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 done 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.*

In December 2023 AEMO published its Draft 2024 ISP. It reports that under the most likely *Step Change* scenario coal fired generation is predicted to exit the NEM completely by 2038 and 6 gigawatts (GW) of new renewable energy generation will be required every year over the next decade. It predicts that by 2030 Australia will require triple the amount of grid-scale variable renewable energy generation (wind and solar) to 57 GW, and a six-fold increase in battery storage to 19 GW.

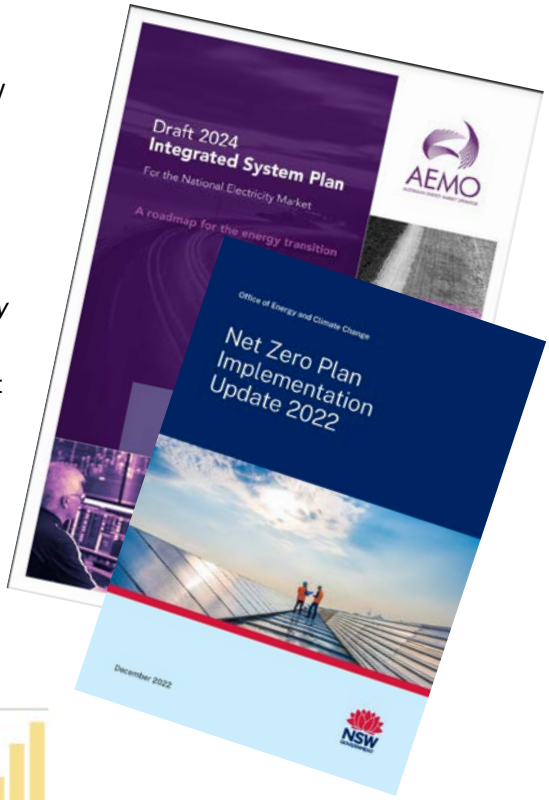
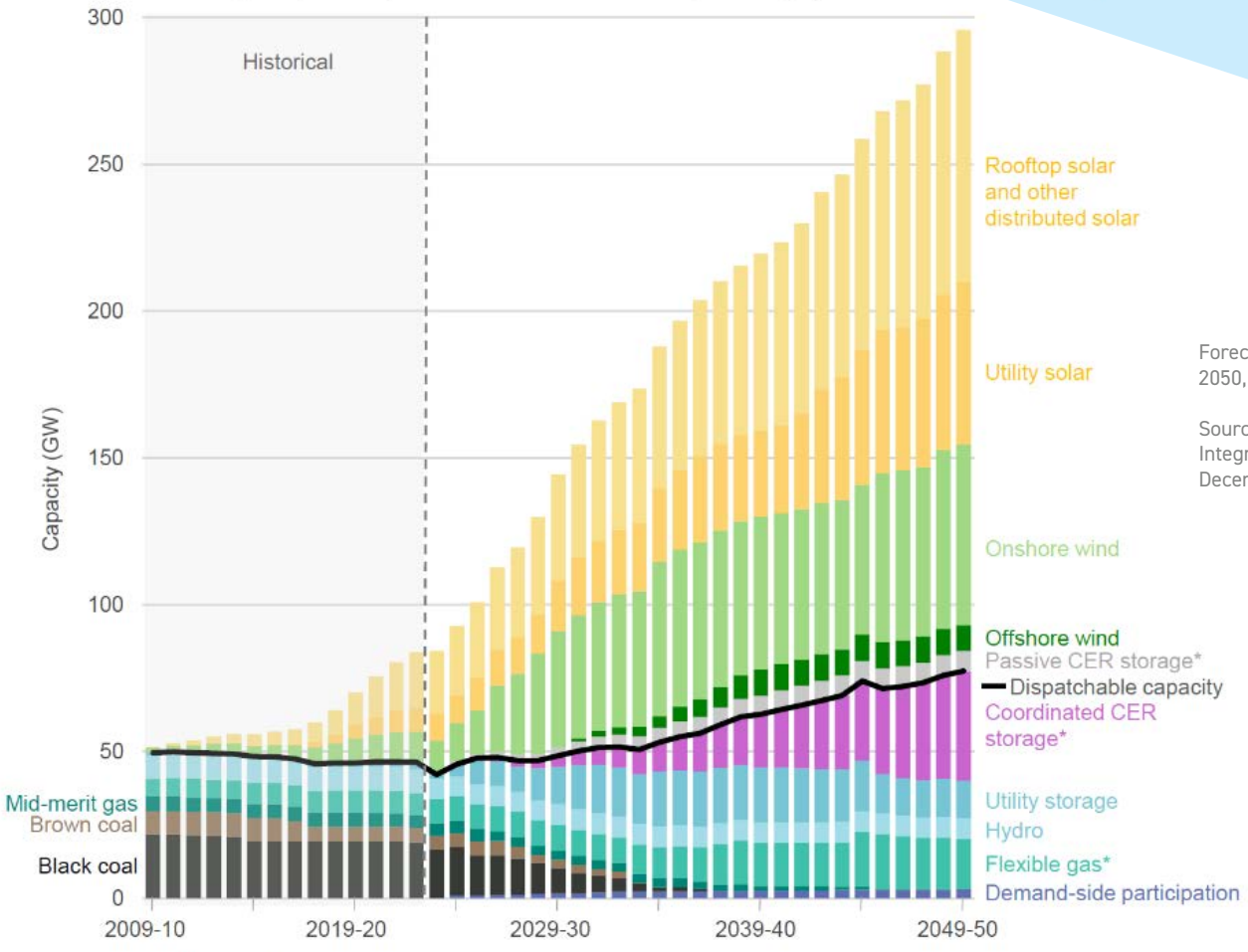


Figure 2 **Capacity, NEM** (GW, 2009-10 to 2049-50, *Step Change*)



Forecast NEM capacity to 2050, *Step Change* scenario.

Source: AEMO, Draft 2024 Integrated System Plan, December 2023

Notes: Flexible gas includes gas-powered generation, and potential hydrogen and biomass capacity. "CER storage" are consumer energy resources such as batteries and electric vehicles.

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 *Climate Change (Net Zero Future) Act 2023* commits to emissions reduction targets for NSW of 50% reduction (compared to 2005 levels) by 2030, 70% reduction by 2035, and net zero by 2050.

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 renewable and emissions reduction targets will require harnessing the State's renewable energy potential at speed and scale.

The NSW Government's plans to transition the state's electricity network is outlined in its Net Zero Plan Stage 1: 2020–2030 and the NSW Electricity Infrastructure Roadmap, which 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.

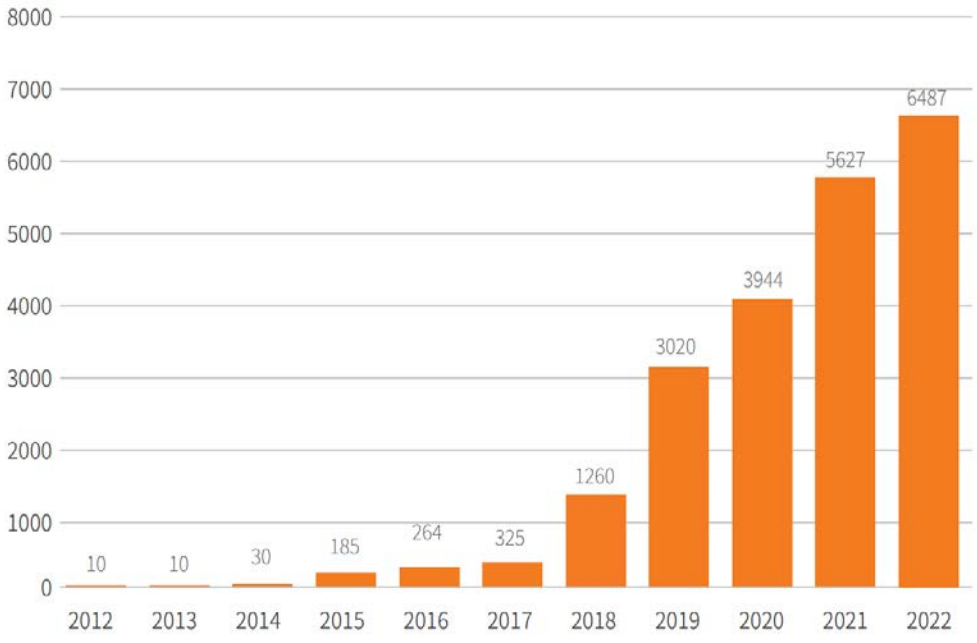
The NSW Government expects its plans to attract more than $32 billion in private sector investment and support more than 9,000 jobs over the next 10 years, mostly in regional parts of the State.

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.

According to the Clean Energy Council's *Clean Energy Australia Report 2023*, there were 12 large-scale solar projects commissioned in 2022 with a cumulative capacity of approximately 840 MW, and another 48 large-scale solar farms under construction in December 2022. Large-scale solar contributed 14 % of the clean energy generated in Australia in 2022, and delivered 1509 GWh in December 2022.



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

Scan QR codes below for more information

Australian Energy Market Operator's 2024 Integrated System Plan (web page)

Fact Sheet - National Electricity Market, AEMO (PDF)

NSW Climate and Energy Action, Renewable Energy in NSW, NSW Government (web page)

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

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

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