



NGER thematic audit program – Higher methods for open cut coal mining

Summary

The Clean Energy Regulator (CER) is responsible for the administration of the National Greenhouse and Energy Reporting (NGER) Scheme. As part of our administration of the scheme, we monitor and enforce compliance of reporters with the *National Greenhouse and Energy Reporting Act 2007* (NGER Act) and the National Greenhouse and Energy Reporting (Measurement) Determination 2008 (NGER Determination).

One of the mechanisms we use to monitor and enforce compliance with the NGER Act is our annual audit program. We have powers under the NGER Act to nominate reporters for an audit of their compliance with the NGER legislation. Results from these audits inform updates to CER guidance and can result in corrections of the NGER data.

Consistent with the [Australian Government's response](#)¹ to the Climate Change Authority's (CCA) 2023 review of the NGER scheme, the Department of Climate Change, Energy, the Environment and Water (DCCEEW) made amendments to the NGER legislation in 2024. These amendments progressively restrict the availability of Method 1 for estimating fugitive emissions from open-cut coal mine coal extraction for certain reporters from 1 July 2025.

Method 1 uses a state-specific emission factor to estimate fugitive emissions from open-cut coal mines. Both higher methods (Method 2 and 3) estimate fugitive emissions using a mine-specific model of the greenhouse gas in place prior to coal extraction. This enables more accurate estimation of fugitive emissions from open cut coal extraction compared with the use of Method 1. The mine-specific gas model is based on results from testing and analysis of representative borehole samples in accordance with the [ACARP Guidelines](#)². Key aspects for applying the ACARP Guidelines include that the 'Estimator' that leads the modelling is appropriately qualified and the process and supporting data for the modelling undergo a documented independent peer review.

The CER initiated a thematic audit program that concluded in October 2025 looking at facilities that used higher methods to estimate fugitive emissions from open cut coal mining to ensure the methods are being applied correctly.

¹ <https://www.dcceew.gov.au/about/reporting/obligations/government-responses/2023-cca-review-nger-legislation>

² The 'Guidelines for the Implementation of NGER Method 2 or 3 for Open Cut Coal Mine Fugitive GHG Emissions Reporting' (C20005), published by the Australian Coal Association Research Program (ACARP) in December 2011 are available at <https://www.acarp.com.au/abstracts.aspx?repId=C20005>



Seven audits were run as part of this program to provide a point-in-time snapshot of compliance with higher methods. The audits found that the methods were being appropriately applied. No corrections to the NGER data were required. Some areas for improvement were identified, and the CER will continue to monitor the use of higher methods.

Introduction

The CER has powers under the NGER Act to conduct audits of a reporter in relation to any aspect of the NGER Act, or associated provisions. They permit the CER to nominate the greenhouse and energy auditor and direct them to audit a reporter at the CER's expense. The CER nominates reporters for audit typically on either of the following bases:

- targeted, where a reporter is selected for further investigation of their compliance with the NGER Act based on information available to the CER
- thematic, where a reporter is selected based on a topic of interest to the CER which affects the reporter.

Audits conducted by the CER are undertaken by registered greenhouse and energy auditors. The CER maintains a register of greenhouse and energy auditors and auditors must meet strict knowledge and experience requirements to gain and maintain their registration. Additionally, audits must be undertaken in accordance with legislative requirements and auditing standards, which ensure independence and integrity in the audit process.

For the 2022–23 financial year, approximately 7.5 per cent of total scope 1 emissions reported in NGER came from fugitive emissions from the coal mining sector. Coal mine activities can be split depending on whether the coal is extracted from an open cut mine, where the overburden is removed, or from an underground mine, where tunnelling is used to access the coal seam. Fugitive emissions from open cut coal mines were 2.1 per cent of total scope 1 emissions, and account for 28.4 per cent of fugitive emissions from the coal mining sector. Of the 6.5 MtCO₂-e of fugitive emissions from open cut coal mines, 54.1 per cent were estimated using Method 1 and 45.9 per cent using Method 2. No reporters used Method 3 to estimate fugitive emissions from open cut coal mines for the 2022–23 financial year.

For more information on the requirements for reporting using Method 1, 2 or 3 see the CER's guideline on [Estimating emissions and energy from coal mining](#)³.

In 2024, the CER initiated a thematic audit program to look at facilities that used higher methods to estimate fugitive emissions from open cut coal mining to provide assurance on the compliance of reporters utilising these methods, and provide insight into whether:

- any gaps were present in reporters' understanding of the requirements to report under those higher methods
- any improvements were needed to the guidance materials published by the CER on fugitive emission reporting from coal mining
- any additional assurance is warranted on reporters' ability to comply with the NGER legislation relating to fugitive emissions reporting from coal mining.

³ https://cer.gov.au/document_page/estimating-emissions-and-energy-coal-mining-guideline



The potential risks to the accuracy of emissions estimated under Method 2, which can be tested through audit, are:

- Modelled area does not cover all the areas mined during the reporting year
 - » This may be due to the gradual expansion of the mine since the model was created.
- Model was incorrectly determined
 - » This may be due to insufficient boreholes and gas samples taken to determine the gas model.
- Model was incorrectly applied
 - » This may be due to misinterpretation of the gas model and how it can be applied to areas mined, and
 - » Misinterpretation of the emission factors to low gas zones, or below pit floor emissions.

Basis of selection

Thirty-nine facilities estimated fugitive emissions from open cut coal mining for the 2022–23 financial year using Method 2.

Facilities were excluded from the thematic audit program on the basis of:

- A satisfactory NGER audit, submitted as part of the Safeguard Mechanism's emissions intensity determination (EID) application process
- An upcoming requirement to submit an EID audit
- A satisfactory CER-initiated NGER audit, since 2021
- A voluntarily supplied satisfactory NGER audit, since 2021

This left 7 reporters who had used Method 2 for estimating fugitive emissions from open cut coal mining and had not already received a satisfactory NGER audit opinion or were not about to be subject to an NGER audit.

Overview of scope

The scope of the audits was specific to the activities of fugitive emissions estimation. The aim was to determine compliance with Method 2 as described in the NGER Determination.

A summary of the procedures undertaken was:

- Confirming the overall process and control environment for estimating fugitive emissions from open cut coal mining prepared using Method 2 per the NGER Determination and the ACARP Guidelines.
- Peer reviewing whether the applied gas distribution models for the coal mines were appropriately prepared and documented in accordance with the requirements of the ACARP Guidelines.
- Interviews with the management of the reporter on their Method 2 emissions estimation reporting process, the contracted Estimator that prepared the gas distribution models and any consultants that prepared the Method 2 open cut coal mine fugitive emissions estimation.
- Testing whether the supporting gas sampling and analysis was appropriately performed for the mine.
- Testing whether the gas distribution models were appropriately applied for the reporting year.
- Testing whether the emissions estimates are based on documented records for gas bearing strata extracted during the reporting year.



- Confirming whether the emission estimates and related 'matters to be identified' (MTBIs) aligned with supporting evidence.
- Reviewing the mined areas and where borehole samples were taken in support of the gas distribution model.

Summary of findings from the 7 thematic audits

These 7 audits found broad compliance with the requirements for reporting emissions under higher methods for fugitive emissions from open cut coal mining. The auditors found no issues relating to:

- the use of boreholes
- gas sampling
- the development of the gas models.

Four auditors' opinions identified exceptions to compliance with the requirements. These related to:

- methane emissions were included for areas determined to be a low gas zone
- mass of gas bearing strata below the pit floor was incorrectly determined
- below pit-floor emissions were estimated incorrectly with an over-estimation of the gas bearing strata's density, and use of an emissions factor twice
- incorrect emissions calculations methodology
- use of the gas model to estimate emissions from outside the modelled area
- deficiencies in record-keeping.

While reporters are required to address the findings before submitting future NGER reports, none of these matters required correction of any historically reported NGER data.

Conclusion

No instances of insufficient sampling or incorrect sampling processes and analysis were identified in the 7 thematic audits. Some errors relating to other requirements were identified but did not require correction of any reported NGER data. The 4 reporters that received audit findings were required to address the findings before submitting future NGER reports. The CER recorded the findings in each reporter's compliance history to inform the assessment of subsequent reports.

A risk-based approach will continue to be used to scrutinise the use of higher methods, with a focus on record-keeping and application of the gas model. If the CER identifies repeated instances of non-compliant reporting, we will take appropriate regulatory action in line with our [compliance, education, and enforcement policy](#)⁴.

In addition, the CER will incorporate learnings from these audits into an update of our published guidelines to better inform reporters of their reporting obligations under higher methods ahead of the 2025–26 reporting deadline.

The CER has also provided the thematic audits to DCCEEW to inform finalisation of its approach to the [review of Method 2](#)⁵.

⁴ <https://cer.gov.au/about-us/our-compliance-approach>

⁵ https://www.dcceew.gov.au/climate-change/emissions-reporting/national-greenhouse-energy-reporting-scheme#toc_3