

# **EXPLANATORY STATEMENT**

Issued by authority of the Minister for Climate Change and Energy

*National Greenhouse and Energy Reporting Act 2007*

*National Greenhouse and Energy Reporting (Measurement) Amendment  
(2022 Update) Determination 2022*

## **Background**

The National Greenhouse and Energy Reporting (NGER) Scheme, established under the *National Greenhouse and Energy Reporting Act 2007* (the Act), provides a framework for the reporting of emissions, energy production and consumption in Australia.

The NGER Scheme is a key data source supporting Australia's international reporting obligations and informs domestic climate and energy policies.

NGER Scheme legislation includes:

- the Act;
- the *National Greenhouse and Energy Reporting Regulations 2008* (the NGER Regulations); and
- the *National Greenhouse and Energy Reporting (Measurement) Determination 2008* (the Measurement Determination).

The Measurement Determination was made under section 10 of the Act, which provides for the Minister to determine methods, or criteria for methods, for the measurement of (a) greenhouse gas emissions; (b) the production of energy; and (c) the consumption of energy.

## **Overview of the Measurement Determination**

The Measurement Determination provides the methods for the estimation of greenhouse gas emissions and the production and consumption of energy. The scope of the Measurement Determination reflects the framework of the *2006 Intergovernmental Panel on Climate Change (IPCC) Guidelines for National Greenhouse Gas Inventories*, as adopted by the Parties to the United Nations Framework Convention on Climate Change (UNFCCC), its Kyoto Protocol and Paris Agreement, and includes emissions from:

- the combustion of fuel for energy;
- the extraction, production, flaring, processing and distribution of fossil fuels, and from carbon capture and storage;

- industrial processes where a mineral, chemical or metal product is formed using a chemical reaction that generates greenhouse gases as a by-product, as well as emissions of hydrofluorocarbons (HFCs) and sulphur hexafluoride (SF6) resulting from their use by certain industries; and
- waste disposal – either in landfill, as management of wastewater or from waste incineration.

The scope of the Measurement Determination does not include land-based emissions covered by the IPCC categories ‘Agriculture’ and ‘Land Use, Land Use Change and Forestry’.

### *Methods of measurement*

The Measurement Determination provides a hierarchy of emissions reporting methods to accommodate the circumstances of individual reporters:

- Method 1 is the default method used in Australia’s National Inventory of greenhouse gas emissions and specifies the use of default emission factors in the estimation of emissions;
- Method 2, where available, is a facility-specific method, for example using industry sampling and Australian or international standards to provide more accurate estimates of emissions at facility level;
- Method 3, where available, is a higher-level facility-specific method, for instance using Australian or international standards for both sampling and analysis of fuels and raw materials;
- Method 4, where available, provides for direct monitoring of emission systems, either on a continuous or periodic basis.

The Measurement Determination draws on existing estimation practices wherever possible, including through the use of data collected for commercial, taxation or other regulatory purposes, with the aim of maximising the use of readily validated data and minimising administrative burdens on reporters.

### **Purpose and operation**

The purpose of the *National Greenhouse and Energy Reporting (Measurement) Amendment (2022 Update) Determination 2022* (the Update Determination) is to:

- Allow company reports to better reflect emissions reductions from the consumption of natural gas with a blended biomethane component, and from the use of end-of-life tyres as fuel;
- Make other minor updates to provisions for reporting emissions from:
  - leakages in natural gas distribution networks;
  - losses of HFCs and SF6; and

- decommissioned underground coal mines; and
- Update electricity-use (‘Scope 2’) emission factors, implementing a revised calculation methodology to reflect recent deployment of renewable generation sources in a more timely way.

The Update Determination will commence on 1 July 2022 and apply to the 2022-23 and subsequent financial years. It will affect NGER Scheme reports to be submitted by corporations by 31 October 2023. For ease of implementation, the amendments for decommissioned underground coal mines and losses of HFCs and SF6 can also apply to the 2021-22 financial year, unless a reporter wishes to use the existing provisions. Details of the amendments contained in the Instrument are provided below.

Further details of the Update Determination are outlined in [Attachment A](#).

The Update Determination is a legislative instrument for the purposes of the *Legislation Act 2003*.

A statement of the Update Determination’s compatibility with human rights is set out in [Attachment B](#).

### **Consultation**

The substance of the amendments made by the Update Determination was released for [public consultation](#) from 4 April to 29 April 2022. 27 submissions were received, expressing broad support for the amendments. In response to one submission, items 2 to 5 of the Update Determination clarify that the zero carbon dioxide emission factor for biomethane applies under Method 2 for combustion of gaseous fuels. Following consultation, measurement requirements for blended gaseous fuels under the new section 2.67A inserted by item 15 of the Update Determination were modified so that sampling according to a prescribed standard is required as an alternative to reliance on product specifications from the producer of the fuel or operator of the pipeline through which it is supplied.

### **Regulatory Impact**

The regulatory impacts of the Update Determination have been assessed as not requiring a Regulation Impact Statement by the Office of Best Practice Regulation (OBPR) (refOBPR22-02245).

## Overview

### Biomethane

Part 2.6 of the Measurement Determination currently allows NGER reporters to report consumption of solid (section 2.66) and liquid (section 2.77) fuels comprising blended quantities of the fuel types listed in Measurement Determination Schedule 1 by using fuel sampling results undertaken according to prescribed standards.

The Update Determination creates a new NGER Scheme fuel type *biomethane*, defined consistently with the 2022 biomethane variations to Emissions Reduction Fund methodology determinations made under the *Carbon Credits (Carbon Farming Initiative) Act 2011* as high-methane content gas upgraded from biogas and suitable for use as a natural gas substitute. Biomethane has nearly identical technical parameters as natural gas, however is assigned a zero carbon dioxide emission factor. This approach is consistent with other biogenic fuel types, and reflects the fact that their combustion releases carbon which was absorbed by their biogenic source materials from the atmosphere during their life.

The Update Determination also extends Part 2.6 of the Measurement Determination to allow reporting of consumption of blended gaseous fuels. Together with the new biomethane fuel type, this will allow reporting of consumption of blended natural gas and biomethane, and for NGER reports to reflect associated reductions in emissions.

### Waste tyres

Formerly, emissions from the combustion of tyres as a fuel at end-of-life were reportable using the fuel type *Industrial materials and tyres that are derived from fossil fuels, if recycled and combusted to produce heat or electricity* (Measurement Determination Schedule 1, item 8).

The Update Determination creates two new stand-alone fuel types in order to more accurately reflect emissions from the combustion of tyres in light of their biomass content: *Passenger car tyres, if recycled or combusted to produce heat or electricity* and *Truck and off-road tyres, if recycled or combusted to produce heat or electricity*.

The proposed carbon dioxide (CO<sub>2</sub>) emission factors for these new fuel types are based on the following calculation:

**Former CO<sub>2</sub> emission factor (*industrial materials and tyres that are derived from fossil fuels, if recycled and combusted to produce heat or electricity*) x (1-biomass content (%))**

Biomass and energy content factors applicable to these fuel types have been adopted from the submission *Australian National Greenhouse Accounts and End-Of-Life Tyre Combustion Emission Factor* (July 2021) prepared by Tyre Stewardship Australia, available as part of materials released for [public consultation](#) on these amendments.

Methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O) emission factors are as for the fuel type *Industrial materials and tyres that are derived from fossil fuels, if recycled and combusted to produce heat or electricity*.

The biomass content, energy content and emission factors are set out below, together with a comparison against the formerly applicable emission factors in the Measurement Determination.

<b>Fuel type</b>	<b>Formerly applicable CO<sub>2</sub> Emission Factor<sup>1</sup></b> <b>(kg CO<sub>2</sub>-e/GJ)</b>	<b>Biomass content (%)</b>	<b>Energy content factor (GJ/t)</b>	<b>Revised CO<sub>2</sub> Emission Factor</b> <b>(kg CO<sub>2</sub>-e/GJ)</b>	<b>CH<sub>4</sub> Emission Factor</b> <b>(kg CO<sub>2</sub>-e/GJ)</b>	<b>N<sub>2</sub>O Emission Factor</b> <b>(kg CO<sub>2</sub>-e/GJ)</b>
Passenger car tyres, if recycled and combusted to produce heat or electricity	81.6	23.1	32.0	62.8	0.03	0.2
Truck and off-road tyres, if recycled and combusted to produce heat or electricity	81.6	31.5	27.1	55.9	0.03	0.2

This amendment aligns Australia's treatment of waste tyres biomass content and associated combustion emissions with that of other UNFCCC Annex-1 reporting parties including the UK, Switzerland, Netherlands, Finland and New Zealand.

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<sup>1</sup> Formerly reportable under the fuel type *Industrial materials and tyres that are derived from fossil fuels, if recycled and combusted to produce heat or electricity* (Measurement Determination Schedule 1, item 8).

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## Other

### *Decommissioned underground coal mines*

Subdivision 3.2.4.2 of the Measurement Determination sets out requirements for estimating emissions of methane from decommissioned underground coal mines.

An update was made by the *National Greenhouse and Energy Reporting (Measurement) Amendment (2018 Update) Determination 2018* (the 2018 amendment) to this subdivision to increase the accuracy of estimated emissions by taking account of part-year emissions for coal mines which are decommissioned part way through an NGER reporting year.

The Update Determination makes a technical correction to the Method 1 emission factor in section 3.33 of the Measurement Determination consistent with the intent of the 2018 amendment.

### *Natural gas distribution- leaks fraction in unaccounted-for-gas*

Methods 1 and 3 for estimating fugitive emissions from natural gas distribution systems (Measurement Determination sections 3.81 and 3.82A) estimate emissions by reference to the amount of unaccounted-for-gas (%UAG<sub>p</sub>) in a pipeline system, together with a numerical factor representing the fraction of that gas estimated to be released as an emission (and not arising from other issues such as measurement error).

This emission fraction is currently 0.55. The Update Determination updates the emission fraction to 0.373 to align with the factor used in Australia's National Inventory, based on the findings of the [Review of Unaccounted for Gas Benchmarks – Methodology report](#) prepared for the Victorian Essential Services Commission in 2017, which is assessed to be the most recently available comprehensive study on this subject, together with submissions to that review.

### *HFCs and SF6*

Methods 2 and 3 for estimating emissions of HFCs and SF6 currently refer to the *Energy Networks Australia (ENA) Industry Guideline for SF6 Management* formerly published by ENA.

As that document is no longer publicly available, the Update Determination recreates the substance of those methods within the text of the Measurement Determination.

### *Scope 2 emission factors*

The Update Determination updates the 'scope 2' factors for emissions from consumption of electricity from the grid. This update implements a revised calculation methodology to reflect recent deployment of renewable generation sources in a more timely way.

## Documents incorporated by reference

The Measurement Determination specifies the use of a range of standards in the measurement of emissions and energy. The use of standards is necessary to ensure the integrity of the information being collected, providing greater certainty to government and reporters. Reporters meeting NGER reporting thresholds (specified by section 13 of the NGER Act) are large corporate entities who regularly use such standards in their commercial activities and for other regulatory purposes. Such standards are incorporated consistently with section 14 of the *Legislation Act 2003*. Subsection 1.9(4) of the Measurement Determination sets out a general rule that such documents are those in force on 1 January 2020.

The Measurement Determination allows flexibility in the application of some standards. For example, sections 2.12, 2.24 and 2.26 allow the use of standards which are equivalent to those specified to be used by reporters where this suits their needs.

Section 2.67A inserted by item 15 of the Update Determination provides that quantities of components of blended gaseous fuels may be determined by adopting a determination from the producer of the fuel or operator of the pipeline through which it is supplied, or by adopting the results of sampling performed in accordance with prescribed standards. The newly prescribed standard ASTM D6866—20 (*Standard Test Methods for Determining the Biobased Content of Solid, Liquid, and Gaseous Samples Using Radiocarbon Analysis*) is an updated version of the standard ASTM D6866—10 which is already prescribed for sampling solid and liquid fuels. ASTM D6866-20 is available for purchase at <https://www.astm.org/d6866-20.html>.

Other standards prescribed for use in the sampling of biomethane and tyres in items 7, 8, 10 and 33 of the Update Determination are already prescribed for use in sampling existing fuels under the Measurement Determination.

Section 1.9 of the Measurement Determination includes definitions of relevant categories of standards referenced in the Measurement Determination. These definitions, and relevant websites to obtain access to the standards, are as follows:

**ASTM** followed by a number (for example, ASTM D6347/D6347M-99) means a standard of that number issued by ASTM International and, if a date is included, of that date. Their website is: <https://www.astm.org/>

**CEN/TS** followed by a number (for example, CEN/TS 15403) means a technical specification (TS) of that number issued by the European Committee for Standardization and, if a date is included, of that date. Their website is: <https://www.cencenelec.eu/>

**GPA** followed by a number means a standard of that number issued by the Gas Processors Association and, if a date is included, of that date. Their standards can be obtained from: <https://ihsmarkit.com/products/gpa-standards.html>

**ISO** followed by a number (for example, ISO 10396:2007) means a standard of that number issued by the International Organization of Standardization and, if a date is included, of that date. Their website is: <https://www.iso.org/>

Commercial websites sell a number of standards, such as <https://www.saiglobal.com/> or <https://webstore.ansi.org/>. Some standards are also available through public libraries, such as the National Library of Australia.



## ATTACHMENT A

### *National Greenhouse and Energy Reporting (Measurement) Amendment (2022 Update) Determination 2022*

#### Section 1 – Name of Determination

This section provides that the title of the Instrument is the *National Energy Reporting (Measurement) Amendment (2022 Update) Determination 2022*.

#### Section 2 – Commencement

This section provides for the amendments to commence on 1 July 2022.

#### Section 3 – Authority

This section outlines that the Update Determination is made under subsection 10(3) of the Act. The power to make legislative instruments under this subsection includes the power to amend or revoke instruments that have already been made, with any doubt about this resolved by subsection 33(3) of the *Acts Interpretation Act 1901*.

#### Section 4 – Schedules

The amendments to the Measurement Determination are outlined at Schedule 1.

## Schedule 1 – Amendments

Item	Item name	Description of Amendment
1.	Section 1.8	Introduces new definition of “biomethane” by reference to the NGER Regulations. That definition is consistent with the 2022 biomethane method variations under the Emissions Reduction Fund.
2.	Subsection 2.5(1) (definition of $EF_{ico_2oxec}$ )	Confirms that the zero carbon dioxide emission factor for biogenic fuels applies under Method 2 for combustion of solid fuels when using a default oxidation factor.
3.	Subsection 2.6(1) (definition of $EF_{ico_2oxec}$ )	Confirms that the zero carbon dioxide emission factor for biogenic fuels applies under Method 2 for combustion of solid fuels when using an estimated oxidation factor.
4.	Subsection 2.21(1) (definition of $EF_{ico_2oxec}$ )	Confirms that the zero carbon dioxide emission factor for biogenic fuels applies under Method 2 for combustion of gaseous fuels.
5.	Subsection 2.42(1) (definition of $EF_{ico_2oxec}$ )	Confirms that the zero carbon dioxide emission factor for biogenic fuels applies under Method 2 for combustion of liquid fuels.
6.	Subsection 2.12(3) (table item 7)	Omits the words ‘and tyres’ from table item 7 of subsection 2.12(3), as new stand-alone fuel types for tyres are created by these amendments.
7.	Subsection 2.12(3) (after table item 7)	Prescribes measurement standards for analysing samples of passenger car and truck and off-road tyres for the purpose of reporting emissions using Method 3 for combustion of solid fuels. Prescribed standards are as for industrial materials in table item 7. Subsection 2.12(4) also allows for equivalent standards to be used.
8.	Subsection 2.24(1) (after table item 12)	Prescribes standards for analysing samples of biomethane for the purpose of reporting emissions using Method 2 for combustion of gaseous fuels. Prescribed standards are as for natural gas in table item 1. Subsection 2.24(2) also allows for equivalent standards to be used

<b>Item</b>	<b>Item name</b>	<b>Description of Amendment</b>
<b>9.</b>	Subsection 2.24(1) (table item 13)	Editorial- see item 8 above. This avoids overlap between table item 13 and the new biomethane fuel type.
<b>10.</b>	Subsection 2.26(3) (after table item 12)	Prescribes standards for analysing samples of biomethane for the purpose of reporting emissions using Method 3 for combustion of gaseous fuels. Prescribed standards are as for most other gaseous fuels, including natural gas and various biogases. Subsection 2.26(4) also allows for equivalent standards to be used
<b>11.</b>	Subsection 2.26(3) (table item 13)	Editorial. This avoids overlap between table item 13 and the new biomethane fuel type.
<b>12.</b>	Section 2.65	Editorial- see item 15 below as the Part now includes blends of gaseous fuels and not just solid and liquid fuels.
<b>13.</b>	Subparagraph 2.66(1)(b)(ii)	Updates the prescribed standard for determining the components of a blended solid fuel to a newer edition.
<b>14.</b>	Paragraph 2.67(1)(b)	Updates a prescribed standard for determining the components of blended liquid fuels to a newer edition.
<b>15.</b>	After section 2.67	<p>Inserts a new section 2.67A allowing for reporting of consumption of blended gaseous fuels, such as natural gas with a blended biomethane component.</p> <p>Reporters may use the results of their own sampling, or sampling performed by the producer of the fuel or operator of the pipeline through which the fuel is supplied. It is similar to the options for blended solid and liquid fuels.</p>
<b>16.</b>	Section 3.33	Makes a technical correction to the formula under Method 1 for estimating emissions of methane from decommissioned underground coal mines. The division by 12 reflects the intended operation of the relevant integral and removes uncertainty as to the operation of the calculation.
<b>17.</b>	Subsection 3.81(1) (equation)	Updates the numerical factor for the fraction of unaccounted-for-gas in natural gas distribution networks comprising emissions (as opposed, for

Item	Item name	Description of Amendment
		example, to measurement error).
18.	Subsection 3.81(1) (note after the definition of %UAGp)	Consequential on the change in item 17 above.
19.	Subsection 3.82A(1) (equation)	Consequential on the change in item 17 above.
20.	Sections 4.103 and 4.104	<p>Recreates the substance of the methods formerly contained in Appendices A and B to the <i>ENA Industry Guideline for SF6 Management</i> formerly published by Energy Networks Association, as that document is no longer publicly available.</p> <p>Section 4.103 is the method 2 mass balance accounting approach focused on changes in stored gases and relevant global warming potentials. This was referred to as a ‘Tier 2’ method in the ENA guidelines.</p> <p>Section 4.104 is the method 3 aggregate loss source accounting method, with subsection (1) covering HFCs and subsection (2) covering SF6. This was referred to as a ‘Tier 3’ method in the ENA guidelines.</p> <p>The intent of this amendment is to replicate the previous guidance rather than change the accounting approach.</p>
21.	Note to subsection 5.3(4)	Editorial as the relevant material is now in Schedule 4 and no longer in the NGER Regulations.
22.	Subsection 8.6(1) (table item 8)	Omits the words ‘and tyres’ from table item 8 of subsection 8.6(1), as new stand-alone fuel types for tyres are created by these amendments.
23.	Subsection 8.6(1) (after table item 8)	Prescribes the energy content uncertainty and carbon dioxide emission factor uncertainty to be used when reporting emissions from combustion of tyres under Method 1.
24.	Subsection 8.6(1) (after table item 28)	Prescribes the energy content uncertainty and carbon dioxide emission factor uncertainty to be used when reporting emissions from combustion of biomethane

<b>Item</b>	<b>Item name</b>	<b>Description of Amendment</b>
		under Method 1.
<b>25.</b>	Subsection 8.6(1) (table item 30)	Editorial. This avoids overlap between table item 30 and the new biomethane fuel type.
<b>26.</b>	After section 9.14	Provides that amendments made by this instrument apply in relation to reporting for the 2022-23 and later financial years.  However, reporters may elect to apply amendments to provisions for emissions of methane from decommissioned underground coal mines and leakages of HFCs and SF6 for the 2021-22 financial year, due by 31 October 2022. These updates provide increased clarity and transparency to reporters respectively.
<b>27.</b>	Part 1 of Schedule 1 (table item 8)	Omits the words ‘and tyres’ from table item 8 of Schedule 1, as new stand-alone fuel types for tyres are created by these amendments.
<b>28.</b>	Part 1 of Schedule 1 (after table item 8)	Specifies the energy content and carbon dioxide, methane and nitrous oxide emission factors for the new fuel types <i>Passenger car tyres, if recycled or combusted to produce heat or electricity</i> and <i>Truck and off-road tyres, if recycled or combusted to produce heat or electricity</i> .
<b>29.</b>	Part 2 of Schedule 1 (after table item 29)	Specifies the energy content and carbon dioxide, methane and nitrous oxide emission factors for the new fuel type <i>biomethane</i> . The carbon dioxide emission factor is zero consistent with other biogenic fuel types; other parameters are as for natural gas.
<b>30.</b>	Part 2 of Schedule 1 (table item 30)	Editorial. This avoids overlap between table item 30 and the new biomethane fuel type.
<b>31.</b>	Part 6 of Schedule 1	Updates ‘Scope 2’ emission factors applicable to the consumption of electricity from the grid.
<b>32.</b>	Schedule 2 (table item 8)	Omits the words ‘and tyres’ from table item 8 of Schedule 2, as new stand-alone fuel types for tyres are created by these amendments.

<b>Item</b>	<b>Item name</b>	<b>Description of Amendment</b>
<b>33.</b>	Schedule 2 (after table item 8)	Prescribes measurement standards for analysing samples of passenger car and truck and off-road tyres for the purpose of reporting emissions using Method 2 for combustion of solid fuels. Prescribed standards are as for industrial materials.
<b>34.</b>	Schedule 3 (table item 8)	Omits the words ‘and tyres’ from table item 8 of Schedule 3, as new stand-alone fuel types for tyres are created by these amendments.
<b>35.</b>	Schedule 3 (after table item 8)	Specifies the carbon content factors for passenger car and truck and off-road tyres.
<b>36.</b>	Schedule 3 (after table item 29)	Specifies the carbon content for biomethane, which is zero as for other biogenic fuel types.
<b>37.</b>	Schedule 3 (table item 30)	Editorial. This avoids overlap between table item 30 and the new biomethane fuel type.

## **Statement of Compatibility with Human Rights**

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

### ***National Greenhouse and Energy Reporting (Measurement) Amendment (2022 Update) Determination 2022***

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 *National Greenhouse and Energy Reporting (Measurement) Amendment (2022 Update) Determination 2022* makes minor amendments to the *National Greenhouse and Energy Reporting (Measurement) Determination 2008* in order to:

- Allow company reports to better reflect emissions reductions from the consumption of natural gas with a blended biomethane component, and from the use of end-of-life tyres as fuel;
- Make other minor updates to provisions for reporting emissions from leakages in natural gas distribution networks; losses of hydrofluorocarbons (HFCs) and sulphur hexafluoride (SF<sub>6</sub>); and decommissioned underground coal mines; and
- Update electricity-use (‘Scope 2’) emission factors, implementing a revised calculation methodology to reflect recent deployment of renewable generation sources in a more timely way.

#### **Human rights implications**

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

#### **Conclusion**

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

**The Hon Chris Bowen MP**  
**Minister for Climate Change and Energy**

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