

CHARGED UP

The uptake of batteries in Australia and implications for NEM energy market policy

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This report reviews the likely timing of batteries entering the national electricity market, how they are likely to reshape the market, and what policy issues they raise.

Batteries are likely to significantly change the electricity market. This is because batteries can capture energy from renewable sources such as solar and then use that power at times of peak demand. This flattens demand at peak times on the grid, reducing the need for generation, transmission, and distribution infrastructure at peak times. It also supports and makes optimal use of renewable sources of generation and makes the grid more resilient and provide power when the grid is not working.

Batteries are being used to provide ancillary services such as responding rapidly to store or generate power to smooth out supply and demand in the short-term (seconds or minutes). There are a number of virtual power plant (VPP) trials going on at the moment to test technically whether home batteries could be coordinated by a third party operator to provide this service.

Batteries can be placed at different points in the market – for example at user premises (home batteries), or in the distribution and transmission grid (community batteries). In the grid, batteries can be used to supply demand at peak times. Community batteries can be placed in the distribution grid to support the grid and store power from users. Community batteries are starting to be offered by third parties; for example, Western Power and Synergy in WA are offering users with solar panels the option to buy storage on a community battery at a charge around \$1 per day to store power from their solar panels.

Home batteries are not currently economic. They should become economic by around 2025 in some scenarios. The biggest factors that would make home batteries economic are time-of-use tariffs (these are tariffs where electricity prices are low at off-peak times and high at peak times). Time-of-use tariffs would increase incentives for users with solar panels to install a battery to store excess power during the middle of the day (when the value of the excess electricity sold back into the grid is low) and use that power at peak times (when the cost of electricity is high). Subsidies for battery uptake would also speed up the emergence of batteries (such as are being offered in places like SA, NT, and Queensland). Electric car batteries may be able to be used in the future to provide the services of home batteries, especially since many electric vehicle batteries are much larger than the typical home batteries currently on the market.

Community batteries are likely to be economic earlier than home batteries because of economies of scale. Users can join together to fund community batteries and share in their benefits at a likely lower cost than installing their own home battery, or they can rely on third parties such as retailers to offer community batteries.

The emergence of batteries raises a number of policy points for consumers and regulators:

- Ring-fencing distributors from owning batteries so that distributors do not favour their own batteries over users' batteries (e.g. by imposing different connection requirements)
- Setting up standard connection arrangements
- Encouraging NEM rules to support community batteries
- Permitting third parties to register as battery owners and operators. This would enable third parties for example to pay users and coordinate users' batteries to provide ancillary services
- Managing payments from third parties to battery owners to promote confidence and trust by battery owners in third parties
- Encouraging retailers to offer time-of-use tariffs on an opt-in basis
- Ensuring there are adequate consumer protections for battery owners
- Targeting subsidies for batteries to enable low-income and vulnerable users have access to subsidies

Consumer groups need to engage in the VPP trials and various AEMC, AEMO, and ENA work programs around distributed energy to ensure consumer views are considered.