



Major Electricity
Users' Group

Promoting
a robust
electricity
market

Case study:



Unless market settings are changed to incentivise demand response, we simply can't justify the investments necessary to enable more flexible participation, while ensuring we collect and process our farmers milk."

Fonterra Co-operative Group has 27 manufacturing sites across New Zealand, each varying in their energy consumption and availability. Six of the 27 use coal for process heat, and four now use wood biomass. The sites use approximately 1,100,000 MWh of electricity and 6.3 PJ of gas per annum through boilers and air heaters in their milk processing plants.

Fonterra has stated that they have the immediate capability and significant future potential for demand response if the market conditions make it viable.

The current capacity for Fonterra's demand response centres on the coolstores and wastewater aerators at some of its North Island sites. Going forward, the Co-operative intends to significantly reduce its current consumption of coal and gas per year through direct electrification. These changes, driven by its decarbonisation strategy, present an opportunity to build in demand response capabilities when refitting facilities. The medium-term electrification of a proportion of Fonterra's milk tanker fleet will also increase demand response capability.



Commercial barriers to demand response.

Fonterra says that there is not a strong business case to engage in significant demand response at this time, nor to build it into future planning, as they make the large-scale move away from fossil fuels.

Savings from avoiding high electricity prices are not seen as adequate compensation for the significant capital expenditure, uncertainty, opportunity cost, and shipment delays required to engage in demand response.

Market settings need to change for viable demand response.

To make demand response viable for Fonterra, it argues that a market change is required. Demand response can and should be declared and bid into the wholesale electricity price stack alongside generators, so that the stack can be priced accurately in real-time.

Demand response participants should be treated equivalent to generators, so that when the System Operator solves for the trading period, any generators or demand response participants that are dispatched for the period will receive the marginal price that has been set.

Fonterra says incorporating its demand response directly into the price stack could remove large peaks from the stack price, potentially capping peaks by hundreds of dollars, as well as reduce reliance on fossil fuel generation sources and support the growing reliance on intermittent renewables

If demand response providers received real-time payments for providing load into the price stack that can be reduced in the same way that generators with minimal fuel costs receive payment for generation, the business case for capital investment in demand response capacity would be far more attractive.

How would demand response work for Fonterra?

At present, any new demand response launched by Fonterra would be driven by existing capacity within cool stores and aerators. If the business case could be made, further utilisation of this would be 'a no-brainer.' This could be achieved by building thermal storage, battery storage, or by being able to fuel switch between electricity and biomass.

A large capital investment programme to upgrade its boilers over the medium term would provide opportunities to transition boilers to swing biomass or thermal storage. This could generate significant additional demand response. Fonterra is currently targeting its move away from coal boilers to be completed by 2037.

Over the medium term, Fonterra will electrify its milk tanker fleet. This will mean between 100 to 200MW of electric tanker batteries will be off the road over the winter months, providing significant additional potential for demand response.

