



Climate Change (Unique Emissions Factors) Regulations 2009

Rt Hon Sir Peter Blanchard, Administrator of the Government

Order in Council

At Wellington this 28th day of September 2009

Present:

His Excellency the Administrator of the Government in Council

Pursuant to sections 163 and 164 of the Climate Change Response Act 2002, His Excellency the Administrator of the Government, acting on the advice and with the consent of the Executive Council and on the recommendation of the Minister for Climate Change Issues, makes the following regulations.

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Regulations

- 1 Title
- These regulations are the Climate Change (Unique Emissions Factors) Regulations 2009.
- 2 Commencement
- These regulations come into force on 1 January 2010.

Part 1 Preliminary matters

- 3 Interpretation
- (1) In these regulations, unless the context otherwise requires,—
Act means the Climate Change Response Act 2002
calorific value means the energy content of a fuel on a gross or high heating value basis expressed in terajoules per tonne of fuel

chief executive means the chief executive of the department responsible for the administration of Part 4 of the Act

coal importing participant means a person who is a participant under section 54(1)(a) of the Act in respect of the activity listed in Part 3 of Schedule 3 of the Act of importing coal

coal mining participant means a person who is a participant under section 54(1)(a) of the Act in respect of the activity listed in Part 3 of Schedule 3 of the Act of mining coal, where the coal mined exceeds 2 000 tonnes in a year

coal participant means—

- (a) a coal importing participant; or
- (b) a coal mining participant; or
- (c) a coal purchasing participant

coal purchasing participant means a person who is a participant under section 54(1)(b) of the Act in respect of the activity listed in Part 4 of Schedule 4 of the Act of purchasing coal from 1 or more participants who mine coal, where the total coal purchased exceeds 250 000 tonnes per year

default emissions factor means an emissions factor that is specified in—

- (a) the Schedule of the Climate Change (Liquid Fossil Fuels) Regulations 2008; or
- (b) Schedule 2 of the Climate Change (Stationary Energy and Industrial Processes) Regulations 2009

estimated uncertainty, in relation to a unique emissions factor, means the uncertainty associated with the sampling and testing used to establish the unique emissions factor, estimated at a 90% confidence level

fuel means obligation fuel, obligation jet fuel, coal, natural gas, geothermal fluid, used oil, waste oil, used tyres, or waste

geothermal participant means a person who is a participant under section 54(1)(a) of the Act in respect of the activity listed in Part 3 of Schedule 3 of the Act of using geothermal fluid for the purpose of generating electricity or industrial heat

mass fraction means the ratio of the mass of a component in a mixture to the total mass of the mixture

mix point means the final point at which steam from 2 or more geothermal steam transmission lines is mixed before used in a geothermal plant

natural gas purchasing participant means a person who is a participant under section 54(1)(b) of the Act in respect of the activity listed in Part 4 of Schedule 4 of the Act of purchasing natural gas from 1 or more participants who mine natural gas, where the total natural gas purchased exceeds 2 petajoules per year

obligation fuel has the same meaning as in regulation 3 of the Climate Change (Liquid Fossil Fuels) Regulations 2008

obligation fuel participant means—

- (a) a person who is a participant under section 54(1)(a) of the Act in respect of an activity listed in Part 2 of Schedule 3 of the Act;
- (b) a person who is a participant under section 54(1)(b) of the Act in respect of an activity listed in Part 3 of Schedule 4 of the Act

obligation jet fuel has the same meaning as in regulation 3 of the Climate Change (Liquid Fossil Fuels) Regulations 2008

periodic source testing option means the option for calculating a unique emissions factor set out in regulations 21 to 23

recognised verifier means—

- (a) a person recognised under Part 3 to verify unique emissions factors for 1 or more activities specified in regulation 27; and
- (b) in relation to an activity specified in regulation 27, a person recognised under Part 3 to verify unique emissions factors for the activity

representative, in relation to samples of a fuel or to measurements or calculations, means taken or made at a sufficient frequency and duration to produce data that may be reliably extrapolated to provide estimates of, as relevant,—

- (a) the properties of a class of fuel:

- (b) emissions across the full range of operating conditions

standard testing option means the option for calculating a unique emissions factor set out in regulation 10 or 20

waste combustion participant means a person who is a participant under section 54(1)(a) of the Act in respect of the activity listed in Part 3 of Schedule 3 of the Act of combusting used oil, waste oil, used tyres, or waste for the purpose of generating electricity or industrial heat.

(2) A reference to a test method containing an acronym listed in the left-hand column in the following table means a standard, or test method related to an organisation, that is listed in the right-hand column of the table:

Test method	Standard or organisation
AS	Australian Standard
ASTM	ASTM International
BS	British Standard
CEN/TS	Comité Européen de Normalisation (European Committee for Standardization) Technical Specification
EN	European Standard
IEC	International Electrotechnical Commission
IP	Energy Institute, which replaced the Institute of Petroleum, London
ISO	International Organization for Standardization
NZS	New Zealand Standard
USEPA	United States Environmental Protection Agency
VDI	The Association of German Engineers

(3) Unless the context otherwise requires, if a test method prescribed in these regulations provides for alternative methods, each method has equal standing, and any of the methods may be used.

4 Application for approval to use unique emissions factor

- (1) A participant applying for approval to use a unique emissions factor must make the application using the form prescribed by the chief executive.
- (2) The application must—
 - (a) state the activity to which the application relates; and
 - (b) describe—
 - (i) the class of fuel in respect of which the person applies for approval to use a unique emissions factor; or
 - (ii) if the unique emissions factor relates to fugitive coal seam gas, the category of coal in respect of which the person applies for approval to use a unique emissions factor; and
 - (c) specify the unique emissions factor for which approval is sought; and
 - (d) be accompanied by—
 - (i) a verification statement that complies with subclause (3);
 - (ii) a plan for ongoing sampling and testing of the fuel or gas to which the application relates;
 - (iii) any other information the chief executive may require.
- (3) The verification statement must—
 - (a) certify that the verifier meets the requirements of regulation 24(1)(a) in relation to verifying unique emissions factors for the activity; and
 - (b) state the regulation or regulations under which the unique emissions factor was calculated; and
 - (c) state that the verifier is satisfied as to all the matters in regulation 24(1)(b) to (d) in relation to the establishment and calculation of the unique emissions factor under these regulations; and
 - (d) be signed by the verifier.

(4) An application for approval to use a unique emissions factor to calculate emissions in relation to a year must be submitted to the chief executive by 31 January in the following year.

5 Chief executive may approve use of unique emissions factor

- (1) The chief executive may approve the use by a participant of a unique emissions factor when calculating emissions from an activity if satisfied that—
 - (a) the person's application complies with regulation 4; and
 - (b) the class or category of fuel to which the application relates meets the criteria in regulation 6; and
 - (c) the verifier who has provided the verification statement required by regulation 4(2)(d) has been recognised by the chief executive as a person who can verify a unique emissions factor for the activity and that the recognition has not expired, or been surrendered, suspended, or revoked.
- (2) A unique emissions factor approved for use by a participant—
 - (a) may be used by the participant to calculate emissions only in relation to fuel within the class (or in the case of fugitive coal seam gas, coal within the category) that the unique emissions factor approval relates to; and
 - (b) is subject to any conditions notified by the chief executive at the time of approval.

6 Criteria for class or category of fuel for which unique emissions factor may be used

- (1) A class of fuel for which the chief executive may approve the use of a unique emissions factor must comply with the following criteria:
 - (a) if the activity for which the approval is sought—
 - (i) relates to owning or purchasing obligation fuel, the class must be a subset of a type of obligation fuel described in regulation 4(1) of the Climate Change (Liquid Fossil Fuels) Regulations 2008;
 - (ii) relates to mining coal, the class must relate to coal from a particular coalfield, or a subset of coal from a particular coalfield;
 - (iii) relates to importing or purchasing coal, the class must relate to—
 - (A) coal from a particular coalfield or a subset of coal from a particular coalfield; or
 - (B) coal that is combusted in particular equipment;
 - (iv) relates to purchasing natural gas, the class must be a class or subset of a class of natural gas listed in regulation 4(d) of the Climate Change (Stationary Energy and Industrial Processes) Regulations 2009 or a subset of natural gas mined at a field listed in Table 10 of Schedule 2 of those regulations, that is combusted in particular equipment;
 - (v) relates to using geothermal fluid, the class must relate to a particular plant or process that uses geothermal fluid (or geothermal steam from geothermal fluid);
 - (vi) relates to combusting used oil, waste oil, used tyres, or waste, the class must,—
 - (A) if the unique emissions factor is calculated in accordance with regulation 20, be a class or subset of a class in Table 7 of Schedule 2 of the Climate Change (Stationary Energy and Industrial Processes) Regulations 2009; or
 - (B) if the unique emissions factor is calculated in accordance with the periodic source testing option, be a class or subset of a class in Table 7 of Schedule 2 of the Climate Change (Stationary Energy and Industrial Processes) Regulations 2009 that is combusted in particular equipment; and
 - (b) the class must have well-defined parameters so that fuel within the class may be easily identified and accounted for separately from fuel that is not within the class.
- (2) A category of coal for which the chief executive may approve the use of a unique emissions factor for fugitive coal seam gas must—

- (a) relate to underground mining at a particular coal mine or a subset of underground mining at a particular coal mine; and
- (b) have well-defined parameters so that coal within the category may be easily identified and accounted for separately from coal that is not within the category.

Part 2

Activities for which unique emissions factor may be sought

Owning and purchasing obligation fuel

7 Obligation fuel participant may apply for approval to use unique emissions factor

- (1) An obligation fuel participant may apply to the chief executive for approval to use a unique emissions factor when calculating emissions in relation to a class of obligation fuel in accordance with the Climate Change (Liquid Fossil Fuels) Regulations 2008.
- (2) However, an obligation fuel participant may apply for approval to use a unique emissions factor only if the difference between the unique emissions factor and the default emissions factor that would otherwise apply to the obligation fuel is more than 2%.

8 Requirements relating to application for unique emissions factor approval by obligation fuel participant

- An obligation fuel participant who wishes to apply for approval to use a unique emissions factor in relation to a class of obligation fuel must—
 - (a) obtain representative samples of the class of obligation fuel for which the unique emissions factor is sought at intervals and in accordance with a procedure that complies with ISO/IEC 4259:2006; and
 - (b) have the following tests carried out on each of the fuel samples by a person or laboratory that is accredited as complying with ISO/IEC 17025:2005 by International Accreditation New Zealand, an overseas accreditation agency with whom International Accreditation New Zealand has a mutual recognition agreement, or an overseas accreditation agency recognised under New Zealand's mutual recognition arrangements to carry out the tests:
 - (i) ASTM D5291–02 (carbon content) or an equivalent standard or test method for testing carbon content related to an organisation that is listed in the table in regulation 3(2);
 - (ii) ASTM D1298–99 or ISO 3675:1998 (density at 15°C); and
 - (c) calculate the emissions factor for carbon dioxide for the class of obligation fuel in accordance with the following formula:

$$EF_{CO_2} = m_C \times D \times EF_C$$

where—

D

is the mean density of the obligation fuel samples determined by reference to the results of the test chosen in paragraph (b)(ii) and expressed in kilograms per litre (kg/l)

EF_C

is the emissions factor for pure carbon specified in Table 3 of the Schedule

EF_{CO_2}

is the emissions factor for CO₂ for the class of obligation fuel in tonnes of carbon dioxide per kilolitre (tCO₂/kl)

m_C

is the mean mass fraction of carbon in the obligation fuel samples determined by reference to the results of the tests in paragraph (b)(i); and

- (d) calculate the unique emissions factor for the class of obligation fuel in accordance with the following formula:

$$UEF = (EF_{CO_2} \times OF) + EF_{CH_4} + EF_{N_2O}$$

where—

EF_{CH_4}

is the emissions factor for CH_4 from Table 1 of the Schedule that applies to the obligation fuel whose specifications are closest to the fuel for which a unique emissions factor is sought

EF_{CO_2}

is the emissions factor for CO_2 determined under paragraph (c) expressed in tonnes of carbon dioxide per kilolitre (tCO_2/kl)

EF_{N_2O}

is the emissions factor for N_2O from Table 1 of the Schedule that applies to the obligation fuel whose specifications are closest to the fuel for which a unique emissions factor is sought; and

OF

is an oxidation factor of 0.99

UEF

is the unique emissions factor for the class of obligation fuel expressed in tonnes of carbon dioxide equivalent gases per kilolitre (tCO_2e/kl); and

- (e) submit the following material to a recognised verifier:
 - (i) a record of the sampling regime that complies with the standard referred to in paragraph (a); and
 - (ii) confirmation that the person or laboratory that carried out the tests referred to in paragraph (b) holds the certification or accreditation required by that paragraph; and
 - (iii) the test results for the tests referred to in paragraph (b); and
 - (iv) the calculations done under paragraphs (c) and (d); and
 - (v) any other information required by the recognised verifier as necessary to provide verification of the unique emissions factor under regulation 24.

Importing, mining, and purchasing coal

9 Coal participant may apply for approval to use unique emissions factor

- (1) A coal participant may apply to the chief executive for approval to use a unique emissions factor when calculating emissions in relation to—
 - (a) a class of coal in accordance with the Climate Change (Stationary Energy and Industrial Processes) Regulations 2009; and
 - (b) if the coal participant is a coal mining participant, fugitive coal seam gas from a category of coal mined from underground mining in accordance with the Climate Change (Stationary Energy and Industrial Processes) Regulations 2009.
- (2) A coal mining participant must calculate a unique emissions factor for a class of coal in accordance with regulation 10.
- (3) A coal mining participant must calculate a unique emissions factor for fugitive coal seam gas from a category of coal in accordance with regulation 12.
- (4) A coal importing participant or a coal purchasing participant may—
 - (a) calculate a unique emissions factor for a class of coal in accordance with regulation 10; or
 - (b) if the class relates to coal that is combusted in particular equipment, calculate a unique emissions factor for the class of coal in accordance with regulation 11.
- (5) Despite subclauses (2) and (4)(a), a coal participant may apply for approval to use a unique emissions factor calculated in accordance with regulation 10 in relation to a class of coal only if the unique emissions factor is lower than the threshold emissions factor for the relevant type of coal specified in Table 2 of the Schedule.

10 Requirements relating to application for unique emissions factor approval for class of coal calculated using standard testing option

- A coal participant using the standard testing option to calculate a unique emissions factor for a class of coal must—

- (a) obtain at least 3 representative samples, taken at intervals of not less than a month, of the coal for which the unique emissions factor is sought in accordance with the procedures in ISO 18283:2006 (hard coal and coke); and
- (b) have the following tests carried out on each of the coal samples by a person or laboratory that is accredited as complying with ISO 17025:2005 by International Accreditation New Zealand, an overseas accreditation agency with whom International Accreditation New Zealand has a mutual recognition agreement, or an overseas accreditation agency recognised under New Zealand's mutual recognition arrangements to carry out the tests:
 - (i) AS 1038.6.4–2005 or ISO 12902:2001 (carbon content);
 - (ii) ISO 5068–1:2007, or ASTM D3302 (total moisture content);
 - (iii) ISO 1171:1997 or ASTM D3174–04 (ash content);
 - (iv) ISO 1928:1995 (gross calorific value); and
- (c) calculate the emissions factor for carbon dioxide for the class of coal in accordance with the following formula:

$$EF_{CO_2} = m_C \times \frac{EF_C}{CV}$$

- where—
- CV
- is the mean gross calorific value of the coal determined by reference to the results of the tests in paragraph (b)(iv)
- EF_C
- is the emissions factor for pure carbon specified in Table 3 of the Schedule
- EF_{CO_2}
- is the emissions factor for CO₂ for the class of coal in tonnes of carbon dioxide per terajoule (tCO₂/TJ)
- m_C
- is the mean mass fraction of carbon in the coal samples determined by reference to the results of the tests in paragraph (b)(i) to (iii); and
- (d) calculate the unique emissions factor for the class of coal in accordance with the following formula:

$$UEF = (EF_{CO_2} \times OF) + EF_{M+N}$$

where—

EF_{CO_2}

is the emissions factor for CO₂ determined under paragraph (c) expressed in tonnes of carbon dioxide per terajoule (tCO₂/TJ)

EF_{M+N}

is the aggregate emissions factor for N₂O and CH₄ for coal specified in Table 4 of the Schedule

OF

is an oxidation factor of 0.98

UEF

is the unique emissions factor for the class of coal expressed in tonnes of carbon dioxide equivalent gases per terajoule (tCO_{2e}/TJ); and

- (e) submit the following material to a recognised verifier:
 - (i) a record of the sampling regime that complies with the standard referred to in paragraph (a); and
 - (ii) confirmation that the person or laboratory that carried out the tests referred to in paragraph (b) holds the certification or accreditation required by that paragraph; and
 - (iii) the test results for the tests referred to in paragraph (b); and
 - (iv) the calculations done under paragraphs (c) and (d); and
 - (v) any other information required by the recognised verifier as necessary to provide verification of the unique emissions factor under regulation 24.

11 Requirements relating to application for unique emissions factor approval for class of coal combusted in particular equipment

- (1) A coal importing participant or a coal purchasing participant who wishes to calculate a unique emissions factor for a class of coal in accordance with this regulation must—
 - (a) first calculate a unique emissions factor for CH₄ and N₂O for the class of coal in accordance with the periodic source testing option; and
 - (b) then calculate the unique emissions factor for the class of coal in accordance with either subclause (2) or (3).
- (2) If the person wishes to include a unique emissions factor for carbon dioxide for the class of coal in the unique emissions factor, the person must—
 - (a) comply with the sampling and testing requirements in regulation 10(a) and (b) in relation to the class of coal; and
 - (b) calculate an emissions factor for carbon dioxide for the class of coal in accordance with regulation 10(c); and
 - (c) calculate the unique emissions factor for the class of coal in accordance with the following formula:

$$UEF = (EF_{CO_2} \times OF) + UEF_{M+N}$$

where—

EF_{CO_2}

is the emissions factor for CO₂ for the class of coal determined under regulation 10(c), expressed in tonnes of carbon dioxide per terajoule (tCO₂/TJ)

OF

is an oxidation factor of 0.98

UEF

is the unique emissions factor for the class of coal expressed in tonnes of carbon dioxide equivalent gases per terajoule (tCO_{2e}/TJ)

UEF_{M+N}

is the unique emissions factor for N₂O and CH₄ for the class of coal calculated under the periodic source testing option.

- (3) If the person does not wish to include a unique emissions factor for carbon dioxide for the class of coal in the unique emissions factor, the person must calculate the unique emissions factor for the class of coal in accordance with the following formula:

$$UEF = DEF - EF_{M+N} + UEF_{M+N}$$

where—

DEF

is the default emissions factor that would otherwise apply to the class of coal under the Climate Change (Stationary Energy and Industrial Processes) Regulations 2009

EF_{M+N}

is the aggregate emissions factor for N₂O and CH₄ for coal specified in Table 4 of the Schedule

UEF

is the unique emissions factor for the class of coal expressed in tonnes of carbon dioxide equivalent gases per terajoule (tCO_{2e}/TJ)

UEF_{M+N}

is the unique emissions factor for N₂O and CH₄ for the class of coal calculated under the periodic source testing option.

- (4) A participant calculating a unique emissions factor under this regulation must submit such of the following material as is relevant to a recognised verifier:
 - (a) a record of the sampling regime that complies with the standard referred to in regulation 10(a); and
 - (b) a record of the measurement and testing regime that complies with regulation 22(3) and (4); and
 - (c) confirmation that the person or laboratory that carried out the tests in regulation 10(b) or 22(3) holds the certification or accreditation required by those regulations; and

- (d) the test results for the tests referred to in regulation 10(b) or 22(3); and
- (e) the calculations done under subclause (2) or (3) and regulations 10(c) and 23(1); and
- (f) any other information required by the recognised verifier as necessary to provide verification of the unique emissions factor under regulation 24.

(5) To avoid doubt, a coal purchasing participant who has approval to use a unique emissions factor calculated under subclause (3) may apply to use a unique emissions factor calculated under subclause (2) relying on the same unique emissions factor for N₂O and CH₄, but only if there has been no material change in the information on which the unique emissions factor for N₂O and CH₄ was based.

12 Requirements relating to application for unique emissions factor approval for fugitive coal seam gas

- (1) A coal participant who wishes to apply for approval to use a unique emissions factor in relation to fugitive coal seam gas from a category of coal must—
 - (a) collect information about the total tonnes of coal mined from underground mining at the relevant coal mine in a year; and
 - (b) obtain at least 10 representative samples of the exhaust air from underground mining at the relevant coal mine during the year, taken from the ventilation shaft or shafts of the mine at intervals of not less than a month; and
 - (c) regularly measure the volumetric flow rate of the exhaust air in the ventilation shaft or shafts in cubic metres per hour; and
 - (d) at the time each sample is taken, measure and record—
 - (i) the pressure of the exhaust air in the ventilation shaft in kilopascals; and
 - (ii) the temperature of the exhaust air in the ventilation shaft in Kelvin; and
 - (iii) the concentration of CH₄ in the sampled exhaust air by volume; and
 - (e) using the data collected under paragraphs (b) to (d), calculate the representative rate of emissions of CH₄ in the ventilation shaft or shafts in accordance with the following formula:

$$mr_{CH_4} = \frac{0.016 \times P \times F \times C}{R \times T}$$

- where—
- 0.016
 - is the molecular mass of CH₄ in tonnes per kilomole
- C
 - is the mean concentration of CH₄ in the samples by volume
- F
 - is the mean volumetric flow rate of the exhaust air in cubic metres per hour at the time the samples were taken
- mr_{CH₄}
 - is the representative rate of CH₄ emitted in tonnes of methane released per hour
- P
 - is the mean pressure of the exhaust air at the time the samples were taken in kilopascals
- R
 - is 8.314, the universal gas constant when expressed in J/K.mol
- T
 - is the mean temperature of the exhaust air at the time of measurement, in Kelvin; and
- (f) calculate the unique emissions factor for the category of coal in accordance with the following formula:

$$UEF = EF_p + \frac{(21 \times mr_{CH_4} \times t)}{A}$$

- where—
- A

- is the total tonnes of coal mined from the relevant coal mine, as recorded under paragraph (a)
 - EF_p
- is 0.0336, the emissions factor for post-mining in tonnes of carbon dioxide equivalent gases per tonne of coal mined (tCO_2e/t)
 - mr_{CH_4}
- is the rate of CH_4 emitted in tonnes released per hour as calculated under paragraph (e)
 - t
- is 8 760, the number of hours in a year
 - UEF
- is the unique emissions factor for the category of coal expressed in tonnes of carbon dioxide equivalent gases per tonne of coal (tCO_2e/t); and
 - (g) submit the following material to a recognised verifier:
 - (i) a record of the sampling and measurement regime that complies with paragraphs (b) to (d) and subclause (2); and
 - (ii) the calculations done under paragraphs (e) and (f); and
 - (iii) any other information required by the recognised verifier as necessary to provide verification of the unique emissions factor for the purposes of regulation 24.

(2) For the purposes of subclause (1), sampling and measuring must be undertaken using devices that are regularly maintained and calibrated.

Purchasing natural gas

13 Natural gas purchasing participant may apply for approval to use unique emissions factor

- (1) A natural gas purchasing participant may apply to the chief executive for approval to use a unique emissions factor for N_2O and CH_4 or for all emissions when calculating emissions in relation to a class of natural gas in accordance with the Climate Change (Stationary Energy and Industrial Processes) Regulations 2009.
- (2) A natural gas purchasing participant who wishes to apply for approval to use—
 - (a) a unique emissions factor for N_2O and CH_4 in relation to a class of natural gas when calculating emissions in accordance with the standard formula in regulation 50(3) of the Climate Change (Stationary Energy and Industrial Processes) Regulations 2009, must calculate the unique emissions factor in accordance with the periodic source testing option:
 - (b) a unique emissions factor for all emissions in relation to a class of natural gas when calculating emissions in accordance with the field specific formula in regulation 50(4) of the Climate Change (Stationary Energy and Industrial Processes) Regulations 2009, must—
 - (i) first calculate a unique emissions factor for N_2O and CH_4 in accordance with the periodic source testing option; and
 - (ii) then calculate the unique emissions factor for the class of natural gas in accordance with subclause (3).

(3) The formula for calculating a unique emissions factor under this subclause is—

$$UEF = DEF_{fieldn} - EF_{M+N} + UEF_{M+N}$$

where—

DEF_{fieldn}

is the default emissions factor that would otherwise apply to the class of natural gas specified in Table 10 of Schedule 2 of the Climate Change (Stationary Energy and Industrial Processes) Regulations 2009

EF_{M+N}

is the aggregate emissions factor for N_2O and CH_4 for natural gas from Table 4 of the Schedule

UEF

is the unique emissions factor for the class of natural gas expressed in tonnes of carbon dioxide equivalent gases per terajoule ($\text{tCO}_2\text{e/TJ}$)

$\text{UEF}_{\text{M+N}}$

is the unique emissions factor for N_2O and CH_4 for the class of natural gas calculated under the periodic source testing option.

(4) A natural gas purchasing participant must submit the following material to a recognised verifier:

- (a) a record of the measurement and testing regime that complies with regulation 22(3) and (4); and
- (b) confirmation that the person or laboratory that carried out the tests referred to in regulation 22(3) holds the certification or accreditation required by that paragraph; and
- (c) the calculations done under subclause (3), if relevant, and regulation 23; and
- (d) any other information required by the recognised verifier as necessary to provide verification of the unique emissions factor for the purposes of regulation 24.

Using geothermal fluid

14 Geothermal participant may apply for approval to use unique emissions factor

- (1) A geothermal participant may apply to the chief executive for approval to use a unique emissions factor when calculating emissions in relation to a class of geothermal fluid in accordance with the Climate Change (Stationary Energy and Industrial Processes) Regulations 2009.
- (2) However, a geothermal participant may apply for approval to use a unique emissions factor only if the difference between the unique emissions factor and the default emissions factor that would otherwise apply to the geothermal fluid is more than the estimated uncertainty.

15 Requirements relating to application for unique emissions factor approval by geothermal participant

- A geothermal participant who wishes to apply for approval to use a unique emissions factor in relation to a class of geothermal fluid defined by reference to—
 - (a) a plant that uses, or a particular use of, geothermal steam, must comply with regulation 16;
 - (b) a plant that uses, or a particular use of, geothermal fluid that does not relate to steam production must comply with regulation 17.

16 Requirements for applications for unique emissions factor approval for geothermal fluid use calculated by reference to steam production

- (1) A geothermal participant who wishes to apply for approval to use a unique emissions factor in relation to a class of geothermal fluid defined by reference to a matter in regulation 15(a) must—
 - (a) obtain representative samples of the geothermal steam to which the application relates in accordance with either—
 - (i) the procedures and standards in—
 - (A) ASTM E947–83 (Reapproved 2007)— (equipment to be used for the collection of uncontaminated and representative samples from single-phase steam pipelines); and
 - (B) ASTM E1675–04 for Sampling 2-Phase Geothermal Fluid for Purposes of Chemical Analysis (as applicable to sampling single-phase steam only); or
 - (ii) the procedures and standards in a published geothermal fluid sampling methodology with accuracy and reliability equivalent to the standards in subparagraph (i); and

- (b) have the following tests carried out on each of the samples of the steam by a person or laboratory that is accredited as complying with ISO 17025:2005 by International Accreditation New Zealand, an overseas accreditation agency with whom International Accreditation New Zealand has a mutual recognition agreement, or an overseas accreditation agency recognised under New Zealand's mutual recognition arrangements to carry out the tests:
 - (i) gas chromatography (to determine CH₄ content); and
 - (ii) standard chemistry titration analysis methods (to determine CO₂ content); and
- (c) measure the tonnes of steam produced per hour at, or downstream of, each separation point, or if the system has multiple steam transmission lines, then at each mix point; and
- (d) calculate the emissions factor for each steam separation point or mix point in accordance with the following formula:

$$EF_S = m_{CO_2} + (m_{CH_4} \times 21)$$

where—

EF_S

is the emissions factor for the steam at the separation or mix point expressed as tonnes of carbon dioxide equivalent gases per tonne of steam (tCO₂e/t steam)

m_{CH_4}

is the mean mass fraction of CH₄ in the steam samples at the separation or mix point as determined by reference to the results of the tests referred to in paragraph (b)(i) and expressed in tonnes of methane per tonne of steam (tCH₄/t steam)

m_{CO_2}

is the mean mass fraction of CO₂ in the steam samples at the separation or mix point as determined by reference to the results of the tests referred to in paragraph (b)(ii) and expressed in tonnes of carbon dioxide per tonne of steam (tCO₂/t steam); and

- (e) calculate the unique emissions factor for the class of geothermal fluid in accordance with the following formula:

$$UEF = \frac{\sum(EF_S \times A)}{\sum(A)} - EF_R$$

○ where—

○ A

- is the tonnes of steam produced by each separation or mix point per hour as measured in accordance with paragraph (c)

○ EF_R

- is,—

- (a) if an adjustment for reinjection of steam condensate is claimed, the emissions factor for steam condensate being reinjected as calculated under subclause (2); or
- (b) if no adjustment for reinjection of steam condensate is claimed, zero

EF_S

is the emissions factor for the relevant steam separation or mix point determined under paragraph (d)

UEF

is the unique emissions factor for the class of geothermal fluid expressed in tonnes of carbon dioxide equivalent gases per tonne of steam (tCO₂e/t steam); and

- (f) submit the following material to a recognised verifier:
 - (i) a record of the sampling regime that complies with the procedures and standards referred to in paragraph (a) and, if relevant, a record of the sampling regime that complies with subclause (2)(a); and
 - (ii) confirmation that the person or laboratory that carried out the tests referred to in paragraph (b) and, if relevant, subclause (2)(b), holds the certification or accreditation required by that paragraph; and

- (iii) the test results for the tests referred to in paragraph (b) and, if relevant, the test results for the tests in subclause (2)(b); and
- (iv) the estimated uncertainty associated with the unique emissions factor; and
- (v) the calculations done under paragraphs (d) and (e) and, if relevant, subclause (2)(c); and
- (vi) any other information required by the recognised verifier as necessary to provide verification of the unique emissions factor under regulation 24.

(2) A geothermal participant who wishes to claim an adjustment to a unique emissions factor calculated under subclause (1) to account for the reinjection of condensate from the class of geothermal fluid into a geothermal field must—

- (a) obtain representative samples of the steam condensate being reinjected in accordance with the procedures and standards referred to in subclause (1)(a); and
- (b) have the tests referred to in subclause (1)(b) carried out on each of the samples of the steam condensate by a person or laboratory that is accredited as complying with that subclause; and
- (c) calculate an emissions factor for the reinjected condensate in accordance with the following formula:

$$EF_R = m_{CO_2} + (m_{CH_4} \times 21)$$

where—

EF_R

is the emissions factor for the condensate being reinjected expressed in tCO₂e/t condensate

m_{CH_4}

is the mean mass fraction of CH₄ in the condensate being reinjected as determined by reference to the results of the tests referred to in paragraph (b) and expressed in tCH₄/t condensate

m_{CO_2}

is the mean mass fraction of CO₂ in the condensate being reinjected as determined by reference to the results of the tests referred to in paragraph (b) and expressed in tCO₂/t condensate.

(3) The following rules apply to measurement of steam for the purposes of this regulation:

- (a) measurement of the steam quantity produced must be undertaken with a venturi flow meter (or other equipment with at least the same accuracy);
- (b) the sample port where the samples are collected for the purposes of subclauses (1)(a) and (2)(a) must be located—
 - (i) immediately after the separation points; or
 - (ii) if the system has multiple steam transmission lines, at a point where a good mixed sample of the steam can be obtained;
- (c) the calculation of steam quantities must be conducted on a continuous basis and in accordance with ISO 5167–1:2003.

17 Requirements for applications for unique emissions factor approval for geothermal fluid use calculated by reference to non-condensable gas concentrations

- (1) A geothermal participant who wishes to apply for approval to use a unique emissions factor in relation to a class of geothermal fluid defined by reference to a matter in regulation 15(b) must—
 - (a) obtain representative samples of the 2-phase geothermal fluid for which the unique emissions factor is sought in accordance with the procedures and standards in—
 - (i) ASTM E1675–04 (for Sampling 2-Phase Geothermal Fluid for Purposes of Chemical Analysis); or
 - (ii) a published geothermal fluid sampling methodology with equivalent accuracy and reliability to the standard referred to in subparagraph (i); and
 - (b) have the following tests carried out on each of the samples of the 2-phase geothermal fluid by a person or laboratory that is accredited as complying with ISO 17025:2005 by International Accreditation New Zealand, an overseas accreditation agency with whom International Accreditation New Zealand has a mutual recognition

agreement, or an overseas accreditation agency recognised under New Zealand's mutual recognition arrangements to carry out the tests:

- (i) gas chromatography (to determine CH₄ content); and
- (ii) standard chemistry titration analysis methods (to determine CO₂ content); and
- (c) calculate the emissions factor for the 2-phase fluid in accordance with the following formula:

$$EF_{\text{fluid}} = m_{\text{CO}_2} + (m_{\text{CH}_4} \times 21)$$

where—

EF_{fluid}

is the emissions factor for the class of 2-phase fluid expressed in tonnes of carbon dioxide equivalent gases per tonne of 2-phase fluid (tCO₂e/t fluid)

m_{CH_4}

is the mean mass fraction of CH₄ in the samples of the 2-phase geothermal fluid as determined by reference to the results of the tests referred to in paragraph (b)(i) and expressed in tonnes of methane per tonne of 2-phase fluid (tCH₄/t fluid)

m_{CO_2}

is the mean mass fraction of CO₂ in the samples of the 2-phase geothermal fluid as determined by reference to the results of the tests referred to in paragraph (b)(ii) and expressed in tonnes of carbon dioxide per tonne of 2-phase fluid (tCO₂/t fluid); and

- (d) calculate the unique emissions factor for the class of geothermal fluid in accordance with the following formula:

$$UEF = EF_{\text{fluid}} - EF_T$$

where—

EF_{fluid}

is the emissions factor for the class of 2-phase fluid as calculated in accordance with paragraph (c) expressed in tonnes of carbon dioxide equivalent gases per tonne of geothermal fluid (tCO₂e/t fluid)

EF_T

is,—

- (a) if an adjustment for reinjection of single-phase fluid is claimed, the emissions factor for reinjected single-phase fluid relating to the class, calculated under subclause (2); or
- (b) zero, if no adjustment is claimed

UEF

is the unique emissions factor for the class of geothermal fluid expressed in tonnes of carbon dioxide equivalent gases per tonne of 2-phase fluid (tCO₂e/t fluid); and

- (e) submit the following material to a recognised verifier:
 - (i) a record of the sampling regime that complies with the procedures and standards referred to in paragraph (a) and, if relevant, a record of the sampling regime that complies with subclause (2)(a); and
 - (ii) confirmation that the person or laboratory that carried out the tests referred to in paragraph (b) and, if relevant, subclause (2)(b), holds the certification or accreditation required by those provisions; and
 - (iii) the test results for the tests referred to in paragraph (b) and, if relevant, the test results for the tests in subclause (2)(b); and
 - (iv) the estimated uncertainty associated with the unique emissions factor; and
 - (v) the calculations done under paragraph (c) and (d) and, if relevant, subclause (2)(c); and
 - (vi) any other information required by the recognised verifier as necessary to provide verification of the unique emissions factor under regulation 24.

(2) A geothermal participant who wishes to claim an adjustment to a unique emissions factor calculated under subclause (1) to account for the reinjection of single-phase geothermal fluid from the class of geothermal fluid into a geothermal field must—

- (a) obtain representative samples of the single-phase geothermal fluid reinjected which results from use of the 2-phase geothermal fluid in accordance with the procedures and standards referred to in subclause (1)(a); and
- (b) have the tests referred to in subclause (1)(b) carried out on each of the samples of the single-phase geothermal fluid by a person or laboratory that is accredited as complying with that subclause; and
- (c) calculate an emissions factor for the reinjected single-phase geothermal fluid in accordance with the following formula:

$$EF_T = m_{CO_2} + (m_{CH_4} \times 21)$$

where—

EF_T

is the emissions factor for the reinjected single-phase fluid expressed in tCO₂e/t fluid

m_{CH_4}

is the mean mass fraction of CH₄ in the samples of the single-phase geothermal fluid as determined by reference to the results of the tests referred to in paragraph (b) and expressed in tCH₄/t fluid

m_{CO_2}

is the mean mass fraction of CO₂ in the samples of the single-phase geothermal fluid as determined by reference to the results of the tests referred to in paragraph (b) and expressed in tCO₂/t fluid.

Combusting used oil, waste oil, used tyres, or waste

18 Waste combustion participant may apply for approval to use unique emissions factor

- (1) A waste combustion participant may apply to the chief executive for approval to use a unique emissions factor when calculating emissions in relation to a class of used or waste oil, used tyres, or waste in accordance with the Climate Change (Stationary Energy and Industrial Processes) Regulations 2009.
- (2) However, a waste combustion participant may apply for approval to use a unique emissions factor only if the difference between the unique emissions factor and the default emissions factor that would otherwise apply to the used or waste oil, used tyres, or waste is more than the estimated uncertainty.

19 Requirements relating to application for unique emissions factor approval by waste combustion participant

- A waste combustion participant who wishes to apply for approval to use a unique emissions factor in relation to a class of used or waste oil, used tyres, or waste that—
 - (a) consists of or contains non-biomass, may calculate a unique emissions factor for the class in accordance with regulation 20 or the periodic source testing option;
 - (b) consists of or contains only biomass, must calculate a unique emissions factor for that class in accordance with the periodic source testing option.

20 Requirements for applications for unique emissions factor approval for waste calculated using standard testing option

- (1) A waste combustion participant using the standard testing option to calculate a unique emissions factor for a class of used or waste oil, used tyres, or waste must—
 - (a) obtain representative samples of the used or waste oil, used tyres, or waste for which the unique emissions factor is sought in accordance with the procedures in,—
 - (i) for solid fuels, CEN/TS 14778–1:2005 or CEN/TS 15442:2006;
 - (ii) for used or waste oil, ASTM D4057–06, ASTM D4177–95 (2005), or ISO 3170:2004; and
 - (b) have the following tests carried out on each of the samples of the fuel by a person or laboratory that is accredited as complying with ISO 17025:2005 by International Accreditation New Zealand, an overseas accreditation agency with whom International Accreditation New Zealand has a mutual recognition agreement, or an

overseas accreditation agency recognised under New Zealand's mutual recognition arrangements to carry out the tests:

- (i) for solid fuels—
 - (A) CEN/TS 15407:2006 (carbon content); and
 - (B) CEN/TS 15400:2006 (gross calorific value); and
 - (C) CEN/TS 15440:2006 or ASTM D6866–08 (determination of biomass content as a percentage) subject to subclause (2);
- (ii) for used or waste oil—
 - (A) ASTM D5291–02 2007 (carbon content); and
 - (B) ASTM D240–02 2007 (gross calorific value); and
- (c) calculate the emissions factor for carbon dioxide for the fuel in accordance with the following formula:

$$EF_{CO_2} = \frac{m_C \times EF_C \times m_{NB}}{CV}$$

- where—
- CV
 - is the mean gross calorific value of the fuel samples determined by reference to the results of the tests referred to in paragraph (b)(i)(B) or (b)(ii)(B)
- EF_C
 - is the emissions factor for pure carbon specified in Table 3 of the Schedule
- EF_{CO_2}
 - is the emissions factor for CO₂ for the class of used or waste oil, used tyres, or waste in tonnes of CO₂ per terajoule (tCO₂/TJ)
- m_C
 - is the mean mass fraction of carbon in the fuel samples determined by reference to the results of the tests referred to in paragraph (b)(i)(A) or (b)(ii)(A)
- m_{NB}
 - is the mean non-biomass fraction of the fuel determined by reference to the results of the tests referred to in paragraph (b)(i)(C); and
- (d) calculate the unique emissions factor for the class of waste or used oil, used tyres, or waste, in accordance with the following formula:

$$UEF = EF_{CO_2} + EF_{M+N}$$

where—

EF_{CO_2}

is the emissions factor for CO₂ determined under paragraph (c)

EF_{M+N}

is the aggregate emissions factor for N₂O and CH₄ for waste specified in Table 4 of the Schedule

UEF

is the unique emissions factor for the class of used or waste oil, used tyres, or waste expressed in tonnes of carbon dioxide equivalent gases per terajoule (tCO₂e/TJ); and

- (e) submit the following material to a recognised verifier:
 - (i) a record of the sampling regime that complies with a standard referred to in paragraph (a); and
 - (ii) confirmation that the person or laboratory that carried out the tests referred to in paragraph (b) holds the certification or accreditation required by that paragraph; and
 - (iii) the test results for the tests referred to in paragraph (b); and
 - (iv) the estimated uncertainty associated with the unique emissions factor; and
 - (v) the calculations done under paragraphs (c) and (d); and
 - (vi) any other information required by the recognised verifier as necessary to provide verification of the unique emissions factor under regulation 24.

(2) In subclause (1)(b)(i)(C), selective dissolution under CEN/TS 15440:2006 is not to be used if—

- (a) the sampled fuel contains more than 10% of rubber residues (whether natural, synthetic, or a combination of both); or
- (b) the sampled fuel contains a combination of more than 5% by weight of nylon, polyurethane or other polymers containing molecular amino groups, or biodegradable plastics of fossil fuel origin; or
- (c) the sampled fuel contains a combination of more than 5% by weight of wool or viscose, or non-biodegradable plastic of biogenic origin, or oil or fat present as a constituent of biomass.

Periodic source testing option

21 Requirements for applications for unique emissions factor approval for coal, natural gas, used or waste oil, used tyres, or waste calculated using periodic source testing option

- (1) A participant who wishes to calculate a unique emissions factor in accordance with the periodic source testing option must comply with regulations 22 and 23, and,—
 - (a) if a coal purchasing participant or coal importing participant, comply with regulation 11; or
 - (b) if a natural gas purchasing participant, comply with regulation 13; or
 - (c) if a waste combustion participant, submit such of the following material as is relevant to a recognised verifier:
 - (i) a record of the sampling regime that complies with regulation 22; and
 - (ii) a record of the measurement and testing regime that complies with regulation 22(3) and (4); and
 - (iii) confirmation that the person or laboratory that carried out the tests referred to in regulation 22(2) and (3) holds the certification or accreditation required by those subclauses; and
 - (iv) the estimated uncertainty associated with the unique emissions factor; and
 - (v) the calculations done under regulation 23; and
 - (vi) any other information required by the recognised verifier as necessary to provide verification of the unique emissions factor for the purposes of regulation 24.
- (2) The participant must conduct sampling and testing, and calculate the rate of emissions under regulations 22 and 23 for a measurement period that is sufficient to ensure that the sampling, testing and calculated emissions accurately represent emissions for the class of fuel combusted in the particular equipment over the full range of operating conditions.

22 Sampling and testing requirements for the periodic source testing option

- (1) A coal purchasing participant, coal importing participant, or a natural gas purchasing participant using the periodic source testing option to calculate a unique emissions factor for N₂O and CH₄ in relation to a class of coal or natural gas must collect information about,—
 - (a) the total tonnes of the class of fuel combusted in the particular equipment during the measurement period; and
 - (b) the mean gross calorific value of the class of fuel combusted in the particular equipment during the measurement period.
- (2) A waste combustion participant using the periodic source testing option to calculate a unique emissions factor in relation to a class of used or waste oil, used tyres, or waste must,—
 - (a) if the person wishes to use the method specified in regulation 23(2)(a) to calculate total energy input to the particular equipment from the class of fuel during the measurement period,—
 - (i) collect information about the total tonnes of the class of fuel combusted in the particular equipment during the measurement period; and
 - (ii) collect representative samples of the class of fuel for which the unique emissions factor is sought during the measurement period in accordance with the procedures in,—
 - (A) for solid fuels, CEN/TS 14778–1:2005 or CEN/TS 15442:2006:

- (B) for used or waste oil, ASTM D4057–06, ASTM D4177–95 (2005), or ISO 3170:2004; and
 - (iii) have the following tests carried out on each of the samples of the fuel by a person or laboratory that is accredited as complying with ISO 17025:2005 by International Accreditation New Zealand, an overseas accreditation agency with whom International Accreditation New Zealand has a mutual recognition agreement, or an overseas accreditation agency recognised under New Zealand’s mutual recognition arrangements to carry out the tests:
 - (A) for solid fuels, CEN/TS 15400:2006 (gross calorific value); or
 - (B) for used or waste oil, ASTM D240–02 (2007) (gross calorific value):
 - (b) if the person wishes to use the method specified in regulation 23(2)(b) to calculate total energy input to the particular equipment from the class of fuel during the measurement period,—
 - (i) record the total quantity of energy generated from the particular equipment through its combustion of the class of fuel during the measurement period in terajoules; and
 - (ii) estimate the efficiency, on a gross energy basis, of the particular equipment during the measurement period; and
 - (iii) if the class of fuel is a class of used or waste oil, calculate—
 - (A) the total number of tonnes of obligation fuel component of the used or waste oil combusted by the particular equipment during the measurement period; and
 - (B) the calorific value of the used or waste oil by obtaining samples and carrying out tests in accordance with paragraph (a)(ii) and (iii).
- (3) A participant using the periodic source testing option must, at sufficient intervals during the measurement period to ensure that the data is representative,—
- (a) measure in accordance with the procedures in ISO 10780:1994 or ISO 14164:1999 the volumetric flow rate for the stacks from which gases resulting from combustion of the class of fuel are emitted ; and
 - (b) have tests to measure CH₄ and N₂O concentrations (and if relevant for waste combustion participants, CO₂ concentrations) by volume in the gas stream from the stacks carried out in accordance with one of the following standards by a person or laboratory that is accredited as complying with ISO 17025:2005 by International Accreditation New Zealand, an overseas accreditation agency with whom International Accreditation New Zealand has a mutual recognition agreement, or an overseas accreditation agency recognised under New Zealand’s mutual recognition arrangements to carry out the tests:
 - (i) ISO 12039:2001:
 - (ii) USEPA—Method 3A—2006:
 - (iii) USEPA—Method 3C—1996:
 - (iv) VDI 2469–1 (measurement of nitrous oxide):
 - (v) ASTM D6348–03 (determination of gaseous compounds); and
 - (c) at the time of each of the measurements referred to in paragraph (b),—
 - (i) measure and record the pressure of the gas stream in the stacks in kilopascals; and
 - (ii) measure and record the temperature of the gas stream in the stacks in Kelvin; and
 - (iii) if the participant is a waste combustion participant and the class of fuel contains non-biomass, have tests to measure the non-biomass fraction of the CO₂ concentrations in the gas stream in the stacks carried out in accordance with ASTM D6866–08 by a person or laboratory that is accredited as complying with ISO 17025:2005 by International Accreditation New Zealand, an overseas accreditation agency with whom International Accreditation New Zealand has a mutual recognition agreement, or an overseas accreditation

agency recognised under New Zealand's mutual recognition arrangements to carry out the tests.

(4) For the purposes of the tests referred to in subclause (3), sampling and measuring must be undertaken using devices that are regularly maintained and calibrated.

23 Calculation of unique emissions factor in accordance with periodic source testing option

- (1) A participant using the periodic source testing option to calculate a unique emissions factor must,—

- (a) using each set of data collected under regulation 22(3), calculate the rate of emissions of CH₄ and N₂O (and if relevant for a waste combustion participant, of CO₂) from the stacks in accordance with the following formula:

$$mr_{\text{gas type}} = \frac{mw_{\text{gas type}} \times P \times F \times C}{R \times T}$$

- where—
 - C
- is the concentration of CH₄, N₂O, or CO₂, as the case may be, by volume in the gas stream at the time of measurement of the gas concentrations
- F
- is the flow rate of the gas stream in cubic metres per second at the time of measurement of the gas concentrations
- mr_{gas type}
- is the rate of each of CH₄ and N₂O (and if relevant CO₂) emitted in tonnes of gas type released per second
- mw_{gas type}
- is the molecular mass of CH₄, N₂O, or CO₂, as the case may be, in tonnes per kilomole, where—
 - (a) CO₂ and N₂O values are 0.044; and
 - (b) CH₄ value is 0.016

P

is the pressure of the gas stream in kilopascals at the time of measurement of the gas concentrations

R

is 8.314, the universal gas constant when expressed in J/K.mol; and

T

is the temperature, in Kelvin, of the gas stream at the time of measurement of the gas concentrations; and

- (b) using the results of the calculations referred to in paragraph (a), estimate representative values of mr_{N₂O} and mr_{CH₄} (and if relevant, mr_{CO₂}) for the measurement period; and
 - (c) calculate the unique emissions factor for the class of fuel, in accordance with the following formula:

$$UEF = \frac{(mr_{\text{CO}_2} \times m_{\text{NB}} \times t) + (mr_{\text{CH}_4} \times 21 \times t) + (mr_{\text{N}_2\text{O}} \times 310 \times t)}{H}$$

- where—
 - H
- is the total energy input to the particular equipment over the measurement period expressed in terajoules and calculated in accordance with subclause (2)
- m_{NB}
- is, if relevant, the mean non-biomass fraction of mr_{CO₂} as calculated by reference to the results of the tests under regulation 22(3)(c)(iii)
- mr_{CH₄}
- is the representative rate of CH₄ emitted for the measurement period in tonnes released per second, as estimated under paragraph (b)
- mr_{CO₂}

- is—
 - (a) the representative rate of CO₂ emitted for the measurement period in tonnes released per second, as estimated under paragraph (b); or
 - (b) zero,—
 - (i) for a coal purchasing participant, coal importing participant, or natural gas participant; or
 - (ii) if the fuel consists of or contains only biomass

mr_{N_2O}

is the representative rate of N₂O emitted for the measurement period in tonnes released per second, as estimated under paragraph (b)

t

is the time interval of the measurement period in seconds

UEF

is,—

- (a) for a coal purchasing participant, coal importing participant, or natural gas purchasing participant, the unique emissions factor for N₂O and CH₄ for the class of fuel expressed in tonnes of carbon dioxide equivalent gases per terajoule (tCO₂e/TJ); and
- (b) for a waste combustion participant, the unique emissions factor for the class of fuel expressed in tonnes of carbon dioxide equivalent gases per terajoule (tCO₂e/TJ).

(2) For the purposes of subclause (1)(c), H must be calculated in accordance with either of the following formulae, as relevant:

(a) $H = A \times CV$

where—

- A is the total tonnes of the class of fuel combusted by the particular equipment during the measurement period as recorded under regulation 22(1)(a) or 22(2)(a)(i)
- CV is the mean gross calorific value of the fuel samples as recorded under regulation 22(1)(b) or as determined by reference to the results of the tests referred to in regulation 22(2)(a)(iii)(A) or (B); or

(b) $H = \frac{D}{U} - B \times CV$

○ where—

- B is,—
 - (a) if the class relates to used or waste oil, the total number of tonnes of obligation fuel component of the used or waste oil combusted in the particular equipment during the measurement period, as recorded under regulation 22(2)(b)(iii)(A); and
 - (b) in any other case, zero
- CV is,—
 - (a) if the class relates to used or waste oil, the weighted average calorific value of the used or waste oil as calculated by reference to the information recorded under regulation 22(2)(b)(iii)(B); and
 - (b) in any other case, zero
- D is the energy output in terajoules produced by the particular equipment through its combustion of the class of fuel during the measurement period as recorded in regulation 22(2)(b)(i)
- U is the gross efficiency of the particular equipment during the measurement period as estimated under regulation 22(2)(b)(ii).

Verification

24 Verification

- (1) A recognised verifier may verify a unique emissions factor for an activity if the verifier—

- (a) has been recognised under these regulations as able to verify unique emissions factors for the activity and the recognition has not expired, or been surrendered, suspended, or revoked; and
 - (b) is satisfied that any samples collected by the participant and tested for the purposes of the relevant regulation—
 - (i) meet any standard for sampling required by the regulation; and
 - (ii) have been tested by a person with any prescribed certification or accreditation to carry out the prescribed tests; and
 - (c) is satisfied that any measurements or other tests required to be carried out by the participant for the purposes of a regulation have been carried out in accordance with the requirements of the regulation; and
 - (d) is satisfied that the unique emissions factor—
 - (i) has been calculated correctly in accordance with the prescribed methodology, having conducted his or her own calculations using the test or measurement results provided by the participant; and
 - (ii) meets any prescribed threshold for applications for approval for use of a unique emissions factor for the activity.
- (2) Despite anything in these regulations, a recognised verifier may not verify a unique emissions factor for the purposes of an application for approval of a unique emissions factor by a participant if the verifier—
- (a) was involved in any way with the taking or testing of any samples, or the taking of any measurements, that support the application; or
 - (b) is an employee of the applicant or any person involved in the taking or testing of any samples, or the taking of any measurements, that support the application; or
 - (c) has any other conflict of interest or relationship with the applicant or any associated person of the applicant that could reasonably be regarded as likely to affect his or her impartiality in carrying out his or her verification function.

Part 3

Recognition of verifiers

25 Applications for recognition

- (1) An application for recognition as a verifier in relation to any activity must—
 - (a) be made to the chief executive on the form prescribed for the purpose by the chief executive; and
 - (b) be accompanied by any supporting information that the chief executive may require.
- (2) For the purpose of assessing the application, the chief executive may require an applicant to supply information additional to that contained in the application.
- (3) If the applicant fails to supply the information within 3 months after the request, or within such further time as the chief executive may allow, the application lapses.

26 Chief executive may recognise individuals as verifiers

- (1) The chief executive may, on the application of an individual who meets the requirements in subclause (2), recognise the individual as a person who can verify unique emissions factors for 1 or more of the activities referred to in regulation 27.
- (2) An applicant must—
- (a) be—
 - (i) a chartered accountant (within the meaning of section 19 of the Institute of Chartered Accountants of New Zealand Act 1996); or
 - (ii) a chartered professional engineer (within the meaning of section 6 of the Chartered Professional Engineers of New Zealand Act 2002); and
 - (b) have—

- (i) at least 100 working days' verification experience, obtained within the 3 years immediately before the date of application; or
- (ii) at least 5 years' full-time work experience as an accountant or engineer, obtained since becoming a chartered accountant or chartered professional engineer.

(3) In carrying out the verification functions for which he or she is recognised, a recognised verifier must—

- (a) perform verification functions only in relation to the activities in respect of which he or she is recognised;
- (b) comply with the relevant requirements of these regulations;
- (c) maintain an appropriate degree of impartiality and independence in carrying out his or her verification functions.

27 Activities in respect of which recognition can be given

- The activities for which the chief executive may recognise an individual to verify unique emissions factors are 1 or more of the following:
 - (a) the activities relating to owning obligation fuel (Part 2 of Schedule 3 of the Act) and purchasing obligation jet fuel (Part 3 of Schedule 4 of the Act);
 - (b) the activities relating to importing coal (Part 3 of Schedule 3 of the Act), mining coal (Part 3 of Schedule 3 of the Act), and purchasing coal (Part 4 of Schedule 4 of the Act);
 - (c) the activity relating to purchasing natural gas (Part 4 of Schedule 4 of the Act);
 - (d) the activity relating to using geothermal fluid (Part 3 of Schedule 3 of the Act);
 - (e) the activity relating to combusting used oil, waste oil, used tyres, or waste (Part 3 of Schedule 3 of the Act).

28 Grant of recognition

- (1) Where the chief executive grants an application by an individual for recognition to verify unique emissions factors, the chief executive must supply to the applicant a notice of recognition that specifies—
 - (a) the activities for which the applicant may verify unique emissions factors; and
 - (b) any conditions applying to the recognition; and
 - (c) whether the duration of the recognition is indefinite or for a stated period.
- (2) A grant of recognition—
 - (a) comes into force on the date specified in the notice of recognition; and
 - (b) continues in force until—
 - (i) it is surrendered under regulation 32; or
 - (ii) it is suspended under regulation 30 or revoked under regulation 31; or
 - (iii) in the case of recognition granted for a stated period, the expiry of the period.
- (3) If the chief executive proposes to refuse to grant recognition for the activities applied for, the chief executive must first give the applicant—
 - (a) a notice containing the particulars that will clearly inform the applicant of the substance of the grounds on which the chief executive proposes to refuse to recognise the applicant; and
 - (b) a copy (or adequate summary) of any information on which the chief executive relies in proposing to refuse to grant recognition; and
 - (c) a reasonable opportunity to make written submissions or be heard in respect of the matter.
- (4) If the chief executive subsequently decides to refuse to grant recognition, the chief executive must, as soon as practicable, give the applicant written notice of his or her decision and the reasons for the decision.

29 Conditions of recognition

- (1) A grant of recognition under regulation 26 may be subject to any conditions that the chief executive thinks fit to specify in the notice of recognition.
- (2) A recognised verifier must notify the chief executive if for any reason the verifier breaches the conditions of recognition.
- (3) The chief executive may at any time, by written notice to a recognised verifier, revoke, amend, or add to any conditions imposed under subclause (1).
- (4) The chief executive may not vary any condition of recognition imposed under this regulation without (to the extent practicable) first giving the recognised verifier concerned a reasonable opportunity to make written submissions to, or be heard by, the chief executive in relation to the matter.
- (5) However, subclause (4) does not apply where any variation to the conditions of recognition is made on the application of the recognised verifier concerned and in accordance with the terms of the application.

30 Suspension of recognition

- (1) The chief executive may, by notice in writing to a recognised verifier, suspend the verifier's recognition for a period not exceeding 3 months if the chief executive has reasonable grounds to believe that the performance of the verifier is unsatisfactory having regard to the requirements of these regulations.
- (2) The chief executive may impose conditions or requirements that must be satisfied if the suspension is to be lifted.
- (3) If the chief executive considers that conditions or requirements have not been satisfied within the suspension period, the chief executive may, by notice in writing, extend the suspension for a further period not exceeding 3 months.
- (4) If the chief executive suspends recognition or extends a period of suspension, the notice of suspension or extension must specify—
 - (a) the reason for the suspension or extension; and
 - (b) the period of the suspension or extension; and
 - (c) the date and time when the suspension or extension commences; and
 - (d) the functions and activities that the suspension or extension relates to; and
 - (e) any conditions or requirements to be met before or during the suspension.

31 Revocation of recognition

- (1) The chief executive may at any time, by notice in writing to a recognised verifier, revoke the verifier's recognition if satisfied that—
 - (a) the verifier is not, or is no longer, competent or able to undertake the functions or activities for which the recognition was granted; or
 - (b) the verifier has failed to comply with any conditions of the recognition; or
 - (c) the verifier has contravened, or failed to comply with, any requirement of these regulations in any particular that in the opinion of the chief executive casts doubt on the verifier's competency to undertake the functions or activities for which the recognition was granted.
- (2) The chief executive may not revoke recognition unless he or she has first given the verifier a reasonable opportunity to make written submissions to, or to be heard by, the chief executive in relation to the matter.
- (3) If recognition is revoked by the chief executive, the verifier whose recognition is revoked must, as soon as practicable,—
 - (a) surrender to the chief executive his or her notice of recognition; and
 - (b) take all reasonable steps to notify the fact of the revocation of recognition to each person who was a client of the verifier (in the verifier's capacity as a recognised verifier) immediately before the revocation.

32 Surrender of recognition

- (1) A recognised verifier may at any time surrender his or her recognition by notice in writing to the chief executive.

- (2) A surrender takes effect on—
- (a) the expiry of 3 months after the date of receipt of the notice by the chief executive; or
 - (b) any earlier date that the chief executive may approve.
- (3) On or before the surrender takes effect, the recognised verifier must return his or her notice of recognition to the chief executive.

33 Substituted notice of recognition

- The chief executive may, if he or she thinks fit, cancel a notice of recognition, and issue a new notice in substitution for it,—
 - (a) if the terms or conditions of the recognition are to be or have been varied under regulation 29; or
 - (b) if the existing notice has become disfigured or dilapidated or contains a mistake; or
 - (c) if the chief executive is satisfied that the notice has been lost or destroyed.

34 List of recognised individuals

- (1) The chief executive must keep a list of individuals who have been recognised as verifiers.
- (2) The list must—
 - (a) contain—
 - (i) the names of recognised verifiers; and
 - (ii) the activities for which each recognised verifier is authorised to undertake verification functions under these regulations; and
 - (b) be available on—
 - (i) the Internet site of the chief executive; and
 - (ii) on request from the office of the chief executive at no cost.
- (3) The chief executive must note next to a verifier's name if his or her recognition has been suspended, and must remove the name immediately if the recognition expires or is revoked.

Schedule

Emissions factors and thresholds

rr 8(c),
(d), 9(5),
10(c),
(d),
11(3),
13(3),
20(1)(c),
(d)

Table 1
Emissions factors for CH₄ and N₂O for obligation fuel participants

Types of obligation fuel	Emissions factor for CH₄ in tCO₂e/kl	Emissions factor for N₂O in tCO₂e/kl
Regular petrol, as defined in regulation 4(1)(a) of the Climate Change (Liquid Fossil Fuels) Regulations 2008	0.014	0.015
Premium petrol, as defined in regulation 4(1)(b) of the Climate Change (Liquid Fossil Fuels) Regulations 2008	0.014	0.016
Automotive diesel and marine diesel, as defined in regulation 4(1)(c) and (d) of the Climate Change (Liquid Fossil Fuels) Regulations 2008	0.003	0.044
Aviation spirit, as defined in regulation 4(1)(e) of the Climate Change (Liquid Fossil Fuels) Regulations 2008	0.001	0.020

Types of obligation fuel	Emissions factor for CH₄ in tCO₂e/kl	Emissions factor for N₂O in tCO₂e/kl
Jet fuel, as defined in regulation 4(1)(f) of the Climate Change (Liquid Fossil Fuels) Regulations 2008	0.001	0.022
Light fuel oil, as defined in regulation 4(1)(g) of the Climate Change (Liquid Fossil Fuels) Regulations 2008	0.006	0.024
Heavy fuel oil, as defined in regulation 4(1)(h) of the Climate Change (Liquid Fossil Fuels) Regulations 2008	0.006	0.024

Table 2
Unique emissions factor thresholds for coal

Class	Emissions factor tCO₂e/TJ
Lignite—all other coalfields, or peat	93.85
Lignite—Waimumu or Roxburgh coalfields	91.04
Sub-bituminous	90.26
Bituminous, including anthracite	87.01

Table 3
Emissions factor for carbon

Emissions source category	Unit	Emissions factor
EF _C —carbon	tCO ₂ /tC	3.6641

Table 4
Emissions factors for methane and nitrous oxide

Fuel type	Methane (CO₂e)	Nitrous oxide (CO₂e)	Aggregate (M+N)	Unit
Coal	0.01397	0.4172	0.485	tCO ₂ e/TJ
Natural gas	0.0265	0.0279	0.054	tCO ₂ e/TJ
Waste	0.663	1.305	1.969	tCO ₂ e/TJ

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for Clerk of the Executive Council.

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