

Refrigeration

- Expected energy savings 4.1 MWh p.a.
- Expected cost savings $2,100 p.a.
- Return on investment < 1 year
- GHG emissions savings 2.1 tCO_2e
- Max KVA load eliminated from grid 28 KVA