



Quantification Methods for the *Output-Based Pricing System Regulations*



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NOTICE

This document is referenced in the proposed “*Regulations Amending the Output-Based Pricing System Regulations and the Environmental Violations Administrative Monetary Penalties Regulations*” (the proposed Amendments).

The proposed Amendments would remove detailed quantification methods from Schedule 3 to the *Output-Based Pricing System Regulations* (OBPS Regulations) and moved them to the *Quantification Methods for the Output-Based Pricing System Regulations* (Quantification Methods), a document incorporated by reference into the OBPS Regulations. The Quantification Methods document specifies the methods to quantify GHGs as seen currently in Schedule 3 for activities set out in Schedule 1 to the OBPS Regulations. The goal of the proposed Amendments are to reduce the administrative burden by enabling improved harmonization of quantification methods for GHG emissions between the OBPS Regulations and the federal Greenhouse Gas Reporting Program (GHGRP), as well as to provide flexibility to the Minister to develop and update the specified methods as needed.

The Quantification Methods would apply to the 2024 and future compliance periods. An early version is available to illustrate the new approach proposed in the amendments. This version will not apply to any annual report under the OBPS but is useful to support understanding of the proposed Amendments. In spring 2023, Environment and Climate Change Canada plans to publish for comment a draft version of the Quantification Methods proposed to apply in the 2024 compliance period. The Quantification Methods applicable to the 2024 compliance period would then be finalized and published in late 2023.

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1. Definitions

Directive 017 means the directive entitled Directive 017: Measurement Requirements for Oil and Gas Operations, published by the Alberta Energy Regulator on May 12, 2020, as amended from time to time

Directive PNG017 means the directive entitled Directive PNG017: Measurement Requirements for Oil and Gas Operations, published by the Government of Saskatchewan in September 2020, as amended from time to time.

GHG means greenhouse gas, i.e., a gas set out in Schedule 3 to the *Greenhouse Gas Pollution Pricing Act*.

GHGRP 2021 means the document entitled Greenhouse Gas Reporting Program, Canada's Greenhouse Gas Quantification Requirements, version 4.0, published by the Department of Environment in December 2020.

IPCC Guidelines means the guidelines entitled 2006 IPCC Guidelines for National Greenhouse Gas Inventories, published by the Institute for Global Environmental Strategies, as amended from time to time.

Oil Sands QM means the document entitled *Quantification of Area Fugitive Emissions at Oil Sands Mines*, published in 2019 by the department of Environment and Parks of the Government of Alberta.

WCI Method means the document entitled Final Essential Requirements of Mandatory Reporting, published on December 17, 2010, by the Western Climate Initiative, as amended from time to time.

2. Purpose

This document prescribes the methods to quantify GHGs, the ratio of heat and the quantity of electricity generated, as required under the *Output-Based Pricing System Regulations* (OBPS Regulations).

3. General Quantification Rules

3.1. Quantity of GHGs

For the purposes of paragraph 17(2)(a) of the OBPS Regulations, the GHG quantification methods are set out in column 3 of the tables in section 5 of this document.

For the purposes of paragraphs 17(2)(b) and (c) of the OBPS Regulations, where the specified emissions type or GHGs are not listed in column 1 or 2 of the tables in section 5 of this document, GHGs are to be quantified in accordance with:

- i. the GHGRP 2021 or the WCI method, if those methods are applicable to the covered facility's activities, or
- ii. the IPCC guidelines, if those methods are applicable to the covered facility's activities and are not available in the GHGRP 2021 or WCI Method.

3.2. Sampling, analysis and measurement requirements

For the purposes of paragraph 17(3) of the OBPS Regulations, the sampling, analysis and measurement requirements are set out in column 4 of the tables in section 5 of this document.

For the purposes of paragraphs 17(3) of the OBPS Regulations, where the sampling, analysis and measurement requirements are not listed in column 4 of the tables in section 5 of this document, the sampling, analysis and measurement requirements are specified in:

- i. the GHGRP 2021 or the WCI method, if those methods are applicable to the covered facility's activities, or
- ii. the IPCC guideline, if those methods are applicable to the covered facility's activities and are not available in the GHGRP 2021 or WCI Method.

3.3. Missing data

For the purposes of paragraph 17(4) of the OBPS Regulations, the missing data methods are set out in column 5 of the tables in section 5 of this document.

For the purposes of paragraphs 17(4) of the OBPS Regulations, where the missing data methods are not listed in column 5 of the tables in section 5 of this document, the missing data methods are specified in:

- i. the GHGRP 2021 or the WCI method, if those methods are applicable to the covered facility's activities, or
- ii. the IPCC guideline, if those methods are applicable to the covered facility's activities and are not available in the GHGRP 2021 or WCI Method.

3.4. Conflicting requirements

For a requirement made under 2021 GHGRP in respect of quantification of GHGs, in the event of a conflict between the OBPS Regulations and GHGRP, the OBPS Regulations prevails to the extent of the conflict.

4. Specific Quantification Rules

4.1. Ratio of heat

For the purposes of paragraph 34(1)(b) of the OBPS Regulations, when determining the ratio of heat the following variables are quantified as follows:

HHV_i

is the higher heating value of the fossil fuel of type "i" combusted in the facility for the generation of thermal energy during the compliance period determined in accordance with sections 2.D.1 and 2.D.3 of the GHGRP 2021.

i

is the i th fossil fuel type combusted in the facility during the compliance period, where “ i ” goes from 1 to n and where n is the number of types of fossil fuels combusted,

QBB_k

is the quantity of biomass fuel type “ k ” combusted in the facility for the generation of thermal energy during the compliance period, determined in accordance with subsection 7(2) of Part 38 of Schedule 3 to the OBPS Regulations and the WCI Method WCI.214.

HHV_k

is the higher heating value of the fossil fuel of type “ k ” combusted in the facility for the generation of thermal energy during the compliance period determined in accordance with sections 2.D.1 and 2.D.3 of the GHGRP 2021 and the WCI Method.214.

k

is the k^{th} biomass fuel type combusted in the facility during the compliance period, where “ k ” goes from 1 to m and where m is the number of types of biomass fuels combusted,

For the purposes of paragraph 34(1)(c) of the OBPS Regulations, when determining the ratio of heat the following variables are quantified as follows:

HHV_i

is the higher heating value of the fossil fuel of type “ i ” combusted in the facility for the generation of thermal energy during the compliance period determined in accordance with sections 2.D.1 and 2.D.3 of the GHGRP 2021.

HHV_k

is the higher heating value of the fossil fuel of type “ k ” combusted in the facility for the generation of thermal energy during the compliance period determined in accordance with sections 2.D.1 and 2.D.3 of the GHGRP 2021 and WCI.214.

4.2. Quantity of CO₂ captured and stored

For the purposes of subsection 35(1) of the OBPS Regulations, the variable B is determined as follows:

B is the quantity of CO₂ captured at the covered facility that is stored during the compliance period in a storage project, determined using the quantification method described in section 1 of the GHGRP 2021, expressed in CO₂e tonnes.

4.3. Quantity of electricity generated

For the purposes of subsection 4(2) of Division 2 to Part 38 Schedule 3 of the OBPS Regulations, variables HHV_i and HHV_j are quantified in accordance with subsection 24(1) of the Reduction of Carbon Dioxide Emissions from Coal-fired Generation of Electricity Regulations.

For the purposes of section 5 of Division 2 to Part 38 Schedule 3 of the OBPS Regulations, the quantity of electricity generated by a given unit is determined by the formula

$$G_{ce} + G_s - G_{ext}$$

where:

G_{ce}

is the gross quantity of electricity that is generated by the generators of the combustion engines in a combustion engine unit that shares a steam turbine with a boiler unit, in the calendar year, expressed in GWh, as measured at the electrical terminals of the generators of the combustion engines using meters that comply with the requirements set out in subsection 31(2) of the OBPS Regulations, if the given unit for which the electricity is being quantified is a combustion engine unit, or equal to zero, if the given unit for which the electricity is being quantified is a boiler unit;

G_s

is the gross quantity of electricity that is generated by the generators of the shared steam turbine in the calendar year, expressed in GWh, as measured at the electrical terminals of the generators of the shared steam turbine using meters that comply with the requirements set out in subsection 31(2) of the OBPS Regulations; and

G_{ext}

is the quantity of electricity that is generated by the unit other than the given unit for which the electricity is being quantified, in the calendar year, expressed in GWh and that is determined by the formula

$$G_s \times \sum_{t=1}^x \left[\frac{\sum_{j=1}^m h_{ext,j} \times M_{ext,j}}{\sum_{j=1}^m h_{ext,j} \times M_{ext,j} + \sum_{k=1}^l h_{int,k} \times M_{int,k}} \right]_t$$

where:

G_s

is the gross quantity of electricity that is generated by the generators of the shared steam turbine in the calendar year, expressed in GWh, as measured at the electrical terminals of the generators of the shared steam turbine using meters that comply with the requirements set out in subsection 31(2) of the OBPS Regulations,

t

is the ^tth hour, where “t” goes from the number 1 to x and where x is the total number of hours during which the generators of the shared steam turbine generated electricity in the calendar year,

j

is the ^jth external heat stream, originating from the other unit where “j” goes from the number 1 to m and where m is the total number of external heat streams that contributed to the electricity generated by the generators of the shared steam turbine of the unit,

h_{ext_j}

is the average specific enthalpy of the j^{th} external heat stream, originating from the other unit that contributed to the electricity generated by the generators of the shared steam turbine, expressed in GJ/tonne, during period “t” and must be based on the measurement of the temperature and pressure of that heat stream and determined using a continuous measuring device,

M_{ext_j}

is the mass flow of the j^{th} external heat stream originating from the other unit that contributed to the electricity generated by the generators of the shared steam turbine, expressed in tonnes, during period “t”, determined using a continuous measuring device,

k

is the k^{th} internal heat stream originating from the given unit, where “k” goes from the number 1 to l and where l is the total number of heat streams that originated from the combustion of fuel in the unit and that contributed to the electricity generated by the generators of the shared steam turbine,

h_{int_k}

is the average specific enthalpy of the k^{th} internal heat stream originating from the given unit and having contributed to the electricity generated by the generators of the shared steam turbine, expressed in GJ/tonne, during period “t” and must be based on the measurement of the temperature and pressure of that heat stream and determined using a continuous measuring device, and

M_{int_k}

is the mass flow of the k^{th} internal heat stream originating from the given unit that contributed to the electricity generated by the generators of the shared steam turbine, expressed in tonnes, during period “t”, determined using a continuous measuring device.

For the purposes of subsection 7(1) of Division 3 of Part 38 of Schedule 3 to the OBPS Regulations, the following variables are quantified as follows:

QFF_j

is the quantity of gaseous, liquid or solid fuel, as the case may be, type “j” combusted in the facility for electricity generation during the compliance period, determined under section 7(2) of Division 3 of Part 38 of Schedule 3 to the OBPS Regulations and in accordance with section 2.D.2 of the GHGRP 2021,

HHV_j

is the higher heating value of the gaseous, liquid or solid fuel, as the case may be, type “j” combusted in the facility for electricity generation determined in accordance with sections 2.D.1 and 2.D.3 of the GHGRP 2021,

QB_i

is the quantity of biomass fuel type “i” combusted in the facility for electricity generation during the compliance period, determined in accordance with subsection 7(2) of Division 3 of Part 38 of Schedule 3 to the OBPS Regulations and with section 2.D.2 of the GHGRP 2021 and the WCI Method WCI.214, and

HHV_i

is the higher heating value for each biomass fuel type “i” combusted in the facility for electricity generation in accordance with sections 2.D.1 and 2.D.3 of the GHGRP 2021 and the WCI Method WCI.214.

For the purposes of subsection 7(2) of Division 3 of Part 38 of Schedule 3 to the OBPS Regulations, the quantity of fuel for QFF_j and QB_i is determined on the following basis:

- (a) for a solid fuel, the mass of the fuel combusted, on a wet or dry basis, expressed in tonnes and measured in accordance with section 2.D.2 of the GHGRP 2021;
- (b) for a liquid fuel, the volume of the fuel combusted, expressed in kL and measured in accordance with section 2.D.2 of the GHGRP 2021; and
- (c) for a gaseous fuel, the volume of the fuel combusted, expressed in standard cubic metres and measured in accordance with section 2.D.2 of the GHGRP 2021.

5. Quantification of GHGs for Industrial Activities

PART 1: Bitumen and Other Crude Oil Production

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHG	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	Directive 017, Directive PNG017	GHGRP 2021 2.E
2	Flaring emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.C	Directive 017, Directive PNG017	GHGRP 2021 2.E
3	Wastewater emissions from				
	(a) Anaerobic wastewater treatment	CH ₄ and N ₂ O	GHGRP 2021 11.G	GHGRP 2021 11.N.7	GHGRP 2021 11.O
	(b) Oil-water separators	CH ₄	GHGRP 2021 11.H	GHGRP 2021 11.N.8	GHGRP 2021 11.O
4	On-site transportation emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

Exception:

For the purposes of calculating flaring emissions in section 2.C of GHGRP 2021, de minimis emissions must meet the requirements of the OBPSR.

PART 2: Bitumen and Heavy Oil Upgrading

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHG	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	Directive 017, Directive PNG017	GHGRP 2021 2.E
2	Industrial process emissions from				
	(a) hydrogen production	CO ₂	WCI Method WCI.133	WCI Method WCI.134	WCI Method WCI.135
	(b) sulphur recovery	CO ₂	GHGRP 2021 11.D	GHGRP 2021 11.N.4	GHGRP 2021 11.O
	(c) catalyst regeneration	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 11.A	GHGRP 2021 11.N.1	GHGRP 2021 11.O
3	Flaring emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.C	GHGRP 2021 2.D.7	GHGRP 2021 2.E
4	Venting emissions from				
	(a) process vents	CO ₂ and N ₂ O	GHGRP 2021 11.B	GHGRP 2021 11.N.2	GHGRP 2021 11.O
	(b) uncontrolled blowdown	CO ₂ and N ₂ O	GHGRP 2021 11.K	GHGRP 2021 11.N.2	GHGRP 2021 11.O
5	Wastewater emissions from				
	(a) anaerobic wastewater treatment	CH ₄ and N ₂ O	GHGRP 2021 11.G	GHGRP 2021 11.N.7	GHGRP 2021 11.O
	(b) oil-water separators	CH ₄	GHGRP 2021 11.H	GHGRP 2021 11.N.8	GHGRP 2021 11.O
6	On-site transportation emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

Exception:

For the purposes of calculating flaring emissions in section 2.C of GHGRP 2021, de minimis emissions must meet the requirements of the OBPSR.

PART 3: Petroleum Refining

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	Venting emissions from				
	(a) process vent	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 11.B	GHGRP 2021 11.N.2	GHGRP 2021 11.O
	(b) asphalt production	CO ₂ and CH ₄	GHGRP 2021 11.C	GHGRP 2021 11.N.2	GHGRP 2021 11.O
	(c) delayed coking unit	CH ₄	GHGRP 2021 11.M	GHGRP 2021 11.M	GHGRP 2021 11.O
3	Industrial process emissions from				
	(a) hydrogen production	CO ₂	WCI Method WCI.133	WCI Method WCI.134	WCI Method WCI.135
	(b) catalyst regeneration	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 11.A	GHGRP 2021 11.N.1	GHGRP 2021 11.O
	(c) sulphur recovery	CO ₂	GHGRP 2021 11.D	GHGRP 2021 11.N.4	GHGRP 2021 11.O
	(d) coke calcining	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 11.J	GHGRP 2021 11.N.9	GHGRP 2021 11.O
4	Flaring emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.C	GHGRP 2021 2.D.7	GHGRP 2021 2.E
5	Leakage emissions	CH ₄	GHGRP 2021 11.I	GHGRP 2021 11.I	GHGRP 2021 11.O
6	Wastewater emissions from				
	(a) anaerobic wastewater treatment	CH ₄ and N ₂ O	GHGRP 2021 11.G	GHGRP 2021 11.N.7	GHGRP 2021 11.O
	(b) oil-water separators	CH ₄	GHGRP 2021 11.H	GHGRP 2021 11.N.8	GHGRP 2021 11.O
7	On-site transportation emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

Exception:

For the purposes of calculating flaring emissions in section 2.C of GHGRP 2021, de minimis emissions must meet the requirements of the OBPSR.

PART 3.1: Surface mining of oil sands and extraction of bitumen

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	Directive 017 or Directive PNG017	GHGRP 2021 2.E
2	Flaring emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.C	GHGRP 2021 2.D.7	GHGRP 2021 2.E
3	Leakage emissions	CO ₂ and CH ₄	Oil Sands QM 6	Oil Sands QM 6 and 7	Oil Sands QM 6 and 7
4	Wastewater emissions from				
	(a) anaerobic wastewater treatment	CH ₄ and N ₂ O	GHGRP 2021 11.G	GHGRP 2021 11.N.7	GHGRP 2021 11.O
	(b) oil-water separators	CH ₄	GHGRP 2021 11.H	GHGRP 2021 11.N.8	GHGRP 2021 11.O
5	On-site transportation emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

Exception:

For the purposes of calculating flaring emissions in section 2.C of GHGRP 2021, de minimis emissions must meet the requirements of the OBPSR.

PART 4: Natural Gas Processing

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	Directive 017 or Directive PNG017	GHGRP 2021 2.E
2	Industrial process emissions from acid gas removal	CO ₂	GHGRP 2021 11.J	GHGRP 2021 11.N.9	GHGRP 2021 11.O
3	Flaring emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.C	Directive 017, Directive PNG017	GHGRP 2021 2.E
4	On-site transportation emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

Exception:

For the purposes of calculating flaring emissions in section 2.C of GHGRP 2021, de minimis emissions must meet the requirements of the OBPSR.

PART 5: Natural Gas Transmission

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	Flaring emissions	CO ₂ , CH ₄ and N ₂ O	WCI Method WCI.353(d)	Directive 017 or Directive PNG017	WCI Method WCI.355

PART 6: Hydrogen Gas Production

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	Industrial process emissions	CO ₂	WCI Method WCI.133	WCI Method WCI.134	WCI Method WCI.135
3	Flaring emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.C	GHGRP 2021 2.D.7	GHGRP 2021 2.E
4	Leakage emissions	CH ₄	GHGRP 2021 11.I	GHGRP 2021 11.I	GHGRP 2021 11.O
5	On-site transportation emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

Exception:

For the purposes of calculating flaring emissions in section 2.C of GHGRP 2021, de minimis emissions must meet the requirements of the OBPSR.

PART 7: Cement and Clinker Production

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	Industrial process emissions	CO ₂	GHGRP 2021 4.A	GHGRP 2021 4.B	GHGRP 2021 4.C
3	On-site transportation emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

PART 8: Lime Manufacturing

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	Industrial process emissions	CO ₂	GHGRP 2021 3.A	GHGRP 2021 3.B	GHGRP 2021 3.C
3	On-site transportation emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

PART 9: Glass Manufacturing

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	Industrial process emissions	CO ₂	WCI Method WCI.143	WCI Method WCI.144	WCI Method WCI.145
3	On-site transportation emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

PART 10: Gypsum Product Manufacturing

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	On-site transportation emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

PART 11: Mineral Wool Insulation Manufacturing

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	Industrial process emissions	CO ₂	WCI Method WCI.183	WCI Method WCI.184	WCI Method WCI.185
3	On-site transportation emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

PART 12: Brick Production

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	Industrial process emissions	CO ₂	WCI Method WCI.183	WCI Method WCI.184	WCI Method WCI.185
3	On-site transportation emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

PART 13: Ethanol Production

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	On-site transportation emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

PART 14: Furnace Black Production

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	Industrial process emissions	CO ₂	WCI Method WCI.303(b)	WCI Method WCI.304(b)	WCI Method WCI.305
3	Venting emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 11.B	GHGRP 2021 11.N.2	GHGRP 2021 11.O
4	Leakage emissions	CH ₄	GHGRP 2021 11.I(1)	GHGRP 2021 11.I(1)	GHGRP 2021 11.O
5	Industrial product use emissions	SF ₆ and PFC	WCI Method WCI.233	WCI Method WCI.234	WCI Method WCI.235
6	On-site transportation emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

PART 15: 2–methylpentamethylenediamine (MPMD) Production

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	Industrial process emissions	CO ₂	WCI Method WCI.133	WCI Method WCI.134	WCI Method WCI.135
3	Industrial product use emissions	SF ₆ and PFC	WCI Method WCI.233	WCI Method WCI.234	WCI Method WCI.235
4	Flaring emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.C	GHGRP 2021 2.D.7	GHGRP 2021 2.E
5	Leakage emissions	CH ₄	GHGRP 2021 11.I	GHGRP 2021 11.I	GHGRP 2021 11.O
6	On-site transportation emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

Exception:

For the purposes of calculating flaring emissions in section 2.C of GHGRP 2021, de minimis emissions must meet the requirements of the OBPSR.

PART 16: Nylon Production

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	On-site transportation emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

PART 17: Petrochemicals Production

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	Industrial process emissions	CO ₂	WCI Method WCI.303(b)	WCI Method WCI.304(b)	WCI Method WCI.305
3	Venting emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 11.B	GHGRP 2021 11.N.2	GHGRP 2021 11.O
4	Flaring emissions	CO ₂ , CH ₄ and N ₂ O	WCI Methods WCI.303(a)(1), (a)(2) and (c)	WCI Method WCI.304(a)	WCI Method WCI.305
5	Leakage emissions	CH ₄	GHGRP 2021 11.I(1)	GHGRP 2021 11.I(1)	GHGRP 2021 11.O
6	Wastewater emissions	CH ₄ and N ₂ O	GHGRP 2021 11.G	GHGRP 2021 11.N.7	GHGRP 2021 11.O
7	Industrial product use emissions	SF ₆ and PFC	WCI Method WCI.233	WCI Method WCI.234	WCI Method WCI.235
8	On-site transportation emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

PART 18: Vaccine Production

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	Industrial product use emissions	SF ₆	WCI Method WCI.233	WCI Method WCI.234	WCI Method WCI.235
3	On-site transportation emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

PART 19: Scrap-based Steel Production

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	Industrial process emissions from				
	(a) electric arc furnace	CO ₂	GHGRP 2021 6.A.5	GHGRP 2021 6.C	GHGRP 2021 6.D
	(b) argon-oxygen decarburization vessel or vacuum degassing	CO ₂	GHGRP 2021 6.A.6	GHGRP 2021 6.C	GHGRP 2021 6.D
	(c) ladle furnace	CO ₂	GHGRP 2021 6.A.9	GHGRP 2021 6.C	GHGRP 2021 6.D
3	On-site transportation emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

PART 20: Integrated Steel Production

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	Industrial process emissions from				
	(a) basic oxygen furnace	CO ₂	GHGRP 2021 6.A.2	GHGRP 2021 6.C	GHGRP 2021 6.D
	(b) coke oven battery	CO ₂	GHGRP 2021 6.A.3	GHGRP 2021 6.C	GHGRP 2021 6.D
	(c) direct reduction furnace	CO ₂	GHGRP 2021 6.A.7	GHGRP 2021 6.C	GHGRP 2021 6.D
	(d) electric arc furnace	CO ₂	GHGRP 2021 6.A.5	GHGRP 2021 6.C	GHGRP 2021 6.D
	(e) blast furnace	CO ₂	GHGRP 2021 6.A.8	GHGRP 2021 6.C	GHGRP 2021 6.D
	(f) ladle furnace	CO ₂	GHGRP 2021 6.A.9	GHGRP 2021 6.C	GHGRP 2021 6.D
	(g) argon-oxygen decarburization vessel or vacuum degassing	CO ₂	GHGRP 2021 6.A.6	GHGRP 2021 6.C	GHGRP 2021 6.D
3	Wastewater emissions	CH ₄ and N ₂ O	GHGRP 2021 11.G	GHGRP 2021 11.N.7	GHGRP 2021 11.O
4	Industrial product use emissions	SF ₆ and PFC	WCI Method WCI.233	WCI Method WCI.234	WCI Method WCI.235
5	On-site transportation emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

Exception:

For the purposes of calculating CO₂ industrial process emissions in section 6.A

- BOG x C_{BOG} is equal to zero in equation 6-3
- COG x C_{COG} is equal to zero in equation 6-4
- BG x C_{BG} is equal to zero in equation 6-9

PART 21: Iron Ore Pelletizing

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	Industrial process emissions (induration furnace)	CO ₂	GHGRP 2021 6.A.1	GHGRP 2021 6.C	GHGRP 2021 6.D
3	On-site transportation emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

PART 22: Metal Tube Manufacturing

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	On-site transportation emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

PART 23: Base Metal Production

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ , and N ₂ O	GHGRP 2021 2.A and 2.B	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	Industrial process emissions from				
	(a) lead production	CO ₂	GHGRP 2021 13.A	GHGRP 2021 13.B	GHGRP 2021 13.C
	(b) zinc production	CO ₂	GHGRP 2021 13.A	GHGRP 2021 13.B	GHGRP 2021 13.C
	(c) copper and nickel production	CO ₂	GHGRP 2021 13.A	GHGRP 2021 13.B	GHGRP 2021 13.C
3	On-site transportation emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

Exception:

For the purposes of calculating industrial process emissions in section 13.A of GHGRP 2021, de minimis emissions must meet the requirements of the OBPSR.

PART 24: Potash Production

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	On-site transportation emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

PART 24.1: Production of Evaporated Salt

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	On-site transportation emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

PART 25: Coal Mining

For the purpose of item 2 of Table 1 to this Part, the CH₄ leakage emissions from surface coal mining are quantified by multiplying the quantity of coal extracted by the applicable emission factor set out in column 3 of Table 2 to this Part according to the province of extraction set out in column 1 and the coal type set out in column 2 of Table 2.

Table 1: Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	Leakage emissions from (a) coal storage	CH ₄	WCI Method WCI.103	WCI Method WCI.104	WCI Method WCI.105
	(b) underground coal mining	CH ₄	WCI Method WCI.253	WCI Method WCI.254	WCI Method WCI.255
3	On-site transportation emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

Table 2: Emission Factor by Province and Coal Type

Item	Column 1	Column 2	Column 3
	Province	Coal Type	Emission Factor (tonnes of CH ₄ / tonnes of coal)
1	Nova Scotia	Bituminous	7×10^{-5}
2	New Brunswick	Bituminous	7×10^{-5}
3	Saskatchewan	Lignite	7×10^{-5}
4	Alberta	Bituminous	5.5×10^{-4}
5	Alberta	Sub-bituminous	2×10^{-4}
6	British Columbia	Bituminous	8.6×10^{-4}

PART 26: Production of Metals or Diamonds

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	On-site transportation emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

PART 27: Char Production

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	On-site transportation emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

PART 28: Activated Carbon Production

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	On-site transportation emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

PART 29: Nitrogen-based Fertilizer Production

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	Industrial process emissions from				
	(a) nitric acid production	N ₂ O	WCI Method WCI.313	WCI Method WCI.314	WCI Method WCI.315
	(b) ammonia steam reforming	CO ₂	GHGRP 2021 8.A	GHGRP 2021 8.B	GHGRP 2021 8.C
3	On-site transportation emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

Exception:

For the purposes of calculating industrial process emission from ammonia production in section 8.A of GHGRP 2021, the variable “CO₂ consumed in urea production” is equal to zero under equation 8-6 and equation 8-7.

PART 30: Industrial Potato Processing

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	Wastewater emissions	CH ₄ and N ₂ O	GHGRP 2021 11.G	GHGRP 2021 11.N.7	GHGRP 2021 11.O
3	On-site transportation emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

PART 31: Industrial Oilseed Processing

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	Wastewater emissions	CH ₄ and N ₂ O	GHGRP 2021 11.G	GHGRP 2021 11.N.7	GHGRP 2021 11.O
3	On-site transportation emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

PART 32: Alcohol Production

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	Wastewater emissions	CH ₄ and N ₂ O	GHGRP 2021 11.G	GHGRP 2021 11.N.7	GHGRP 2021 11.O
3	On-site transportation emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

PART 33: Wet Corn Milling

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	Wastewater emissions	CH ₄ and N ₂ O	GHGRP 2021 11.G	GHGRP 2021 11.N.7	GHGRP 2021 11.O
3	On-site transportation emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

PART 34: Citric Acid Production

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	On-site transportation emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

PART 35: Sugar Refining

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	On-site transportation emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

PART 35.1: Production of Malt

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	Wastewater emissions	CH ₄ and N ₂ O	GHGRP 2021 11.G	GHGRP 2021 11.N.7	GHGRP 2021 11.O
3	On-site transportation emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRPR 2020 2.E

PART 36: Pulp and Paper Production

For the purposes of the table, GHGs from stationary fuel combustion emissions from biomass fuels may be quantified using equations 2-1, 2-2, 2-6, 2-7, 2-11, 2-13 or 2-14 of the GHGRP 2021, if applicable.

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions from				
	(a) boiler, thermal oxidizer, direct-fired turbine, engine, gasifier or any other combustion device that generates heat, steam or energy	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B, for biomass fuels, other than those set out in table 2-3 and 2-11 of the GHGRP, use the emission factors provided in table 20-2 of WCI Method WCI.20 ^a	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
	(b) recovery boiler	CO ₂ , CH ₄ and N ₂ O	For fossil fuels, GHGRP 2021 2.A and 2.B and for pulping liquor, WCI Method WCI.213(c) ^a	For fossil fuels, GHGRP 2021 2.D.1 to 2.D.4 and for pulping liquor, WCI Method WCI.214	GHGRP 2021 2.E and for pulping liquor, WCI Method WCI.215
	(c) lime kiln	CO ₂	GHGRP 2021 2.A	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
	(d) lime kiln	CH ₄ and N ₂ O	GHGRP 2021 2.B, except use the default emission factors for lime kilns set out in Table 210-1 of WCI Method WCI.213 ^a	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	Industrial process emissions: addition of carbonate compound into a lime kiln	CO ₂	GHGRP 2021 12.A.2	GHGRP 2021 12.B	GHGRP 2021 12.C
3	Wastewater emissions	CH ₄ and N ₂ O	GHGRP 2021 11.G	GHGRP 2021 11.N.7	GHGRP 2021 11.O
4	On-site transportation emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

^a For the combustion of biomass fuels where CH₄ and N₂O emission factors are not prescribed, the IPCC Guidelines must be used to estimate those emissions.

Exceptions:

For the purposes of calculating flaring emissions in section 2.C of GHGRP 2021, de minimis emissions must meet the requirements of the OBPSR.

PART 37: Main Assembly of Vehicles

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	Industrial product use emissions	HFC	WCI Method WCI.43(d)	WCI Method WCI.44	WCI Method WCI.45
3	On-site transportation emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

PART 38: Electricity Generation

Quantification of GHGs from Other Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	Leakage emissions from coal storage	CH ₄	WCI Method WCI.103	WCI Method WCI.104	WCI Method WCI.105
3	Industrial process emissions from acid gas scrubbers and acid gas reagent	CO ₂	GHGRP 2021 7.C	GHGRP 2021 7.D	GHGRP 2021 7.E
4	Industrial product use emissions from				
	(a) electrical equipment	SF ₆ and PFC	WCI Method WCI.233	WCI Method WCI.234	WCI Method WCI.235
	(b) cooling units	HFC	WCI Method WCI.43(d)	WCI Method WCI.44	WCI Method WCI.45
5	On-site transportation emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

PART 39: Production of wood products

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	On-site transportation	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

PART 40: Aluminium production from alumina

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	Industrial process emissions from				
	(a) Pre-baked anode consumption	CO ₂	GHGRP 2021 5.A.1	GHGRP 2021 5.B	GHGRP 2021 5.C
	(b) Søderberg electrolysis cells	CO ₂	GHGRP 2021 5.A.2	GHGRP 2021 5.B	GHGRP 2021 5.C
	(c) Anode Effects	PFC	GHGRP 2021 5.A.7	GHGRP 2021 5.B	GHGRP 2021 5.C
3	Industrial product use emissions	SF ₆ and HFC	GHGRP 2021 5.A.8 and WCI.43(d)	GHGRP 2021 5.B and WCI Method WCI.44	GHGRP 2021 5.C and WCI Method WCI.45
4	On-site transportation	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

PART 41: Production of baked anodes - Aluminium

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	Industrial process emissions from				
	(a) Anode and Cathode baking	CO ₂	GHGRP 2021 5.A.3, 5.A.4 and 5.A.5	GHGRP 2021 5.B	GHGRP 2021 5.C
3	Industrial product use emissions	SF ₆ and HFC	GHGRP 2021 5.A.8 and WCI Method WCI.43(d)	GHGRP 2021 5.B and WCI Method WCI.44	GHGRP 2021 5.C and WCI Method WCI.45
4	On-site transportation	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

PART 42: Production of calcined petroleum coke - Aluminium

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	Industrial process emissions from				
	(a) Green coke calcination	CO ₂	GHGRP 2021 5.A.6	GHGRP 2021 5.B	GHGRP 2021 5.C
3	Industrial product use emissions	SF ₆ and HFC	GHGRP 2021 5.A.8 and WCI Method WCI.43(d)	GHGRP 2021 5.B and WCI Method WCI.44	GHGRP 2021 5.C and WCI Method WCI.45
4	On-site transportation	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

PART 43: Production of alumina from bauxite

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	Industrial product use emissions	SF ₆ and HFC	GHGRP 2021 5.A.8 and WCI Method WCI.43(d)	GHGRP 2021 5.B and WCI Method WCI.44	GHGRP 2021 5.C and WCI Method WCI.45
3	On-site transportation	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E

PART 44: Production of pneumatic tires

Quantification of GHGs from Certain Specified Emission Types

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Specified Emission Types	GHGs	Method for Calculating GHGs	Sampling, Analysis and Measurement Requirements	Method for Estimating Missing Analytical Data
1	Stationary fuel combustion emissions	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A and 2.B	GHGRP 2021 2.D.1 to 2.D.4	GHGRP 2021 2.E
2	Industrial product use emissions	HFC	WCI Method WCI.43(d)	WCI Method WCI.44	WCI Method WCI.45
3	Wastewater emissions	CH ₄	GHGRP 2021 11.G	GHGRP 2021 11.N.7	GHGRP 2021 11.O
4	On-site transportation	CO ₂ , CH ₄ and N ₂ O	GHGRP 2021 2.A.1.a, 2.A.2.e and 2.B	GHGRP 2021 2.D.6	GHGRP 2021 2.E