Energy storage market analysis australia

Energy storage market analysis australia

As the world shifts to renewable energy, the importance of battery storage becomes more and more evident with intermittent sources of generation - wind and solar - playing an increasing role during the transition.

The Australian Energy Market Operator (AEMO) has reported growth in renewable capacity has seen increasing instantaneous penetration of renewables in the National Electricity Market (NEM) with a new record of 72.1 per cent reached in October last year. The market operator forecasts increasing periods when the grid will hit 100 per cent instantaneous renewables.

The issue is, renewables are not dispatchable as they are not always available. As more dispatchable plants leave the market, battery storage, along with pumped hydro and gas-fired generation, will become more critical to the grid.

The market operator sees a significant opportunity here if solar households can be encouraged to install a battery storage system and allow it to be coordinated. However, there are limitations in achieving this, as mentioned below.

Different forms of storage are needed to firm both consumer-owned and utility-scale renewables at different times of the day and year. These vary according to their "depth", that is, the length of time that electricity can be dispatched at maximum output before the stored energy is exhausted.

Consumer owned storage: behind the meter, including EVs that may be able to send electricity back into the grid. Coordinated CER storage is managed as part of a VPP, while passive CER storage is not. While the combined installed capacity of these batteries is large, they can only dispatch electricity for about two hours at full discharge, so their energy storage capacity is relatively small, and deeper, utility scale storage is needed.

Medium storage: Able to dispatch electricity for four to 12 hours. This may be battery or pumped hydro (or other emerging technologies in future) which can shift large quantities of electricity to meet evening or morning peaks. These solutions are increasingly needed to support renewable energy growth.

Deep storage: Strategic reserves that can dispatch electricity for more than 12 hours, to shift energy over weeks of months (seasonal shifting) or cover long periods of low sunlight and wind (renewable droughts), backed up by gas-powered generation. Borumba Dam"s anticipated 48 GWh capacity in Queensland would be larger than all coordinated CER storage combined, and Snowy 2.0 would provide 350 GWh.

Deep storage systems, capable of dispatching electricity for over 12 hours continuously, can help stabilize fluctuations in daily energy demand and renewable energy supply. The deepest storage options currently available to the NEM are existing large deep-reservoirs that can address renewable energy shortages and

balance energy availability throughout different seasons. Transmission projects like HumeLink and Marinus Link are intended to help enhance the NEM"s access to these resources.

There is strong interest in developing new deep storage facilities across Australia. However, there are only three projects currently in operation - Temut, Wivenhoe and Shoalhaven - and two more under construction, Snowy 2.0, which will support both New South Wales and Victoria, and Kidston, located in Queensland.

Queensland is currently evaluating two deep storage initiatives, Borumba Dam and Pioneer-Burdekin, although their fate may be influenced by the upcoming state election. Additionally, Hydro Tasmania is exploring a new pumped hydro project at Cethana as part of the Battery of the Nation initiative. New South Wales has also set a legislative target to achieve 2 GW of storage with at least 8 hours of duration by 2030

As shown in Figure 1, shallow storage will play a major role over the next two decades, while coordinated CER will account for more than 50 per cent of installed capacity by 2050. Deep storage, including Snowy 2.0 and Borumba will be around 10 per cent of Australia"s total capacity by 2050, however it is worth noting that this model only includes committed projects, meaning this capacity could be higher if more projects are proposed and brought online.

Contact us for free full report

Web: https://www.hollanddutchtours.nl/contact-us/
Email: energystorage2000@gmail.com
WhatsApp: 8613816583346