

# LARGE SCALE BATTERIES Fact Sheet

## Grid-scale energy storage in Victoria



### Victorian Renewable Energy Target

The Victorian Renewable Energy Target (VRET) will see 25 per cent of the State's electricity generation supplied from renewable sources by the year 2020, increasing to 50 per cent by 2030.

These targets will encourage investment in new energy projects, create jobs, lower electricity prices and secure Victoria's electricity supply.

Increasing renewable energy capacity will also reduce greenhouse gas emissions. Victoria aims to achieve 15 to 20 per cent reduction in emissions by 2020 (from 2005 levels) and net zero emissions by 2050.

### What do large-scale batteries do?

Large scale batteries can store low-cost electricity, such as renewable energy, when there is an oversupply or during periods of low demand so that it is available when demand is higher or supply decreases. They also stabilise the grid during frequency disruptions.

Large-scale batteries can also immediately dispatch stored electricity when there is a temporary loss of supply (either unexpected or regulated) and is a cheaper interim electricity source than emergency gas-fired and diesel generators.

Storage can reduce the frequency of blackouts and need for load shedding when there is a supply imbalance. However, is unable to prevent blackouts in situations where the electricity network has been compromised, such as a storm impacting poles and wires and electricity cannot be physically supplied.

### The technology

Batteries store electrical energy in chemical form. The range of electrochemical technologies include lithium ion, redox-flow batteries and zinc-hybrid.

Large-scale batteries typically consist of several components – a battery unit or 'enclosure' (generally a large fridge sized box or a shipping container), an inverter (to convert DC to AC and vice versa), and a transformer (to transform the AC voltage). The number

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of units / enclosures will be determined by the technology and required output.

### What does it mean for me?

Large-scale batteries improve grid reliability and lower prices in two main ways.

First, they can help lower prices by storing low-cost power for use during times when generation costs are higher.

Second, large-scale batteries make stored electricity available for immediate dispatch when energy demands exceed generation. They are comparable to other peaking generation mechanisms (such as gas peaking plants) and can be deployed quickly, allowing for more efficient use of the network. This will help keep downward pressure on power bills and reduce network costs.

### Why now?

Energy storage technologies can unlock growth in areas experiencing network constraints. They will also support on-demand energy needs as the network transitions to more renewable sources of energy.

Energy storage is an important enabling technology for improving the competitiveness and increasing the supply of renewable energy, especially as the industry continues to grow.

### Case study: Gannawarra energy storage system

The Gannawarra Energy Storage System (GESS) is a 25MW/50MWh battery co-located at the Gannawarra solar farm near Kerang, NW Victoria. It is the first integrated solar and battery storage project in Australia and among the largest in the world.

The lithium ion battery will allow electricity generated by the solar farm during the day to be used at night and is capable of powering more than 16,000 homes for two hours of peak demand before being recharged.

### Local impacts

Modern large-scale batteries use purpose-built containers that can be painted, positioned and screened for minimal visual impact.

Lithium ion technologies favoured in Australia have no noticeable vibration, emissions, and negligible close-proximity sound.

Each battery unit/container is individually environmentally controlled with its own monitoring and fire suppression systems.

Each facility has industry emergency management plans that have procedures for potential disturbances and hazards, including approaching bushfires.

### For further information:

- <https://www.energy.vic.gov.au>
- [energystorage@delwp.vic.gov.au](mailto:energystorage@delwp.vic.gov.au)

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