Submission No 14

INQUIRY INTO EMISSIONS FROM THE FOSSIL FUEL SECTOR

Organisation: NSW Net Zero Commission

Date Received: 22 August 2025

22 August 2025

The Hon Jeremy Buckingham MLC
Joint Standing Committee on Net Zero Future
Parliament House
Macquarie Street
SYDNEY NSW 2000

Re: Submission to the committee's 2025 inquiry into emissions from the fossil fuel sector

Dear Mr Buckingham,

The Net Zero Commission thanks the Joint Standing Committee on Net Zero Future for the opportunity for the commission to provide input into this inquiry into emissions from the fossil fuel sector.

Reducing emissions from coal mining has a critically important role in NSW achieving its emissions reduction targets, and in ensuring regional communities successfully manage the transition to a net zero economy. While the NSW Department of Climate Change, Energy, the Environment and Water (DCCEEW) projects fugitive emissions to decline strongly after 2027, this is not assured without strong uptake of mitigation technology. It is evident from DCCEEW's emissions projections that NSW is not on track to meet its 2030 and 2035 emissions reduction targets. Reducing emissions in the resources sector is critical to getting the state back on track.

As noted in the commission's 2024 annual progress report, the vast majority of NSW's resources sector emissions are from coal mining. In 2021-22, coal mining emissions were composed of approximately 75% fugitive emissions and 25% fuel combustion. An overview of emissions from fossil fuels is included at Appendix A. The main component of fugitive emissions is methane, a short-lived greenhouse gas that has a global warming potential 28 times that of carbon dioxide on a 100-year time-horizon. This makes any reductions in methane emissions a powerful lever for contributing to achieving the State's emissions reduction targets.

In its 2024 report, the commission noted the criticality of the resources sector to the State's legislated emissions reduction targets and risks to the targets from increased emissions in this

sector. These risks mainly stem from further development of existing coal mines and potentially the development of new coal mines. The commission committed to a deep consideration of these issues, recognising the need to address the broader social and economic implications for NSW communities in making the transition to a net zero economy.

Further, coal mines continue to emit after their closure. It is critical that coal mines adequately prepare to manage closed mines for the longer-term, including allocating resources for rehabilitation, mitigation action and its maintenance.

The commission notes the findings of the Joint Standing Committee's inquiry into the commission's 2024 report, and its recommendation for the commission to deliver a further report on the resources sector. The commission is progressing this work as a priority, including relevant stakeholder engagement being conducted in the Illawarra and Hunter, and the report on the sector being well underway. To assist with informing this current inquiry into the emissions of the fossil fuel sector, the commission is including an initial, high-level summary of stakeholder input on coal fugitive emissions (Appendix B), noting this work is still in progress. In the context of considerations for this inquiry, the commission also notes the NSW Environment Protection Authority released the Proposed Greenhouse Gas Mitigation Guide for NSW Coal Mines for consultation. The commission looks to provide comments on this proposed guide in the coming months.

Overview of matters raised in stakeholder consultations

Submissions received by the commission in response to its call for written input during **May to July 2025 are available** for direct access at www.netzerocommission.nsw.gov.au.

Many submissions provide input in respect of coal mining and fugitive emissions. A large number of individual respondents and a number of organisations expressed concern over the ongoing approval of coal mining expansion and extension projects in NSW, with their recommendations converging on a need for stronger and more direct interventions to reduce emissions from coal mining.

Many respondents advocated for a shift from reliance on offsets to direct, on-site abatement through a combination of regulatory, financial, and policy measures. Many made recommendations for improved transparency under the Safeguard Mechanism and reducing reliance on offsets. Respondents recommended adoption of additional measures including robust, standardised greenhouse gas assessment frameworks for planning applications (including scope 3 emissions), setting specific emissions reduction targets for methane, increasing regulatory enforcement and penalties for non-compliance, and a halt to new approvals for mining expansion and extension projects. Resources industry respondents argued against duplicative or additional NSW regulatory measures to the Safeguard Mechanism for mandatory on-site abatement and stressed the need for national consistency.

The submissions and direct meetings with stakeholders have highlighted the challenges in this sector. Five key themes emerged:

1. The cost of mitigation and related uncertainty over how long some coal mines would continue to operate, making capital investments less attractive.
2. Commercial maturity and safety of available methane abatement technologies: Stakeholders noted that current price signals under the Safeguard Mechanism are insufficient to address cost challenges of on-site mitigation technologies. While current abatement technologies

were considered to face cost and feasibility challenges, they are expected to play a role in future reductions. Further demonstration and scaling, in coordination with state and national actions, was viewed as necessary to support broader industry uptake. Several trials have been conducted or are underway, including the trial of ventilation air methane abatement at Appin Colliery using a Regenerative Thermal Oxidiser (RTO) with the next phase currently at planning application stage and multiple earlier RTO demonstration projects by the CSIRO.

3. The question of NSW regulation and avoiding duplication of the Safeguard Mechanism: Coordination between NSW planning and licensing processes and Commonwealth mechanisms is an area of concern for industry stakeholders. Some respondents also called for clearer and more effective NSW regulation generally.
4. Stakeholders hold differing views on the role of offsets: Some stakeholders advocated for action on emissions to focus on direct abatement, while others support a broad and flexible use of offsets. The NSW Government defines the scope of its net zero target as accounting for direct emissions[1], while the Safeguard Mechanism allows offsetting through certificate markets.
5. Transition planning and regional impacts need to be given stronger emphasis: Responses noted that coal continues to provide significant regional economic benefits, so longer-term planning is required to support diversification and ensure that emissions reduction goals are met in a way that maintains economic and social resilience in affected regions.

Overall, these consultations are providing important insights into the complexities and potential avenues for actions which could accelerate emissions reductions in the sector. I expect the commission will be able to provide more insights when it completes its report on these consultations in October this year. In the meantime, we encourage the Joint Standing Committee to directly access the submissions.

The commission is continuing its work on coal fugitive emissions as a key priority. We expect to be in a position to release a report on this topic in coming months and look forward to continuing our engagement with the committee on this important sector.

Sincerely,

Meg McDonald
Interim Chair Net Zero Commission

[1] NSW Government, Scope of the NSW state-wide net zero by 2050 target, accessed at www.energy.nsw.gov.au/sites/default/files/2023-02/2023_Scope_NSWstate-wide_net_zero_by_2050_target.pdf

Appendix A: Emissions from the fossil fuel sector in NSW

Fossil fuel emissions can be classified into two categories, with the first being the focus of response to this inquiry:

1. fugitive emissions from the extraction, processing and delivery of fossil fuels
2. emissions from fuel combustion in the fossil fuel and other industries.

Emissions from the fossil fuel sector in NSW are dominated by coal mining-related emissions

Most emissions from the fossil fuel sector in NSW are fugitive emissions and emissions from fuel combustion from the coal mining and gas industries. In NSW, there is currently very little fossil gas extraction. There is no other fossil fuel extraction, such as crude oil, in NSW.

Emissions from coal mining and the extraction, transmission and distribution of gas and other liquid fuels are listed in the table below.

Table 1: Actual and projected emissions from the NSW resources sector by main emission sources, from the State and Territory Greenhouse Gas Inventories: 2022 emissions for NSW and from the NSW DCCEEW emissions projections[2, 3].

Emissions source	Emissions in 2021-22[2] ($MtCO_2$-e)	2030 emissions projections[3] ($MtCO_2$-e)	2035 emissions projections[3] ($MtCO_2$-e)
Coal mining fugitive emissions – underground mines	8.1	10.6	5.2
Coal mining fugitive emissions – surface mines	1.9	1.8	1.7
Coal mining fuel combustion emissions	3.4	3.9	2..4
Estimated total coal mining-related emissions	13.4	16.3	9.3
Oil and gas industry fugitive emissions	0.5	0.8	0.8
Oil and gas industry fuel combustion emissions	Not publicly available	Not publicly available	Not publicly available
Estimated total emissions from fossil fuel sector (excl. oil and gas industry fuel combustion emissions)	13.9	17.1	10.1

The NSW Government's current policy emissions projections estimate that, in the years 2030 and 2035, emissions from coal mining will be approximately 16.3 $MtCO_2$-e and 9.3 $MtCO_2$-e, respectively[3].

[2] Australian Government, National Greenhouse Accounts 2022, - State and Territory greenhouse gas inventories: 2022 emissions for NSW. Note: The latest available NSW emissions projections use the 2022 National Greenhouse Accounts. For consistency, the 2022 data is presented here, rather than the latest available National Greenhouse Accounts data from 2023.

[3] State Government of NSW and NSW Department of Climate Change, Energy, the Environment and Water 2022, NSW Greenhouse Gas Emission Projections, 2023–2050, current policy emissions projections, accessed from The Sharing and Enabling Environmental Data Portal.

Fugitive emissions from coal mining

Fugitive emissions are defined by the 2006 IPCC Guidelines as the intentional or unintentional release of greenhouse gases that occur during the extraction, processing and delivery of fossil fuels to the point of final use (IPCC 2006). Unlike combustion emissions, which are predominantly carbon dioxide (CO_2), fugitive emissions are predominantly methane (CH_4). Both CH_4 and CO_2 emissions are reported under the National Greenhouse and Energy Reporting (NGER) Scheme for both underground and surface coal mines. CO_2, CH_4 and nitrous oxide (N_2O) emissions are also reported from flaring.

Australia's greenhouse gas inventory reports coal mine emissions from FY1989–90 using Tier 2 and Tier 3 IPCC-aligned methods[4]. Tier 3 methods, involving direct measurement, are used for all operating underground mines under the NGER Scheme, while surface mines mostly use Tier 2 default or modelled emission factors. Regulators and coal companies monitor CH_4 and CO_2 via mandated methods under the NGER Determination. Reporting uncertainties noted in the National Inventory Report are ±10.2% for underground and ±33.2% for surface mines[5].

At the end of the current reporting year (FY2022–23), there were 17 underground mines, 20 surface mines, and 2 mines with both underground and surface operations in NSW.

Emissions from the use of fossil fuels

Fossil fuel use makes up over 74% of NSW emissions across all sectors, regions and human activities. Strong action is needed by governments and the private sector to reduce fossil fuel use and substitute it with low-emissions alternatives. This encompasses action to accelerate uptake of electrification and other mature technologies, as well as investment in innovation and commercialisation of novel technologies for sectors where low-emissions substitutes are not currently available. A high-level, indicative breakdown of emissions contribution from fuel use by sector is included in the table below.

Table 22: Publicly available figures on greenhouse gas emissions from fuel use in NSW for selected categories, from the State and Territory Greenhouse Gas Inventories: 2022 emissions for NSW

Emissions source	Emissions in 2021-22 ($MtCO_2$-e)
Electricity generation	43.3[6]
Transport	23.5[7]
Agriculture and land[8]	2.2

[4] Clean Energy Regulator, Methods and measurement criteria guideline, 2025

[5] Australian Government Department of Climate Change, Energy, the Environment and Water, National Inventory Report 2022 – Uncertainty data, Uncertainty Tables 2022, 2024

[6] The emissions presented also include emissions from electricity generation from non-fossil fuels due to data confidentiality.

[7] The emissions presented also include renewable fuel combustion emissions from the Transport sector due to data confidentiality. These are not a significant proportion of overall combustions emissions.

[8] This relates to fossil fuel combustion in agriculture, forestry and fishery.

Emissions source	Emissions in 2021-22 ($MtCO_2$-e)
Industry and waste (fossil fuel combustion for energy only)	6.1 [9]
Resources (fuel combustion in coal mining only)	3.4
Built environment (residential and commercial buildings fuel use)	4.0
Estimated total	82.5

[9] This relates to fossil fuel combustion in manufacturing industries. There are also emissions from fossil fuel use under the Industrial Processes and Product Use category. These are not included in the estimated total emissions.

Appendix B

Early insights on coal mining fugitive methane emissions from the commission's engagements

Coal mining remains a significant part of the NSW economy, providing employment, royalties, and regional development. At the same time, emissions from the sector — particularly methane — are drawing increasing focus as NSW works towards legislated net zero targets. A wide range of views were expressed on how emissions are managed in the sector, highlighting both areas of alignment and divergence.

The below provides initial, high-level overview of stakeholder views from the commission's consultation process, including responses to the consultation paper released in May 2025. Analysis and further investigations into the responses and recommendations made to the commission are underway.

What we heard so far

Economic and regional significance

Coal continues to underpin economic activity in several NSW regions. Throughout the engagement, industry members emphasised the sector's contribution to jobs, state revenue, and energy security, while noting that few alternative industries currently match this scale. Some also highlighted that NSW coal has comparatively lower emissions intensity than international alternatives. Others questioned whether continued approval of expansion and extension of coal mines is consistent with NSW's emissions reduction targets and wished to see greater focus directed toward renewable energy and economic diversification.

Regulatory certainty and effectiveness

In the submissions to the commission's consultation, stakeholders called for greater regulatory certainty and co-ordination between Commonwealth and NSW jurisdictions. Industry representatives pointed to duplication between NSW regulation of coal mines and the Commonwealth Safeguard Mechanism and argued that uncertainty in these processes can undermine investment confidence. Community and environmental groups regarded current mechanisms as inadequate to drive sufficient emissions reductions and called for clearer accountability and stronger regulation in NSW.

Emissions reduction technologies and constraints

Methane was widely recognised as the most challenging emission source in coal mining. Operators pointed out safety requirements, high abatement costs, and the limited maturity of available abatement technologies — such as ventilation air methane oxidation — as barriers to broader uptake. As a result, many mines continue to rely heavily on offsets. Many others expressed concern that this reliance limits genuine progress and supported stronger expectations around on-site abatement and methane reduction targets.

Measurement, transparency and coordination

There was general agreement on the importance of robust emissions measurement, though views differed on the adequacy of existing arrangements. Industry pointed to site-specific monitoring

methods as being among the most advanced globally. Others believe that current practices understate methane emissions, advocating for independent verification, more transparent data, and closer alignment between state and federal reporting frameworks.

Transition opportunities

Despite differences, stakeholders recognised potential opportunities linked to transition. Some companies are exploring the use of rehabilitated sites for renewable energy, new industries or energy storage. They saw skills developed within their region as transferrable to emerging industries, such as pumped hydro and large-scale infrastructure development. Across perspectives, there was acknowledgement of the importance of planning for a just and orderly transition that considers both emissions outcomes and regional economies.