

## SolarTech Power Solutions

# Low-carbon energy storage in Australia

### HEAT DISSIPATION

Cold aisle containment,  
making optimal refrigeration effect;



## Overview

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Energy storage secures and stabilises energy supply, and services and cross-links the electricity, gas, industrial and transport sectors. It works on and off the grid, in passenger and freight transportation, and in homes as ‘behind the meter’ batteries and thermal stores or heat pump systems.

Australia has committed to a Paris-aligned 43 percent emissions reduction target by 2030, yet we remain a major exporter of fossil fuels and key supplier to carbon intensive hard-to-abate industries such as steel and liquified natural gas (LNG). While global peers have accelerated investment in.

Current forecasts from the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and the Australian Energy Market Operator (AEMO) indicate that as much as 95% of the National Energy Market (NEM) would need to come from variable renewable energy (VRE) to meet Australia’s emission.

One challenge is energy storage, which is proving critical to our energy needs in a fully renewable space. We need the right technology to store enough renewable energy to meet our NEM needs, so we don’t have to default to fossil fuel electricity production to fill the gap. A potential solution to.

eaching net zero in Australia.<sup>2</sup> hydrogen. It can also remove carbon dioxide from the CCUS can reduce emissions in hard-to-abate atmosphere through Direct Air Capture (DACC).<sup>3</sup> industria’s total greenhouse gas emissions. The Sleipner CCUS project in Norway has been safely and permanently

storing.

Before we explore the specifics of Carbon Capture Storage Australia, let's first understand the basic concept. Carbon Capture Storage (CCS) refers to the process of capturing carbon dioxide (CO<sub>2</sub>) emissions from industrial processes and storing it underground to prevent it from entering the. How can long-duration energy storage benefit Australia?

Seasonal balancing during low-supply periods. By embedding long-duration energy storage into the heart of the grid, Australia can move from variable renewable supply to 24/7 renewable energy on which communities and industries can rely across days, weeks, and seasons. Long-duration energy storage brings clean power closer to the end user.

Why do we need energy storage in Australia?

STORES and DES can effectively maintain the balance between renewable energy supply and energy demand and hence facilitate large-scale integration of variable solar and wind energy. The energy storage resources are largely available in Australia.

How many CO<sub>2</sub> storage resources are there in Australia?

The Oil and Gas Climate initiative (2022) applied the technically-based CO<sub>2</sub> Storage Management System (the SRMS; SPE, 2017) to produce a catalogue of global CO<sub>2</sub> storage resources and their maturity (Figure 7.3), which estimates that Australia has approximately 31 Gt of sub-commercial storage capacity and 470 Gt in undiscovered storage resources.

Will zero-carbon energy be the cheapest energy solution in Australia?

These cost figures can compete with that of the current and new-build future fossil energy systems. As the technology advances and economies of scale in renewable energy development, the technology costs will be reduced further, and zero-carbon energy would become the lowest-cost solution in the Australian energy markets.

Are lithium-ion batteries the future of energy storage?

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How can Australia benefit from a low-carbon supply chain?

As global demand shifts toward low-carbon value chains, Australia has a rare opportunity to leverage its traditional resource exports, not only to lay the foundation for a competitive CCUS industry, but also to enhance our value proposition across both existing commodities and emerging low-carbon supply chains.

## Low-carbon energy storage in Australia

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