

EXPLANATORY STATEMENT

Carbon Credits (Carbon Farming Initiative) Act 2011

Carbon Credits (Carbon Farming Initiative—Coal Mine Waste Gas) Methodology Determination 2015

Background

The *Carbon Credits (Carbon Farming Initiative) Act 2011* (the Act) enables the crediting of greenhouse gas abatement from emissions reduction activities across the economy. Greenhouse gas abatement is achieved either by reducing or avoiding emissions or by removing carbon from the atmosphere and storing it in soil or trees.

In 2014, the Australian Parliament agreed to the *Carbon Farming Initiative Amendment Act 2014*, which establishes the Emissions Reduction Fund (ERF). The ERF has three elements: crediting emissions reductions, purchasing emissions reductions, and safeguarding emissions reductions.

Emissions reduction activities are undertaken as offsets projects. The process involved in establishing an offsets project is set out in Part 3 of the Act. An offsets project must be covered by, and undertaken in accordance with, a methodology determination.

Subsection 106(1) of the Act empowers the Minister to make, by legislative instrument, a methodology determination. The purpose of a methodology determination is to establish procedures for estimating abatement (emissions reductions and sequestration) from eligible projects and rules for monitoring, record keeping and reporting. These methodologies will ensure that emissions reductions are genuine—that they are both real and additional to business as usual.

In deciding to make a methodology determination the Minister must have regard to the advice of the Emissions Reduction Assurance Committee (ERAC), an independent expert panel established to advise the Minister on proposals for methodology determinations. The Minister will also consider any adverse environmental, economic or social impacts likely to arise as a result of projects to which the determination applies.

Offsets projects that are undertaken in accordance with the methodology determination and approved by the Clean Energy Regulator (the Regulator) can generate Australian Carbon Credit Units (ACCUs), representing emissions reductions from the project.

Project proponents can receive funding from the ERF by submitting their projects into a competitive auction run by the Regulator. The Government will enter into contracts with successful proponents, which will guarantee the price and payment schedule for the future delivery of emissions reductions.

Further information on the ERF is available at:
www.environment.gov.au/emissions-reduction-fund.

Application of the Determination

The *Carbon Credits (Carbon Farming Initiative—Coal Mine Waste Gas) Methodology Determination* (the Determination) sets the requirements for implementing and monitoring offsets projects that avoid emissions through the combustion of the methane component of coal mine waste gas. These requirements have been designed to reflect the offsets integrity standards of the Act and ensure that emissions reductions are real and additional to business

as usual. The offsets integrity standards require that an eligible project should result in carbon abatement that is unlikely to occur in the ordinary course of events and is eligible carbon abatement under the Act. In summary, the offsets integrity standards also include that:

- amounts are measurable and capable of being verified;
- the methods used are supported by clear and convincing evidence;
- material emissions which are a direct consequence of the project are deducted; and
- estimates, assumptions or projections used in the determination should be conservative.

All projects will be able to generate emission reductions for a seven-year crediting period.

Public Consultation

The Determination has been developed by the Department of the Environment in collaboration with a technical working group of experts from the coal mine fugitives industry and the Regulator. The technical working group held multiple meetings in 2013 and 2014 and has reviewed several draft versions of the Determination.

The exposure draft of the Determination was published on the Department's website for public consultation from 3 September 2014 to 1 October 2014. Six submissions were received. Details of the non-confidential submissions made are provided on the Department of the Environment website, www.environment.gov.au.

Determination details

Details of the Determination are at [Attachment A](#). Numbered sections align with the relevant sections of the Determination. The definition of terms highlighted in ***bold italics*** can be found in the Determination.

For the purpose of subsections 106(4), (4A) and (4B) of the Act, in making this Determination the Minister has had regard to, and agrees with, the advice of the ERAC that the Determination complies with the offsets integrity standards and that the proposed Determination should be made. The Minister is satisfied that the carbon abatement used in ascertaining the carbon dioxide equivalent net abatement amount for a project is eligible carbon abatement from the project. The Minister also had regard to whether any adverse environmental, economic or social impacts are likely to arise from the carrying out of the kind of project to which the Determination applies and other relevant considerations.

Subitem 393A(2) of Schedule 1 of the *Carbon Farming Initiative Amendment Act 2014* operated in relation to this Determination to deem the request to the Interim ERAC to be the relevant request to the statutory ERAC under subsection 106(10) of the Act. Subitem 393A(3) then allowed the ERAC to consider the consultation on the exposure draft which occurred before 13 December 2014 and not re-open consultation under section 123D of the Act.

A Statement of Compatibility prepared in accordance with the *Human Rights (Parliamentary Scrutiny) Act 2011* is at [Attachment B](#).

Details of the Methodology Determination

Part 1 Preliminary

1 Name of Determination

Section 1 sets out the full name of the Determination, which is the *Carbon Credits (Carbon Farming Initiative—Coal Mine Waste Gas) Methodology Determination 2015*.

2 Commencement

Section 2 provides that the Determination commences on the day after it is registered on the Federal Register of Legislative Instruments.

3 Authority

Section 3 provides that the Determination is made under subsection 106(1) of the Act.

4 Duration

Paragraph 4(a) provides that the Determination begins on commencement (as set out in section 2).

The Determination will remain in force for the duration set out in this section unless revoked in accordance with section 123 of the Act.

Paragraph 4(b) provides that the Determination ends on the day before it would otherwise be repealed under subsection 50(1) of the *Legislative Instruments Act 2003*.

Instruments are repealed under that provision on the first 1 April or 1 October following the tenth anniversary of registration on the Federal Register of Legislative Instruments. In accordance with subparagraph 122(1)(b)(i) of the Act, paragraph 4(b) of the Determination sets out the time that the Determination will expire.

If the Determination expires or is revoked during a crediting period for a project to which the Determination applies, the Determination continues to apply to the project during the remainder of the crediting period under subsections 125(2) and 127(2) of the Act. Project proponents may apply to the Regulator during a reporting period to have a different methodology determination apply to their projects from the start of that reporting period (see subsection 128(1) of the Act).

Under section 27A of the Act the Emissions Reduction Assurance Committee may also suspend the processing of applications under a determination if there is reasonable evidence that the methodology determination does not comply with one or more of the offsets integrity standards. This does not impact applications for declaration already received by the Regulator before such a suspension or declared eligible offset projects which apply the Determination.

5 Definitions

Section 5 defines a number of terms used in the Determination. Generally, where terms are not defined in the Determination, they have the meaning given by section 5 of the Act.

Under section 23 of the *Acts Interpretation Act 1901*, words in the Determination in the singular number include the plural and words in the plural number include the singular.

Key definitions in section 5 include those set out below.

Coal mine waste gas refers to the gas, consisting mainly of methane and carbon dioxide, released during the mining process due to fracturing of coal seams and overburden and underburden strata. This gas is drained or conveyed from a coal mine that is, or was covered by a coal mining lease.

Coal seam methane refers to the gas drained from coal seams for the purpose of extracting the methane; the activity is not undertaken at a coal mine covered by a coal mining lease. This differentiation from ***coal mine waste gas*** is important as the Determination is only intended to incentivise the capture and combustion of the gas where it is produced as a by-product from the primary activity of extracting coal.

Combustion device refers to a ***flaring device*** or ***electricity production device*** that combusts the methane component of coal mine waste gas. The definition of flaring device excludes flaring devices that are directly associated with the operation of an electricity production device. The reason for this is that they are not considered to be a device installed for the primary purpose of combusting methane. Rather, these devices are considered to be an integrated operational device that is utilised when the electricity production device is not operational due to either a planned or unplanned event.

The definitions of flaring device and electricity production device exclude ventilation air methane (VAM) oxidation devices. The reason for this is that the Determination and associated calculation requirements are for methane combustion achieved through current and commercially viable technologies. VAM oxidation devices are not yet considered to be commercially viable, however if this or other technologies become commercially viable they may become eligible under the ERF through development of a new methodology determination or amendment to this Determination.

NGA Factors document means the document entitled ‘National Greenhouse Account Factors’, published on the Department of the Environment’s website, www.environment.gov.au, and as in force from time to time. Factors published in this document will be updated from time to time to allow for more accurate estimates of emissions that maintain consistency with Australia’s National Greenhouse Accounts.

Recognised capacity refers to either the maximum volume of methane capable of being combusted or the maximum amount of electricity capable of being produced through the combustion of methane by an operating device that is possible within a given measurement time interval, as provided in the manufacturer’s specifications for the device.

To be declared an eligible ***expansion flaring project*** or an ***expansion electricity production project***, the proponent is required to assess the recognised capacity of all ***existing flaring devices*** and ***existing electricity production devices***.

Recognised capacity is determined in the baseline setting approach set out in sections 42 and 43 of the Determination and is considered in calculations as a baseline deduction in determining the net abatement amount for an expansion flaring project, expansion electricity production project and a displacement electricity production project.

Accounting for the recognised capacity of existing flaring devices and existing electricity production devices ensures that the methane combustion achieved by the project (through devices installed for the purposes of the project) is likely to be additional to what would occur in the absence of the project.

6 Meaning of *existing regulatory obligation*

Section 6 sets out a definition of ***existing regulatory obligation*** for the purpose of informing section 17 which sets out requirements in lieu of the regulatory additionality requirement under subparagraph 27(4A)(b)(i) of the Act.

7 Meaning of *material abatement*

Section 7 sets out the meaning of ***material abatement***. This concept is introduced in the Determination to allow for coal mine waste gas projects to be declared eligible as a ***new flaring project*** or a ***new electricity production project*** under section 12 and 14 where the project has a very small recorded amount of abatement from the combustion of the methane component of coal mine waste gas in the past.

The material abatement threshold level for ***historic abatement*** is set at 5,000 tonnes of carbon dioxide equivalent (CO₂-e) in a financial year. Proponents will be required to consider historic levels of abatement from the combustion of methane drawn from the same coal mine to which the project applies. This includes all abatement from combustion of methane from the coal mine using combustion devices, not only activity undertaken by the proponent. The approach for calculating historic abatement is outlined in section 40 and will be used for the purpose of determining whether the material abatement threshold has been exceeded.

Historic abatement of less than 5,000 tonnes CO₂-e per year is deemed not to be material abatement. It represents less than two per cent of the average annual abatement achieved by an Australian underground coal mine that has undertaken combustion activities.

If the proponent is able to demonstrate that abatement achieved in all previous and current financial years (since 2008) is less than 5,000 tonnes CO₂-e for each year, they would be eligible to participate as a new flaring project or a new electricity production project. However, in these circumstances the historic abatement level would be deducted from the net abatement amount, proportionate to the duration of the reporting period. This approach is consistent with the offsets integrity standards outlined in section 133 of the Act.

8 Meaning of *integrated monitoring system*

Section 8 sets out the meaning of ***integrated monitoring system***.

An integrated monitoring system undertakes the concurrent monitoring of the methane volume sent to the combustion device and the operation of the combustion device (e.g. the flame status of a flare).

The Determination allows these parameters (for a new flaring project or a new electricity production project) to be monitored using either:

- separate monitoring devices that individually measure the parameters used to calculate the volume of methane; or

- through an integrated monitoring system that is able to measure both parameters concurrently and provide an estimate of the volume of methane sent to an operating combustion device.

As detailed in the monitoring requirements in section 47, an integrated monitoring system is not required to measure the portion of coal mine waste gas that is methane at the same frequency that the volume and operational status is measured. Instead this can be measured at a frequency of at least once a month, as set out in section 47.

The Determination allows the use of an integrated monitoring system for estimating the volume of the methane component of coal mine waste gas sent to installed devices in a new flaring project or a new electricity production project, and provides for the total volume of methane sent to devices in the reporting period. The integrated monitoring system is not included in the abatement method for an expansion flaring project, an expansion electricity production project, or a displacement electricity production project types as these type of projects require net abatement calculations to be applied at any given time interval. This is required in order to account for the interaction between installed devices, existing devices, and the baseline, at individual time intervals.

9 References to factors and parameters from external sources

Section 9 refers to factors or parameters used in calculations that are derived from external sources. Most parameters are derived from the *National Greenhouse and Energy Reporting Regulations 2008* (the NGER Regulations) or the *NGER (Measurement) Determination* made under subsection 10(3) of the *National Greenhouse & Energy Reporting Act 2007* (NGER Act).

The effect of subsection 9(1) is that if those legislative instruments are amended during a project's reporting period, then the project proponent will be required to use the factor or parameter prescribed in the instrument that is in force at the end of the reporting period.

Paragraph 9(2)(a) provides that subsection 9(1) does not apply if the Determination sets out other requirements.

Paragraph 9(2)(b) provides that subsection 9(1) does not apply where it is not possible to retrospectively apply a factor or parameter in an instrument that is in force at the end of the reporting period. An example of circumstances where this may occur is where the monitoring approach defined in an external source is amended to require additional or different monitoring practices after the reporting period has commenced. In this circumstance it is not possible to retrospectively undertake monitoring activities in accordance with the new requirement.

As provided for by section 10 of the *Acts Interpretation Act 1901* and section 13 of the *Legislative Instruments Act 2003*, references to external documents which are legislative instruments (such as the *NGER (Measurement) Determination*) are to versions of those instruments as in force from time to time. In circumstances where paragraph 9(2)(b) applies, it is expected that project proponents will use the version of legislative instruments in force at the time at which monitoring or other actions were conducted. Subsection 45(1) sets out reporting requirements to be followed when paragraph 9(2)(b) applies.

Part 2 Coal mine waste gas projects

10 Coal mine waste gas projects

The effect of paragraphs 27(4)(b) and 106(1)(a) of the Act is that a project must be covered by a methodology determination, and that the determination must specify the kind of offsets project to which it applies.

Paragraph 10(1)(a) provides that the Determination applies to an offsets project that reduces emissions through the combustion of methane that is sourced from coal mine waste gas at an operating underground coal mine.

The combustion of methane undertaken by eligible projects requires the installation and operation of one or more flaring devices or electricity production devices. In the case of electricity production devices, combustion activity also reduces or avoids electricity consumption from alternative electricity sources.

Paragraphs 10(1)(b) and 10(1)(c) restrict projects where there is methane available for combustion but the proponent's standard business activities do not resemble the operation of a coal mine for the purpose of mining coal. This involves excluding projects that capture or use coal seam methane, which as a defined term includes methane not captured by the definition of coal mine waste gas.

Subsection 10(2) provides that a project covered by the Determination is deemed a ***coal mine waste gas project***. This term is used throughout the Determination.

Subsection 10(3) summarises the five types of eligible offsets project that may be a coal mine waste gas project under the Determination. To be an eligible coal mine waste gas project a proponent must select from one of the five available options included in subsection 10(3) of the Determination. Other technologies may be added to this Determination, or covered by other determinations, as they become commercially viable and methods meeting the requirements of the Act are developed.

Part 3 Project requirements

Division 1 General requirements

11 Operation of this Division

The effect of paragraph 106(1)(b) of the Act is that a determination must set out requirements that must be met for a project to be an eligible offsets project. Under paragraph 27(4)(c) of the Act, the Regulator must not declare that an offsets project is an eligible offsets project unless the Regulator is satisfied that the project meets these requirements.

Division 1 of Part 3 of the Determination sets out a number of requirements to be met in order for a project to be declared an eligible offsets project. Different requirements apply to the five types of offsets projects outlined in sections 12 to 16.

The criteria allow proponents to assess the eligibility of their proposed offsets project through a straightforward assessment of their previous and current business operations relating to the combustion of methane.

12 Requirements for a new flaring project

Section 12 provides eligibility requirements for a new flaring project to be declared as an eligible offsets project.

Subsection 12(2) requires that this type of project involves the installation and operation of a flaring device.

A proponent of this type of project must assess the level of previous abatement activity from the combustion (if any) of the methane component of coal mine waste gas at the mine. This assessment is intended to ensure that abatement achieved by the project is likely to be additional to that which would have occurred in the absence of the project.

Under subsection 12(3) a proponent must assess whether there has been any material abatement from combustion of the methane component of coal mine waste gas the proponent intends to use under the project.

Proponents with a relatively minor history of abatement from methane combustion – which is specified as less than 5,000 tonnes CO₂-e per year for all previous and current financial years since the NGER Act commenced in 2008 – will be eligible as a new flaring project. In circumstances where a proponent has exceeded the material abatement threshold, they may be eligible as an expansion flaring project, an expansion electricity production project, or a ***displacement electricity production project*** (outlined in sections 13, 15 and 16).

For a new flaring project, consideration of previous methane combustion must include combustion from both flaring and electricity production devices.

Subsection 12(4) outlines the manner by which a proponent must determine the level of abatement from methane combustion that is required to be assessed under subsection 12(3).

The Determination draws on existing processes where possible, to avoid introducing new administrative processes.

Paragraph 12(4)(a) sets out that in circumstances where a proponent submits an application for declaration as an eligible offsets project during the course of a financial year and an NGER report for that financial year is not yet available, the proponent must provide a declaration that there has been no material abatement from combustion of methane in the

current financial year. To assist with the application process, the Regulator may provide advice on the format required if a written declaration is required under an application.

Paragraph 12(4)(b) sets out that a proponent must use previous NGER reports that the relevant coal mine and user of the coal mine waste gas submitted under the NGER Act. The NGER reports provide information to easily determine whether there has been material abatement from combustion of methane from the mine (as set out in section 40). By using the NGER reports a proponent can determine if they meet the eligibility requirements for a new flaring project.

All operating underground coal mines are currently meeting greenhouse gas emission thresholds that require the submission of NGER Act emissions reports and as such all current operating coal mines should be capable of considering NGER reports outlined in subsection 12(4)(b).

There may be instances in the future where a coal mine does not have previous NGER reports. These circumstances would be isolated to new or planned coal mines that are not yet operational. A proponent intending to use coal mine waste gas in these circumstances may be eligible as a new flaring project with recognition of no material abatement from combustion of methane.

13 Requirements for an expansion flaring project

Section 13 provides eligibility requirements for an expansion flaring project to be declared as an eligible offsets project.

Subsection 13(2) requires that this type of project involves the installation and operation of a flaring device.

A proponent of this type of project must assess the recognised capacity of all existing flaring devices and existing electricity production devices installed as part of the previous combustion of methane at the coal mine. This assessment is required to ensure that methane combustion undertaken by an offsets project is likely to be additional to what would have occurred in the absence of the project. The assessment is used to set relevant fixed baselines for the offsets project. This approach is in accordance with the offsets integrity standards outlined in section 133 of the Act.

Subsection 13(3) requires that there has been some combustion of methane at the mine where the offsets project intends to combust methane. This simple check ensures that the offsets project best fits with an expansion flaring project in that there will have been a history of methane combustion upon which to expand.

Subsection 13(4) outlines the approach by which a proponent must determine the recognised capacity of existing flaring devices and existing electricity production devices. Recognised capacity is drawn from the highest total recognised capacity of existing combustion devices that existed between 24 April 2014 and the time of the application. Existing combustion devices are defined as existing flaring devices and existing electricity production devices.

The backdate of 24 April 2014 aligns with the date the ERF White Paper was released and intends to avoid any influence that government policy, as stated in the ERF White Paper, may have had on existing methane combustion activities after the White Paper was released.

The Determination requires that the recognised capacity corresponds with the manufacturer's specifications for the relevant combustion devices. Recognised capacity is considered during an expansion flaring project in determining a fixed baseline for methane sent to combustion

devices. The baseline setting approach is outlined in sections 24, 42 and 43 of the Determination.

14 Requirements for a new electricity production project

Section 14 provides eligibility requirements for a new electricity production project to be declared an eligible offsets project.

Subsection 14(2) requires that this type of project involves the installation and operation of an electricity production device.

Consistent with the approach for a new flaring project, the eligibility criteria for a new electricity production project requires a proponent to assess the level of previous abatement from the combustion (if any) of the methane component of coal mine waste gas at the mine where the gas is intended to be combusted by the project.

Subsection 14(3) requires a proponent to consider whether there has been any material abatement from combustion of the methane component of coal mine waste gas. Material abatement is considered in the same way as for a new flaring project.

Whilst a new electricity production project relates to methane combustion from electricity production, consideration of previous methane combustion is required to include combustion from both flaring and electricity production devices.

Subsection 14(4) includes the requirement to determine the level of methane combustion that will be assessed under subsection 14(3) and is consistent with the approach outlined in subsection 12(4) for a new flaring project.

15 Requirements for an expansion electricity production project

Section 15 provides eligibility requirements for an expansion electricity production project to be declared as an eligible offsets project.

Subsection 15(2) requires that this type of project involves the installation and operation of an electricity production device.

Subsection 15(4) requires a proponent to assess the recognised capacity of all existing flaring devices and existing electricity production devices that existed at the point of greatest methane combustion capacity between 24 April 2014 and the time of the application. This is used to set relevant fixed baselines for the offsets project.

Recognised capacity is considered during an expansion electricity production project in determining a fixed baseline for methane sent to combustion devices. The baseline setting approach is outlined in sections 31, 42 and 43 of the Determination.

16 Requirements for a displacement electricity production project

Section 16 provides eligibility requirements for a displacement electricity production project to be declared as an eligible offsets project.

The Determination notes that unlike a new electricity production project or an expansion electricity production project, a displacement electricity production project does not take into account abatement from the combustion of the methane component of coal mine waste gas. The project only provides for abatement from displacement of electricity. This is because in

some circumstances a proponent may not be eligible to undertake combustion activity as part of an offsets project due to existing regulatory obligations that require the combustion, but they may be eligible to displace electricity.

Subsection 16(2) requires that this type of project involves the installation and operation of an electricity production device. The eligibility criteria for a displacement electricity production project require a proponent to assess the recognised capacity of all existing electricity production devices installed as part of the previous combustion of methane. This assessment is required in order to ensure that electricity production undertaken is likely to be additional to that which would occur in the absence of the offsets project.

This type of offsets project differs from an expansion electricity production project in that it does not require consideration of previous combustion capacity. This is because methane combustion would not be eligible abatement under a displacement electricity production project.

Subsection 16(3) outlines the approach a proponent must use to determine the recognised capacity of all existing electricity production devices and is only required in circumstances where there has been some historic abatement from the combustion of methane from electricity production devices.

The recognised capacity is drawn from the highest total recognised capacity for generating electricity that has existed at any point between 24 April 2014 and the time of the application.

Recognised capacity is considered in a displacement electricity production project to determine a fixed baseline for electricity production capacity. The baseline setting approach is outlined in section 37 and 39 of the Determination.

Division 2 Additionality requirements

The effect of subparagraph 27(4A)(b)(ii) of the Act is that a determination may set out requirements in lieu of the regulatory additionality requirement set out in the Act. These requirements must be met for a project to be an eligible offsets project.

Division 2 of Part 3 of the Determination sets out circumstances under which regulatory additionality requirements set out in the Act are to be replaced with specific provisions in the Determination.

The intent of specifying regulatory additionality requirements in lieu of those set out in the Act is to enable consideration of circumstances that may be otherwise excluded by the general regulatory additionality requirement set out in subparagraph 27(4A)(b)(i) of the Act.

17 Requirements in lieu of regulatory additionality requirement

Subsection 17(1) sets out that in lieu of the regulatory additionality requirement set out under subparagraph 27(4A)(b)(i) of the Act, the coal mine lease holder associated with all types of coal mine waste gas projects other than a displacement electricity production project must not have an existing regulatory obligation to destroy the methane component of coal mine waste gas.

This requirement intends to define the circumstances that determine a proponent's existing regulatory obligation in lieu of a potentially broader interpretation of the regulatory additionality requirement that is set out in the Act.

Subsection 17(2) provides a requirement in lieu of the regulatory additionality requirement set out under subparagraph 27(4A)(b)(i) of the Act for displacement electricity production projects, namely that the project must install and operate an electricity production device. This has been provided to clarify the interaction of the Act with requirements under state and territory legislation designed to promote beneficial use of coal mine waste gas where the use is commercially feasible. Specifically, the intent is to avoid a situation where a project becomes mandatory under state law because it is commercially viable as a result of participating in the ERF. This provision is consistent with the broader policy intent to ensure projects are additional, in that the project would not have proceeded in the absence of ERF support.

Part 4 Net abatement amounts
Division 1 Operation of this Part

18 Operation of this Part

Part 4 of the Determination sets out the method for working out the CO₂-e net abatement amount for a reporting period as per paragraph 106(1)(c) of the Act.

19 Overview of gases accounted for in abatement calculations

Section 19 provides an overview of the greenhouse gases and emission sources that are relevant in calculating the net abatement amount for a coal mine waste gas project. Depending on the type of offsets project undertaken, emissions sources will vary. The calculations set out in Part 4 of the Determination relate to the specific emissions that determine the net abatement amount.

Table 1 – Greenhouse gases and emissions sources		
Relevant emissions calculation	Emissions source	Greenhouse gas
Project abatement	Methane combustion	Methane (CH ₄)
Project emissions	Fuel consumption	Carbon dioxide (CO ₂) Methane (CH ₄) Nitrous oxide (N ₂ O)
Project emissions	Methane combustion	Carbon dioxide (CO ₂) Methane (CH ₄) Nitrous oxide (N ₂ O)
Project emissions	Unburned methane	Methane (CH ₄)

The following minor emissions sources are excluded from abatement calculations for all coal mine waste gas projects in order to simplify the calculations:

- fugitive emissions of methane from on-site equipment;
- fugitive emissions of methane from a gas supply pipeline or from vehicles; and
- accidental release of methane.

Emissions associated with the delivery of electricity to the grid are incorporated by applying a marginal loss factor to electricity production calculations.

The Determination seeks to recognise the combustion of the methane component of coal mine waste gas that would otherwise be vented to the atmosphere. Carbon dioxide and nitrous oxide that are also components of the coal mine waste gas will not be affected by combustion activity from the project and are therefore excluded from abatement calculations.

Division 2 New flaring project method

Division 2 sets out how net abatement is calculated for a new flaring project. The net abatement is:

- the amount of emissions avoided as a result of methane combusted by the project, calculated using subsection 21(5);

less:

- emissions released as a result of the combustion of methane, worked out using subsection 21(6), and
- ancillary emissions relating to energy used for the purposes of the project worked out using section 41.

A new flaring project can have a maximum historic abatement of 5,000 tonnes CO₂-e per financial year. Historic abatement of less than 5,000 tonnes CO₂-e per year is deemed not to be material abatement for the purposes of the Determination; it represents less than two per cent of the average annual abatement achieved by an Australian underground coal mine that has undertaken combustion activities. Historic abatement is to be determined according to section 40, and subtracted from the net abatement amount, where applicable, according to subsection 21(3).

20 Summary

Section 20 provides a summary of the method for estimating the net abatement amount for a new flaring project.

21 Net abatement amount

Section 21 provides the steps to determine the net abatement amount in tonnes CO₂-e.

Subsection 21(1) sets out that the project must have a historic level of abatement less the amount considered to be material abatement. As noted in section 40, this means less than 5,000 tonnes CO₂-e per financial year in every past NGER reporting year and in the period from the start of the current NGER reporting year up to the date of application as an eligible offsets project.

Historic abatement is determined through section 40. Where historic abatement is determined to be zero, the net abatement is determined using subsection 21(2); where historic abatement is above zero however less than 5,000 tonnes CO₂-e, the net abatement amount is determined using subsection 21(3).

Subsection 21(3) sets out that where historic abatement is above zero and below 5,000 tonnes CO₂-e, the historic abatement must be subtracted from the net abatement amount. As the reporting period may not be exactly one year, a correction factor of $T/365$ is applied, where T is the number of days in the reporting period and 365 is the number of days in a year. No correction is required to account for leap years.

Project emissions resulting from the combustion of methane include CO₂, CH₄ and N₂O. These three gases must be accounted for, for all ***installed flaring devices***. As such, in subsection 21(6), the calculation to sum devices ***h*** must be performed for all installed flaring

devices and the calculation to sum gas types j must be performed for the greenhouse gases CO₂, CH₄, and N₂O.

Division 4 ‘General calculations for flaring methods’ provides rules for the estimation of the volume of methane sent to a combustion device (section 25) and emissions resulting from operation of combustion devices (section 26) installed as part of the new flaring project.

Division 3 Expansion flaring project method

Division 3 sets out how net abatement is calculated for an expansion flaring project. The net abatement is:

- the amount of emissions avoided as a result of methane combusted by the project, accounting for the fixed baseline for methane sent to devices, calculated using subsection 23(3);

less:

- emissions released as a result of the combustion of methane worked out using subsection 23(4), and
- ancillary emissions relating to energy used for the purposes of the project worked out using section 41.

22 Summary

Section 22 provides a summary of the method for estimating the net abatement amount for an expansion flaring project.

23 Net abatement amount

Section 23 provides steps and equations to determine the net abatement amount in tonnes CO₂-e.

Subsection 23(3) sets out that in each time interval t , the volume of methane sent to devices is determined from the volume of methane sent to:

- flaring devices as determined according to **equation 10**, and
- electricity production devices as determined according to **equation 11** (if there are existing electricity production devices).

The volume of methane sent to combustion devices will be considered to have resulted from the offsets project where the amount is above the baseline for the methane component of coal mine waste gas sent to the combustion devices. If the volume of methane during a time interval is less than the baseline (e.g. as may arise during a pause in mining operations), projects will not be penalised.

Subsection 23(3) provides that where methane combustion during a time interval is negative (i.e. less than the baseline), the combustion would be set to zero for that interval.

Project emissions resulting from the combustion of methane includes CO₂, CH₄ and N₂O. These three gases must be accounted for, for all installed flaring devices. As such, in subsection 23(4), the calculation to sum devices h must be performed for all installed flaring

devices and the summation over the calculation to sum gas types j must be performed for the greenhouse gases CO₂, CH₄, and N₂O.

Division 4 of Part 4 ‘General calculations for flaring methods’ provides rules for estimating the emissions resulting from operation of combustion devices (section 26) installed as part of the expansion flaring project.

24 Volume of methane sent to combustion devices

Section 24 sets out how to calculate the eligible volume of methane sent to combustion devices, in cubic metres.

In determining the volume of methane sent to combustion devices, an expansion flaring project must net out the baseline for the methane sent to flaring and electricity production devices.

Methane sent to flaring devices

The volume of methane sent to flaring devices is to be determined at regular time intervals consistent with the monitoring requirements. Subsection 24(1) sets out that the volume of methane sent to all flaring devices in each time interval by flaring devices for the purposes of the project is determined by:

- the amount of methane sent to installed flaring devices; and
- the amount of methane combusted by existing flaring devices;

less:

- the fixed baseline for methane sent to flaring devices for that period.

The baseline for methane sent to electricity production devices is detailed in section 43 and is based on the recognised capacity of existing electricity production devices at the point of greatest capacity between 24 April 2014 and the time of application of the offsets project.

The measurement of the volume of methane sent to the flaring device and the operational status of the flaring device (e.g. the presence of a flame at appropriate temperature or other threshold) are key inputs into calculations of net abatement. As coal mine waste gas may continue to be sent to a flaring device and released into the atmosphere when the device is not operating, additional requirements are specified for concurrent measurements of volume flow and device operation to ensure that only the combustion is recognised.

The amount of methane sent to a flaring device h or m in a given time interval t is the volume of methane sent to the combustion device in that time interval, $Q_{CH_4,h,t}$ or $Q_{CH_4,m,t}$ multiplied by the operation of the combustion device during that time interval $O_{h,t}$ or $O_{m,t}$.

Monitoring requirements in section 47 specify the bounds for choice of time interval t ; and for determining combustion device operation $O_{h,t}$ or $O_{m,t}$ where the combustion device is a flare. Device operation must be monitored at least once every 15 minutes.

Methane sent to electricity production devices

Subsection 24(2) sets out that the volume of methane sent to existing electricity production devices for the purposes of the project would be equal to:

- the amount of methane sent to existing electricity production devices;

less:

- the fixed baseline for methane sent to electricity production devices for that period.

The baseline for methane sent to electricity production devices is detailed in section 43 and is based on the recognised capacity of existing electricity production devices at the point of greatest capacity between 24 April 2014 and the time of application of the offsets project.

The volume of methane sent to an electricity production device is based on the amount of electricity produced by the device that is supplied to the grid or used as part of the project, $Q_{EG,h}$, in megawatt hours.

The conversion factors in **equation 11** are to be applied to estimate the volume of methane sent to a combustion device based on the metered amount of electricity $Q_{EG,h}$.

Subsection 24(3) sets out that if the total methane combustion from existing electricity production devices exceeds the baseline for methane sent to electricity production devices in any time interval t , the excess would not be counted toward the volume of methane combusted for the purposes of the project. This is because abatement for this type of project will be isolated to additional combustion that is achieved through flaring devices.

Baseline for methane sent to combustion devices

The baseline for methane sent to combustion devices is determined according to rules provided in sections 42 and 43 (depending on whether it is methane sent to a flaring device or methane sent to an electricity production device). It corresponds with the greatest recognised capacity of combustion devices that existed between 24 April 2014 and the date of the application for declaration as an eligible offsets project. This includes all combustion devices that have used the coal mine waste gas from the mine, not only existing combustion devices managed by the proponent. This ensures the project is additional to the continued use of existing devices which may be managed by more than one operator.

Division 4 General calculations for flaring methods

This division includes general calculations to be used for a new flaring project or an expansion flaring project.

25 Volume of methane sent to combustion device

Section 25 sets out how to calculate the volume of methane sent to a flaring device that was installed as part of the project, in cubic metres.

Measurement of the volume of methane sent to the flaring device and the operational status of the flaring device (e.g. the presence of a flame at appropriate temperature or other threshold) are key inputs into calculations of net abatement. As coal mine waste gas may continue to be sent to a flaring device and released into the atmosphere when the device is not operating, additional requirements for concurrent measurements of volume flow and device operation are specified to ensure that only actual combustion is recognised.

Section 25 sets out that the amount of methane combusted by a device h in a given time interval t is the product of:

- the volume of methane sent to the combustion device in that time interval, $Q_{CH_4,h,t}$; and
- the operation of the combustion device during that time interval $O_{h,t}$.

The total volume of methane combusted by a device h over the period is obtained by summing the volume of methane combusted by the device in each time interval in the reporting period.

The monitoring requirements in subsection 47(1) set out the bounds for choice of time interval t ; and criterion for determining combustion device operation $O_{h,t}$ where the combustion device is a flare. Device operation must be monitored at least once every 15 minutes.

26 Emissions

Emissions from the combustion of methane consist primarily of carbon dioxide, with some amounts of nitrous oxide due to the reaction of nitrogen and oxygen in the air, and residue methane.

Section 26 sets out the calculation for determining emissions as a result of the combustion of coal mine waste gas for the project, in tonnes CO₂-e. **Equation 13** refers to the monitoring requirements for estimating the emissions factor for gas type j (EF_j). The monitoring requirements provide three options for estimating EF_j , provided as a hierarchy, with each subsequently listed option corresponding to more advanced measurements.

A summary of key differences between options for estimating EF_j is provided in the **Table 2** below.

Table 2: Options for estimating EF_j	
Option	Emission factors
1	<ul style="list-style-type: none"> • NGER default factors for all gas types, in accordance with item 19 of Schedule 1 of the <i>NGER (Measurement) Determination</i>.
2	<ul style="list-style-type: none"> • Carbon dioxide factor determined using sampling and analysis in accordance with Division 2.3.3 of the <i>NGER (Measurement) Determination</i> • NGER default factors for nitrous oxide and methane in accordance with item 19 of Schedule 1 of the <i>NGER (Measurement) Determination</i>.
3	<ul style="list-style-type: none"> • Carbon dioxide factor determined using sampling and analysis, with standards applied, in accordance with Division 2.3.4 of the <i>NGER (Measurement) Determination</i> • NGER default factors for nitrous oxide and methane in accordance with item 19 of Schedule 1 of the <i>NGER (Measurement) Determination</i>.

Once an option is chosen, proponents must continue to use the same option, or a higher numbered option for the remainder of the project. This is outlined at item 6 in the table in subsection 47(1) (monitoring requirements).

The gas stream may also contain carbon dioxide and nitrous oxide that are not affected by the project. They are therefore excluded from abatement calculations.

Division 5 New electricity production project method

Division 5 sets out how net abatement is calculated for a new electricity production project.

The net abatement is:

- the amount of emissions avoided as a result of methane combusted by the project, calculated in accordance with subsection 28(5); and
- the amount of emissions avoided as a result of displacing electricity through the use of project devices that produce electricity from coal mine waste gas, calculated using section 36;

less:

- emissions released as a result of the combustion of methane worked out using subsection 28(6); and
- ancillary emissions relating to energy used for the purposes of the project worked out using section 41.

A new electricity production project can have a maximum historic abatement 5,000 tonnes CO₂-e per financial year. This approach is consistent with consideration of historic abatement with a new flaring project outlined in Division 2 of Part 4. Historic abatement is to be determined according to section 40 and subtracted from the net abatement amount, where applicable, according to subsection 28(3).

27 Summary

Section 27 provides a summary of the method for estimating the net abatement amount for a new electricity production project.

28 Net abatement amount

Section 28 provides the key steps determine the net abatement amount in tonnes CO₂-e.

Subsection 28(1) sets out that a new flaring project must have a historic level of abatement less the amount considered to be material abatement. As set out in section 40, this means less than 5,000 tonnes CO₂-e per financial year for each past NGER reporting year and in the period from the start of the current NGER reporting year up to the date of application.

Historic abatement is determined through section 40. Where historic abatement is determined to be zero, the net abatement is determined using subsection 28(2); where historic abatement is above zero and less than 5,000 tonnes CO₂-e, the net abatement amount is determined using subsection 28(3).

Subsection 28(3) sets out that where historic abatement is above zero and below 5,000 tonnes CO₂-e, the historic abatement must be subtracted from the net abatement amount. As the reporting period may not be exactly one year, a correction factor of $T/365$ is applied to the adjustment, where T is the number of days in the reporting period, and 365 is the number of days in a year. No correction is required to account for leap years.

Project emissions of CO₂, CH₄ and N₂O must be accounted for, for all *installed electricity production devices*. As such, in subsection 28(6), the calculation to sum devices *h* must be performed for all installed electricity production devices and the summation over the calculation to sum gas types *j* must be performed for the greenhouse gases CO₂, CH₄, and N₂O.

Division 8 of Part 4 ‘General calculations for electricity production methods’ is used to estimate a number of parameters associated with determining the net abatement amount.

Division 6 Expansion electricity production project method

Division 6 sets out how net abatement is calculated for an *expansion electricity production* project. The net abatement is:

- the amount of emissions avoided as a result of methane combusted by the project, accounting for the baseline for methane sent to combustion devices, calculated using subsection 30(3); and
- the amount of emissions avoided as a result of deferring grid electricity use through the use of project devices that produce electricity from coal mine waste gas, accounting for the baseline for electricity produced by *electricity production devices*, calculated using section 36;

less:

- emissions released as a result of the combustion of methane worked out using subsection 30(4); and
- ancillary emissions relating to energy used for the purposes of the project worked out using section 41.

29 Summary

Section 29 provides a summary of the method for estimating the net abatement amount for an expansion electricity production project.

30 Net abatement amount

Section 30 provides the key steps and equations to determine the net abatement amount in tonnes CO₂-e.

Subsection 30(3) sets out that in each time interval *t*, the volume of methane sent to combustion devices for the project is determined from the sum of methane sent to:

- flaring devices as determined according to **equation 23**, and
- electricity production devices as determined according to **equation 24**.

Projects are recognised for methane sent to devices that is above the baseline within a time interval. If the combustion during a time interval is less than the baseline (e.g. as may arise during a pause in mining operations), projects are not penalised. Subsection 30(3) provides that where combustion during an interval is negative (i.e. less than the baseline), the combustion is set to zero for that interval.

Project emissions of CO₂, CH₄ and N₂O must be accounted for, for all installed electricity production devices. As such, in subsection 30(4), the calculation to sum devices h must be performed for all installed electricity production devices and the summation over the calculation to sum gas types j must be performed for the greenhouse gases CO₂, CH₄, and N₂O.

31 Volume of methane sent to combustion devices

Section 31 sets out how to calculate the volume of methane sent to a project device h , in cubic metres.

In determining the volume of methane sent to combustion devices, an expansion electricity production project must net out the baseline for methane sent to flaring and electricity production devices.

Methane sent to flaring devices

Subsection 31(1) sets out that the volume of methane sent to flaring devices for the purposes of the project would be equal to:

- the amount of methane sent to existing flaring devices;

less:

- the fixed baseline for methane sent to flaring devices during that period.

Measurement of the volume of methane sent to the flaring device and the operational status of the flaring device (e.g. the presence of a flame at appropriate temperature or other threshold) are key inputs into calculations of net abatement. As coal mine waste gas may continue to be sent to a flaring device and released into the atmosphere when the device is not operating, additional requirements are specified for concurrent measurements of volume flow and device operation to ensure that only the combustion is recognised.

For the purpose of this calculation, the amount of methane sent to a flaring device h or m in a given time interval t is the product of:

- the volume of methane sent to the combustion device in that time interval, $Q_{CH_4,m,t}$; and
- the operation of the combustion device during that time interval $O_{m,t}$.

Section 47 sets out the bounds for the choice of time interval t ; and criterion for determining combustion device operation $O_{h,t}$ or $O_{m,t}$ where the combustion device is a flare. Device operation must be monitored at least once every 15 minutes.

Subsection 31(2) sets out that if the total combustion through existing flaring devices exceeds the baseline for methane sent to flaring devices in any time interval t , the excess would not be counted toward the volume of methane sent to devices for the purposes of the project. This is

because the offsets project is an expansion electricity production project where consideration of abatement is isolated to additional combustion that is achieved through electricity production devices.

Methane sent to electricity production devices

Subsection 31(3) sets out that the volume of methane sent to electricity production devices for the purposes of the project is equal to:

- the amount of methane sent to installed electricity production devices, and
- the amount of methane sent to existing electricity production devices;

less:

- the fixed baseline for combustion capacity of existing electricity production devices during that period.

Estimation of the volume of methane combusted by electricity production devices is based on the amount of electricity produced by the device, that is supplied to the grid or used as part of the project, $Q_{EG,h}$, in megawatt hours.

The conversion factors in **equation 24** are applied to estimate the volume of methane that would have been combusted to produce the metered amount of electricity $Q_{EG,h}$.

Subsection 31(4) requires that the electrical efficiency of a device Eff_h (or Eff_m) must be used for the parameter for all time intervals in all reporting periods, which means for the entire project. Eff_h (or Eff_m) is determined in accordance with options included in **equation 24**, consisting of two options: one using manufacturer's specification for the device, and the other option is a default value of 0.36, which is based on a relevant default value in the *NGER (Measurement) Determination*.

Baseline for methane sent to combustion devices

The baseline for methane sent to combustion devices is determined according to sections 42 and 43 (depending on whether it is methane sent to flares or methane sent to electricity production devices). It corresponds with the greatest recognised capacity of combustion devices that existed at a point between 24 April 2014 and the date of the application for declaration as an eligible offsets project. This refers to all combustion capacity for coal mine waste gas from the mine, not only combustion devices managed by the proponent. This ensures the project is additional to the continued use of existing devices which may be managed by more than one operator.

Division 8 'General calculations for electricity production methods' provides rules for estimating a number of parameters associated with determining the net abatement amount.

Division 7 Displacement electricity production project method

Division 7 sets out how net abatement is calculated for displacement electricity production projects. The net abatement is:

- the amount of emissions avoided as a result of deferring grid electricity use through the use of installed electricity production devices that produce electricity from coal mine waste gas, accounting for the baseline for electricity produced by combustion devices, calculated using section 39.

Emissions that arise as a result of the project are accounted for as part of calculations in section 36. As the project only concerns displacement of grid electricity use, the combustion of methane for electricity production and the resultant combustion emissions are not considered in the net abatement calculations for this project.

33 Net abatement amount

Section 33 sets out how the net abatement is derived from the quantity of displacement grid emissions, as calculated under section 36, in tonnes CO₂-e.

Division 8 General calculations for electricity production project methods

This division includes general calculations to be used for a new electricity production project or an expansion electricity production project.

34 Volume of methane sent to combustion device

Section 34 provides the method for determining the volume of methane sent to an installed electricity production device *h*, in cubic metres, by metering the electricity produced by the device that is supplied to the grid or used as part of the project.

Subsection 34(1) sets out that the estimation of the volume of methane combusted from electricity production devices is based on the amount of electricity produced by the device that is supplied to the grid or used as part of the project, $Q_{EG,h}$, in megawatt hours.

The conversion factors in **equation 26** are applied to estimate the volume of methane sent to a device, based on the metered amount of electricity $Q_{EG,h}$.

Subsection 34(2) requires that the electrical efficiency of a device Eff_h (or Eff_m) must be used for the parameter for all time intervals in all reporting periods, which means for the entire project. Eff_h (or Eff_m) is determined in accordance with options included in **equation 26**, consisting of two options: one using manufacturer's specification for the device, and the other option is a default value of 0.36, which is based on a relevant default value in the *NGER (Measurement) Determination*.

35 Emissions

Emissions from the combustion of methane consist primarily of carbon dioxide, with some amounts of nitrous oxide (due to the reaction of nitrogen and oxygen in the air) and residue methane.

Section 35 sets out how these emissions are calculated, in tonnes CO₂-e. By reference to the monitoring requirements in section 47, several options are available:

- the energy content factor EC_{CMWG} ;
- the emission factor EF_j where *j* refers to methane; and
- the emission factor EF_j where *j* refers to carbon dioxide.

To determine the emission factor EF_j where *j* refers to nitrous oxide, project proponents must use the NGER default factor.

As detailed in the relevant items in the table in section 47, options are available for determining each of the parameters above. They are provided as a hierarchy, with each

subsequently listed option corresponding to more advanced measurements. Once an option is chosen, proponents must continue to use the same option, or a subsequently listed option for the remainder of the project.

A summary of key differences between options is provided in the tables below.

Table 3(a) – Options for determining emissions	
Option from the table in section 47	Energy content factor (EC_{CMWG})
Item 15 - (a)	Default factor - item 19 of Schedule 1 to the <i>NGER (Measurement) Determination</i>
Item 15 - (b)	Determined by analysis in accordance with Subdivision 2.3.3.2 of the <i>NGER (Measurement) Determination</i> .

Table 3(b) – Options for determining emissions	
Option from the table in section 47	Emission factor for methane (EF_j where j is methane)
Item 7 - (a)(i)	Default factor - item 19 of Schedule 1 to the <i>NGER (Measurement) Determination</i>
Item 7 - (a)(ii)	Using the emission factor that applies in estimating emissions of methane in section 2.27 of the <i>NGER (Measurement) Determination</i> .

Table 3(c) – Options for determining emissions	
Option from the table in section 47	Emission factor for carbon dioxide (EF_j where j is carbon dioxide)
Item 7 - (c)(i)	Default factor - item 19 of Schedule 1 to the <i>NGER (Measurement) Determination</i>
Item 7 - (c)(ii)	Estimated in accordance with section 2.22 of the <i>NGER (Measurement) Determination</i> .
Item 7 - (c)(iii)	Determined by analysis in accordance with section 2.26 of the <i>NGER (Measurement) Determination</i> .

36 Displaced electricity emissions

Section 36 sets out how the net abatement is calculated for the displacement of electricity emissions in tonnes of CO₂-e. This is based on the net amount of electricity produced, multiplied by an electricity emission factor.

The net amount of electricity produced is determined from the amount of electricity:

- produced by the device, accounting for the baseline for electricity produced by combustion devices;
- less the amount of electricity:*
- produced by fuels other than coal mine waste gas; and
 - consumed (referred to as auxiliary losses); and
 - lost during transmission and distribution to a grid.

These calculations only concern abatement and emissions relating to the displacement of electricity use. The combustion of methane for electricity production and the resultant combustion emissions are not considered here.

Calculation of abatement from the displacement of electricity emissions in tonnes of CO₂-e is based on division 2.3 of the *Renewable Energy (Electricity) Regulations 2001*. This method provides additional guidance for netting out the fixed baseline for electricity produced by devices, where applicable.

The electricity emissions factor to be used is to be taken from the *National Greenhouse Accounts Factors (NGA Factors document)* published by the Department from time to time. Proponents will apply the factor for the relevant electricity that has been displaced, from the NGA Factors document as in force on the day the project is declared an eligible offsets project. This is intended to provide certainty to proponents that the emissions intensity of electricity displaced will not deviate due to factors outside of their control once a project has commenced.

Where electricity is supplied to another source or grid not covered by the NGA Factors document, proponents must use either the factor provided by the operator of the electricity source or grid which reflects the emissions intensity of the electricity that is being displaced. Where this factor is not available, the proponent will apply the off-grid electricity in the NGA Factors document.

37 Electricity produced by project

Section 37 sets out how to calculate the total amount of electricity produced by the project in megawatt hours.

In determining the total amount of electricity produced by the project, the project must net out the baseline for electricity production capacity, if any.

Projects are recognised for electricity production above the baseline within a time interval. If the electricity produced during a time interval is less than the baseline (e.g. as may arise during a pause in mining operations), projects are not penalised. Subsection 37(1) provides that where electricity produced during an interval is negative (i.e. less than the baseline), the electricity produced would be set to zero for that interval.

Subsection 37(2) sets out that the total amount of electricity produced by electricity production devices for the purposes of the project is equal to:

- the amount of electricity produced from coal mine waste gas by installed electricity production devices, and
- the amount of electricity produced from coal mine waste gas by existing electricity production devices;

less:

- the fixed baseline for electricity production capacity during that period.

The fixed baseline for electricity production capacity existing electricity production devices is determined according to section 39.

38 Electricity produced by using fuel other than coal mine waste gas

Section 38 sets out how to calculate the amount of electricity produced using fuel sources that are not coal mine waste gas. These calculations are based on guidance provided in Part 6.5 of the *NGER (Measurement) Determination*.

39 Baseline for electricity production

Section 39 sets out how to obtain the baseline for electricity production for the project during a given time interval. It corresponds to the total recognised capacity for electricity production for the mine at the point where it was at the highest value, between 24 April 2014 and the

date of project application. This refers to all capacity to produce electricity from coal mine waste gas from the mine, not only combustion devices under the management of the project operator. This ensures the project is additional to the continued use of existing devices which may be managed by more than one operator.

Division 9 General calculations for flaring and electricity production methods

This division includes general calculations to be used for both flaring and electricity production methods.

40 Historic abatement

Section 40 is used to calculate a mine's historic abatement for the purpose of determining if the mine has material abatement in a previous financial year, and any necessary adjustment to net abatement amounts for a new flaring project or a new electricity production project.

This enables mines that have undertaken a very limited amount of historic abatement to host a new flaring project or a new electricity production project. However, the project must estimate the maximum historic annual abatement achieved for the mine and subtract this amount from the net abatement amount for the reporting period. This estimate is considered to be conservative, in accordance with the offsets integrity standards outlined in section 133 of the Act.

For the purpose of this method, a simplified estimation procedure has been adopted that makes use of previously submitted NGER data and/or standard NGER emissions estimation procedures.

Equation 35 provides a simple estimate of the amount of historic abatement A_H based on historic emissions resulting from the combustion of methane E_H , where E_H refers to the sum of emissions of carbon dioxide, methane and nitrous oxide, resulting from the combustion of coal mine waste gas, expressed in tonnes CO₂-e.

The simplified estimate will use a dimensionless conversion factor of 5.775 that is based on approaches and factors in the *NGER (Measurement) Determination*, and derives from:

- an estimation of the amount of methane, in cubic metres, that would have been combusted to produce the emissions E_H ;
- the conversion factor from volume of methane combusted in cubic metres to avoided emissions in tonnes of CO₂-e.

The quantity E_H is the highest total annual emissions resulting from the combustion of the methane component of coal mine waste gas. This quantity must be determined by considering all previous NGER reports since its commencement on 1 July 2008, as well as an estimate of emissions for the current NGER reporting period (if an NGER report has not yet been submitted) determined in accordance with NGER reporting obligations as applicable to the mine for the duration between the start of the current NGER reporting year and the time of project application.

A new flaring project and a new electricity production project will be required to subtract this maximum historic abatement from the net abatement amount.

41 Ancillary project emissions

Section 41 sets out how ancillary emissions for an offsets project are calculated, in tonnes CO₂-e.

Emissions resulting from the use of fossil fuels other than coal mine waste gas, and from the use of electricity for the collection, transport and combustion of the coal mine waste gas as part of the project are collectively referred to as ancillary emissions. They include emissions relating to energy used for:

- collecting gas, such as compressors, blowers and or other coal mine waste gas gathering systems;
- transporting coal mine waste gas for the purpose of combusting it as part of the project; and
- combusting coal mine waste gas through flaring or electricity production devices.

Emissions relating to equipment installed for the safety of the mine are not considered part of ancillary emissions.

The electricity emissions factor to be used is to be taken from the *National Greenhouse Accounts Factors* published by the Department from time to time. Proponents will apply the factor for the relevant electricity grid from the document as in force on the day the project is declared an eligible offsets project. This is intended to provide certainty to proponents that the emissions intensity of electricity imported will not deviate due to factors outside of their control once a project has commenced.

Where electricity is obtained from another source or grid not covered by the *National Greenhouse Accounts Factors*, proponents must use either the factor provided by the operator of the electricity source or grid which reflects the emissions intensity of the electricity being supplied. Where this factor is not available, the proponent will apply the off-grid electricity in the *National Greenhouse Accounts Factors*.

Equation 36 considers emissions from use of:

- grid electricity, as calculated by multiplying the amount of energy used by a grid emission factor; and
- fossil fuels, as calculated by multiplying the amount of fuel consumed by the relevant energy content and emission factor, and dividing by 1,000 (which corrects for the difference in units used in different parameters).

Where section 41 is applied to an expansion flaring project or expansion electricity production project, some existing equipment, infrastructure and devices may be necessary for activities undertaken as part of the project. The project is required to estimate the portion of grid electricity or fossil fuel use, and consequent ancillary emissions that are attributable to the operation of installed combustion devices.

42 Baseline for the methane component of coal mine waste gas sent to flaring devices

Section 42 sets out how to obtain the baseline for the methane component of coal mine waste gas sent to flaring devices for the project during a time interval. It corresponds to the total recognised capacity for existing flaring devices for the mine at the point where capacity was at the highest value, between 24 April 2014 and the date of project application. This refers to all flaring capacity for coal mine waste gas from the mine, not only devices under the

management of the project operator. This ensures the project is additional to the continued use of existing devices which may be managed by more than one operator.

The availability factor for a flaring device $AF_{Fl,m}$ is considered in order to account for manufacturer recommended maintenance cycles, and is included in the baseline to account for the likelihood that a combustion device won't be available to operate 100 per cent of the time.

43 Baseline for the methane component of coal mine waste gas sent to electricity production devices

Section 43 sets out how to obtain the baseline for the methane component of coal mine waste gas sent to electricity production devices for the project during a time interval. It corresponds to the total recognised capacity for existing electricity production devices for the mine at the point where capacity was at the highest value, between 24 April 2014 and the date of project application. This refers to all electricity production capacity for coal mine waste gas from the mine, not only devices under the management of the project operator. This ensures the project is additional to the continued use of existing devices which may be managed by more than one operator.

The availability factor for an electricity production device $AF_{Gen,m}$ is considered in order to account for manufacturer recommended maintenance cycles, and is included in the baseline to account for the likelihood that a combustion device won't be available to operate 100 per cent of the time.

Default parameters used in the calculation of abatement

Table 4 below lists default factors or parameters used in the Determination, current at 1 July 2014. Several factors and parameters set out in section 9 are derived from external sources, usually either the *National Greenhouse and Energy Reporting Regulations 2008* (the NGER Regulations) or the *NGER (Measurement) Determination*. If these legislative instruments are amended during a project's reporting period, then the project proponent will be required to use the factor or parameter prescribed in the instrument in force at the reporting period end date.

If the parameters are updated between the end of the reporting period and the day the report is submitted, proponents will need to exercise care to use correct values. Historic versions of the *NGER (Measurement) Determination* and other legislative instruments are available at www.comlaw.gov.au.

Table 4 – Default factors and parameters used in Part 4 of the Determination

Parameter	Description	Unit	Value or source
EF_{Elec}	Emission factor for the electricity grid from which the project consumes or supplies electricity.	kg CO ₂ -e/kWh	As published in the <i>National Greenhouse Accounts Factors</i> by the Department and in force at the time of project declaration or provided by the operator of the electricity source or grid.
EC_{CMWG}	Energy content factor of coal mine waste gas.	GJ/m ³	Item 19 of Schedule 1 of the <i>NGER (Measurement)</i>

Table 4 – Default factors and parameters used in Part 4 of the Determination

Parameter	Description	Unit	Value or source
			<i>Determination 2008</i>
$F_{MWh \rightarrow GJ}$	Factor converting energy in MWh to GJ.	(Dimensionless)	3.6
EC_i	Energy content factor of fuel type i for stationary energy purposes.	GJ/kL (or other appropriate units)	Part 1, 2 or 3 (as appropriate) of Schedule 1, of the <i>NGER (Measurement) Determination 2008</i>
EF_j	Emission factor for gas type j from the combustion of coal mine waste gas.	kg CO ₂ -e/GJ	Item 19 of Schedule 1 of <i>NGER (Measurement) Determination 2008</i>
EF_j	Emission factor for gas type j released during the reporting period (including relevant oxidation factors).	kg CO ₂ -e/GJ	Item 19 of Schedule 1 of <i>NGER (Measurement) Determination 2008</i>
$EF_{i,j}$	Emissions factor for each gas type j release during the reporting period (which includes the effect of an oxidation factor) due to project activities that consume fuel type i .	kg CO ₂ -e/GJ	Part 1, 2 or 3 (as appropriate) of Schedule 1, of the <i>NGER (Measurement) Determination 2008</i>
γ	Conversion factor cubic metres of methane at standard conditions to tonnes of CO ₂ -e.	t CO ₂ -e/m ³	Section 3.21 of the <i>NGER (Measurement) Determination 2008</i> .
DE	Default methane destruction efficiency for a flaring device.	(Dimensionless)	0.98
OF_{Fl}	Correction factor for the oxidation of coal mine waste gas flared.	(Dimensionless)	OF_{ij} in section 3.14 of the <i>NGER (Measurement) Determination</i> .
MLF	Marginal loss factor, to allow for the amount of electricity losses in transmission networks, as determined by: (a) if the power station is part of the national electricity market—AEMO; or (b) in any other case—an authority of the State or Territory where the power station is.	(Dimensionless)	Where the power station is part of the national electricity market, the marginal loss factor shall be the factor published by AEMO which was valid for the greatest number of days during the reporting period. If two or more factors fit these criteria, then the average of those factors shall be used.
$AF_{Fl,m}$	Annual availability factor of flaring device m .	(Dimensionless)	Has the default value of 1 (one) or as calculated in accordance with the standard maintenance cycle

Table 4 – Default factors and parameters used in Part 4 of the Determination

Parameter	Description	Unit	Value or source
			specified by the manufacturer.
$AF_{Gen,m}$	Annual availability factor of electricity production device m .	(Dimensionless)	Has the default value of 1 (one) or as calculated in accordance with the standard maintenance cycle specified by the manufacturer.

Part 5 Reporting, record-keeping and monitoring requirements

Subsection 106(3) of the Act sets out that a methodology determination may require the project proponent of an eligible offsets project to comply with specified reporting, record-keeping and monitoring requirements.

Under Parts 17 and 21 of the Act, a failure to comply with these requirements may constitute a breach of a civil penalty provision, and a financial penalty may be payable.

The reporting, record-keeping and monitoring requirements specified in Part 5 of the Determination are in addition to any requirements specified in the Act, regulations or legislative rules.

Division 1 Offset report requirements

44 Operation of this Division

Division 1 of Part 5 sets out information that must be included in an offsets report in addition to the offset report requirements set out in the Act, regulations and legislative rules.

45 Determination of certain factors and parameters

Section 45 sets out what must be included in an offsets report.

Subsection 45(1) sets out that the offsets reporting requirements in this subsection apply where it is not possible to meet the requirements of subsection 9(1), as outlined in paragraph 9(2)(b). Further explanation of these circumstances is provided in section 9. The purpose of subsection 45(1) is to provide the Regulator with information on which version of the *NGER (Measurement) Determination* or other relevant external source has been used by a project proponent to meet the monitoring requirements set out in section 47. The proponent is required to detail in their offsets report the version of the *NGER (Measurement) Determination* or external source that was used when undertaking monitoring, the dates that the version was used and why it was not possible for the proponent to use the version that was in force at the end of the reporting period.

Subsection 45(2) sets out that the requirements in this subsection apply if a parameter is worked out using section 45, which is applied if a project proponent fails to meet requirements to monitor certain parameters. The information required to be reported is listed in paragraphs 45(2)(a) to 45(2)(d) and is to provide the Regulator with evidence that will allow them to determine the nature and frequency of the failure to meet the monitoring requirements of the Determination and determine what compliance action may be appropriate.

Division 2 Monitoring requirements

46 Operation of this Division

Division 2 of Part 5 sets out requirements to monitor a coal mine waste gas project that is an eligible offsets project that are in addition to the monitoring requirements set out in the Act, regulations and legislative rules.

47 Monitoring requirements

Section 47 provides a summary of parameters that require monitoring, including specifications for the manner and frequency of monitoring.

Key monitored parameters are:

- the volume of methane sent for combustion $Q_{CH_4,h,t}$, $Q_{CH_4,m,t}$ and $Q_{CH_4,h}$; and
- the operation of the combustion device $O_{h,t}$ and $O_{m,t}$.

Measurement of the volume of methane sent to the flaring device and the operational status of the flaring device (e.g. the presence of a flame at appropriate temperature or other threshold) are key inputs into calculations of net abatement. Additional guidance for the parameters above have been provided in subsections 47(2), 47(3), 47(4), 47(5) and 47(6).

In the table at subsection 47(1), where the monitoring frequency of a parameter is specified as 'continuous', this means it should be monitored throughout the reporting period at intervals necessary to meet the specified standards.

As the volume of the methane component of coal mine waste gas is a key monitored parameter, section 47 sets out that volume of the methane component of methane is required to be measured according to the AAA criterion in Division 2.2.6 of the *NGER (Measurement) Determination* and sampled and analysed in accordance with subdivision 2.3.3.2 of the *NGER (Measurement) Determination*.

Subsection 47(2) and 47(3) include an allowance for project proponents to use methane analysers for determining methane content. If a methane analyser is to be used, the uncertainty relating to the measurement of the fraction of the volume of coal mine waste gas that is methane as sent to each device must be estimated in accordance with standard methods, from regular instrument calibration tests against certified standard methane samples. The total uncertainty of the measurement for each device must take into account:

- bias or offset uncertainty;
- uncertainty in the certified calibration gas sample; and
- uncertainty in calibration measurements;

A maximum upper bound uncertainty must be determined that includes the above, expressed as the decimal fraction U_h , and applied as a discount to the quantity of methane $Q_{CH_4,h}$ and $Q_{CH_4,h,t}$, as the factor $(1-U_h)$.

For example, if the maximum upper bound uncertainty of measurements is two per cent, the discount factor is $U_h=0.02$, and the quantity of methane must be discounted by multiplication by the factor $1-0.02=0.98$. This discount factor is applied to comply with the offsets integrity standards outlined in section 133 of the Act. Further guidance on the uncertainty factor for methane analysers will be made available through guidance material associated with the Determination.

As reiterated by subsection 48(2) below, failure to monitor parameters in accordance with this section is a breach of requirements of the Determination. In the case of certain parameters, where it has not been possible to monitor in accordance with the requirements projects should use one of the approaches provided in section 48.

48 Consequence for failure to monitor certain parameters

Compliance with requirements for monitoring of parameters is important to ensure that abatement credited by the project is calculated correctly. Monitoring requirements (see subsection 47) include the process for monitoring and the standard to which monitoring must occur.

In some cases for reasons beyond their control, a project proponent may be unable to monitor a parameter to the requirements set out in section 47. When this occurs, section 48 requires that adjustments must be applied for the time intervals that the parameters are not being monitored in accordance with requirements (termed the *non-monitored period*). The adjustment is necessary to ensure that all estimates or assumptions used in the Determination are conservative and are in accordance with the offsets integrity standards outlined in section 133 of the Act.

For parameters listed in item 1 of the table in subsection 48(1), the consequence for not monitoring in accordance with the requirements is for the project to work out the parameter using the default emissions factor for that parameter (as is included in the lower order monitoring option for the parameter). The project must apply a 10 per cent adjustment to the default emissions factor (i.e. the factor is multiplied by 1.1) for a period of up to three months in any 12 month period. For any period in excess of those three months the adjustment is 50 per cent (i.e. the factor is multiplied by 1.5).

For parameters listed in item 2 of the table, the consequence for not monitoring these parameters in accordance with the monitoring requirements will require the project to make a conservative estimate of the parameter for the duration of the non-monitored period.

The need for a proponent to apply section 48 arises from failure to meet monitoring requirements. In accordance with the Act, the Regulator may determine an appropriate response within its compliance and enforcement framework depending on the nature of the non-compliance (i.e. whether it is a one-off minor event or a more significant or repeated breach). This could include determining that that no eligible net abatement has been achieved by the project for the period of the breach. A note to subsection 48(2) indicates other actions that the Regulator may choose to take in response to a project failing to meet monitoring requirements.

When section 48 is used the project will be required to include information relating to the monitoring failure in its offsets report for the relevant reporting period (see subsection 45(2)). This is to provide the Regulator with evidence that will allow them to determine the nature, and frequency, of the failure to meet the monitoring requirements of the Determination and determine what compliance action may be appropriate.

Section 48 does not provide an exhaustive list of all parameters used in the Determination. Key parameters that do not have an option for lower order estimation (such as a default emissions factor) are considered integral to the abatement calculation and may only be monitored in accordance with the requirements set out in the Determination.

Statement of Compatibility with Human Rights

Prepared in accordance with Part 3 of the Human Rights (Parliamentary Scrutiny) Act 2011

Carbon Credits (Carbon Farming Initiative—Coal Mine Waste Gas) Methodology Determination 2015

This Legislative Instrument is compatible with the human rights and freedoms recognised or declared in the international instruments listed in section 3 of the *Human Rights (Parliamentary Scrutiny) Act 2011*.

Overview of the Legislative Instrument

The *Carbon Credits (Carbon Farming Initiative—Coal Mine Waste Gas) Methodology Determination 2015* (the Determination) sets out the detailed rules for implementing and monitoring offsets projects that avoid greenhouse gas emissions by combusting the methane component of coal mine waste gas through flaring or electricity production activities. The Determination applies to new projects or expansion projects that capture and combust coal mine waste gas from an operating coal mine.

Project proponents wishing to implement the Determination must make an application to the Clean Energy Regulator (the Regulator) and meet the eligibility requirements set out under the Determination. Offsets projects that are approved by the Regulator can generate Australian Carbon Credit Units, representing emissions reductions from the project.

Project proponents can receive funding from the Emissions Reduction Fund by submitting their projects into a competitive auction run by the Regulator. The Government will enter into contracts with successful proponents, which will guarantee the price and payment for the future delivery of emissions reductions.

Human rights implications

This Legislative Instrument does not engage any of the applicable rights or freedoms.

Conclusion

This Legislative Instrument is compatible with human rights as it does not raise any human rights issues.

Greg Hunt, Minister for the Environment