# Changing **Energy Market**

Australia's energy market is in transition. About 40% of Australia's and 28% of Queensland's electricity is now generated from renewable sources.

Renewable sources of energy are being harnessed to meet 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.

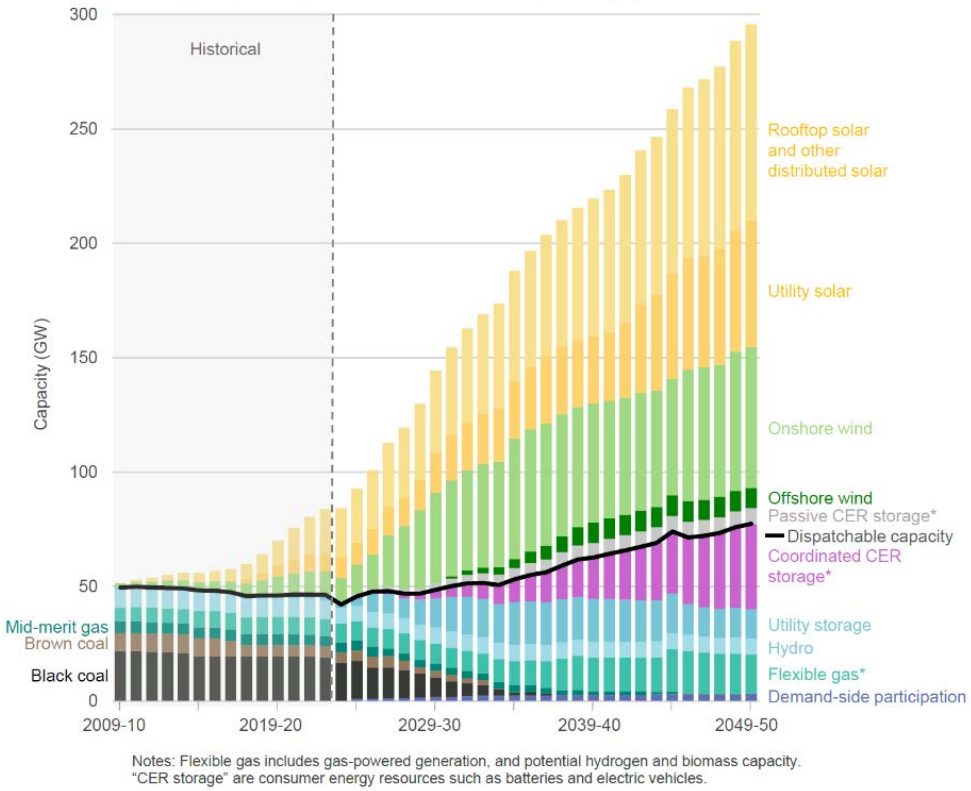
The ISP's objective is to: *maximise value to end consumers by designing the lowest cost, secure and reliable energy system capable of meeting any emissions trajectory determined by policy makers at an acceptable level of risk.*

The last ISP, published in 2024, considered the most likely scenario for the NEM is a 'Step-change' scenario. This forecasts that:

- Coal-fired energy generation will be retired from the NEM by 2038.
- Electricity consumption will double by 2050.
- Australia will require a six-fold increase in grid-scale wind and solar (variable utility-scale renewable energy) by 2050.

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

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




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.

*Source: AEMO, 2024 Integrated System Plan*

Since 2017, 223 renewable generation and storage projects have been commissioned, worth $33.5 billion in capital investment.

The ***'Billions in the Bush'*** report (Clean Energy Council, Farmers for Climate Action) forecasts that by 2050 landholders could receive up to $9.7 billion in payments and community contributions are likely to be ~$2 billion.

The ***'Emissions reductions delivered by renewable energy, 2015-2025'*** report (Clean Energy Council, Green Energy Markets), shows that 40 gigawatts of large-scale renewables have been installed since 2015, avoiding 200 million tonnes of CO2 and lowering Australia's emissions by 30%.

***'The Impact of a Delayed Transition on Electricity Bills'*** report (Jacobs) shows renewables are the cheapest way to lower energy bills, and that power bills could increase by 30% for households and 41% for small businesses by 2030, if the rollout of renewable energy is stalled.

## Information about renewable energy

Energy Fact Check is a website to help answer questions about the energy transition, and provides information on the energy system, electricity costs, renewable energy and storage.

Visit energyfactcheck.com.au or scan QR code below.

Scan the QR code to visit the Energy Fact Check website

ENERGY FACT CHECK

FACT SHEET

# The National Electricity Market

**The National Electricity Market (NEM) operates on one of the world's longest interconnected power systems. It covers around 40,000 km of transmission lines and cables, supplying a population exceeding 23 million.**

The NEM involves wholesale generation that is transported via high voltage transmission lines from generators to large industrial energy users and to local electricity distributors in each region, which deliver it to homes and businesses.

The transport of electricity from generators to consumers is facilitated through a 'pool', or spot market, where the output from all generators is aggregated and scheduled at five-minute intervals to meet demand and to provide a better price signal for investment in faster response technologies, such as batteries and gas peaking generators.

Western Australia and the Northern Territory are not connected to the NEM. They have their own electricity systems.

AEMO
AUSTRALIAN ENERGY MARKET OPERATOR

## NEM RECORDS

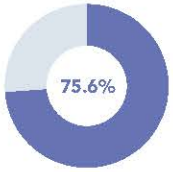
**Maximum demand record** **35,796 MW** (29 Jan 2009)

**Minimum demand record** **10,073 MW** (26 Oct 2024)

Driven by mild weather and rooftop solar generation, which reduces demand for energy from the grid.

**Average**
annual renewable contribution


**Instantaneous**
renewable contribution record
6 November 2024




## NEM facts

Commenced as a wholesale electricity market in December 1998.

More than 600 registered participants, including generators, transmission and distribution network service providers, and market customers, including retailers.

Approx 181.4 terawatt hours of electricity supplied to homes and businesses a year.

$17.7 billion traded in FY23-24.

## Generation capacity

**By fuel type as at December 2024**

**Thermal energy**

**Gas**
13.8% | 12,177 MW

**Coal**
24.1% | 21,255 MW

**Renewable energy**

**Rooftop solar**
25.5% | 22,500 MW

**Wind**
13.3% | 11,691 MW

**Grid solar**
11.4% | 10,025 MW

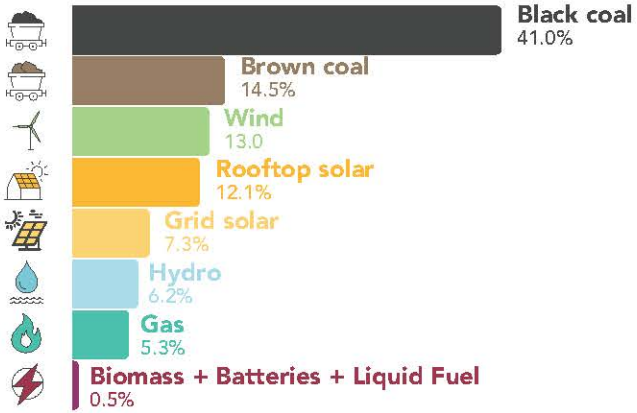
**Hydro**
9.1% | 7,979 MW

**Battery storage**
2.7% | 2,363 MW

**Biomass/other**
0.2% | 143 MW

## Generation supply mix

**By fuel type as at December 2024**




About us: AEMO is the independent energy market and system operator and system planner for the National Electricity Market (NEM) and Western Australia's Wholesale Electricity Market (WEM). We are a not-for-profit company, with a membership of state and federal governments (60%) and energy industry members (40%).

More info:
aemo.com.au/about/who-we-are