



COUNTRY	STATE	POPULATION	ENERGY PRODUCTION TARGET	ENERGY PRODUCTION IN 2020
AUSTRALIA	SOUTH AUSTRALIA	1,771,000	100% RENEWABLE BY 2030; 500% BY 2050	60% RENEWABLE

Scaling up battery storage in South Australia to a new dimension

As a leader in renewable energy in the country, the state of South Australia is expanding the foundations of its electricity storage industry. By 2020, South Australia generated [60%](#) of its electricity from renewables. From almost no renewable generation in 2003, the state now has over 2 GW of installed wind capacity and around 2.5 GW of solar PV capacity. South Australia has set a target of generating [500%](#) of its renewable energy needs by 2050 as part of its [Climate Action Plan 2021-2025](#), with the aim of exporting the surplus to other Australian states, and internationally. This ambition hinges on the development of energy storage.

Subsidising local storage in order to balance out the grid

In the [absence](#) of hydro storage capacity, South Australia is funding and playing a key role in industry partnerships to develop large-scale battery energy storage projects. As early as 2017, as part of its [Energy Plan](#), South Australia established an AU\$150 million Renewable Technology Fund, which among other things enabled the state to acquire the world's largest lithium-ion battery, the 100 MW [Hornsedale Power Reserve](#). Installed and managed by Tesla, it can store up to 129 MWh of electricity. Thanks to the [Grid Scale Storage Fund](#), renewable energy producer Neoen received AU\$15 million to increase the project's capacity by 50% over the year 2020.

With government funding of AU\$100 million, the Home Battery Scheme (HBS) has provided access to grants and low-interest loans, provided by the Clean Energy Finance Corporation, an Australian government-owned finance bank, to grid-connected South Australia residents since October 2018. This help to purchase home batteries and a new solar power system if needed. These batteries work by storing excess power generated through the solar panels, ready to be used at other times, such as during cloudy periods or when the sun goes down, or when there are peaks in demand on the grid. The aim is to reduce pressure on the grid during peak demand by storing the domestically

generated surplus of solar energy. [29%](#) of all domestic batteries installed in Australia in 2020 were installed in South Australia. The government is supporting the project with a grant of AU\$2 million, a loan of AU\$20 million from the Renewable Technology Fund and a grant of AU\$10 million through its Grid Scale Storage Fund. The trial phase completed in 2019 saw [1,100](#) homes equipped with solar and home battery systems, with over 50,000 homes expected to benefit in the future.

The Renewable Technology Fund has also enabled the development of a virtual power plant (VPP) in partnership with Tesla and electricity retailer Energy Locals. A VPP is a network of small, distributed energy sources — such as houses with solar systems and batteries - that work together as a single power plant through a computer system. VPPs allow for better control of production in response to changes in demand.

Multiplying end-uses to decarbonise the industrial sector

Given South Australia's aforementioned absence of hydro storage capacity, battery storage can stabilise intermittent power systems, facilitate the decarbonisation of energy-intensive industries, and provide significant cost savings. By allowing for a better supply-demand balance on the grid, Tesla's giant battery has saved AU\$150 mil-

lion in its first two years of operation, while the average price of a battery system purchased through the HBS programme has dropped by AU\$5,000 since its launch. Possessing over [68%](#) of the country's copper resources, SA is also relying on battery storage to decarbonise its mining industry. The AU\$1 million state-subsidised Carrapateena gold and copper mine will test a [hybrid](#) plant using a 250 kW lithium-ion battery, a 250 kW photovoltaic system and a 10 kW wind turbine, integrated with a diesel power plant and a light electric vehicle charging station.