

ONE IN, ALL IN

MAKING COMMUNITY SCALE BATTERIES WORK IN THE NEM

Community scale batteries are all the rage, thanks largely to Western Power's rollout of 13 of them in southwest WA. And what is not to like? With economies of scale vis-a-vis home batteries, and without requiring any upfront capital investment, they are generally a more cost-effective alternative for consumers.

For those of us stuck on the east coast, and without the synergies offered by the state government owning the networks as well as the residential retailers, things are not quite so advanced. In Victoria, United Energy is trialling two small pole-mounted batteries to provide network support — that is, to feed energy back into the low voltage network to power up to 75 houses for up to 2.5 hours in the evening as an alternative to increasing substation capacity where it is constrained.

This is a good use of United's innovation allowance, but it is small beer. The real value in community scale batteries (that is, batteries from 100kWh to 1MWh, usually connected to the low voltage network in front of customers' meters) comes from realising the value of as many benefits as possible, including:

- Solar energy excess to daytime household needs that is exported to the grid to be stored for evening use.
- Network support.
- Frequency control and other ancillary services.
- Wholesale market arbitraging (charging when wholesale prices are relatively low and discharging into the market when prices are high).

They can also allow networks to overcome the need to impose export limits on rooftop solar. And there are non-economic benefits, including the ability to share energy between neighbours, some of whom may not have PV, and the reduction in emissions when charging is from solar alone.

Given that community scale batteries are hardware that will sit on the distribution network (potentially alongside existing kerbside kiosk substations or inside larger substations), it might seem obvious that they should be owned by networks. They could use part of the capacity themselves for network support, adding the capital cost of that part to their asset base, and lease out the rest of the capacity to other parties like homeowners for solar storage and to market participants (retailers, generators or aggregators) for market purposes.

The glitch is that, in the NEM, networks are not allowed to own generation assets, and cannot buy or sell energy (although they can own and operate these assets via ring fenced affiliated entities). The alternative argument goes that if they owned batteries, networks would monopolise the market by virtue of their superior knowledge (for example, of network constraints and the best locations to install batteries) to muscle out other parties — even though the largest part of the value stack lies in market participation).

A property developer could, for instance, locate them out the back of shopping malls to manage demand when the sun is not shining on the facility's solar array — or in the middle of a new residential estate to manage PV and grid power flows. A community group could use one to store and share the output of a multi-owner solar garden. A grid-connected microgrid operator could use one to match supply and demand between residential and commercial customers with different generation and load profiles. The possibilities are many.

A recent report by Oakley Greenwood for TEC found that under current regulations third parties like retailers are best placed to take advantage of the multiple value streams, mostly because they play in the wholesale market, which all the recent studies show is likely to be the biggest value stream.

On the other hand, third-party ownership may create problems around retail contestability, because any single retailer is unlikely to be able to contract with enough downstream customers on any single LV feeder to make the project financially viable.

A third alternative is ownership by community energy groups. Oakley Greenwood found that all three ownership options (network affiliate, retailer or community group) significantly outperformed individual household battery ownership in terms of the financial returns to the owners.

Who should own and control them is only one of the regulatory issues facing the commercial rollout of community scale batteries in the NEM. (Another report soon to be released by Ausgrid* identified no less than 11 regulatory issues which need to be resolved for a commercial rollout.)

The other big issue is network tariffs. Because they sit in front of customer meters but are themselves classified as connection points, they currently attract full network charges or DUOS in *both* directions (charging and discharging), making them uneconomic vis-a-vis home batteries. With lower network tariffs, the tables are turned.

Ausgrid has proposed a number of regulatory reforms to overcome these issues, potentially including:

Recognising a customer battery storage service as a distribution service (so that networks could offer them to customers).

- Multiple trading relationships or subtractive metering (to overcome the double payment issue).
- Local Use of System (LUOS) charges (in order for network charges to reflect the limited use of the system).

A stakeholder working group is about to be established to pursue a way forward to overcome the regulatory obstacles as soon as possible. From TEC's perspective, this process should begin by developing a set of guiding principles, beginning with the objective that the regime should be ownership-neutral (ie, it should not prevent any party from participating in this new part of the market by favouring others).

Second, we want to maximise opportunities for energy to be shared between solar and non-solar households, so that community scale batteries function like solar gardens, only better (because they will provide energy at night, too).

Finally, we would also prefer that these batteries were not charged from the grid (as well as rooftop solar), given it is still powered two-thirds by coal. However, because environmental outcomes are not part of the current national electricity objective, this outcome may be difficult to achieve.

The hope is that we can sort out these regulatory issues next year so that community scale batteries can start being rolled out on a commercial basis in the NEM from 2022.

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* Other studies have been undertaken by ANU for ARENA and ITP Renewables for the Energy Security Board.