Submission No 63

INQUIRY INTO 2024 ANNUAL REPORT OF THE NET ZERO COMMISSION

Organisation: Institute for Energy Economics and Financial Analysis

Date Received: 14 February 2025

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To: The Joint Standing Committee on Net Zero Future
Re: Inquiry into the 2024 Annual Report of the Net Zero Commission

Dear The Hon. Jeremy Buckingham,

The Institute for Energy Economics and Financial Analysis (IEEFA) is grateful for the opportunity to present its submission to the 2024 Annual Report of the Net Zero Commission (NZC). IEEFA is an energy finance think tank that examines issues related to energy markets, trends and policies. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy.

IEEFA is supportive of the measures outlined in NZC 2024 Annual Report to reduce greenhouse gas emissions across the state's electricity, resources and built environment sectors.

On reviewing the report, IEEFA recommends the Commission:

- Tightens methane rules on NSW coal production, and include clauses in planning laws to ensure new coal or gas project approvals are in line in emissions reduction targets.
- Considers new measures to stimulate coalmine methane abatement in areas where it wouldn't otherwise occur. Incentives could attract private capital and create research and development (R&D) opportunities in the state.
- Accelerates the exit of coal in NSW, and the entry of replacement renewables to support the delivery of federal and state emissions reductions and renewables penetration targets.
- Prioritises the development of NSW's gas decarbonisation roadmap, accelerating measures to reduce gas demand and planning for the phase-down of its gas distribution networks.

Please do not hesitate to contact us for any further information.

Kind regards,
Kevin Morrison – Energy Finance Analyst, Australian Gas
Johanna Bowyer – Lead Analyst, Australian Electricity
Jay Gordon – Energy Finance Analyst, Australian Electricity
Andrew Gorringe – Energy Finance Analyst, Australian Coal
Anne-Louise Knight – Lead Analyst, Australian Coal

Introduction

IEEFA agrees with the assertion in the NSW Net Zero Commission's 2024 Annual Report that coalmine expansions or extensions in the state would require all other sectors to make faster and deeper cuts to their greenhouse gas emissions. Despite NSW producing relatively small volumes of gas, this may change if the Narrabri gas project were to go ahead. The Narrabri gas project could affect the prevailing NSW 2030 and 2035 emissions reduction targets.

IEEFA supports the policy initiatives in the Commission's 2024 report to encourage large buildings to be all-electric, and the pursuit of the policy to restrict gas connections on new homes or developments.

Risks to NSW legislated emissions targets

NSW is not on track to meet any of its legislated emissions targets. IEEFA concurs with the NZC's finding that "unless faster and more significant progress is made, the target for 2030 will not be achieved, the 2035 target could be out of reach, and the challenge of meeting net zero by 2050 may become more difficult".[1]

The NZC further adds that "in the immediate term and beyond, the electricity and energy sector remains central in the drive towards net zero, both in reducing its own emissions and enabling other sectors to decarbonise through electrification". IEEFA's submission largely focuses on the electricity and energy sectors.

1. The NZC said it was "concerned about the risks to the state's targets from increased emissions in the resources sector"

The majority of NSW emissions in the resource sector are from coalmining. NSW only has minimal oil and gas production, and "emissions from these activities have generally been low".[2]

This is a critical year for methane abatement action in NSW, which has stronger greenhouse gas emissions reduction targets than the Commonwealth, and bipartisan support for climate action. Australia's largest state economy has committed to ambitious action on climate change, but the hiatus between commitment and implementation creates significant risk of locking in emissions and delaying investment in mitigation and adaptation action. More than a dozen coalmine expansions are in the planning system, several of which are very large. While there is a commitment to regulate methane from coalmines via state pollution licences, this is taking time to implement.

[1] Net Zero Commission. 2024 Annual Report. November 2024. Page 11.
[2] Ibid. Page 47.

2. NSW out of step in approving thermal coalmine expansions or extensions

Coalmining in NSW is largely for thermal coal, and most production is destined for export. As such, the NSW coalmining sector is more exposed than other states to the global energy transition. Despite this fact, in 2024, federal approval was granted to four coalmine extension or expansion projects, including Ravensworth Underground Mine, Mount Pleasant open-cut mine, Narrabri South underground mine and Boggabri Coal Mine Modification 8.

Australia, as a large coal exporting nation, has one of the largest pipelines of coal projects, many of which are in NSW. These recent approvals put Australia at odds with the recommendation that coalmining emissions need to fall 75% by 2030 to limit global warming to 1.5°C and achieve net zero. Even so, the mining approvals boost coal production well beyond the 2030 milestone.

Coal methane emissions are growing, and the quantity of coal mined is a lead indicator. According to the National Greenhouse Gas Inventory, fugitive emissions from the coalmining sector grew in the 2023-24 financial year. In NSW, raw coal production grew by 2.4% in the year to December 2024, to 236.1 million tonnes.[3]

There are several pathways to reducing coalmining emissions. Pre-drainage and flaring of methane in gassy underground mines are the low-hanging fruit – and have largely been picked. Progress to net zero will require new avenues to be developed, either from ventilation air methane (VAM) at underground mines or preventing fugitive emissions from open-cut mines.

Miners face a decision about what to do with the fugitive methane emissions associated with coalmining. For underground mines, these emissions can be substantial, and best practice would suggest some form of abatement technology is used. For example, some mines have introduced on-site power generation to utilise the captured methane and reduce emissions. Abatement measures could have been made a condition of recent underground mine approvals. However, they were not.

For open-cut mines, fugitive emissions are uncertain. Most of the recent open-cut mine approvals were granted on the assumption of near zero methane emissions, without requiring further enquiry or requirements to consider pre-mine gas drainage. Nor are they eligible to receive carbon credits in the Australian Carbon Credit Units (ACCU) scheme, as "the volume of emissions released per year from an open cut mine with no pre-drainage was likely to be less than the emissions created from a project that used pre-drainage to extract the methane faster than it would otherwise have been released". But in Queensland, South Walker Creek will become the first open-cut mine to pre-drain gas and feed it to onsite electricity generators. Its approval documents outlined how this would lead to a net reduction in emissions. With assistance from Queensland's Low Emissions Investment Partnerships (LEIP) grant scheme, the methane pre-drainage project is a commercially viable investment for the miner. The state has a responsibility to consider whether public-private partnerships (PPP) programmes such as the

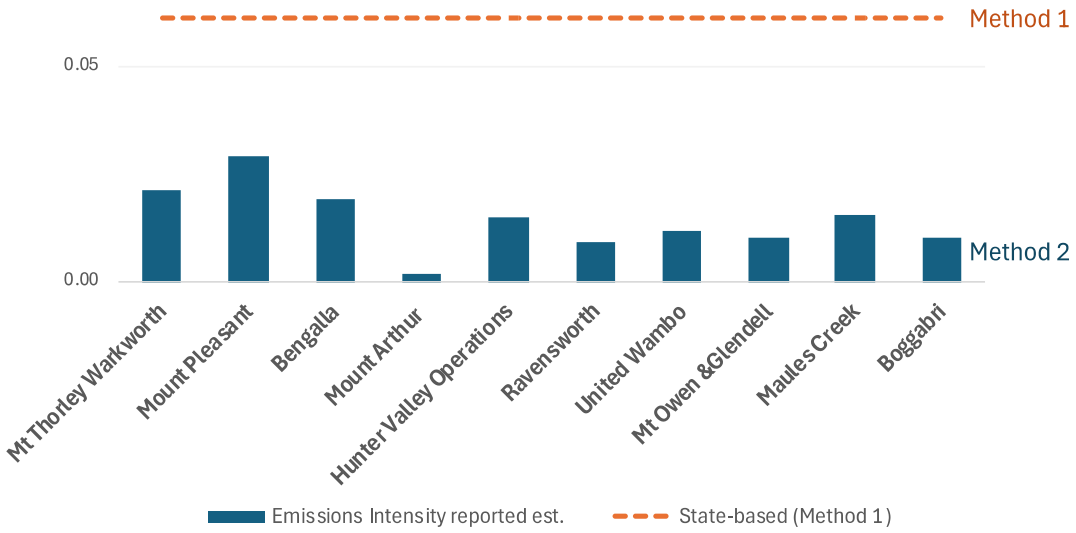
[3] Coal Services. NSW coal industry statistics. Accessed February 2025.

LEIP scheme are appropriate. This could further incentivise improved methane measurements, require gas utilisation and extend abatement to VAM emissions. Open-cut mine emissions abatement would be best served by inclusion in the ACCU scheme, without requiring state funding.

Fugitive methane abatement in open-cut mining can face more challenges. Without regulation, grants or eligibility to receive carbon credits, there is little incentive for miners to act. New technology, such as satellite detection, means observed methane emissions may become much higher than currently recorded. This would place further pressure on the state to meet its emissions reduction goals, particularly as most mine extension applications are for open-cut mining.

As it stands, open-cut miners in NSW have reported lower emissions after using Method 2 to estimate methane emissions instead of Method 1 under the National Greenhouse and Energy Reporting (NGER) Scheme. The reported fugitive emissions intensity of the top 10 open-cut coal mine emitters in NSW is shown in Figure 1 below.

Figure 1: Large NSW open-cut mines' fugitive emissions intensity (tCO_2e/ROMt)



Sources: 2022/23 Safeguard Mechanism Reporting; company reports; Common Capital; IEEFA

All the mines above have been able to report emissions intensity levels using NGER Method 2, which are at least half that of the Method 1 state-based level of 0.061 tonnes of carbon dioxide equivalent (tCO_2e) per tonne of coal, with some significantly lower.[4] The implications of this are that these mines, regulated under the Safeguard Mechanism, will be required to reach an emissions intensity level – for Scope 1 emissions – to trend towards a target rate of 0.0653tCO_2e by FY2029-30, or above the Method 1 level. This target includes their diesel emissions, but these

[4] Open-cut coalmine operators can choose to report their fugitive methane emissions through either state-based emissions factors (Method 1), or company-led emissions estimates (Method 2).

typically make up about half of the Scope 1 emissions. In other words, most will be allowed to increase emissions intensities unencumbered, contrary to what the NGER scheme and Safeguard Mechanism intend.

The state has a responsibility to actively consider abatement opportunities. All coalmine extension applications should require methane gas management plans that detail the potential for methane drainage and abatement. For underground mines, this could extend to more than a consideration of gas management from a safety perspective but also from an emissions perspective. For open-cut mines, methane pre-drainage should be considered well in advance of mining.

Some miners have demonstrated that private capital can be attracted to methane abatement in the coalmining sector, given sufficient incentives or support. The development of technologies and innovation required in this sector provide ample opportunity for NSW to lead and develop R&D that can be exported to other coal-producing regions in Australia and potentially overseas.

Net zero progress in this sector is unlikely to come easily, and existing policies and practices are ineffective in managing and reducing methane emissions.

3. NSW needs to accelerate the exit of coal and the entry of replacement renewables

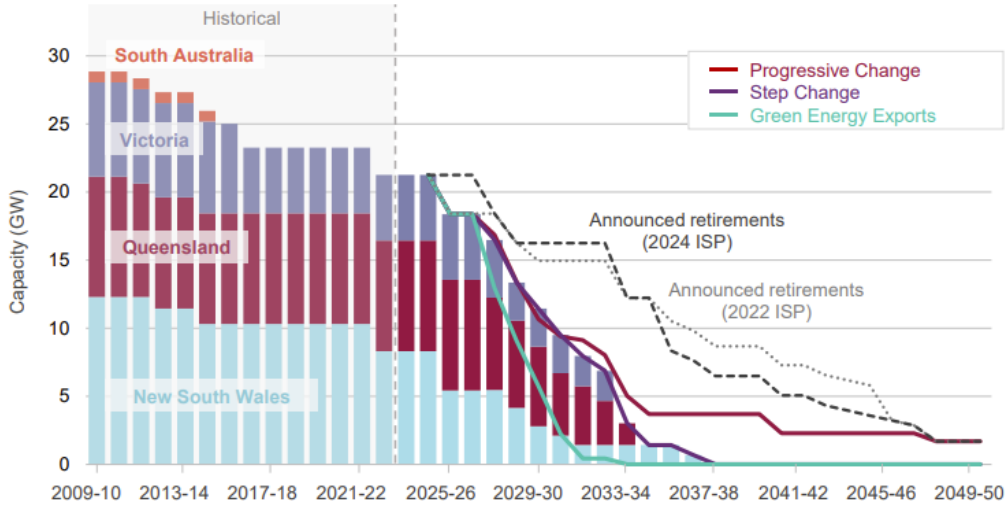
The Net Zero Commission's 2024 Annual Report outlines that NSW is not on track to meet its emissions reduction targets.[5] "The April 2024 projections show NSW barely reaching its targets for 2030 and 2035, but only under the most optimistic assumptions modelled. Otherwise, the projections show NSW falling short of the targets, especially in 2030."

It will be key for NSW to accelerate the rollout of renewable energy backed by storage and connected with transmission to enable faster electricity sector decarbonisation. NSW has developed innovative policy mechanisms with the NSW Electricity Infrastructure Roadmap. However, transmission delays, slow grid connection processes and slow planning processes have delayed the rollout of renewables, storage and transmission. NSW will need concerted efforts in these areas to speed up progress.

Furthermore, NSW needs to accelerate coal's exit to achieve its emissions reduction targets. To stay in line with the Australian Energy Market Operator's (AEMO) Step Change scenario, which supports the Federal Government's goal to reach 82% renewables by 2030, coal will need to exit far earlier than the announced closure dates as shown in Figure 2 below.

[5] Net Zero Commission. 2024 Annual Report. November 2024. Pages 9-10.

Figure 2: National Energy Market coal capacity (GW, FY2009-10 to FY2049-50)



Source: AEMO ISP 2024.[6]

Coal capacity in NSW is about 8.3 gigawatts (GW). AEMO's 2024 Integrated System Plan (ISP) Step Change scenario forecasts coal capacity to be 4.1GW in FY2028-29 – about half current levels. This would support an emissions trajectory below 2°C of warming and be aligned with 82% renewables nationally. However, the only scheduled closure before 2029 is Eraring, in 2027. This reduction in coal capacity is not sufficient to meet the ISP conditions – additional coal capacity in NSW needs to close before 2029.

Further, the Eraring arrangement is problematic, as it leaves open the possibility for the plant to operate until 2029. However, it needs to close years earlier to stay in line with the Step Change scenario. This changeable timeframe may reduce investor confidence in replacement capacity. The Eraring arrangement could also result in NSW taxpayers covering the losses of a historically profitable plant, making the deal appear like the privatisation of profits and potential socialisation of future losses.[7]

The timing of the Vales Point and Bayswater closures in 2033 is also not ideal from emissions trajectory and energy system planning perspectives. The NZC's 2024 Annual Report shows the Vales Point and Bayswater closures represent a lumpy exit of almost 4GW of coal capacity in one year.[8] However, the ISP Step Change scenario shows NSW coal capacity at 1.4GW in 2031-32, i.e. only Mount Piper should remain in the system from 2032 onwards. The closure dates of Vales Point and Bayswater need to be more carefully planned to stay in line with Step Change. Replacement capacity needs to be brought into the system to enable these exits in the appropriate timeline while maintaining reliability of electricity supply.

[6] AEMO. 2024 Integrated System Plan for the National Electricity Market. June 2024. Page 10.
[7] IEEFA. Eraring extension could see NSW taxpayers covering potential losses. 23 May 2024.
[8] Net Zero Commission. 2024 Annual Report. November 2024. Page 22.

Figure 3. Historical and estimated coal power station closures in NSW

Coal generator	Capacity (MW)	Year of closure
Munmorah	600	2012
Redbank	144	2014
Wallerawang C	1,000	2014
Liddell	2,000	2023 (deferred from 2022)
Eraring	2,880	2027–29 (estimated, deferred from 2025)
Vales Point	1,320	2033 (estimated)
Bayswater	2,640	2033 (estimated)
Mount Piper	1,400	2035–40 (estimated)

Source: Net Zero Commission.[9] Note: Future closure dates as announced by owners.

4. NSW to accelerate gas substitution measures to reduce gas demand

NSW is largely reliant on gas supplies from neighbouring Victoria, South Australia and Queensland, as state gas production is relatively small. However, Santos has said it plans to have its Narrabri gas project in northern NSW ready for a final investment decision (FID) this year.[10] IEEFA has argued in a submission to the NSW Independent Planning Commission (IPC) that, "The Narrabri gas project will not bring down the cost of gas for the domestic consumer as Santos claims. The Narrabri gas project will embed high cost gas into the system, forcing up the price of gas for the domestic consumer."[11]

Gas demand is NSW has been declining in recent years, falling to a 14-year low of 134.3 petajoules (PJ) in FY2022-23 to 30 June 2024, marking a 19.6% drop since its peak use of 167PJ in FY2013-14.[12] The fall largely reflects lower use by the manufacturing sector in NSW, which dropped to a 41-year low of 58.8PJ in FY2022-23 and down 37% from its peak use of 93.1PJ in FY2000-01.[13]

Despite this fall, the manufacturing sector is still the largest consumer of gas in NSW, representing almost 44% of gas use in the state in FY2022-23. An IEEFA report in October 2024 found that industrial heat pumps could replace more than half of the gas used for Australia's industrial process heat, or about 17% of domestic gas use. One of the most promising applications was in the food and beverage sector.[14]

[9] Net Zero Commission. 2024 Annual Report. November 2024. Page 22.
[10] Santos. 2023 Investor Day presentation. Page 32.
[11] IEEFA. The Narrabri Gas Project – Submission to Independent Planning Commission. August 2020. Page 2.
[12] Australian Government DCCEEW. Australian Energy Update 2024. Table F. August 2024.
[13] Ibid.
[14] IEEFA. Industrial heat pumps key to addressing excess gas demand. 31 October 2024. Page 4.

This could be a potential area to target as food and beverage manufacturing in NSW is significant. The sector employs about 64,800 people in the state.[15]

Residential is the second-largest gas consuming sector. Residential gas consumption in NSW has broadly trended upwards over the past decade, but dropped to 32.6PJ in FY22-23, its lowest in seven years.[16] This fall may reflect an increasing number of NSW households making the financial decision to switch from gas to electricity. It also correlates with data from the Clean Energy Regulator (CER) showing that installations of heat pump hot water systems in NSW grew almost twentyfold from the 2021 calendar year to 2023, and a further 48% between 2023 and 2024.[17]

Despite this, the NSW government is yet to implement targeted policies to support households to switch to efficient electric appliances. By contrast, the ACT and Victoria are implementing their Integrated Energy Plan[18] and Gas Substitution Roadmap,[19] respectively. Both states have implemented legislation to require new residential developments to be all-electric, and are considering further reforms to transition to efficient electric homes.

Energy system models consistently show that the residential sector is one of the most cost-effective to decarbonise in the economy, particularly through electrification.[20] If residential emission reductions do not occur at the pace necessary to meet NSW's legislated targets, this may result in other sectors needing to increase their decarbonisation effort to compensate, leading to a costlier transition overall.

Additionally, delaying residential electrification can enhance the stranded asset risks faced by gas distribution networks and their consumers. Most regulated gas networks, including Jemena in NSW, have admitted that they face "significant asset stranding risks" as consumers shift to electrification.[21] By continuing to extend the network to connect new customers, these risks will only continue to grow.

The NSW government has committed to develop a Gas Decarbonisation Roadmap.[22] This roadmap should be an immediate priority for development in 2025. It presents an opportunity to deliver significant cost savings to consumers while driving down emissions in the residential sector. This roadmap should:

- Set timelines for the requirement of new homes to be all-electric, ending the growth of future gas network stranded assets.

[15] NSW government. Investment NSW. Food and Beverage Manufacturing in NSW: making opportunities happen. 2025.
[16] Australian government. DCCEEW. Australian Energy Update 2024. Table F. August 2024.
[17] Clean Energy Regulator. Quarterly Carbon Market Report – December Quarter 2024 (data release). 23 January 2025. Figure 3.4.
[18] ACT government. The Integrated Energy Plan: Our Pathway to Electrification. June 2024.
[19] Victorian government. Department of Energy, Environment and Climate Action. Victoria's Gas Substitution Roadmap – Update 2024. December 2024.
[20] For example, see CSIRO and Climateworks Centre. Multi-sector energy modelling 2022: Methodology and results. Final report. December 2022. Page 9.
[21] Jemena Gas Networks. 2025-30 Access Arrangement Proposal. Attachment 7.4: Future of gas analysis. June 2024. Page 18.
[22] Parliament of NSW. Legislative Council House Business Papers. 1276 – Energy – Gas Substitution Roadmap. October 2023.

- Set timelines for the requirement of new appliances to be efficient and electric, allowing for a managed phase-down of the existing gas network.
- Exclude solutions proved to offer limited benefits or delay the transition, such as "renewable gas".[23]
- Establish a broader plan for the phase-down of gas networks, identifying an optimal cost-sharing approach and cost-efficient strategy to decommission existing infrastructure.

The economic need to phase out gas demand in NSW, combined with recent trends that suggest an economic shift is already occurring, further undermines the business case for the Narrabri gas project.

IEEFA also supports the creation of a provision in the Climate Change (Net Zero Future) Act 2023 that places a duty on resource project planning decision-makers that the projects they approve must meet the NSW government's 2030 and 2035 emissions reduction targets. It is difficult to see how the Narrabri gas project would assist in reducing NSW's emission reductions by 50% on 2005 levels by 2030, and by 70% by 2035.[24]

[23] For example, see IEEFA. 'Renewable gas' campaigns leave Victorian gas distribution networks and consumers at risk. August 2023.
[24] NSW Government. AdaptNSW. NSW Government action on climate change. 2025.