

11 April 2025

National Greenhouse Accounts

Department of Climate Change, Energy, the Environment and Water

Submitted via [Consultation Hub](#)

Dear National Greenhouse Accounts team

Review of Method 2 for estimating fugitive methane emissions from open-cut coal mines

Environmental Defenders Office (**EDO**) welcomes the opportunity to comment on the proposed updates to the National Greenhouse and Energy Reporting Act 2007 (**NGER Act**) and associated legislative instruments, as well as forward working plan.

This submission focuses on the ‘Review of Method 2 for estimating fugitive emissions from open cut coal mines’ in the NGER forward work program section of the Consultation Paper,¹ be to undertaken in response to the Climate Change Authority’s (**CCA**) review of the NGER scheme published in December 2023.² Our lack of submissions on the other sections of the Consultation Paper and legislative amendments should not be considered to be support for any policies or changes outlined therein.

Key recommendations:

- Ensure no new fossil fuel exploration, production, or approvals, and commence the phase out of existing fossil fuel projects, including coal mines;
- Expedite NGER scheme-wide transition to highest order methods; and
- Rapidly implement all recommendations made by the CCA in its 2023 review of the NGER scheme.

In relation to Method 2:

- Implement top-down verification to ensure whole-of-mine assessment of emissions;
- Set statistical methods not “expert judgement” as in the ACARP guidelines;
- Ensure all potential contributions of gas are addressed and aim for whole-of-mine contributions; and
- Commence a thorough review of estimation methods and incorporate into Method 2.

Background to the consultation

Measurement of emissions occurs in alignment with the National Greenhouse and Energy Reporting (Measurement) Determination 2008 (**Measurement Determination**), which specifies how to estimate the emissions from a particular source. For scope 1 emissions, which includes sources such

¹ Department of Climate Change, Energy, the Environment and Water (**DCCEEW**), National Greenhouse and Energy Reporting scheme 2025 Public Consultation.

² Climate Change Authority, 2023 Review of the National Greenhouse and Energy Reporting Legislation (December 2023) (**CCA review**). Recommendation 17: As a matter of urgency, review Method 2 for extraction of coal in open cut coal mining with respect to sampling requirements and standards.

as emissions from production of electricity, burning of diesel, or fugitive emissions, there are four possible Methods available. The Methods progress from simpler estimation under Method 1, through to direct measurement or monitoring of emissions under Method 4. Reporting facilities can choose which method to apply to estimate emissions depending on the scope of the emissions, but not all methods are available to estimating emissions from all sources. For emissions from open-cut coal mines, Methods 1-3 are available to estimate the methane released to the atmosphere from the exposed portions of the coal seams.

Subsequent to CCA recommendations and the reform of the Safeguard Mechanism, in 2024 the Measurement Determination was amended to phase out the use of Method 1 for open cut coal mines covered by the Safeguard Mechanism.³ From July 2026, all open-cut coal mines covered by the Safeguard Mechanism must use Method 2 or 3. Method 2 requires facility-specific information, such as industry based sampling, applying Australian or international standards to the analysis.⁴ While the removal of Method 1 is welcome, EDO notes ongoing concerns with the remaining Methods 2 and 3, and the need for urgency in the review of remaining Methods relevant to estimating methane emissions from open cut coal mines. Relevant to the NGER Consultation Paper, we note the urgent need for the review and reform of Method 2 for open cut mines in particular.

Emissions targets meaningless without accurate reporting

In relation to emissions targets generally, EDO **recommends** the adoption of a 1.5 degree aligned emissions reduction target of net zero by 2035,⁵ including a specific fossil methane target to reduce emissions 75% by 2030, on 2020 levels. With coal mines representing the most significant and avoidable source of fossil methane emissions in Australia,⁶ reducing coal production is one of the best forms of emissions mitigation that Australia could possibly employ.⁷ Meeting our internationally-agreed climate commitments requires fossil methane emissions to fall by at least 75% this decade.⁸

As such, first and foremost, EDO **recommends** no new fossil fuel exploration, production, or approvals, and the phase out of existing fossil fuel projects – including coal mines.

However, relevant to this consultation, we cannot reliably set or achieve any emissions targets without accurate measurement of our emissions contribution. There is significant evidence suggesting that Australia is vastly under reporting energy sector methane emissions. As noted in CCA's 2023 review, and widely documented elsewhere,⁹ developments in methane measurement techniques have raised questions about the accuracy of estimated fugitive methane emissions from

³ Clean Energy Regulator, National Greenhouse and Energy Reporting legislative amendments for the 2024-25 reporting year (2024) accessed: <https://cer.gov.au/news-and-media/2024/july/national-greenhouse-and-energy-reporting-legislative-amendments-2024-25-reporting-year>

⁴ CCA Review 2023, 23.

⁵ EDO, [Submission on the Climate Change Authority's 2024 Issues paper: Targets, Pathways and Progress](#) (14 May 2024).

⁶ Ember, ['Australia's Coal Mines can Deliver Two Thirds of Methane Cuts'](#) (October 2022)

⁷ Fossil Fuel Non-Proliferation Treaty Initiative, ['Exporting Harm: The Climate Toll of Australia's Fossil Fuel Expansion'](#) (March 2025) 14.

⁸ International Energy Agency. Curtailing Methane Emissions from Fossil Fuel Operations: Pathways to a 75% Cut by 2030; OECD, 2021. <https://doi.org/10.1787/1616ff90-en>.

⁹ See e.g., The Guardian, 'Methane emissions from Queensland mine may be gross underestimates, UN research finds' (26 March 2025) <https://www.theguardian.com/environment/2025/mar/26/methane-emissions-from-queensland-mine-may-be-gross-underestimates-un-research-finds>.

coal mining and oil and gas operations in Australia. A recent report from the International Energy Agency (**IEA**) found that Australia is under-reporting fossil methane emissions by as much as 64%,¹⁰ while research published in 2023 estimated Australian coal mines could be emitting up to double the amount of methane reported under the NGER scheme.¹¹ This problem is being exacerbated by shifts towards open cast mining and ongoing flawed emissions measurement practices.¹²

The CCA concluded that Australia should move measurement and reporting of fugitive methane emissions to high order methods, which capture the true extent of the pollution from coal mines. EDO agrees, and reiterates our **recommendation** that scheme-wide transition to highest order methods must be expedited commensurate with the need for urgent action to meet emissions reduction targets and stabilise global warming in line with international commitments.¹³

Reform of Method 2 urgently needed

The methodology for Method 2 and 3 was developed from an Australian Coal Association Research Program's (**ACARP**) study published in 2011.¹⁴ It is out of date, and fails to take into account new measurement and sampling technologies, as well as top-down verification methods. Moreover, it is important to note that Methods 2 and 3 are estimations, not real measurements. With measurement technology improving, any changes proposed to Method 2 must take into account the need for public, transparent and auditable data that uses fit-for-purpose measurement and sampling methods available. With that in mind, EDO supports several areas for further consultation proposed in the Consultation Paper, and makes the following comments.

Currently, none of the methods available under the NGER Act require site-level reconciliation of source-level measurements. Only Method 4 requires direct monitoring. Methods 2 and 3 can only give estimates of emissions, with varying accuracy. Source-site reconciliation (reconciling top-down and bottom-up measurements) can be used to verify emissions totals, reduce uncertainty and identify unknown emissions sources.¹⁵ EDO **recommends** top-down verification of direct measures should be implemented to ensure whole-of-mine assessment, and within and among basin comparisons to be used for regulation and compliance checks.

Terms are also problematically undefined, which permits excessive flexibility in application – for example, that three boreholes should be made per “domain”, where “domain” is not defined. Moreover, a sample size of three is unlikely to be representative. The variability of coal seam porosity and the irregular distribution of methane content within a domain requires a more statistical approach to sample size setting that incorporates the spatial distribution of sampling across domains. Sampling should be fit-for-purpose, which in this instance means fit to model whole-of-mine emissions distribution.

¹⁰ International Energy Agency, [Global Methane Tracker 2024](#) (2024).

¹¹ Ember, '[Not Measured, Not Managed: Australia remains ignorant of its coal mine methane problem](#)' (November 2023).

¹² Ember, '[Australia's coal mining emissions paradox](#)' (March 2025).

¹³ EDO, [Submission on the 2024 Proposed Amendments to the National Greenhouse and Energy Reporting Scheme](#) (24 May 2024).

¹⁴ CCA Review 2023, 81.

¹⁵ CCA Review 2023, 77.

EDO **recommends** that a sampling methodology is determined and standardised to be a part of Method 2. Flexibility for different mine sizes and data integrity would be achieved through statistical setting rather than through arbitrary minimum sample size setting.

In relation to ensuring sampling is unbiased and representative, EDO **recommends** that statistical methods should be used and set for Method 2, not “expert judgement” as in the ACARP guidelines. EDO agrees that potential bias may be introduced when the required peer review can be undertaken by an employee of the same company, that this allows for unacceptable discretion, and should be amended to ensure independent review and statistical methodology to avoid bias.

EDO agrees the ACARP guidelines should address all listed potential contributions of gas, and **recommends** they strive for whole-of-mine contributions. Finally, EDO notes the potential for leakage during direct gas sampling, and notes that studies estimating the loss are available.¹⁶ EDO **recommends** a thorough review of estimation methods should be done and incorporated into Method 2.

Inaccurate measurement may distort the Safeguard Mechanism

As noted above, setting emissions targets without having the full picture of Australia’s true emissions profile will mean we are hamstrung from the outset when it comes to climate mitigation. Good lawmaking requires reliable data. For an example in practice, Australia’s ability to accurately track methane emissions has a direct impact on the efficacy of the Safeguard Mechanism, the federal government’s only mandatory emissions reduction policy.

The Safeguard Mechanism applies to industrial emitters with annual emissions over 100,000 tonnes of CO₂-e. Facilities above this threshold will need to reduce emissions in line with applicable baselines, and may receive Safeguard Mechanism Credits (**SMCs**) where emissions reductions exceed the required amount. SMCs can then be used by other facilities to meet their baselines, if onsite mitigation was insufficient. Accurate measurement of scope 1 emissions is therefore essential for the integrity of entire Safeguard regime. If facilities are able to switch to a method that records lower emissions, without requiring a recalculation of historical emissions using the new method, then a glut of SMCs will be generated within the Mechanism.

Coal mines that have shifted from method 1 to method 2 estimates have reported dramatic reductions in their emissions reporting to date, with a recent study by Ember finding that simply shifting to Method 2 allowed three mines to remove close to 8.5 million tonnes of CO₂-e from their accounts, with no change in practice.¹⁷ This means that facility baselines calculated using historical emissions intensity will be distorted – and given around 40% of coal mines captured by the Safeguard Mechanism use Method 1, so too will future baselines calculated using industry average.¹⁸

This shows that piecemeal changes to the NGER scheme, like simply removing Method 1 in isolation from other reform, can have significant unintended consequences. As a matter of urgency, to protect the integrity of the federal emissions reduction regime, EDO **recommends** the federal government rapidly implement all recommendations made by the CCA in its 2023 review of the NGER scheme.

¹⁶ E.g., [Estimation of Gas Loss in Methodology for Determining Methane Content of Coal Seams](#).

¹⁷ Ember. How an Accounting Shift Could Conceal Millions of Tonnes of Coal Mine Emissions; 2024. <https://ember-energy.org/latest-insights/accounting-shift-could-conceal-millions-of-tonnes-of-emissions>.

¹⁸ See for percentage of baseline inputs: DCCEEW, [Safeguard Mechanism factsheet](#) (May 2024) 2.

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Yours sincerely,

Environmental Defenders Office

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Revel Pointon

Managing Lawyer, Policy and Law Reform

A handwritten signature in black ink, appearing to be 'Frances Medlock', written in a cursive style.

Frances Medlock

Senior Solicitor, Policy and Law Reform