Rewiring Aotearoa submission on The future operation of New Zealand's power system - Consultation paper

About Rewiring Aotearoa

Rewiring Aotearoa is an independent non-partisan non-profit funded by New Zealand philanthropy. It is a registered charity working on energy, climate, and electrification research, advocacy, and supporting communities through the energy transition. The team consists of New Zealand energy, policy, and community outreach experts who have demonstrated experience both locally and internationally. We're always fighting for the New Zealanders who use the energy system, and our goal is to help build a low cost, low emissions, high resilience electrified economy for Aotearoa NZ.

Key messages

We are supportive of the objectives the Electricity Authority (the Authority) is seeking to achieve through its work on future power system operation. We agree there will need to be a mechanism for allocating distribution network capacity as part of DER coordination, visibility and predictability of DER operations for the system operator.

When considering future system operation roles it is important to scrutinise:

- how retail prices signals, including payments for exports from consumer energy resources (CER), could play a pivotal role in allocating flexibility from CER in a predictable way
- the level of third party control that is needed to utilise flexibility from customer resources effectively
- whether it is necessary to 'bake in' a role for flexibility aggregators who would extract profits from the flexibility services provided by customers.

Retail pricing and payment for exports - key to unlock value from CER

Time-of-use (TOU) pricing and export payments (including distribution export tariffs) have the potential to unlock most of the electricity system value that can be gained from CER flexibility. Automation in CER devices allows them to respond to price signals and minimise customer bills, potentially creating stable and predictable demand patterns and export profile. Price signals could unlock much of the value from CER to lower overall electricity system cost.

Third-party control of customer devices could, for example, play a secondary role through mechanisms such as managed EV charging tariffs or payments for access to a portion of a customer's battery export capacity.

Rewiring Aotearoa supports a system design that allocates the value of CER flexibility to customers. We believe retail price offerings can capture most of the value from customer flexibility while providing stable, forecastable load and export profiles. Price-based approaches also deliver more value to customers than third-party aggregator offerings,that bake in an additional profit recovery from consumer flexibility.

More work is needed to unlock improved retail pricing options that support efficient CER investment and operation for customers. Currently, New Zealand retailers offer very limited time-of-use pricing options, may not fully pass through network pricing signals, and it remains unclear how they will pass distribution peak export rebates to customers who export during network peaks. This means the current price offerings to reward customers for providing system value from CER is limited. More innovative provision of retailer tariffs that reward consumers have been delivered by independent retailers, for example Octopus Energy, however we have seen the departure of independent retailers in New Zealand in recent years which limits customers choices.

The Authority notes in point 4.14 *"However, it's important for aggregators, retailers and distributors to anticipate pitfalls of simplistic time-of-use plans that might cause 'herding' of EV charging, spiking consumption when a cheaper tariff kicks in*." We think this is an important area where more consideration by the Authority is needed to ensure sufficient retail pricing plans are developed. While some customers may prefer simple time-of-use pricing, more cost-reflective retail offerings could deliver greater customer value. These pricing structures could play a significant role in optimising distributed CER flexibility and help avoid secondary peaks that often result from simple off-peak pricing.

It is important to scrutinise the role of Aggregators

Aggregators or Virtual Power Plants (VPPs), can not be seen as the solution to an electricity market that does not provide innovative price and export offerings to incentivise benefits for CER.

Relying on VPPs or aggregator third-party business models likely means they will take a significant cut of the electricity system value generated by customer flexibility. This can dilute investment signals for customers or communities making the investment and reduces customers benefits.
There is no technical reason why these signals cannot go directly to customers. The inability to adequately price flexibility comes from the regulator's failure to keep pace with technological progress on the demand side. Creating another supply-side middleman market is unlikely to deliver long-term customer benefit. Australia is well ahead of New Zealand in deploying VPPs and managing distribution networks with high levels of consumer resources. Below is a direct quote from a recently published Australian book that briefly covers the topic of VPPs. For context it is a discussion between Dr Saul Griffith, an energy expert, and Dan Adams, the CEO of Amber, an Australian electricity retailer.

> Page 181-182 - Plug In! The Electrification Handbook by Dr Saul Griffith
> *"When Dan worked at Tesla, he developed their virtual power plant (VPP). A VPP is a program whereby people sign up to have someone else manage their battery for a*

fee. Dan learned that customers don't really want the VPP model. We are a little way into this experiment, and 86% of households with a home battery in Australia are opting out of VPP programs. Dan explains that the reason is simple, people want two things: to maximise the value of their battery and solar, and to stay in control of these assets. Unsurprisingly, people hate giving up control to their utility company.

Instead, customers want a model that will help them to unlock the full value of their batteries and EVs and give them control. This is what Amber has tried to provide, Dan explains. "Our whole model at Amber, and the reason we've done things the way we have, is so that an individual customer can get paid the same price as a big coal or gas generator when they're exporting their battery into the grid, and they can buy power at the same price as big retail when there's lots of cheap renewables flooding the grid," says Dan. "We basically empower the individual household to be able to compete with the big end of town."

Dan has about 38,000 customers so far. Most of them come to Amber, he explains, after buying a home battery system and talking to their tradie about it. Increasingly their tradie tells them they have three options:

One: they can just use their battery for self consumption.
Two: they could sign up to a VPP, which might pay them $300-400 per year for the electricity they sell back to the grid, but they'll lose control of their asset.
Three: they can sign up to a company like Amber, get direct access to the market, get paid the same price as a big coal or gas generator, unlock about $1000 per year of additional value and stay in full control."

It must be noted that for this to be possible, the pricing must be in the market and accessible to customer tariffs. This requires EDBs to signal the value of battery export so that the retailer (in the case above Amber) has value to pass onto the customer without needing to sign a VPP contract with the network. Many Australian networks already have this reverse injection pricing available - and recent decisions by the Authority mean we will see peak distribution export tariffs in New Zealand soon.

Part of the DSO role can be implemented by EDBs now

We believe EDBs should begin implementing some DSO functionality now, rather than waiting for clarity on the future system operation model. For example, EDBs should currently be accessing data to improve their visibility of network conditions, and constraints, regardless of how future DSO functions are defined. These actions should deliver network investment that serves consumers' long-term interests by supporting customer DER connections and identifying opportunities to deploy flexibility instead of traditional asset renewals and investment for demand growth and resilience. These actions should already be strongly incentivised under the Commerce Commissions regulation of EDBs under Part 4 of the Commerce Act.

Regulatory measures should be in place to incentivise EDBs to take these actions, and to incentivise retailers to provide more innovative retail offerings including more cost reflective time-of-use and export tariffs (including distribution peak export payments). Understanding

the impact of these measures, in particular the impact of a wide range of retail offerings on forecastability of CER operation, can help determine the function and most appropriate design of future system operation roles.

Response to questions

The submission above is in response to questions 1, 2, 3, 4 and 7.