Explanatory Statement

Carbon Credits (Carbon Farming Initiative) Act 2011

Carbon Credits (Carbon Farming Initiative—Coal Mine Waste Gas) Methodology Determination Variation 2016

Purpose

The *Carbon Credits (Carbon Farming Initiative—Coal Mine Waste Gas) Methodology Determination Variation 2016* (the Variation) will amend the *Carbon Credits (Carbon Farming Initiative—Coal Mine Waste Gas) Methodology Determination 2015* (the Determination).

The Variation will implement a number of changes designed to expand the coverage of methane conversion processes under the Determination. This variation expands the Determination to cover all chemical reactions involving the conversion of methane to carbon dioxide, including thermal, catalytic and chemical processes. These changes enable the crediting of emissions reduction from the use of ventilation air methane (VAM) oxidation devices.

In 2012, VAM emissions accounted for up to 60 per cent (approximately 12.7 million tonnes CO_2-e) of fugitive emissions from Australian underground coal mines. By expanding coverage of the Determination to allow VAM oxidation, new opportunities to unlock potential abatement may become available to project proponents.

A number of small administrative corrections or clarifications will also be made to the Determination.

Legislative provisions

The Determination was made under subsection 106(1) of the *Carbon Credits (Carbon Farming Initiative) Act 2011* (the Act).

The Variation will amend the Determination, and will be made under subsection 114(1) of the Act, which empowers the Minister to vary, by legislative instrument, a methodology determination.

Background

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.

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 reduction and sequestration) from eligible projects and rules for monitoring, record keeping and reporting. These methodologies will

help ensure that emissions reductions are genuine—that they are both real and additional to business-as-usual.

The Determination was made on 13 February 2015, and sets out the detailed rules for implementing and monitoring projects that avoid emissions through the destruction of the methane component of coal mine waste gas. Since the Determination was made, the Department of the Environment and Energy has considered whether further opportunities for abatement of emissions of coal mine waste gas should be made available.

Further information on the Emissions Reduction Fund is available on the Department of the Environment and Energy website at: www.environment.gov.au/emissions-reduction-fund.

Operation

The Variation will significantly amend sections 14, 15, 16, 21, 23, 26, 28, 30, 36 and 40 of the Determination. Division 7A and section 16A will be added to the Determination. A number of minor amendments will also be made to other sections in order to facilitate these changes.

The Variation introduces flameless oxidation devices as an eligible technology in the Determination. Flameless oxidation devices are devices which oxidise methane without the use of a flame.

The Variation will not affect projects that are already declared eligible under the existing Determination and whose crediting period has started. Even after a determination has been varied, a project that was declared as an eligible offsets project before the variation can continue to use the determination in the form it was at the time the project's crediting period began, under section 126 of the Act. These project proponents may apply to the Clean Energy Regulator (the Regulator) for approval to move to the varied determination under section 128 of the Act. All eligible offsets projects approved after the commencement of the Variation, and those approved projects whose crediting period has not begun when the variation commences, will need to comply with the Determination as varied by the Variation, even if the applications were submitted before the Variation commenced. Under paragraph 69(4)(b) of the Act existing project proponents have one opportunity to change the start date of a delayed crediting period chosen for the project, which may impact which version of the Determination applies.

Consultation

The Variation has been developed by the Department of the Environment and Energy.

A detailed proposal for the Variation, in the form of a marked up copy of the Determination showing the Determination as varied by the Variation, was published on the Department's website for public consultation from 1 August 2016 to 29 August 2016. One confidential submission was received.

Determination details

A description of provisions in the Determination affected by the Variation is provided in Schedule 1. Numbered sections in this explanatory statement align with the items of the Variation. The definition of terms in ***bold italics*** can be found in the Variation or the Determination.

A complete description of the varied methodology determination is provided in Schedule 2. This is based on the original explanatory statement to the determination and is intended to assist the interpretation of the Determination as amended by the Variation.

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

For the purpose of subsections 114(2), (2A) and (7B) of the Act, in varying a methodology determination the Minister must have regard to, and agree with, the advice of the Emissions Reduction Assurance Committee (ERAC). The ERAC ensures that the varied methodology determination complies with the offsets integrity standards and that the varied methodology determination should be made. The Minister must be 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 must have 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 varied methodology determination applies and other relevant considerations.

Schedule 1

Amendments of the *Carbon Credits (Carbon Farming Initiative—Coal Mine Waste Gas) Methodology Determination 2015*

Schedule 1 provides explanations to the amendments made by the *Carbon Credits (Carbon Farming Initiative—Coal Mine Waste Gas) Methodology Determination Variation 2016* (the Variation).

All parts of the *Carbon Credits (Carbon Farming Initiative—Coal Mine Waste Gas) Methodology Determination 2015* (the Determination) are varied by the Variation:

- Items [1] to [19] varies part 1 of the Determination
- Items [20] to [22] varies part 2 of the Detemination
- Item [23] repeals and replaces parts 3 and 4 of the Detemination
- Items [24] to [29] varies part 5 of the Determination.

Explanations of the items in the Variation are below. A full explanation of the operation of the Determination as amended by the Variation in contained in Schedule 2. Both Schedule 1 and 2 are intended to assist in the interpretation of the Determination as amended by the Variation.

[1] Paragraph 4(b)

Item [1] changes a reference in the Determination from the *Legislative Instruments Act 2003* to the *Legislation Act 2003* to reflect the change in the name of this Act.

[2] Section 5 (definition of ***coal mine waste gas***)

Item [2] amends the ***coal mine waste gas*** definition to no longer include hydrocarbon substances drained from decommissioned coal mines, or their shafts or ducts. This change elucidates the exclusion of decommissioned mine drainage from the Determination. Before the Variation, coal mine waste gas from decommissioned mines was only excluded in the eligibility requirements. It also clarifies that the coal mine waste gas must come from an operating underground coal mine, consistent with the existing eligibility requirements in section 10 of the methodology determination.

[3] Section 5 (definition of ***conversion device***)

Item [3] removes the definition of ***combustion device*** from the Determination.

[4] Section 5 (definitions of ***combustion, combust, conversion device, conversion and convert***)

Item [4] introduces the term ***collocated***. The Variation allows two or more collocated mines to operate under the same offsets project.

Item [4] also introduces definitions into section 5 of the Determination for ***combust***, ***combustion***, ***conversion device***, ***convert*** and ***conversion***. The introduction of these new

definitions is important to establish flameless oxidation devices as eligible technologies under the Determination.

The terms ***combust*** and ***combustion*** are introduced to refer to the conversion of methane to carbon dioxide by use of a flame.

The definition of ***conversion device*** is introduced to replace the definition of ***combustion device*** (which is removed in item [3] of the Variation). The term ***conversion device*** covers devices that combust methane or convert it using flameless oxidation.

The terms ***convert*** and ***conversion*** cover both combustion and flameless oxidation processes for converting methane to carbon dioxide. The terms are generally used in place of the terms ***combust*** and ***combustion*** in the Determination, to refer to both combustion and flameless oxidation.

[5] Section 5 (definition of ***decommisssioned underground coal mine***)

Item [5] adds a note to the ***decommissioned underground coal mine*** definition to clarify a mine is deemed to be decommissioned if one or more of the associated clauses apply. This helps ensure consistency with the use of the term in the *National Greenhouse and Energy Reporting* (NGER) Scheme.

[6] Section 5 (definition of ***electricity production device***)

Item [6] amends the definition of ***electricity production device*** to include flameless oxidation devices that produce electricity.

[7] Section 5 (definition of ***existing electricity production device***)

Item [7] amends the definition of ***existing electricity production device*** to refer to devices that convert methane, rather than combust methane (i.e. to include electricity production from flameless oxidation).

[8] Section 5 (definition of ***existing flaring device***)

Item [8] renames the definition of ***existing flaring device*** to ***existing flaring or flameless oxidation device***. This definition is also amended to refer to devices that convert methane, rather than combust methane.

[9] Section 5 (definition of ***expansion flaring project***)

Item [9] renames the ***expansion flaring project*** definition and introduces two new definitions into the Determination.

The definition of ***expansion flaring project*** is renamed ***expansion flaring or flameless oxidation project***.

Definitions for ***flameless oxidation*** and ***flameless oxidation device*** are introduced into the Determination. Notes under these definitions clarify the different types of technology that can be considered flameless oxidation devices.

[10] Section 5 (definition of ***flaring***)

Item [10] amends the ***flaring*** definition to clarify methane is converted through the process of combustion. This distinguishes flaring from flameless oxidation.

[11] Section 5 (definition of ***flaring device***)

Item [11] amends the definition of ***flaring device*** to clarify it combusts methane rather than any gas. The definition is also amended to not exclude ventilation air methane oxidation devices, which are covered by the definition of flameless oxidation device.

[12] Section 5 (definition of ***installed flaring device***)

Item [12] renames the definition of ***installed flaring device*** to ***installed flaring or flameless oxidation device***. This definition is also amended to refer to both flaring and flameless oxidation devices.

[13] Section 5 (definition of ***new flaring project***)

Item [13] renames the definition of ***new flaring project*** to ***new flaring or flameless oxidation project***.

[14] Section 5 (definition of ***NGER report***)

Item [14] amends the definition of ***NGER report*** to include NGER reports provided under section 22XB, a section added to the NGER Act as part of the Safeguard Mechanism.

[15] Section 5 (definition of ***operating***)

Item [15] amends the definition of ***operating*** to refer to devices that convert methane, rather than combust methane.The definition is also reworded for clarity.

[16] Section 5 (definition of ***recognised capacity***)

Item [16] amends the definition of ***recognised capacity*** to refer to flaring and flameless oxidation devices. The definition is also amended to refer to conversion, rather than combustion of methane.

[17] Section 5 (definition of ***ventilation air methane***)

Item [17] introduces a definition of ***ventilation air methane***.

[18] Paragraph 6(a) and (b) (meaning of ***existing regulatory obligation***)

Item [18] amends the meaning of ***existing regulatory obligation*** to refer to obligations to convert or destroy methane, rather than just those that refer to the destruction of methane.

[19] Section 7 (meaning of ***material abatement***)

Item [19] amends the meaning of ***material abatement*** to refer to historic abatement from conversion, rather than combustion of methane. This means historic abatement is worked out as the combined historic abatement from both both flaring devices and flameless oxidation devices.

[20] Section 8 (meaning of ***integrated monitoring system***)

Item [20] amends the meaning of ***integrated monitoring system*** to refer to devices that convert methane, rather than combust methane.

[21] to [23] Section 10 (coal mine waste gas projects)

Items [21] to [23] amend section 10 of the Determination to apply to flameless oxidation devices. The ventilation air methane only project type is added to the list of eligible offset project types. Requirements for this project type are covered in Division 7A of the Determination.

Item [21] amends paragraph 10(1)(a) to apply to an offsets project at an operating underground coal mine or two or more collocated operating underground coal mines. This enables collocated operating underground coal mines to share project methane conversion devices. Collocated mines are in close proximity; mining leases should be bordering or within a few kilometres of each other.

[24] Parts 3 and 4

Item [24] repeals and replaces Part 3—Project requirements and Part 4—Net abatement amounts of the Determination.

Generally, in both Parts 3 and 4, references to ***flaring*** are revised to ***flaring or flameless oxidation*** (for example, ***flaring devices*** are referred to as ***flaring or flameless oxidation devices*** and ***new*** or ***expansion flaring projects*** are referred to as ***new*** or ***expansion flaring or flameless oxidation projects***). Item [24] generally replaces the terms ***combust*** and ***combustion***, with ***convert*** and ***conversion***. Exceptions are as follows:

The term ***flaring*** is retained in the following two sections the Determination:

- Section 10—specifies devices eligible under the Determination
- Section 47—specifies monitoring requirements specific to flares.

The term ***combustion*** is retained in the following sections the Determination:

- Section 40—which refers to parameters defined in the NGER (Measurement) Determination or sourced from the proponent's National Greenhouse and Energy Reporting (NGER) reports
- Section 41— which is concerned with ancillary emissions from the combustion of fossil fuels, rather than emissions from the conversion of methane
- Section 47—specifies monitoring requirements specific to flares.

Item [24] amendments to Part 3—Project requirements

In sections 14 and 15 of the Determination, conversion devices (i.e. flares or flameless oxidation devices) may be installed in new electricity production projects and expansion electricity production projects. This allows the conversion of methane from flaring or flameless oxidation devices, beyond any baseline amount, to be counted as eligible abatement.

Amendment to section 16 of the Determination enables displacement electricity production projects to install and claim abatement from conversion devices that use ventilation air methane devices as the primary fuel source. This abatement is in addition to the abatement claimed for displacing electricity with electricity produced from converting the methane in coal mine waste gas.

Item [24] introduces section 16A of the Determination to define the requirements for a ventilation air methane only project. Abatement for this project type is worked out from the conversion of methane by devices that use ventilation air methane as the primary fuel source.

Subsection 17(3) of the Determination sets out a requirement for ventilation air methane only projects in lieu of the regulatory additionality requirement. This requirement in lieu recognises that an obligation to flare or combust methane from the mine generally (such as those imposed under state or territory law) does not extend to flameless oxidation of ventilation air methane.

Item [24] amendments to Part 4—Net abatement amounts

Item [24] standardises the notation of parameters in the equations set out in parts 3 and 4 of the Determination. The letters used to denote different types of devices are as follows:

- Installed flaring or flameless oxidation devices are represented by ***h***
- Installed electricity production devices are represented by ***i***
- Existing flaring or flameless oxidation devices are represented by ***m***
- Existing electricity production devices are represented by ***n***.

This standardisation addresses a potential source of confusion when applying the equations.

Where possible, item [24] has made references to parameters defined in the NGER (Measurement) Determination, rather than set the parameter value in the Determination:

- **Equation 35** in section 40 of the Determination has been amended to replace the constant 5.775 with the parameters that were used to calculate the constant. These parameters are default values defined in the NGER (Measurement) Determination. This has the practical effect of updating the constant for recent changes to global warming potentials and oxidisation factors as well as any future changes that are made to those factors in the NGER (Measurement) Determination.
- The destruction efficiency (***DE***) value of conversion devices is defined by reference to the default parameter OF_{Fl} in section 3.14 of the NGER (Measurement) Determination, for both flaring and flameless oxidation devices.

Item [24] amends **equations 17** and **23** to include the eligible abatement from conversion devices installed as part of a new or expansion electricity production project. Subsection 31(2) of the Determination is repealed to allow the calculation of the abatement from conversion devices for expansion electricity production devices.

Equations 18 and **22** are amended so the emissions resulting from the conversion of methane by these installed conversion devices is deducted from the new abatement amount.

The amendments made to section 33 of the Determination enable abatement to be included from installed conversion devices that use ventilation air methane as the primary fuel source. **Equation 25** is amended to include the term for this abatement A_{PVAM}, and **equations 25A**, **25B** and **25C** are introduced to calculate A_{PVAM}.

Item [24] introduces division 7A of the Determination is to set out how to calculate the net abatement amount for a ventilation air methane only project.

Item [24] clarifies in subsection 36(5) of the Determination the types of electricity which can be considered displaced by the electricity generated by displacement electricity production projects. Subsection 36(5A) clarifies the coal mine waste gas that is eligible as an energy source for producing electricity in the project.

As well as amending **equation 35** so updates to factors in the NGER (Measurement) Determination are taken into account, item [24] also makes two further amendments to section 40. These amendments relate to the meaning of E_H:

- The meaning of E_H has been changed to clarify that E_H is determined by only considering emissions that occured before project application.
- A requirement to adjust E_H for differences in CO_2-e, set out in subparagraphs (a) and (b), is added in case global warming potentials have changed. This adjustment takes place if global warming potentials have changed in the time between the NGER reporting year from which E_H was taken and:
    a) the end of the reporting period—if A_H is being calculated to work out the net abatement amount (such as in equation 2 or equation 15); or
    b) the application time—if A_H is being calculated to work out if the historic abatement is greater than 5000 tonnes CO_2-e (meaning it is material abatement)

[25] Subsection 47(1) (table)

Item [25] amends rows 1 to 13 of the table in subsection 47(1) to include monitoring requirements for parameters introduced by the Variation. Changes also reflect the standardisation of parameter notation and replace references to combustion with conversion.

[26] Subsection 47(2)

Item [26] amends subsection 47(2) of the Determination so it is applicable to the relevant parameters incorporated into the monitoring requirements table in item [26] of the Variation. A condition is added to the subsection so it is explicit that the monitoring of coal mine waste gas volume parameters is done at the standard conditions defined in subsection 2.32(7) of the NGER (Measurement) Determination.

[27] Paragraph 47(3)(b)

Item [27] amends paragraph 47(3b) of the Determination to refer to the relevant parameters incorporated into the monitoring requirements table in item [25] of the Variation.

[28] to [29] Subsections 47(5) and 47(6)

Items [28] to [29] amend references to ‘devices’ in subsections 47(5) and 47(6) to ‘flaring devices’. This change is made because the references to how to monitor the operation of devices in these subsections are relevant for flaring devices but not flameless oxidation devices.

[30] Paragraph 48(1)(table)

Item [30] amends row 2 of the table in section 48 to reflect the standardisation of parameter notation throughout the Determination.

Schedule 2
Details of the varied methodology determination

Schedule 2 provides an explanation of the *Carbon Credits (Carbon Farming Initiative—Coal Mine Waste Gas) Methodology Determination 2015* (the Determination) after amendment by *Carbon Credits (Carbon Farming Initiative—Coal Mine Waste Gas) Methodology Determination Variation 2016* (the Variation). It is intended to assist in the interpretation and implementation of the 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 *Carbon Credits (Carbon Farming Initiative) Act 2011*(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 *Legislation 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 an operating underground coal mine that is covered by a coal mining lease. A mine must operate under a mining lease to be eligible under the Determination. A mine operating under a petroleum lease alone is ineligible under the Determination. Gas from decommissioned mines is not considered coal mine waste gas and as such is ineligible for abatement under the Determination. Similarly, gas from a coal mine that has not been continuously maintained in a gaseous form (e.g. liquefied coal mine waste gas) is ineligible for abatement. If there are two or more collocated coal mines as part of the same project and one or more mines are not operating, then only gas from the operating underground coal mine is considered coal mine waste gas under the Determination. An example of an underground coal mine that is not operating is a mine that is in care and maintenance, and is either not expected to resume coal production on a commercial basis or does not resume coal production on a commercial basis, in each case within a reasonable period of time after entering into care and maintenance.

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 conversion of the gas where it is produced as a by-product from the primary activity of extracting coal.

Collocated refers to the situation that mines are sufficiently close to each other that it would be feasible for mines to convert coal mine waste gas in shared devices. It is important that collocated mines are identified at the application for the declaration of the project as an eligible offsets project for proving that project requirements are met.

Combust or ***combustion*** refers to the conversion of methane to carbon dioxide by use of a flame. This is distinct from other approaches to convert methane to carbon dioxide that do not involve a flame, such as flameless oxidation.

Conversion device refers to a ***flaring device, flameless oxidation device*** or ***electricity production device*** that converts the methane component of coal mine waste gas.

Convert or ***conversion*** refers to the conversion of methane to carbon dioxide. This term covers both combustion and flameless oxidation of methane.

Flameless oxidation refers to the process involving the chemical oxidation and conversion of methane to carbon dioxide. The conversion process can occur with or without utilisation of thermal energy or a catalyst. Flameless oxidation processes have potential to convert gas with low concentration of methane, such as ventilation air methane.

NGA Factors document means the document titled *National Greenhouse Account Factors*, published on the Department of the Environment and Energy'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. The ability to incorporate documents as in force from time to time is provided in subsection 106(8) of the Act.

Operating refers to whether a device is operating.

Recognised capacity refers to either the maximum volume of methane capable of being converted or the maximum amount of electricity capable of being produced through the conversion 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.

ventilation air methane means the methane contained within the ventilation air of an operating underground coal mine that would otherwise be released into the atmosphere with that air, consistent with its ordinary meaning in the coal industry. Ventilation air methane is different to high concentration methane which is drained or otherwise collected from the underground coal mine.

To be declared an eligible ***expansion flaring or flameless oxidation project*** or an ***expansion electricity production project***, the proponent is required to assess the recognised capacity of all ***existing flaring devices, existing flameless oxidation 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. Recognised capacity applies for expansion flaring or flameless oxidation, expansion electricity production and displacement electricity production project types.

Accounting for the recognised capacity of existing flaring devices, existing flameless oxidation devices and existing electricity production devices ensures that the methane conversion 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.

The *National Greenhouse and Energy Reporting Regulations 2008* (the NGER Regulations) and the NGER (Measurement) Determination are also defined in relation to those instruments as in force from time to time. These instruments are available at www.legislation.gov.au. Further detail on their incorporation is provided in section 9.

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 or flameless oxidation 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 conversion of the methane component of coal mine waste gas in the past.

The material abatement threshold level for ***historic abatement*** is set at 5000 tonnes of carbon dioxide equivalence (CO_2-e) in a financial year. This level is fixed and does not increase if there are two or more collocated mines part of the project.

Proponents will be required to consider historic levels of abatement from the conversion of methane drawn from the same coal mine to which the project applies. This includes all abatement from conversion of methane from the coal mine using conversion devices (i.e. flares, flameless oxidation devices and electricity production 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 5000 tonnes CO_2-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 conversion activities.

If the proponent is able to demonstrate that historic abatement is less than 5000 tonnes CO_2-e for each year, they would be eligible to participate as a new flaring or flameless oxidation 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. Historic abatement is the abatement achieved in all previous financial years (since 2008) plus abatement from the start of the year at which the application for the project is made. 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 conversion device and the operation of the conversion device (e.g. the flame status of a flare).

The Determination allows these parameters (for a new flaring or flameless oxidation 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 conversion 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 conversion devices, and provides for the total volume of methane sent to devices in the reporting period.

Integrated monitoring systems are used in new flaring or flameless oxidation projects, new electricity production projects and ventilation air methane only projects meeting the requirements for one of these new project types. The integrated monitoring system is not included in the abatement method for an expansion flaring or flameless oxidation project, an expansion electricity production project, a displacement electricity production project types or a ventilation air methane only project type meeting the requirements of one of these expansion or displacement project types, as these type of projects require net abatement calculations to be applied at any given time interval. Individual time intervals are required to account for the interaction between installed conversion devices, existing conversion devices and the baseline.

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 NGER Regulations or the NGER (Measurement) Determination made under subsection 10(3) of the *National Greenhouse & Energy Reporting Act 2007* (the 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 *Legislation 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 conversion of methane that is sourced from coal mine waste gas at an operating underground coal mine or two or more collocated operating underground coal mines. This enables collocated operating underground coal mines to share conversion devices. Collocated mines are in close proximity; mining leases should be bordering or within a few kilometres of each other.

At the time of application, project proponents should set out which collocated mines, if any, make up the project. Defining the collocated mines as part of the project is necessary to show the project requirements set out in part 2 and part 3 of the Determination have been satisfied. For some project types it is a requirement to assess if there has been ***material abatement***, which is worked out by considering the historical abatement at each of the collocated mines in the project (material abatement is defined in section 7 of the Determination). Given that knowing which collocated mines are part of the project is important to proving project requirements are met, a project proponent cannot add in collocated mines not identified at the time of declaration as part of the eligible offsets project. These mines would need to be registered as a separate eligible offsets project (see the definition of ***collocated***).

The conversion of methane undertaken by eligible projects requires the installation and operation of one or more flaring or flameless oxidation devices or electricity production devices. In the case of electricity production devices, conversion 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 conversion but the mining lease holder'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 six 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 six 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. For example, flameless oxidation devices were added as an eligible technology to the Determination after amendment by the *Carbon Credits (Carbon Farming Initiative—Coal Mine Waste Gas) Methodology Determination Variation 2016.* It is up to the proponent to specify which type of project it seeks the declaration of where multiple types may be applicable.

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 six 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 (in the year at which the application for the project is made) relating to the conversion of methane.

12 Requirements for a new flaring or flameless oxidation project

Section 12 provides eligibility requirements for a new flaring or flameless oxidation 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 or flameless oxidation device.

A proponent of this type of project must assess the level of previous abatement activity from the conversion (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.

Consistent with paragraph 27(4A)(a) of the Act, any flaring device or flameless oxidation devices used for a project must be new (i.e. not pre-existing at the mine). If a proponent has pre-existing flaring or flameless oxidation devices and would like to receive credits for these devices, they should apply under the expansion flaring or flameless oxidation project type.

It is further noted that conversion of methane is mandatory in some jurisdictions under certain circumstances. In these situations, conversion would not be considered additional for the purposes of paragraph 27(4A)(b) of the Act.

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

Proponents with a history of relatively minor abatement from methane conversion——which is specified as less than 5000 tonnes CO_2-e per year for all financial years since the NGER Act commenced in 2008 (including abatement from the start of the year at which the application for the project is made)—will be eligible as a new flaring or flameless oxidation project. In circumstances where a proponent has exceeded the material abatement threshold, they may be eligible as an ***expansion flaring*** or ***flameless oxidation project***, an ***expansion electricity production project***, a ***displacement electricity production project***, or a ***ventilation air methane only project*** (outlined in sections 13, 15, 16 and 16A).

For a new flaring or flameless oxidation project, consideration of previous methane conversion must include conversion from flaring, flameless oxidation and electricity production devices.

Subsection 12(4) outlines the manner by which a proponent must determine the level of abatement from methane conversion 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 conversion of methane in the financial year in which project application is made. 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 conversion 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 or flameless oxidation project.

There may be instances 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 or flameless oxidation project with recognition of no material abatement from conversion of methane.

13 Requirements for an expansion flaring or flameless oxidation project

Section 13 provides eligibility requirements for an expansion flaring or flameless oxidation 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 or flameless oxidation device.

A proponent of this type of project must assess the recognised capacity of all existing flaring devices, existing flameless oxidation devices and existing electricity production devices fitted as part of the previous conversion of methane at the coal mine. This assessment is required to ensure that methane conversion 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 conversion of methane at the mine where the offsets project intends to convert methane. This simple check ensures that the offsets project best fits with an expansion flaring or flameless oxidation project in that there will have been a history of methane conversion upon which to expand.

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

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

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

This type of project may also involve the installation and operation of a flaring or flameless oxidation device. Installation of these devices allows methane to be converted, rather than released to the atmosphere, on occasions when the quantity of methane exceeds the capacity of the installed electricity generation devices.

Consistent with paragraph 27(4A)(a) of the Act, any flaring or flameless oxidation devices used for a project must be new (i.e. not pre-existing at the mine). If a proponent has pre-existing flaring or flameless oxidation devices and would like to receive credits for these devices, they should apply under the expansion electricity production project type.

It is further noted that flaring of methane is mandatory in some jurisdictions under certain circumstances. In these situations, flaring would not be considered additional for the purposes of paragraph 27(4A)(b) of the Act.

Consistent with the approach for a new flaring or flameless oxidation project, it is a requirement for a new electricity production project to assess the level of previous abatement from the conversion (if any) of the methane component of coal mine waste gas at the mine where the gas is intended to be converted by the project.

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

While a new electricity production project relates to methane conversion from electricity production, consideration of previous methane conversion is required to include conversion from flaring devices, flameless oxidation devices and electricity production devices.

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

Consistent with the approach for a new electricity production project, this type of project may also involve the installation and operation of a flaring or flameless oxidation device. As in section 14, this allows projects to claim abatement from simultaneously generating electricity and converting methane using a flare or flameless oxidation device. Devices installed for such projects must be new to meet the requirements of paragraph 27(4A)(a) of the Act and flaring must not be mandatory under state or territory law in order to be considered additional for the purposes of paragraph 27(4A)(b) of the Act.

Subsection 15(4) requires a proponent to assess the recognised capacity of all existing flaring or flameless oxidation devices and existing electricity production devices that existed at the point of greatest methane conversion 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 conversion 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 conversion of the methane component of coal mine waste gas. The exception to this is abatement from the conversion of methane from a conversion device that uses ventilation air methane as its primary fuel source, where no such device was previously installed.

A displacement electricity production project only provides for abatement from the displacement of electricity and conversion of ventilation air methane. Proponents may also operate devices to convert methane from other sources of coal mine waste gas, however abatement from these devices is excluded from the calculation of net abatement. This abatement is not likely to be additional because of regulatory obligations that require destruction of methane in coal mine waste gas.

Paragraph 16(2)(a) requires this type of project involve the installation and operation of an electricity production device. Paragraph 14(2)(b) permits the installation and operation of a flaring or flameless oxidation device.

The calculation of abatement from a displacement electricity production project requires a proponent to assess the recognised capacity of all existing electricity production devices. This assessment is required to set a baseline to ensure that abatement attributed to electricity production is likely to be additional to that which would occur in the absence of the offsets project. The baseline setting approach is outlined in sections 37 and 39 of the Determination.

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 conversion 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.

16A Requirements for a ventilation air methane only project

Section 16A sets out the requirements for a ventilation air methane only project to be declared as an eligible offsets project.

Subsection 16A(1) sets out that this project type covers projects which install and operate conversion devices that use ventilation air methane as the primary fuel source. Note the primary fuel source should be identified based on the total amount of energy delivered to the device to ensure the device is genuinely a ventilation air methane device.

In addition, it is a requirement the project also meets the eligibility requirements for one of the following four project types:

- a new flaring or flameless oxidation project
- an expansion flaring or flameless oxidation project
- a new electricity production project
- an expansion electricity production project.

The inclusion of this project type enables projects under a regulatory obligation to flare or combust methane, to count abatement from installing and operating conversion devices to use ventilation air methane. If a project with this regulatory obligation will also operate electricity production devices, then it may instead meet the requirements of the displacement electricity production project type. In particular, it is anticipated that only projects that need to rely on the requirement in lieu of the regulatory additionality requirement in subsection 17(3) would choose this project type.

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 – unless associated with a displacement electricity production project or ventilation air methane only 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 Emissions Reduction Fund. 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 Emissions Reduction Fund support.

Subsection 17(3) provides a requirement in lieu of the regulatory additionality requirement set out under subparagraph 27(4A)(b)(i) of the Act for ventilation air methane only projects, namely that the project must install and operate a conversion device. This establishes that an obligation to flare or combust methane from the mine generally (such as those imposed under state or territory law) does not require the conversion of methane in ventilation air methane.

Part 4 Net abatement amounts

Part 4 of the Determination covers how abatement values are calculated.

Key parameter subscripts used in the equations in part 4 of the Determination are listed in **Table 1** below.

Table 1 – Descriptions of key parameter subscripts used in the Determination

Subscript Character	Description
N	Net amount
P	Project emissions
H	Historic amount
Com	Volume of gas converted
MD	Emissions of gas converted
An	Ancillary
h	An installed flaring or flameless oxidation device
j	Gas type which is carbon dioxide, methane or nitrous oxide
t	Time interval in the reporting period
m	An existing flaring or flameless oxidation device
Fl	Installed and existing flaring or flameless oxidation devices
CMWG	Coal mine waste gas
n	An existing electricity production device
Gen	Electricity production devices
G	Displaced electricity emissions from electricity production
i	An installed electricity production device
PVAM	Project ventilation air methane
k	An installed electricity production device that uses ventilation air methane as its primary fuel source
l	An installed flameless oxidation device that uses ventilation air methane as its primary fuel source
f	Fuel type that is not coal mine waste gas
CO_2	Carbon dioxide
CH_4	Methane
N_2O	Nitrous oxide

Division 1 Operation of this Part

18 Operation of this Part

Part 4 of the Determination sets out the method for working out the CO_2-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 2 – Greenhouse gases and emissions sources

Relevant emissions calculation	Emissions source	Greenhouse gas
Project abatement	Methane conversion	Methane (CH_4)
Project emissions	Fuel consumption	Carbon dioxide (CO_2) Methane (CH_4) Nitrous oxide (N_2O)
Project emissions	Methane conversion	Carbon dioxide (CO_2) Methane (CH_4) Nitrous oxide (N_2O)
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
- accidental release of methane.

Emissions associated with the delivery of electricity to the grid are incorporated by applying a marginal loss factor (as defined in section 36 of the Determination) to electricity production calculations.

The Determination seeks to recognise the conversion 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 conversion activity from the project and are therefore excluded from abatement calculations.

Division 2 New flaring or flameless oxidation project method

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

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

less:

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

A new flaring or flameless oxidation project can have a maximum historic abatement of 5000 tonnes CO_2-e per financial year. Historic abatement of less than 5000 tonnes CO_2-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 conversion 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 or flameless oxidation project.

21 Net abatement amount

Section 21 provides the steps to determine the net abatement amount in tonnes CO_2-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 5000 tonnes CO_2-e per financial year in every past NGER reporting year and in the reporting year in which the project application is made (from the start of the year 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 5000 tonnes CO_2-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 5000 tonnes CO_2-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.

Note the 5000 tonnes CO_2-e threshold referred to above is fixed and does not increase if there are two or more collocated mines part of the project.

Subsection 21(5) sets out that the volume of methane converted by the project is worked out with the destruction efficiency (***DE***) of the conversion device. The value for ***DE*** is taken to be the value set for the factor OF_{if} in the NGER (Measurement) Determination, which is the destruction efficiency of coal mine waste gas flared.

Project emissions resulting from the conversion of methane include CO_2, CH_4 and N_2O. These three gases must be accounted for, for all methane conversion by installed flaring or flameless oxidation devices. As such, in subsection 21(6), the calculation to sum devices ***h*** must be performed for all installed flaring or flameless oxidation devices and the calculation to sum gas types ***j*** must be performed for the greenhouse gases CO_2, CH_4, and N_2O.

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

Division 3 Expansion flaring or flameless oxidation project method

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

- the amount of emissions avoided as a result of methane converted 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 conversion of methane worked out using subsection 23(4)
- 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 or flameless oxidation project.

23 Net abatement amount

Section 23 provides steps and equations to determine the net abatement amount in tonnes CO_2-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 or flameless oxidation 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 conversion 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 conversion 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 conversion during a time interval is negative (i.e. less than the baseline), the conversion would be set to zero for that interval.

Project emissions resulting from the conversion of methane includes CO_2, CH_4 and N_2O. These three gases must be accounted for, for all installed flaring or flameless oxidation devices. As such, in subsection 23(4), the calculation to sum devices ***h*** must be performed for all installed flaring or flameless oxidation devices and the summation over the calculation to sum gas types ***j*** must be performed for the greenhouse gases CO_2, CH_4, and N_2O.

Division 4 of Part 4 'General calculations for flaring or flameless oxidation methods' provides rules for estimating the emissions resulting from operation of conversion devices (section 26) installed as part of the expansion flaring or flameless oxidation project.

24 Volume of methane sent to conversion devices

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

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

Methane sent to flaring or flameless oxidation devices

The volume of methane sent to flaring or flameless oxidation 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 or flameless oxidation devices in each time interval by flaring or flameless oxidation devices for the purposes of the project is determined by:

- the amount of methane sent to installed flaring or flameless oxidation devices
- the amount of methane converted by existing flaring or flameless oxidation devices

less:

- the fixed baseline for methane sent to flaring or flameless oxidation 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 or flameless oxidation device and the operational status of the flaring or flameless oxidation 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 or flameless oxidation 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 conversion is recognised.

The amount of methane sent to a flaring or flameless oxidation device ***h*** or ***m*** in a given time interval ***t*** is the volume of methane sent to the conversion device in that time interval, $\boldsymbol{Q_{CH_4,h,t}}$

or $\boldsymbol{Q_{CH_4,m,t}}$ multiplied by the operation of the conversion device during that time interval $\boldsymbol{O_{h,t}}$ or $\boldsymbol{O_{m,t}}$.

Monitoring requirements in section 47 specify the bounds for choice of time interval $\boldsymbol{t}$; and for determining conversion device operation $\boldsymbol{O_{h,t}}$ or $\boldsymbol{O_{m,t}}$ where the conversion device is a flare or flameless oxidation device. 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, $\boldsymbol{Q_{EG,n}}$, in megawatt hours.

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

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

Baseline for methane sent to conversion devices

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

Division 4 General calculations for flaring or flameless oxidation methods

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

25 Volume of methane sent to flaring or flameless oxidation device

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

Measurement of the volume of methane sent to the flaring or flameless oxidation device and the operational status of the flaring or flameless oxidation 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 or flameless oxidation 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 conversion is recognised.

Section 25 sets out that the amount of methane converted by a device $\boldsymbol{h}$ in a given time interval $\boldsymbol{t}$ is the product of:

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

The total volume of methane combusted by a device $\boldsymbol{h}$ over the period is obtained by summing the volume of methane converted 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 $\boldsymbol{t}$; and criterion for determining conversion device operation $\boldsymbol{O_{h,t}}$ where the conversion device is a flare or flameless oxidation device. Device operation must be monitored at least once every 15 minutes.

26 Emissions

Emissions from the conversion 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 conversion of coal mine waste gas for the project, in tonnes CO_2-e. **Equation 13** refers to the monitoring requirements for estimating the emissions factor for gas type $\boldsymbol{j}$ ($\boldsymbol{EF_j}$). The monitoring requirements provide three options for estimating $\boldsymbol{EF_j}$, provided as a hierarchy, with each subsequently listed option corresponding to more advanced measurements.

A summary of key differences between options for estimating $\boldsymbol{EF_j}$ is provided in the **Table 3** below.

Table 3: Options for estimating $\boldsymbol{EF_j}$

Option	Emission factors
1	• NGER default factors for all gas types, in accordance with item 19 of Schedule 1 of the NGER (Measurement) Determination.
2	• Carbon dioxide factor determined using sampling and analysis in accordance with Division 2.3.3 of the NGER (Measurement) Determination. • NGER default factors for nitrous oxide and methane in accordance with item 19 of Schedule 1 of the

Table 3: Options for estimating EF_j	
Option	**Emission factors**
	NGER (Measurement) Determination.
3	• Carbon dioxide factor determined using sampling and analysis, with standards applied, in accordance with Division 2.3.4 of the NGER (Measurement) Determination. • NGER default factors for nitrous oxide and methane in accordance with item 19 of Schedule 1 of the NGER (Measurement) Determination.

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 converted by the project, calculated in accordance with subsection 28(5)
- 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 conversion of methane worked out using subsection 28(6)
- 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 5000 tonnes CO_2-e per financial year. This approach is consistent with consideration of historic abatement with a new flaring or flameless oxidation 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 CO_2-e.

Subsection 28(1) sets out that a new electricity production 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 5000 tonnes CO_2-e per financial year for each past NGER reporting year and in the period from the start of the reporting year at which the project application is made 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 5000 tonnes CO_2-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 5000 tonnes CO_2-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.

Subsections 28(4) and 28(5) set out calculations for the tonnes of emissions abatement from electricity production, flaring and flameless oxidation devices in new electricity production projects.

Project emissions of CO_2, CH_4 and N_2O must be accounted for, for all installed electricity production devices, installed flaring devices and installed flameless oxidation devices. As such, in subsection 28(6), the calculation to sum devices ***i*** must be performed for all installed electricity production devices and the calculation to sum devices ***h*** must be performed for all installed flaring and flameless oxidation devices. The summation over the calculation to sum gas types ***j*** must be performed for the greenhouse gases CO_2, CH_4, and N_2O.

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 converted by the project, accounting for the baseline for methane sent to conversion devices, calculated using subsection 30(3)
- 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 conversion of methane worked out using subsection 30(4)

- 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 CO_2-e.

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

- flaring or flameless oxidation devices as determined according to **equation 23**
- 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 conversion 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 conversion during an interval is negative (i.e. less than the baseline), the conversion is set to zero for that interval.

Project emissions of CO_2, CH_4 and N_2O must be accounted for, for all installed flaring, flameless oxidation and 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 calculation to sum devices ***i*** must be performed for all installed flaring and flameless oxidation devices. The summation over the calculation to sum gas types ***j*** must be performed for the greenhouse gases CO_2, CH_4, and N_2O.

31 Volume of methane sent to conversion devices

Section 31 sets out how to calculate the volume of methane sent to installed conversion devices ***h*** and existing conversion devices ***i***, in cubic metres.

In determining the volume of methane sent to conversion devices, an expansion electricity production project must net out the baselines. Baselines are calculated differently for methane sent to flaring or flameless oxidation devices and for electricity production devices.

Methane sent to flaring or flameless oxidation devices

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

- the amount of methane sent to existing conversion devices and installed conversion devices

less:

- the fixed baseline for m*ethan*e sent to flaring or flameless oxidation devices during that period.

Measurement of the volume of methane sent to the flaring or flameless oxidation device and the operational status of the flaring or flameless oxidation 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 or flameless oxidation 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 conversion is recognised.

For the purpose of this calculation, the amount of methane sent to existing flaring or flameless oxidation devices and installed flaring or flameless oxidation devices are distinct. The amount of methane sent to a flaring or flameless oxidation device ***h*** or ***m*** in a given time interval ***t*** is the product of:

- the volume of methane sent to the conversion device in that time interval, $\boldsymbol{Q_{CH_4,m,t}}$ (or $\boldsymbol{Q_{CH_4,h,t}}$)
- the operation of the conversion device during that time interval $\boldsymbol{O_{m,t}}$ (or $\boldsymbol{O_{h,t}}$).

The total volume of methane sent to flaring or flameless oxidation devices is the sum of the volume of methane sent to existing flaring or flameless oxidation devices and the volume of methane sent to installed flaring or flameless oxidation devices.

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

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
- the amount of methane sent to existing electricity production devices

less:

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

Estimation of the volume of methane converted 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, $\boldsymbol{Q_{EG,i,t}}$ (or $\boldsymbol{Q_{EG,n,t}}$)**,** in megawatt hours.

The conversion factors in **equation 24** are applied to estimate the volume of methane that would have been converted to produce the metered amount of electricity $\boldsymbol{Q_{EG,i,t}}$ (or $\boldsymbol{Q_{EG,n,t}}$).

Subsection 31(4) requires that the electrical efficiency of a device $\boldsymbol{Eff_i}$ (or $\boldsymbol{Eff_n}$) must be used for the parameter for all time intervals in all reporting periods, which means for the entire project. $\boldsymbol{Eff_i}$ (or $\boldsymbol{Eff_n}$) 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 conversion devices

The baseline for methane sent to conversion devices is determined according to sections 42 and 43 (depending on whether it is methane sent to flaring devices, flameless oxidation devices or methane sent to electricity production devices). It corresponds with the greatest recognised capacity of conversion 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 conversion capacity for coal mine waste gas from the mine, not only conversion devices managed by the proponent. This ensures the project is additional to the continued use of existing conversion 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 conversion devices, calculated using section 39
- the amount of emissions abated by conversion devices which use ventilation air methane as the primary fuel source. Note the primary fuel source should be identified based on the total amount of energy delivered to the device during the reporting period to ensure the device is genuinely a ventilation air methane device. These conversion devices must be installed where no such devices previously existed in order to be eligible for the calculation of abatement.

Emissions that arise as a result of the displacement of electricity are accounted for as part of calculations in section 36. The conversion of methane for electricity production and the resultant conversion emissions are not considered in the net abatement calculations for this project.

The approach used to calculate emissions abatement through the use of ventilation air methane conversion devices is similar to the approach used for flaring and flameless oxidation devices under new electricity production projects.

33 Net abatement amount

Subsection 33(1) sets out how the net abatement is derived from the quantity of displacement grid emissions, as calculated under section 36, and abatement from flameless oxidation devices using ventilation air methane as the primary fuel source, as calculated under subsections 33(2) to 33(4), in tonnes CO_2-e.

Subsections 33(2) to 33(4) are similar equations to subsections 28(4) to 28(6). The difference between these calculations is the equations in section 33 only apply to flameless oxidation devices which use ventilation air methane as the primary fuel source.

Division 7A Ventilation air methane only method

Division 7A sets out how net abatement is calculated for ventilation air methane only projects. Abatement for this project type is calculated as if the project was one of the following project types:

- a new flaring or flameless oxidation project
- an expansion flaring or flameless oxidation project
- a new electricity production project
- an expansion electricity production project.

Abatement is only counted for conversion devices using ventilation air methane as the primary fuel source.

This project type supports projects which are under a general obligation to flare or combust methane, but under no particular obligation to convert the methane in ventilation air methane.

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 conversion device

Section 34 provides the method for determining the volume of methane sent to an installed electricity production device $\boldsymbol{i}$, 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 converted 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, $\boldsymbol{Q_{EG,i}}$, 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 $\boldsymbol{Q_{EG,i}}$.

Subsection 34(2) requires that the electrical efficiency of a device $\boldsymbol{Eff_i}$ (or $\boldsymbol{Eff_n}$) must be used for the parameter for all time intervals in all reporting periods, which means for the entire project. $\boldsymbol{Eff_i}$ (or $\boldsymbol{Eff_n}$) 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 conversion 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 CO_2-e. By reference to the monitoring requirements in section 47, several options are available:

1. the energy content factor $\boldsymbol{EC_{CMWG}}$
2. the emission factor $\boldsymbol{EF_j}$ where $\boldsymbol{j}$ refers to methane
3. the emission factor $\boldsymbol{EF_j}$ where $\boldsymbol{j}$ 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 4(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 NGER (Measurement) Determination
Item 15 - (b)	Determined by analysis in accordance with Subdivision 2.3.3.2 of the NGER (Measurement) Determination.

Table 4(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 NGER (Measurement) Determination
Item 7 - (a)(ii)	Using the emission factor that applies in estimating emissions of methane in section 2.27 of the NGER (Measurement) Determination.

Table 4(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 NGER (Measurement) Determination.
Item 7 - (c)(ii)	Estimated in accordance with section 2.22 of the NGER (Measurement) Determination.
Item 7 - (c)(iii)	Determined by analysis in accordance with section 2.26 of the NGER (Measurement) Determination.

36 Displaced electricity emissions

Section 36 sets out how the net abatement is calculated for the displacement of electricity emissions in tonnes of CO_2-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 conversion devices

  less the amount of electricity:

- produced by fuels other than coal mine waste gas
- consumed (referred to as auxiliary losses)
- lost during transmission and distribution to a grid.

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

Calculation of abatement from the displacement of electricity emissions in tonnes of CO_2-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* (the 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.

Subsection 36(5) clarifies that electricity displaced by the project will be disregarded when working out abatement if it is not used to meet demand that would otherwise have been supplied from an electricity grid or an electricity generator supplying electricity through a dedicated or shared power line. The abatement calculations cater only for the loss and displacement factors for displaced electricity. Other types of potential energy displacement are ineligible (such as liquefying coal mine waste gas for transport purposes).

One example of electricity considered displaced by the project is when the electricity generated by the project's devices removes the need for a coal mining operation to source electricity from a grid or another power station. Another example is where electricity generated by the project is in excess of the coal mining operation's requirements and is exported back to a grid or to another facility who otherwise would have sourced electricity from the grid.

Paragraph 36(5)(b) sets out that electricity generated by the project's devices is also disregarded when working out abatement if approval to use the coal mine waste gas as an fuel source is required by a government authority and evidence for that approval is unavailable.

Subsection 36(5A) clarifies the definition of electricity produced from fuel sources other than eligible coal mine waste gas. In particular, coal mine waste gas is not an eligible source of energy for the purpose of calculating eligible abatement in **equation 29** if it has been sourced from:

- coal mines that are not part of the project and the gas is not supplied through a dedicated pipeline; or
- coal mines that are not part of the project and could not be part of the project in the future.

The use of coal mine waste gas transported in a pipeline from an adjoining or nearby coal mine is permitted provided that the other mine is also eligible to be part of the project (i.e. it meets eligibility requirements, including the requirements in lieu of the regulatory additionality requirement in section 17). The mine would also have to be collocated, noting that for meeting paragraph (b) of the definition for collocation it could have been identified at the time of application for declaration.

Note that **equation 29** calculates the net electricity produced by coal mine waste gas devices as the electricity produced by devices minus the electricity imported from other sources.

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

plus:

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

Division 9 General calculations for flaring or flameless oxidation and electricity production methods

This division includes general calculations to be used for both flaring or flameless oxidation 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 or flameless oxidation 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 or flameless oxidation 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 Determination, an estimation procedure has been adopted that makes use of previously submitted NGER data and/or standard NGER emissions estimation procedures.

Equation 35 provides an estimate of the amount of historic abatement $\boldsymbol{A_H}$ based on the historic emissions (as reported in an NGER report) resulting from the conversion of methane in coal mine waste gas ($\boldsymbol{E_H}$). The amount $\boldsymbol{E_H}$ is the sum of emissions of carbon dioxide, methane and nitrous oxide, expressed in tonnes CO_2-e. The tonnes CO_2-e for these different greenhouse gases may need to be adjusted if the Global Warming Potentials have changed in the time between when E_H was reported and the end of the reporting period.

The historic abatement $\boldsymbol{A_H}$ is subtracted from the net abatement amount for a new flaring or flameless oxidation project or a new electricity production project.

The historic abatement $\boldsymbol{A_H}$ is worked out using the factors that were used to estimate the emissions $\boldsymbol{E_H}$ from the historic volume of methane converted. The factors used in the equation are:

- $\boldsymbol{\gamma}$—the conversion factor from volume of methane combusted in cubic metres to avoided emissions in tonnes of CO_2-e, as defined in the NGER (Measurement) Determination
- $\boldsymbol{EC_{CMWG}}$—the energy content factor of coal mine waste gas, worked out in accordance with the monitoring requirements
- $\boldsymbol{EF_{CO_2}}$, $\boldsymbol{EF_{CH_4}}$ and $\boldsymbol{EF_{N_2O}}$—the sum of the emissions factors, in cubic metres, for each of the gases that resulted from the historic abatement (emissions caused by the conversion of methane), as defined in the NGER (Measurement) Determination
- $\boldsymbol{DE}$—the default methane destruction efficiency for conversion devices defined in the NGER (Measurement) Determination.

The quantity $\boldsymbol{E_H}$ is the highest total historic annual emissions resulting from the combustion of the methane component of coal mine waste gas.

$\boldsymbol{E_H}$ is determined by only considering emissions that occured before project application. This quantity must be determined by considering all previous NGER reports, as well as an estimate of emissions for the NGER reporting period in which the application was made (if an NGER report has not yet been submitted).

A requirement to adjust $\boldsymbol{E_H}$ for differences in CO_2-e is set out in subparagraphs (a) and (b). This adjustment takes place if global warming potentials have changed in the time between the NGER reporting year from which $\boldsymbol{E_H}$ was taken and:

a) the end of the reporting period—if $\boldsymbol{A_H}$ is being calculated to work out the net abatement amount (such as in **equation 2** or **equation 15**); or
b) the application time—if $\boldsymbol{A_H}$ is being calculated to work out if the historic abatement is greater than 5000 tonnes CO_2-e (meaning it is material abatement)

The references to combustion in the section are to ensure that the factors used in **equation 35** reflect the wording used in the NGER (Measurement) Determination and NGER reports.

41 Ancillary project emissions

Section 41 sets out how ancillary emissions for an offsets project are calculated, in tonnes CO_2-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 conversion 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 converting it as part of the project
- converting coal mine waste gas through flaring or flameless oxidation 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 NGA Factors document 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 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 being supplied. Where this factor is not available, the proponent will apply the off-grid electricity in the NGA Factors document.

Equation 36 considers emissions from use of:

- grid electricity, as calculated by multiplying the amount of energy used by a grid emission factor
- fossil fuels, as calculated by multiplying the amount of fuel consumed by the relevant energy content and emission factor, and dividing by 1000 (which corrects for the difference in units used in different parameters).

Where section 41 is applied to an expansion flaring or flameless oxidation 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 conversion devices.

The references to combustion in section 41 are to ensure that the factors used in **equation 35** reflect the wording used in the NGER (Measurement) Determination and NGER reports.

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

Section 42 sets out how to obtain the baseline for the methane component of coal mine waste gas sent to flaring or flameless oxidation devices for the project during a time interval. It corresponds to the total recognised capacity for existing flaring or flameless oxidation 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 the combined flaring and flameless oxidation 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 flaring or flameless oxidation devices which may be managed by more than one operator.

The availability factor for a flaring or flameless oxidation device $\boldsymbol{AF_{Fl,n}}$ is considered in order to account for manufacturer recommended maintenance cycles, and is included in the baseline to account for the likelihood that a conversion 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 electricity production devices which may be managed by more than one operator.

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

Default parameters used in the calculation of abatement

Table 5 below lists default factors or parameters used in the Determination. Several factors and parameters set out in section 9 are derived from external sources, usually either 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.legislation.gov.au/.

Table 5 – 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 *National Greenhouse Accounts Factors* 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 NGER (Measurement) Determination
$F_{MWh \to GJ}$	Factor converting energy in MWh to GJ.	(Dimensionless)	3.6
EC_f	Energy content factor of fuel type ***f*** for stationary energy purposes.	GJ/kL (or other appropriate units)	Part 1, 2 or 3 (as appropriate) of Schedule 1, of the NGER (Measurement) Determination
EF_j	Emission factor for gas type ***j*** from the conversion of coal mine waste gas.	kg CO_2-e/GJ	Item 19 of Schedule 1 of NGER (Measurement) Determination
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 NGER (Measurement) Determination
$EF_{f,j}$	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 ***f***.	kg CO_2-e/GJ	Part 1, 2 or 3 (as appropriate) of Schedule 1, of the NGER (Measurement) Determination
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 NGER (Measurement) Determination
DE	Default methane destruction efficiency for a flaring or flameless oxidation device.	(Dimensionless)	OF_{ij} in section 3.14 of the NGER (Measurement) Determination

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 or flameless oxidation device ***m.***	(Dimensionless)	Has the default value of 1 or as calculated in accordance with the standard maintenance cycle specified by the manufacturer.
$AF_{Gen,n}$	Annual availability factor of electricity production device ***n.***	(Dimensionless)	Has the default value of 1 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 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 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, and legislative rules.

The monitoring requirements may apply to projects with two or more collocated mines. Consistent with the requirements set out in Division 2 of the Determination, monitoring should be done is a way that can distinguish the coal mine waste gas sourced and converted by each collocated mine part of the project.

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 conversion $\boldsymbol{Q_{CH_4,h,t}}$, $\boldsymbol{Q_{CH_4,m,t}}$, $\boldsymbol{Q_{CH_4,i,t}}$, $\boldsymbol{Q_{CH_4,i}}$, $\boldsymbol{Q_{CH_4,k}}$, $\boldsymbol{Q_{CH_4,l}}$ and $\boldsymbol{Q_{CH_4,h}}$
- the operation of the conversion device $\boldsymbol{O_{h,t}}$ and $\boldsymbol{O_{m,t}}$.

Measurement of the volume of methane sent to the flaring device, flameless oxidation device and electricity production device and the operational status of the device (e.g. the presence of a flame at appropriate temperature or other manufacturer requirement for operation) are key inputs into calculations of net abatement. Additional guidance for the parameters above have been provided in subsections 47(2) to 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.

Subsections 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
- 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.

Attachment A

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 Variation 2016

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 Variation 2016* (the Variation) amends the *Carbon Credits (Carbon Farming Initiative—Coal Mine Waste Gas) Methodology Determination 2015* (the Determination). The Variation amends the Determination to implement a number of changes designed to expand the coverage of methane conversion processes under the Determination. The Variation expands the Determination to cover a wider range of chemical reactions involving the conversion of methane to carbon dioxide, including thermal, catalytic and chemical processes. These changes enable the crediting of emissions reduction from the use of ventilation air methane oxidation devices.

The Variation also makes a number of small administrative corrections or clarifications to the Determination.

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.

Josh Frydenberg, Minister for the Environment and Energy