

# World's biggest battery with 1,200MW capacity set to be built in NSW Hunter Valley

**The announcement by CEP Energy is the latest in a flurry of major energy storage projects for Australia's national electricity grid**



File photo of solar panels. CEP Energy says its \$2.4bn battery at Kurri Kurri will be the world's biggest with about eight times greater capacity than South Australia's big battery. Photograph: Carly Earl/The Guardian

**Adam Morton** *Environment editor*

[@adamlmorton](#)

Fri 5 Feb 2021 04.18 GMT

Developers plan to build what they say will be the world's biggest large-scale battery in the **New South Wales** Hunter Valley, the latest in a flurry of major energy storage projects announced for the national electricity grid.

CEP Energy said its \$2.4bn battery at Kurri Kurri, north-west of Newcastle, would have a power capacity of up to 1,200 megawatts – about eight times greater than the **battery at Hornsdale** in South Australia, which was the biggest when it began operating in 2017.

It would also be significantly bigger than large batteries announced in the past three months for the **Lake Macquarie Eraring coal power station** in NSW, the Wallerawang power station near Lithgow, **Torrens Island in Adelaide** and **near Geelong in Victoria**.

CEP **Energy** said it was part of a planned network of four grid-scale batteries, including two in Victoria and one in South Australia, that would have a combined capacity of 2,000MW. It was also planning 1,500MW of rooftop solar panels on industrial sites.

Morris Iemma, a former NSW premier and CEP Energy's chairman, said the **clean energy roadmap that passed the state's parliament last year** had given the market confidence to invest in renewable generation supported by large-battery storage without subsidies.

He said big batteries would play a major role in filling the gap left by the retirement of coal and gas plants, including the closure of the Liddell power station in early 2023.

"This project will help ensure the Hunter region of NSW remains true to its heritage as one of the nation's energy powerhouses as we work towards a cleaner, decarbonised future," Iemma said.

BirdLife Australia said it was concerned about plans to expand industry in endangered bird habitat in the Tomalpin Woodlands near Kurri Kurri. It said the battery was one of a number of projects that could affect the woodlands, which is one of the few remaining regular breeding areas for two critically endangered species, the regent honeyeater and swift parrot.

The group's woodland birds project manager, Mick Roderick, said the battery had not been properly thought through. "Renewable energy is great and there are potentially appropriate sites nearby, but this proposal cannot be built in the Tomalpin woodlands," he said.

If it goes ahead at the scale planned, the project could challenge the viability of gas-fired power plants proposed for the region by AGL Energy and EnergyAustralia. It would also raise further questions about a Morrison government proposal to instruct the taxpayer-owned Snowy Hydro to build a

gas plant at Kurri Kurri if companies have not made commitments by April to directly replace Liddell.

The government has said NSW **will need 1,000MW** of new flexible electricity capacity that can be called on at any time to support variable solar and wind when Liddell shuts, but the suggestion more gas-fired power is needed in the region to ensure grid stability and keep prices down is contested.

The Australian Energy Market Operator (Aemo) found only **an additional 154MW** would be needed in NSW by 2023 to meet the electricity grid's strict "reliability standard", and that well in excess of that amount had already been announced. Origin Energy, AGL Energy and Maoneng have all recently announced battery projects in the state.



New gas-fired power not needed as renewable energy expands, grid operator says

CEP Energy says construction of its big battery is planned to start in early 2022, with operation to begin the following year. It will be built in the Hunter economic zone, one of five renewable energy zones announced by the NSW government.

The company is yet to decide the storage capacity, which will determine how many hours it can run.

Battery technology has taken off more rapidly than was predicted. An Aemo forecast in 2016 suggested the country might have only 4MW of large-scale batteries by 2020, and build no more than that before 2036.

A report in November said the country already had 287MW in operation or committed to construction. Plans for more than 2 gigawatts have been announced since then.

Aemo has suggested the grid will need between 6GW and 19GW of new flexible electricity capacity over the next two decades as old coal-fired plants close and are mostly replaced by solar and wind.

Flexible capacity can come from batteries, pumped hydro, demand management programs and gas. Aemo last year found additional gas-fired power, which is the only fossil fuel on the list, **was an option, but not essential** as part of an optimal future grid and was likely to be more expensive than alternatives.

## **NSW's clean energy plan means the federal government is even more isolated on fossil fuels**

Angus Taylor's dire warnings about abandoning coal are going unheeded as the states forge their own path towards renewables



NSW's new bill to build 12 gigawatts of clean energy means it could 'produce almost as much clean electricity as is consumed across South Australia, Western Australia and Tasmania'. Photograph: Bloomberg/Bloomberg via Getty Images

**Adam Morton** *Environment editor*

[@adamlmorton](#)

Sun 29 Nov 2020 16.30 GMT

There may have been other weeks that packed in as many transformative developments in clean energy in Australia as the past seven days, but they don't come often.

On Friday, the **New South Wales** parliament passed laws to build 12 gigawatts of clean energy – roughly equivalent to the country's entire existing large-scale renewable capacity – and 2GW of energy storage in the state over the next decade.

Remarkably, given Australia's tortured national climate politics, the legislation had near-unanimous parliamentary support from the Coalition government, the Labor opposition, the Greens and most other crossbenchers. One Nation opposed the bill, filibustering through the night before its **eventual passage**.

The scale of what the NSW plan will mean for the grid and – despite the cautiousness of MPs when the issue is raised – the early closure of coal-fired



power is yet to be fully appreciated. “It’s massive,” says Tristan Edis, a director with the analysis firm Green Energy Markets. “It will produce almost as much electricity as is consumed across South Australia, Western Australia and Tasmania.”

Three days earlier, the Victorian government’s budget included \$543m to develop six renewable energy zones. Part of a **\$1.6bn clean energy commitment**, it will be used to buttress and make best use of the solar and windfarms built to meet a state renewable energy target.



AGL, the country’s biggest greenhouse gas emitter, has announced it will build a large-scale battery next to its Loy Yang A coal plant in Gippsland. It is the third major battery announcement in two weeks. Photograph: David Gray/Getty Images

Meanwhile, the energy company AGL, the country’s biggest greenhouse gas emitter, announced it would build a large-scale battery **next to its Loy Yang A coal plant** in Gippsland. It was the third major battery announcement in three weeks, following others **near Geelong** and **Adelaide**. All are bigger than anything currently in operation in Australia.

Up north near Townsville, a zinc refinery owned by Sun Metals became the first business of its type to pledge it would be **run entirely on renewable energy** by 2040. Down south, the Tasmanian government boasted the near-complete

construction of the Granville Harbour wind farm had tipped the state over to **running 100% on renewable energy**.

The ramifications of the change were the focus of speakers at an online summit hosted by the Australian Financial Review. Some marvelled at the pace, while others expressed frustration at what they saw as a leap away from a national electricity market towards the sort of state-based central planning that was supposed to have died in the 20th century.

Several analysts said the rapid shift raised another question: where does it leave the Morrison government's case for new fossil fuel power as part of its touted **gas-fired recovery** from the Covid-19 pandemic?

Scott Morrison and his federal energy and emissions reduction minister, Angus Taylor, have claimed NSW **will need 1,000 megawatts** of new flexible electricity capacity that can be called on at any time – so not solar and wind – to replace the Liddell coal plant when it shuts in 2023. They warned the private sector they will instruct the taxpayer-owned Snowy Hydro to build some of it if companies have not made commitments by April.

The idea more gas was needed was heavily contested at the time – and is even more so now.

Taylor responded to the NSW plan by warning it will drive away private investors, pointing to **AGL** and **EnergyAustralia** saying they would now delay decisions on gas and battery projects.

The NSW's plan architect, the energy and environment minister Matt Kean, who has emerged as a media-friendly clean energy evangelist within the Coalition, says his assessment is new gas will not be needed when Liddell shuts.

“We think there are other means that could achieve this,” he said on Friday. “What I am focused on is delivering the infrastructure that will keep the lights on here and drive prices down.”

Kean describes the NSW plan as a “historic victory for the people of NSW” that will spark \$58bn in investment over the next 20 years and create thousands of

jobs. “Ultimately, NSW is its own government and my job is to put the people of NSW first, and that’s exactly what we’re doing,” he says.

On gas, he argues it has an ongoing role to play in generating electricity “but it’s a very expensive way to do that”.

In terms of actual generation, gas plays a relatively minor role in the national grid, providing about 8% of electricity.

It plays a much smaller role in NSW, providing just 1.4% of the electricity over the past year. The state’s existing gas plants have been operating at just 6% of their capacity. The main reason is pretty clear: the average wholesale price for gas power has been more than twice as expensive as the average across the grid.

Dr Dylan McConnell, a researcher at the University of Melbourne’s climate and energy college, is among those who say the state commitments are pushing gas further out of the picture. “Practically, that is what’s happening,” he says. “At the moment renewable energy is cheaper, but in future it will be the batteries and the 2GW of storage in NSW pushing out gas.”

Simon Holmes à Court, also at the University of Melbourne and a clean energy commentator, says this is in line with forecasts by the Australian Energy Market Operator (Aemo), which suggest a shrinking amount of gas-fired generation over the next 10-15 years. “We are already using less and gas prices are down,” he says. “The fact is, it is struggling because it is competing with cheaper renewables.”

The price of energy is expected to fall further as more solar and wind comes into the system. In both NSW and **Victoria**, the commitment is not to build the plants, but to sign contracts guaranteeing private investors a minimum price for the electricity they generate. This is already happening in **Victoria** under the state’s renewable energy target, which has backed 928 megawatts of wind and solar and promised at least another 600MW.

The **NSW scheme** will support not just solar and wind energy but also two types of storage – long-duration technologies that can provide backup power for eight hours or more (expected to be pumped hydro and batteries) and “fast-start”



generators that can whir into action to ensure grid stability when needed (batteries and possibly gas).

Both NSW and Victoria will help pay for the grid connections and other infrastructure needed to get the clean energy online. Tristan Edis says Victoria has perhaps had less credit for its policy than it might have because it has rolled it out gradually, where NSW opted for one big hit.

Other states are heading down a similar path. Queensland has a similar renewable energy zone and auction model run by the **state-owned renewable company CleanCo**, while Tasmania has contentiously promised **200% renewable energy generation** – twice the state’s local demand – by 2040 through a yet-to-be-announced model.

The Morrison government has been critical of some state intervention in the national electricity market, particularly when it believes it is unclear what it will mean for electricity prices. Its opponents argue the states would not be taking these steps if the federal Coalition had not abandoned the field by repealing a national carbon price, dropping plans for some sort of replacement and choosing not to extend the national renewable energy target when it was filled last year.

They also point out the Morrison government is planning its own interventions, particularly to push for new gas-fired power that others say is not needed.

In addition to threatening to build a new gas plant in NSW if private companies don’t, Taylor is trying to push through legislation to allow the taxpayer-owned green bank, the Clean Energy Finance Corporation, to **underwrite five “fast-start” gas plants**.

The need for additional gas-fired generation to replace the Liddell coal plant is heavily contested. Neither Aemo nor a **government-commissioned taskforce** looking at the Liddell closure found there would be a shortfall in generation capacity.



Research commissioned by Greenpeace, found the NSW government's model – renewables backed mostly by batteries – was by far the cheapest option when compared with doing nothing or building a new gas plant. Photograph: SUPPLIED/PR IMAGE

Taylor says new gas is needed less to ensure reliable supply, and more to prevent a spike in electricity prices – as happened around the time the Hazelwood coal plant in Victoria shut much more abruptly in 2017.

Again, this has been challenged by analysts who have considered alternatives to new fossil fuels. Research **released on Friday** by analysts at Reputex, commissioned by Greenpeace, found the NSW government's model – renewables backed mostly by batteries – was by far the cheapest option when compared with doing nothing or building a new gas plant.

Where does this leave the case for a gas-fired recovery?

There is a separate, and more complicated, argument about the use of gas for heating and as a chemical feedstock in manufacturing and industry, where it is not always as easily replaced (though **independent analysis** has found even here the need for new gas, rather than making better use of existing resources and **backing cleaner alternatives where possible**, is significantly overstated).

But in electricity, the case for new gas in the short-term appears limited.

In its **assessment of what an optimal future grid would look like**, Aemo found it would increasingly run on large and small-scale renewable energy – potentially by 2035 up to 90% of electricity from solar and wind at times – supported by “dispatchable” generation that can be called on when needed.

That dispatchable generation can come from a range of sources including pumped hydro, batteries and, yes, gas. But Aemo suggested investment in gas was less likely to make sense than cleaner options due to cost. It didn't consider the impact of the emissions from gas, but it was the only fossil fuel on the list.

Analysts make a similar case, with a caveat. While the amount of gas-fired power generation is expected to continue to fall in the next few years, McConnell and Edis say there may be a case for new plants to be built as more of the country's coal fleet shuts, depending on how much other technologies have developed.

These plants would hardly ever be used, and would not contribute much to emissions. **Gas** plants differ from batteries and pumped hydro at the moment in that they can sit idle for all but a few hours a year and be called on only at times of absolute need, as diesel generators are in some places now. By comparison, pumped hydro and batteries need to be called on more regularly to justify their existence.

McConnell says if companies or governments do feel compelled to back gas plants, they would be wise to ensure they can also run on hydrogen, given **where the future of energy is headed**.

“The reality is complex,” McConnell says. “I'd like to think the answer on new gas is ‘no’ but having gas turbines that are hydrogen-ready may not be the worst thing we can do. But we don't need them now.”

## Australia's climate record labelled 'simply embarrassing' and among worst of G20 nations

This article is more than 2 months old

## **Australia has no national policies to expand renewable energy and per capita emissions are three times the average, global report says**



The Climate Transparency report, released before this weekend's G20 summit, ranks Australia in the bottom bracket in every climate policy area except one. Photograph: Dean Lewins/AAP

**Adam Morton** *Environment editor*

[@adamlmorton](#)

Wed 18 Nov 2020 06.16 GMT

Australia is one of only two countries in the **G20** not implementing or planning any sort of carbon price scheme, one of only four without a national policy to increase renewable energy and ranks last in cutting greenhouse gas emissions from transport, a new global report has found.

The **Climate Transparency report**, an assessment by 14 organisations released before this weekend's virtual G20 summit, said Australia ranked in the bottom bracket in every climate policy area considered except one.

The Morrison government was found to have no national policies to expand renewable energy, phase out coal, phase out fossil fuel cars, decarbonise heavy-duty vehicles, change the nature of mass public or freight transport, retrofit existing buildings or reduce deforestation.

Meanwhile, Australia had one of the highest shares of fossil fuel use, per capita emissions three times the G20 average and ranked highly for vulnerability to climate risk.

The report comes as Australia is **resisting pressure to set a target** and introduce policies to reach net zero emissions by 2050. Once the US president-elect Joe Biden takes office, the target will be backed by more than 70 countries including all members of the G7, the European Union and China (which says it will be carbon-neutral before 2060).

Ursula Fuentes-Hutfilter, a senior policy adviser with Climate Analytics, which contributed to the report, said the report highlighted how poorly Australia was doing in addressing the climate crisis.

“When measured up against other G20 nations, the Australian government’s record is simply embarrassing,” she said.

On carbon pricing, only Australia and India were found to have neither an existing policy or a plan to introduce an emissions trading scheme or carbon tax. While the US does not have a national price, there are several schemes at state level.

On transport, Australia ranked last. The report said the Coalition government had made some positive announcements, including promising to release a national electric vehicle strategy to cut transport emissions by 10m tonnes by 2030, but no decisions or plans had followed.

The sole policy area in which Australia was not given a bottom-level “low” ranking was on limiting emissions from new buildings.

An Australia-specific analysis accompanying the Climate Transparency report said emissions were **increasing from domestic transport and industry**, and fossil fuel extraction and export. Emissions from electricity generation are reducing due to an expansion of cheap renewable energy, but the report said investment in wind and solar **had fallen** due to a lack of policy direction.

The national renewable energy target for 2020 was met last year and the federal government has no plan to replace it. The report does not include renewable



energy announcements by state governments, including a **New South Wales policy** last week to underwrite 12 gigawatts of new clean energy over the next decade.

While renewable energy provided nearly 26% of electricity in the national grid (covering the five eastern states and the Australian Capital Territory) over the past year, fossil fuels supplied 93% of Australia's total energy needs once heating, cooking and transport were factored in.

The report listed recent developments in Australian climate policy as continued support for fossil fuel industries as part of **the government's "technology neutral" approach to supporting technology**, plans to change the Clean Energy Finance Corporation **to ensure it can invest in gas-fired power** and ruling out ratcheting up its commitment under the **Paris agreement** or adopting a long-term net zero emissions target despite the goal having widespread support within the country.

It noted the government had mostly not used economic stimulus to back a **"green recovery"** from the **Covid-19 pandemic**, instead promising a **"gas-led recovery"** that would lock in a fossil-fuel-based trajectory. There had been some funding for clean energy, including **hydrogen** and **battery storage**, from the federal and state governments, but there had also been support for the coal, oil, and gas sectors.

Across the G20, about 30% of stimulus spending has been directed to "environmentally-intensive sectors", but most had gone to supporting emissions-intensive and environmentally-damaging industries "with little consideration overall to the climate or improving resilience".

The report agreed with previous assessments in finding Australia was not on track to play its part to limit global heating to 1.5C. Doing that would require it to cut emissions to about 50% below 2005 levels by 2030 on the path to net zero.

Australia's 2030 target is a 26-28% cut. A government assessment last year found **it was not on track to meet even this goal** without using a controversial carbon accounting measure opposed by other countries.

A Morrison government spokesperson said the report was misleading and lacked credibility. “Australia is taking real and practical action on climate change, and we have a strong track record of meeting and beating our international targets,” they said.

Before Covid-19, Australia’s national emissions had fallen about 15% since 2005, including a 2.2% drop since the Coalition was elected in 2013.