Changing Energy Market

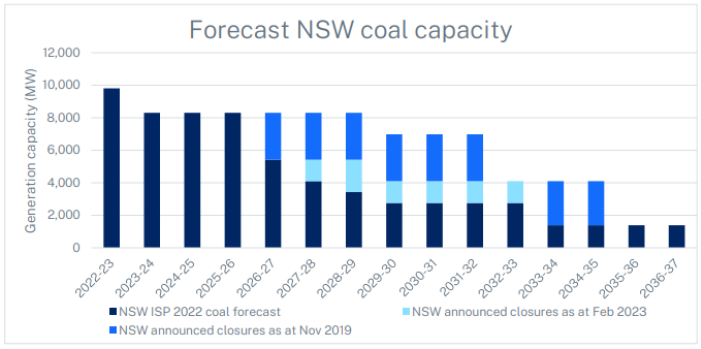
Australia's energy market is in transition.

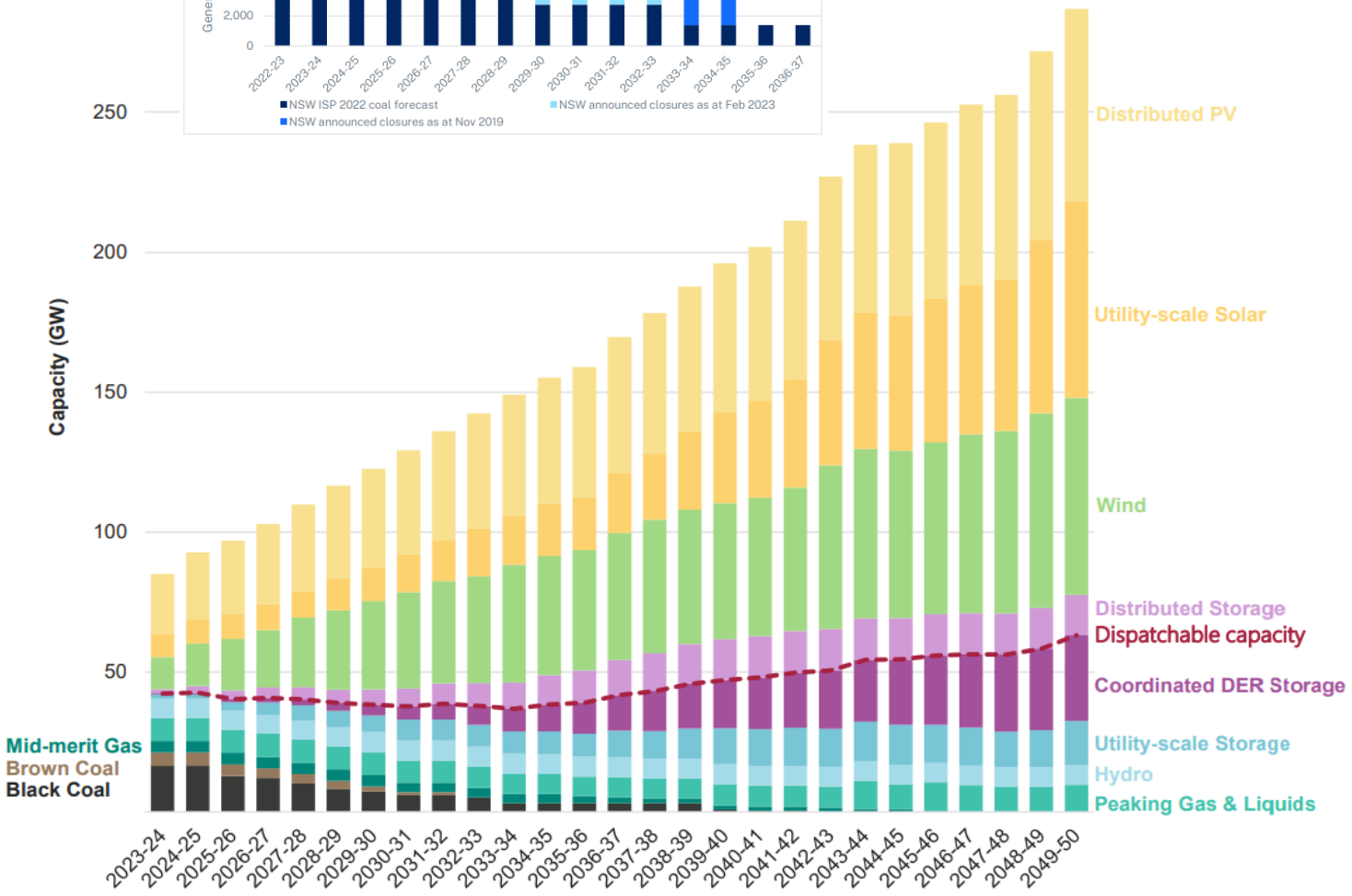
Clean, renewable sources of energy are being harnessed to meet growing electricity demand and reduce carbon emissions to mitigate the impacts of climate change.

Whole-of-system planning for the National Electricity Market (NEM) is managed by the Australian Energy Market Operator (AEMO) and outlined in its Integrated System Plan (ISP), which is updated every two years.

The ISP's objective is to: *maximise value to end consumers by designing the lowest cost, secure and reliable energy system capable of meeting any emissions trajectory determined by policy makers at an acceptable level of risk.*

The last ISP, published in 2022, considers the most likely scenario for the NEM is a 'Step-change' scenario. This forecasts that by 2050: electricity demand will double, coal-fired generation will be retired much faster than originally anticipated, and Australia will require a nine-fold increase in grid-scale wind and solar.





Forecast NEM capacity to 2050, *Step Change* scenario. Source: AEMO, 2022 Integrated System Plan

The Australian Government has set a national target of 82% energy from renewable sources in the NEM by 2030, and the *Climate Change Act 2022* has legislated a national emissions reduction target of 43% by 2030 (compared to 2005 levels) on the way to net zero by 2050.

New South Wales (NSW) was one of the first Australian jurisdictions to commit to net zero emissions by 2050. The NSW Government has committed to an emissions reduction target of 50% by 2030 and has the objective to reduce emissions by 70% by 2035.

In 2022, 36% of Australia's and 30.7% of New South Wales' electricity was generated from renewable sources (Source: Clean Energy Council, *Clean Energy Australia Report 2023*). Achieving the emissions reduction and renewable energy targets will require harnessing the State's renewable energy potential at speed and scale.

In March 2020 the NSW Government announced its Net Zero Plan Stage 1: 2020–2030, and in November 2020, the NSW Government released the NSW Electricity Infrastructure Roadmap, the State's 20 year plan to transform the electricity system.

The Roadmap aims to support the private sector to deliver 12 gigawatts (GW) of new renewable electricity generation and 2 GW of long-duration storage by 2030.

The NSW Government expects its plans to attract more than $32 billion in private sector investment and support more than 9,000 jobs over the next 10 years, mostly in regional parts of the State.

Renewable energy generated from solar serves an important role in diversifying Australia's energy mix.

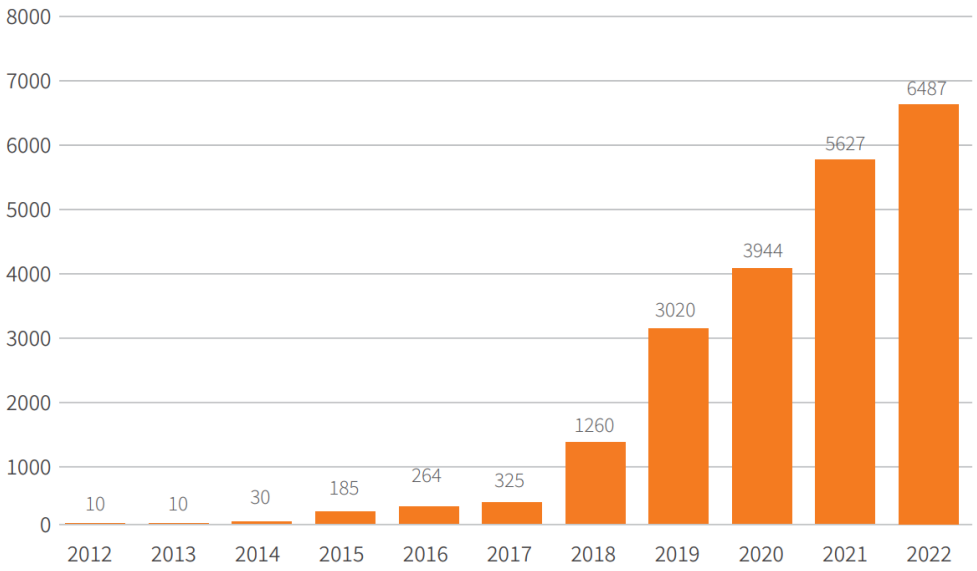
According to the International Energy Agency, solar energy is the most abundant energy resource on earth, with about 885 million terawatt hours (TWh) reaching the surface of the planet every year.

Australia has the highest average solar radiation per square metre of any continent in the world. With excellent solar resources and established electricity infrastructure, NSW is an attractive opportunity for solar farm development.

In 2022 more than 310,352 residential solar photovoltaic (PV) systems were installed across Australia, representing over 2.7 gigawatts (GW) of installed capacity. Solar farms use the same technology as rooftop solar systems, but on a larger scale.

There were 12 large-scale solar projects commissioned in 2022 with a cumulative capacity of approximately 840 MW. While in 2021 new projects were shared relatively evenly around the country, in 2022 NSW dominated, commissioning eight of the 12 new projects.

Large-scale solar contributed a larger percentage of the clean energy generated in Australia in 2022 (14 %) as well as a larger proportion of Australia's total electricity generated in 2022 (5 %). (Source: Clean Energy Council, *Clean Energy Australia Report 2023*)



Cumulative installed capacity of large-scale solar systems.
Source: Clean Energy Council, *Clean Energy Australia Report 2023*

Scan QR codes for more information

Australian Energy Market Operator 2022 Integrated System Plan (PDF)

AEMO Fact Sheet - National Electricity Market (PDF)

NSW Government, NSW Climate and Energy Action, Renewable Energy in NSW

Clean Energy Council, Clean Energy Australia Report 2023 (PDF)

NSW Government, Net Zero Plan Implementation Update 2022 (PDF)

More information

T - 1800 731 296

E - info@richmondvalleysolar.com.au

W - richmondvalleysolar.com.au
or scan QR code below

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