SIX MONTHS OF BREAKDOWNS

AGEING, UNRELIABLE COAL STATIONS ARE FAILING OUR COMMUNITY

Reliability Watch is a collaboration between the peak environmental bodies for Queensland, New South Wales and Victoria that builds upon the previous Gas and Coal Watch project by The Australia Institute.

This report is brought to you by the Queensland Conservation Council, Nature Conservation Council of NSW and Environment Victoria.

Executive Summary

Coal in the National Electricity Market (NEM) is ageing, unreliable and prone to breakdowns, even during cooler months when the grid is under less stress from heat, extreme weather and increased demand.

Queensland's coal fleet, despite being the youngest, is the least reliable in the NEM. From 1 April - 30 September 2025, an average of 26% of Queensland's coal-fired power station capacity was offline, compared to 22% in NSW and 16% in Victoria.

In total during the 2025 winter period, there were 142 outages at coal-fired power stations across the NEM, including 23 scheduled and 119 unplanned breakdowns. More than half of these outages occurred at just three power stations, Gladstone in Queensland, Bayswater in NSW and Yallourn in Victoria.

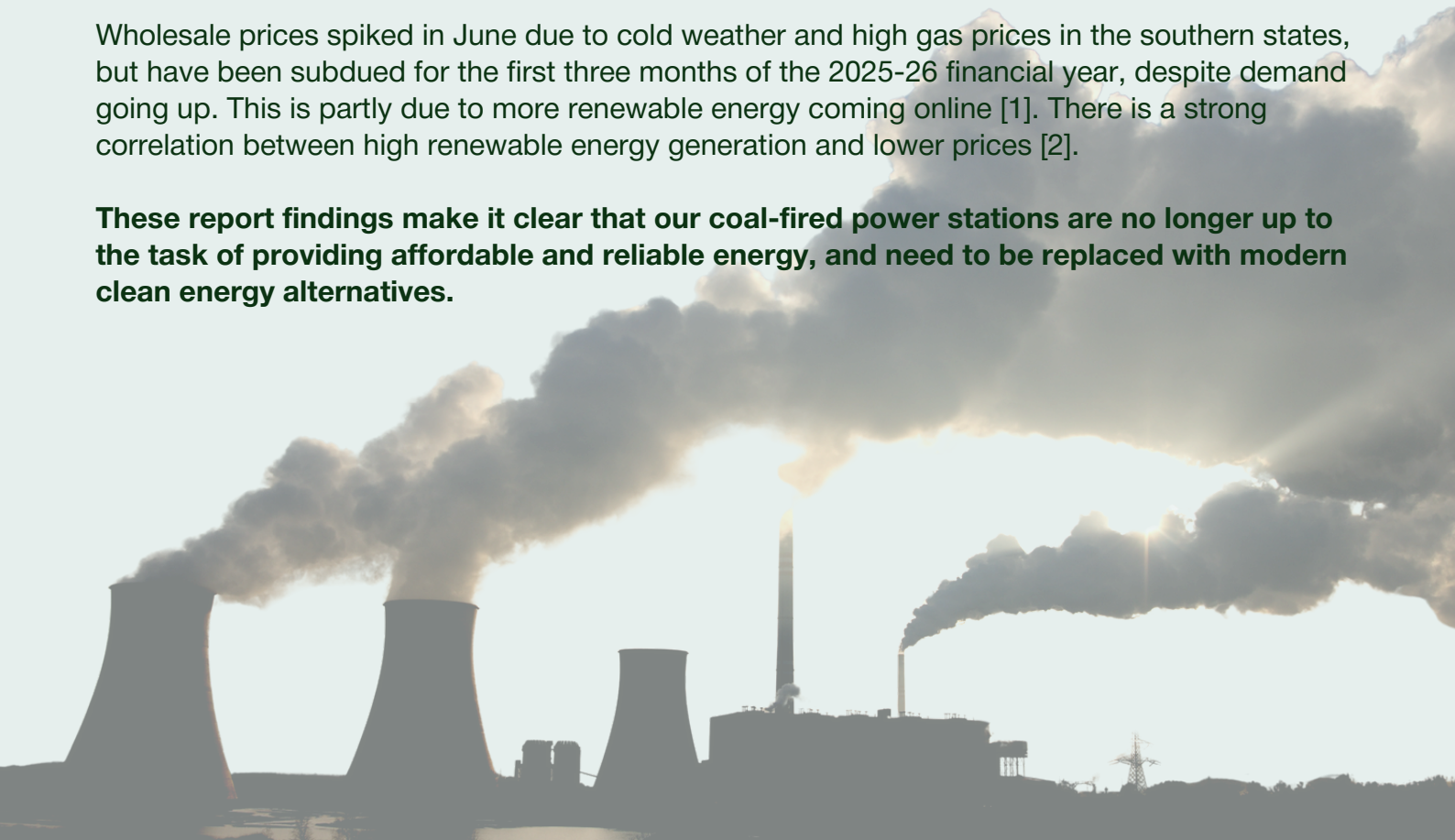
These three privately-owned power stations are at the centre of political debate in their respective states over closure dates. Gladstone's owners, NRG, announced their intention to close the struggling power station by 2029. AGL has announced a 2030 - 2033 closure schedule for Bayswater and Energy Australia a 2028 closure for Yallourn.

State Governments are grappling with these decisions with rumours of extensions to Yallourn, and Queensland's Energy Roadmap refusing to definitively plan for Gladstone to retire in 2029. The persistent breakdowns show that these power stations are unlikely to be able to function beyond the closure dates identified by their owners, and governments need to plan for their replacement.

The ray of sunlight in this story is that rising renewable energy output has helped bring down wholesale prices despite coal outages.

Wholesale prices spiked in June due to cold weather and high gas prices in the southern states, but have been subdued for the first three months of the 2025-26 financial year, despite demand going up. This is partly due to more renewable energy coming online [1]. There is a strong correlation between high renewable energy generation and lower prices [2].

These report findings make it clear that our coal-fired power stations are no longer up to the task of providing affordable and reliable energy, and need to be replaced with modern clean energy alternatives.



Coal-fired power stations in the NEM

Australia's National Electricity Market (NEM), which connects the eastern seaboard states, South Australia and Tasmania, was built around coal-fired power stations. In 2004, coal provided 88% of the electricity in the NEM. This has fallen rapidly to 54% in 2025 [3].

There are still 15 operating coal-fired power stations in the National Electricity Market:

- Three brown coal power stations in Victoria
- Four black coal power stations in New South Wales
- Eight black coal power stations in Queensland

These power stations add up to more than 21 GW of capacity in the NEM.

Availability

Between April and September 2025, coal-fired power stations were, on average, unavailable 22% of the time. This means an average of 4.7 GW of capacity was not available to the market on any given day.

These calculations of availability use the data submitted by coal-fired power stations to tell the Australian Energy Market Operator (AEMO) the amount of capacity they have available to input into the grid every five minutes. This takes into account any scheduled maintenance or unplanned outages. It also reflects any constraints that limit a unit's output below its maximum capacity. This is termed availability, reported in megawatts (MW). Availability indicates the maximum potential generation of the unit at that time. The generation of the unit, reported in megawatt-hours (MWh) will depend upon demand and price.

Coal-fired power stations require maintenance to be able to continue to function. AEMO's long term forecasting assumes that coal-fired power stations will be unavailable due to planned and unplanned maintenance, including partial breakdowns, around 10% of the time [4].

The winter and shoulder seasons are generally the preferred time for planned maintenance of coal-fired power stations, so it would not be expected that any power station was offering 100% availability between April and October. However, only Kogan Creek, Loy Yang A and Loy Yang B achieved above the long term forecasting average of 90% availability. Tarong North had the worst availability, offering on average only 33% of its capacity to the market (Figure 1).

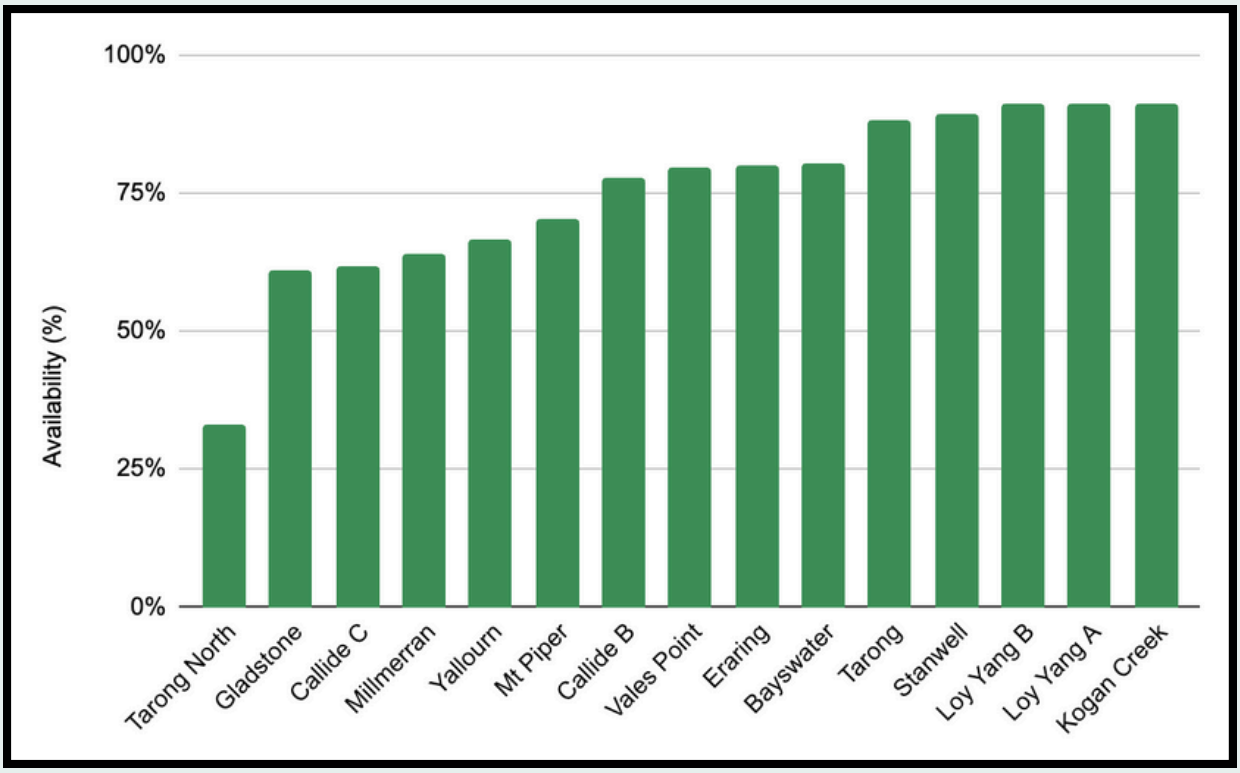


Figure 1: Availability by power station April 2025 - September 2025.

Looking at availability results by unit instead of station shows that, as well as Tarong North, a unit at Callide C, Gladstone and Millmerran were available less than half the time (Figure 2).

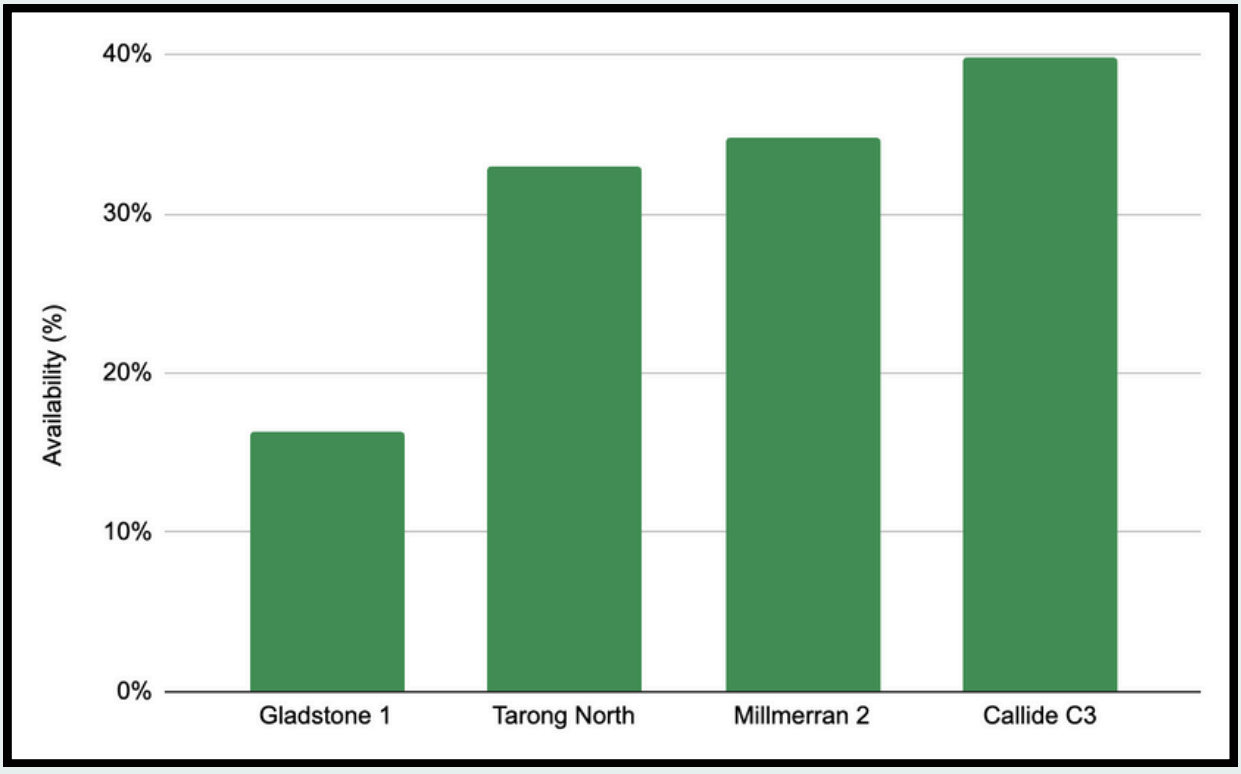


Figure 2: worst performing coal units April - September 2025.

Twenty four units across the coal-fired power stations were entirely offline for more than 1000 hours during the period, including all units at Gladstone, Bayswater and Yallourn, except for Bayswater 3.

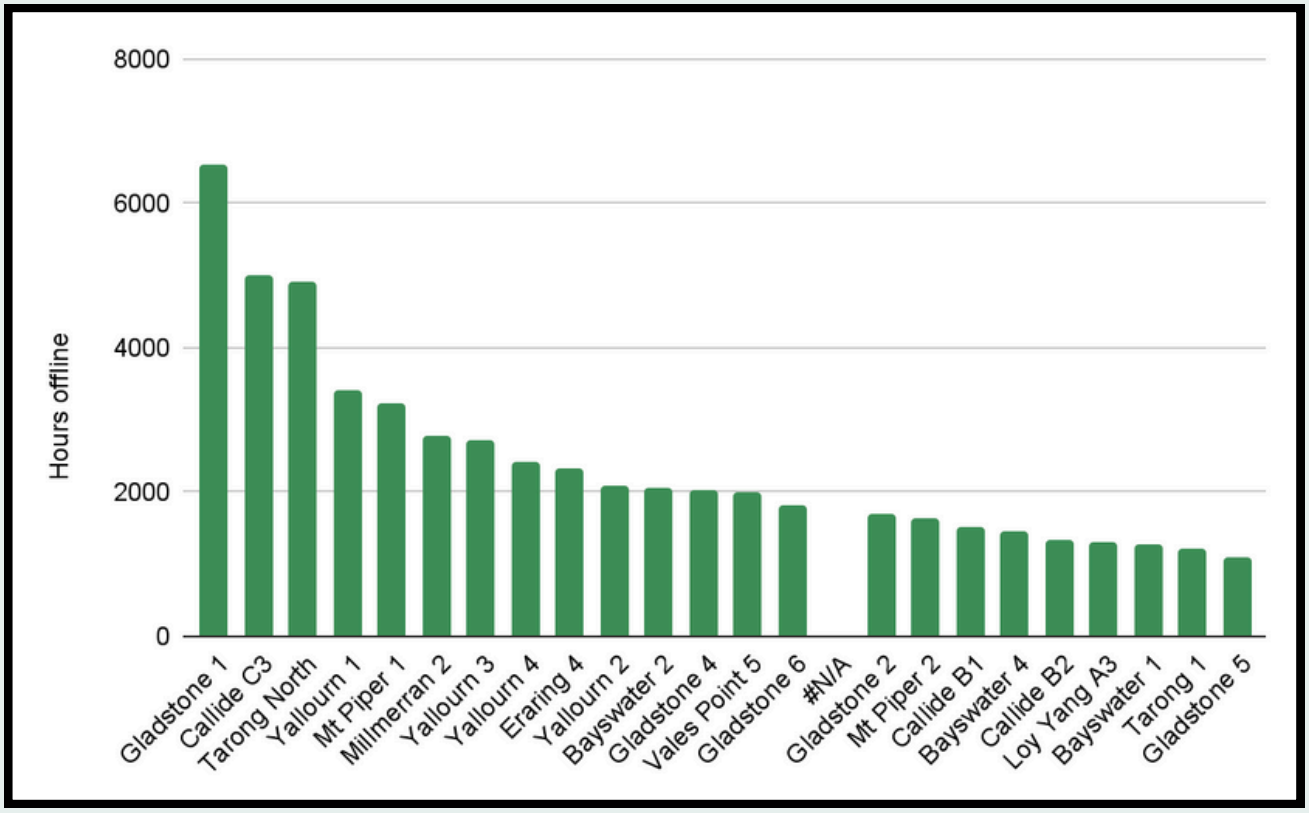


Figure 3: Coal units offline for more than 1000 hours over April 25 - September 25.

Forecast compared to actual

The generators submit their forecast availability to the Australia Energy Market Operator to create the Medium Term System Adequacy Projection Assessment (MTPASA).

At the beginning of April 2025, the coal-fired power stations were forecasting that only 7% of their capacity would be unavailable over the period, so they would have 93% availability until the end of September 2025 [5].

In reality, 22% of coal-fired power stations capacity was unavailable over this period. This was due to a combination of derating, where a unit was unable to reach its full capacity, and breakdowns or maintenance overruns, where the unit was completely offline.

Breakdowns

To define breakdowns, the availability data submitted to AEMO was analysed to find the periods where coal-fired power stations offered no capacity to the market, by submitting a zero availability bid.

This data was then filtered to remove any instances of two shifting where some units have begun offering zero availability during the middle of the day. However, this is not yet common.

The data was then compared to the availability submitted at the beginning of April, to remove planned maintenance. This method likely returns a higher number of breakdowns than will be picked up by the Reliability Watch website, which will track in real time when units experience a rapid loss of generation. Slower breakdowns can be picked up in post analysis, as can shut downs planned closer to real time. Breakdowns which are planned less than six months in advance are still included in this analysis because, although maintenance outages may be planned at short notice, they are still disruptive to the system and should be considered forced outages.

At the beginning of April 2025, coal-fired power stations submitted 23 planned maintenance shutdowns across the NEM for the period until the end of September. Instead of these 23 outages expected by AEMO, from April to September, there were actually 142 outages (Figure 4). This is 119 breakdowns in six months.

Combined with the analysis of the previous summer months from October 2024 - March 2025, this is a total of 247 breakdowns at coal-fired power stations over the year.

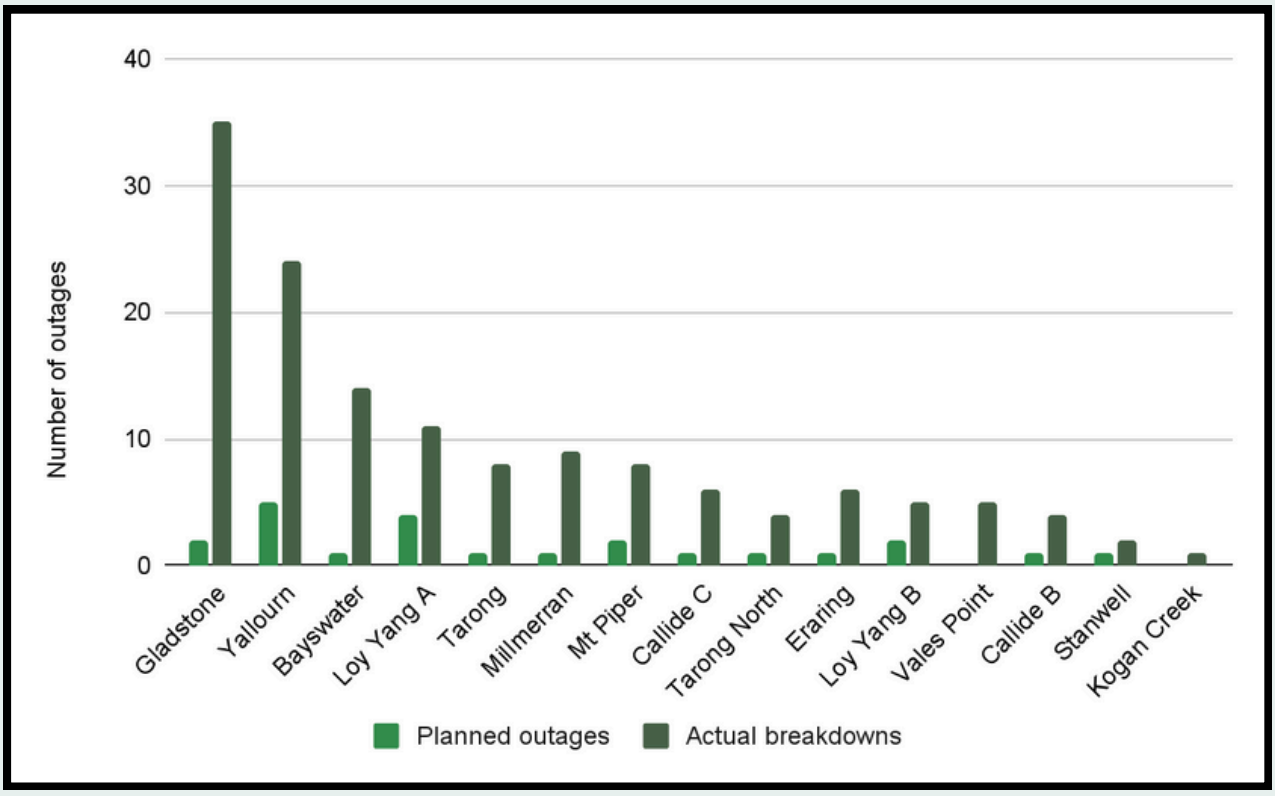


Figure 4: Planned outages vs actual breakdowns April 2025 - September 2025.

The worst performers

Yallourn (Victoria)

Yallourn was one of the first major power stations in Australia and is now one of the oldest. It has run for nearly 15 years longer than the five power stations that were on the site historically and retired at an average age of 33. The current Yallourn power station has an average age approaching 48 years.

Yallourn is the dirtiest coal-fired power station in Australia, with each kWh of electricity generated in 2023-24 releasing 1.29 kg of carbon dioxide equivalent.

After poor availability during the 2022 market suspension period, EnergyAustralia planned a series of remediation works to Yallourn through to January 2025 [6]. This maintenance was significantly overrun over summer.

From April - September, Yallourn's availability has remained dismally low at 67%. It has suffered 24 breakdowns, only five of which were scheduled before April. Yallourn's units 1 and 4 have each recorded 9 breakdowns over the six months.

Yallourn is scheduled to close in 2028, at fifty years old. This is the age that Hazelwood, Callide A and Liddell power stations were all shut down.

Bayswater (NSW)

Bayswater, in the Hunter Valley near Muswellbrook is one of the biggest coal-fired power stations in NSW. At the end of March, it forecast only a single maintenance outage across its four units for the next six months. Across the four units, they suffered 14 outages, not including planned two shifting.

Gladstone (Queensland)

Gladstone is the oldest power station in the NEM and dirtiest in Qld and NSW. It is already 49 years old. It has six units and 33 unscheduled outages between April - September.

Appendix A: Coal-Fired Power Stations Background

Technology

In all coal-fired generators, coal is burnt to create steam. At high pressure, this steam turns a turbine which creates the electricity. The steam is then condensed back to water [7]. Most coal-fired power stations have several individual turbines, or units, which can operate independently. Across the 15 coal-fired power stations in the NEM, there are 44 units. Kogan Creek in Queensland is the only coal-fired power station with a single turbine, or unit, and Gladstone has the most, with 6 units.

Australia's coal-fired power stations differ on their fuel and efficiency. Victoria's brown coal, or lignite, has low energy density so Victorian coal-fired power stations have the highest carbon emissions intensity for the same electricity output. All coal-fired power stations in NSW, and the older Queensland stations, are subcritical, where the coal is burnt in a traditional boiler to create steam.

Newer coal-fired power stations in Queensland are supercritical. In these stations, the water is pressurised above a critical point so that the process can be more efficient. Figure 5 shows the emissions created, in carbon dioxide equivalent (CO2e) for every kilowatt hour (kWh) of electricity generated across the three categories.

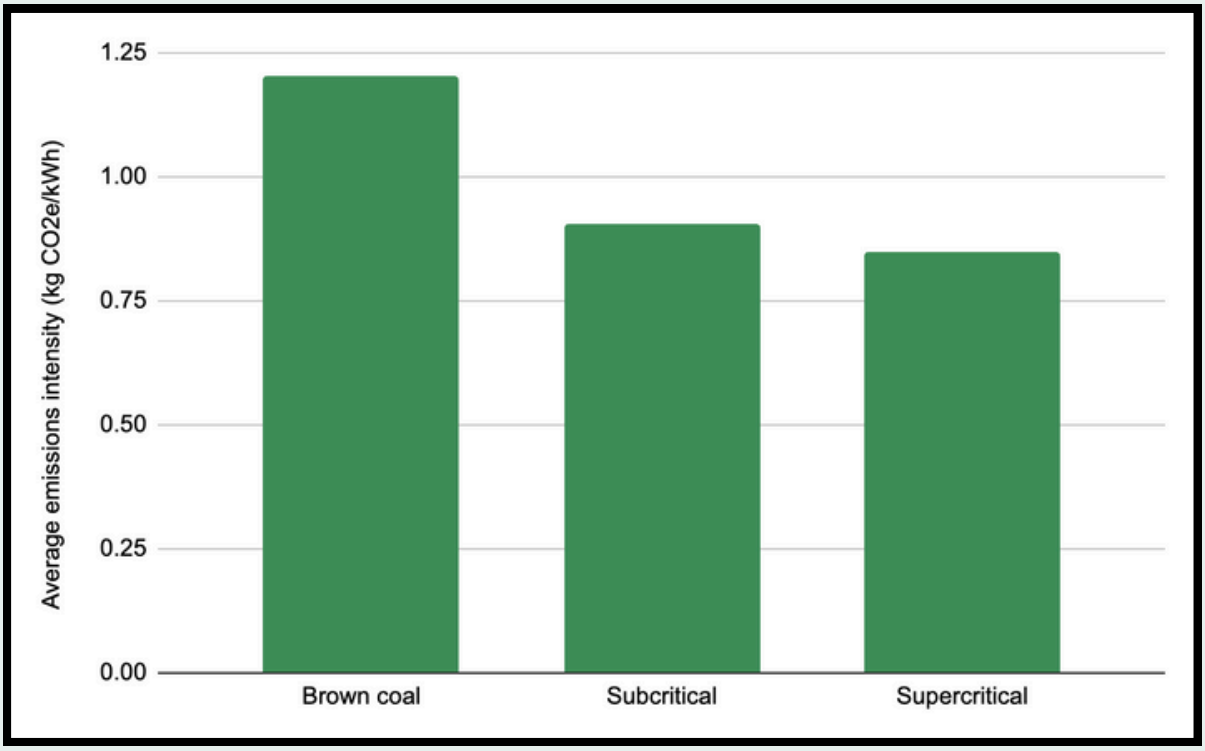


Figure 5: Emissions intensity of brown coal, subcritical black and supercritical black coal-fired power stations in Qld, NSW and Victoria [8].

Ownership

Almost all coal-fired power stations in Australia were built by state government-owned corporations. There are only a handful of exceptions. Millmerran in Queensland was fully privately built. Callide C and Tarong North also in Queensland were originally joint public private partnerships, although Tarong North has been bought back by the Government.

Queensland has retained ownership of most of its power stations. Victoria sold its off in the 1990s and NSW in the 2010s. Victoria's coal-fired power stations are now owned entirely by retailers. EnergyAustralia, AGL and Alinta energy own one power station a piece. AGL, EnergyAustralia and retailer Origin own a power station each in NSW as well.

Age

The youngest coal-fired power station in the NEM, Kogan Creek in Queensland, was commissioned in 2007.

The average age of power stations in the NEM is 35 years.

Since 2007, 12 power stations around the NEM have closed, taking 7.3 GW of capacity out of the system. These coal-fired power stations were retired at an average age of 45 years [9].

Figure 6 shows that many still operating coal-fired power stations are older than stations that have already retired due to old age.

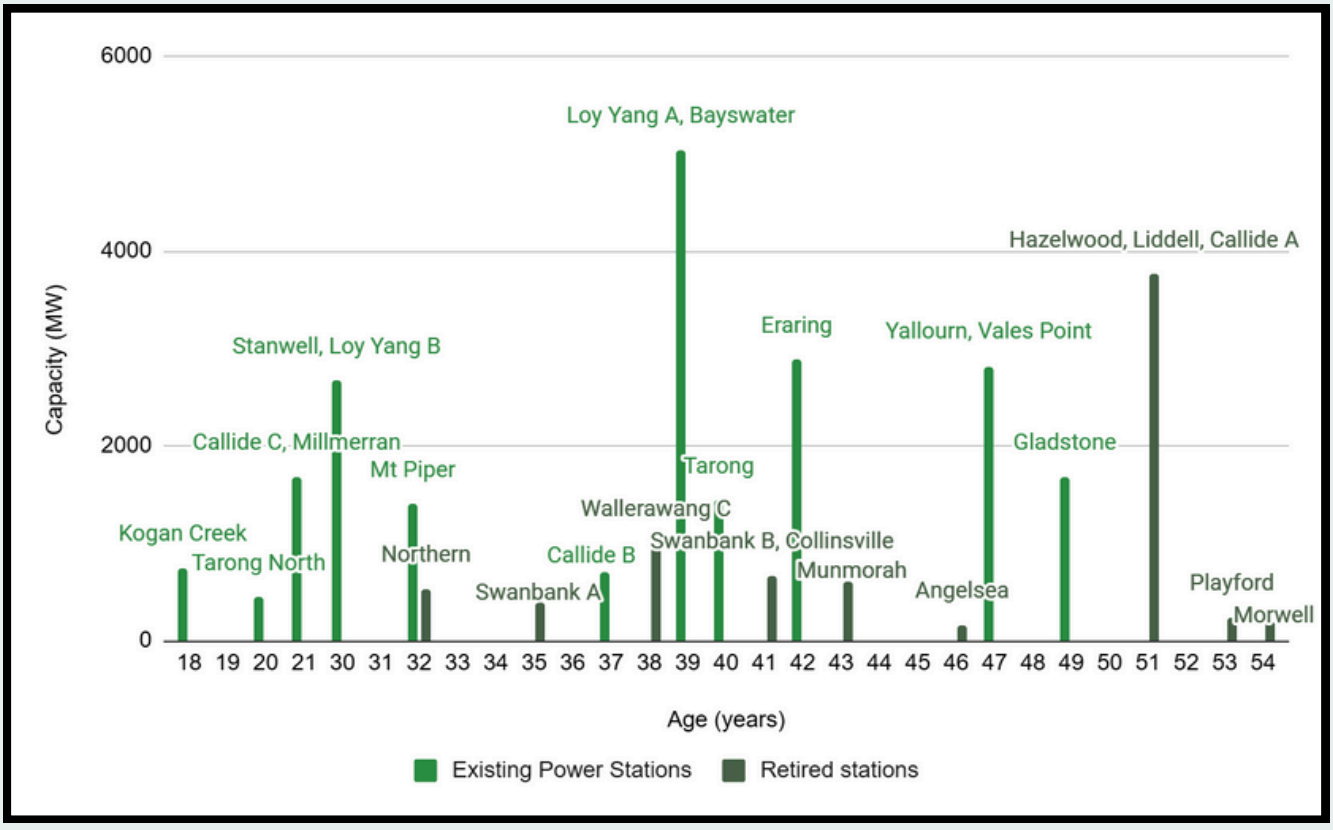


Figure 6: Coal-fired power stations (existing and retired since 2007).

References

[1] Australian Energy Market Operator. (2025). *Quarterly Energy Dynamics Q3 2025*.

[2] Institute for Energy Economics and Financial Analysis. (2025). *What are the factors driving changing power bills, and are there any opportunities for reductions?*

[3] OpenElectricity. (2025). *Energy in the NEM*.

[4] AEMO. (2025). *2025 Inputs, Assumptions and Scenarios Report*.

[5] Australian Energy Market Operator. (2025). *Medium Term Projected Assessment of System Adequacy by Dispatch Unit ID*.

[6] McCardle, P., (2023). *A quick look at EnergyAustralia's outage plans for Yallourn Power Station*.

[7] Tennessee valley Authority. (2025). *How a Coal Fired Power Station Works*.

[8] Clean Energy Regulator. (2025). *Corporate Emissions and Energy Data 2023-24*.

[9] Note that this analysis doesn't include Redbank Power Station which operated for 14 years in NSW and closed due to economics partly driven by unusual coal supply arrangements.

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