

REPORTING GUIDANCE FOR THE B.C. OUTPUT-BASED PRICING SYSTEM

July 2024



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INTRODUCTION

BACKGROUND

As part of Budget 2023, the Province announced a change to the way it prices greenhouse gas (GHG) emissions from industrial operations. To align with the Government of Canada's carbon price path, Budget 2023 included an announcement that, starting April 1, 2023, B.C.'s carbon price would increase to \$65/tonne of carbon dioxide equivalent (CO₂e) emissions, rising by \$15/tonne each year until it reaches \$170/tonne in 2030. The Budget 2023 announcement also included the Province's intention to transition from the CleanBC Industrial Incentive Program (CIIP) to a made-in-B.C. OBPS for large industrial emitters, which took effect on April 1, 2024.

The B.C. OBPS is supported by amendments made to the *Greenhouse Gas Industrial Reporting and Control Act* (GGIRCA) and its regulations that came into force on April 1, 2024.

Eligibility

Participation in the B.C. OBPS is mandatory for producers of regulated industrial products under the GGIRCA that emit above 10,000 tonnes CO₂e per year. All operators required to report emissions under GGIRCA are called *reporting operations*.

Industrial operators that participate in the B.C. OBPS are called *regulated operations*. Some large operations are exempt from the B.C. OBPS but are still required to report their GHG emissions to the Province and are considered reporting operations. Industrial operators that produce regulated products but do not meet the 10,000 tCO₂e threshold may opt-in to the B.C. OBPS to become regulated operations.

For more information about B.C. OBPS context, eligibility, and stringency, please see the general program guide—[Getting Started with the B.C. OBPS](#).

PURPOSE OF THIS DOCUMENT

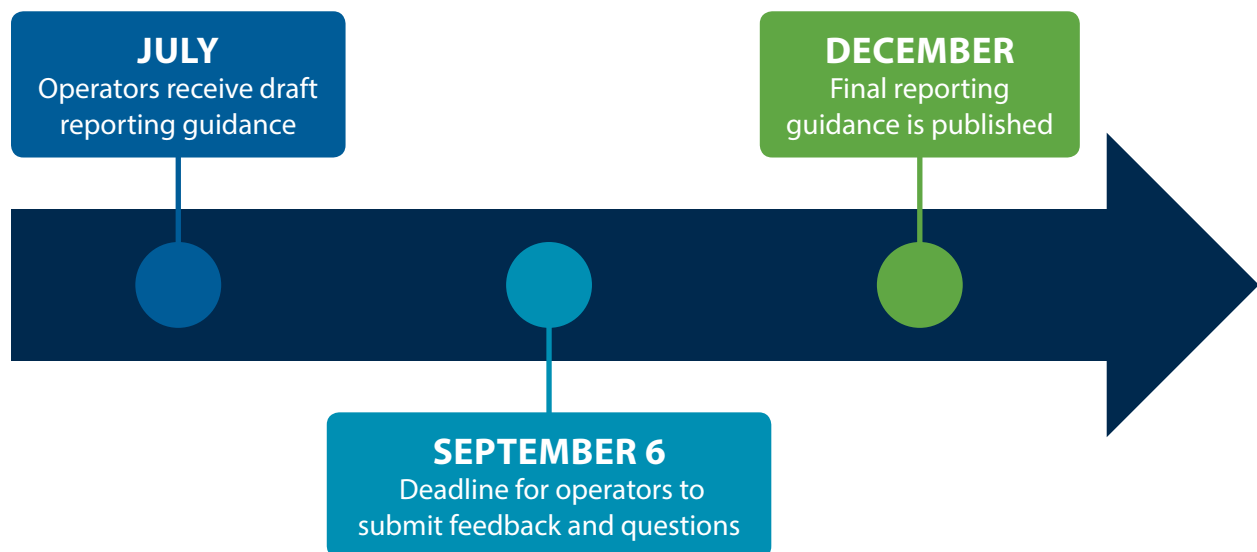
This guidance document sets out reporting requirement details for regulated operations in the B.C. OBPS. Regulated operations have new emissions reporting requirements under the *Greenhouse Gas Emission Reporting Regulation* (GGERR) as well as new compliance reporting requirements. This document is intended to provide guidance and clarity for operations on their obligations for reporting, record keeping, and sector-specific details, including how to quantify emissions and allocate them to multiple products when applicable.

Engagement Period

Given the complexity of new requirements and the fact that 2024 is a transition year for the B.C. OBPS, the Province is releasing this document for industrial operators to solicit feedback in Summer 2024. Industrial operators will have 6 weeks to review the document and submit questions and feedback to GHGRegulator@gov.bc.ca by September 6th, 2024 (see Figure 1).

Staff plan to publish updated reporting guidance in December 2024 to help operators prepare for reporting in 2025 based on the 2024 *compliance period*.

Figure 1. Timeline for reporting guidance engagement



Staff are looking for feedback on the structure, clarity, and detail of the guidance and how to improve communications to ensure a smooth transition to the B.C. OBPS. Any feedback received on policy-level decisions, such as the stringency of the program, will not be considered through this engagement process. Below are some questions for operators to consider when compiling feedback:

- Is the structure of this document user-friendly? What could be improved?
- Are any topics missing?
- Are any topics included in this document unnecessary or not helpful?
- What could use further explanation or clarification?

Contact Information

Please send all feedback and questions to the Climate Action Secretariat by emailing the GHGRegulator@gov.bc.ca inbox.

REPORTING FOR LARGE INDUSTRIAL EMITTERS IN B.C.

OVERVIEW OF ANNUAL REPORTING REQUIREMENTS

All reporting operations, including regulated operations, have new reporting requirements since legislative and regulatory amendments came into force on April 1st, 2024.

Operations report data for activities that occurred during the previous calendar year, also known as the *compliance period*. The compliance period is defined as the calendar year in which the operator of a regulated operation has a compliance obligation—the year the operation emitted GHGs into the atmosphere (e.g., 2024). The *submission period* is the year following the compliance period (e.g. 2025).

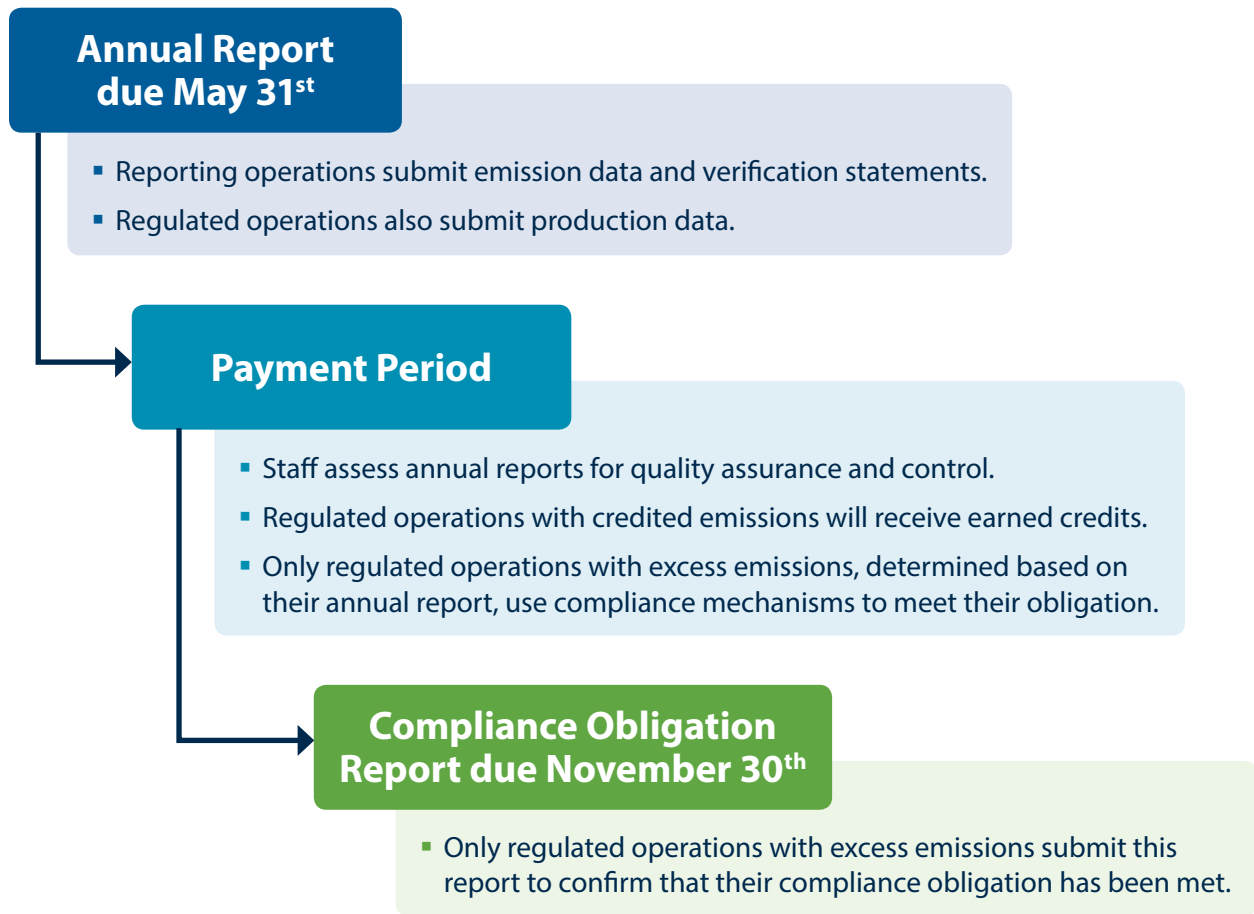
Reporting will be done in the new [B.C. Industrial Emissions Reporting System \(BCIERS\)](#). All operations will complete the Annual Report. Only regulated operations with excess emissions will submit the Compliance Obligation Report (see Figures 2 and 3).

Third-party verification of the annual report will be required for all regulated operations as well as reporting operations that emit over 25,000 tonnes of CO₂e per year.

Figure 2. Mapping names of reports from the Regulation to the BCIERS

Report Names in GGERR	Report Names in BCIERS	Due Date in Submission Period
Emission Report <hr/> Compliance report required under section 22.1	Annual Report	May 31 st
Compliance report required under section 22.2	Compliance Obligation Report	November 30 th

Figure 3. Timeline of events for submission period



ANNUAL REPORT

All reporting operations are required to submit an Annual Report although regulated operations will have additional data to submit, including but not limited to production, emissions allocation, and the methodologies used.

Reporting requirements are similar to previous years as included in the GGERR. Changes or additions to the GGERR and reporting requirements are outlined below.

Facilities Information

Emissions Reporting

The GGERR specifies a detailed list of *activities* that generate GHG emissions to be reported, along with their associated emission *source types* and *gas types*.

Each activity has prescribed emission quantification methodologies. Please refer to the sector specific information in the appendix and the [Western Climate Initiative \(WCI\) methodologies](#).

Figure 4. Sections of the Annual Report

Section of the Annual Report	Type of Operation	Types of Data
1. Operation Level	All reporting operations	Operator information
2. Facilities information		
a. Emission data	All reporting operations	<ul style="list-style-type: none"> Total emissions attributable to the operation. Fuel usage. Non-attributable emissions: exceeding 100 tonnes of CO₂ equivalent, a description of activities, sources, and types of GHGs emitted Captured emissions: for on-site use, on-site sequestration, or transfer off-site.
b. Production data	Regulated operations	<ul style="list-style-type: none"> Production data Emission allocation data Description of allocation methodologies
3. Compliance summary	Regulated Operations	Produce by BCIERS
4. Verification statement upload	<ul style="list-style-type: none"> Reporting operations that emit over 25k tCO₂e Regulated operations 	Verification statement
5. Sign-off and submit	All reporting operations	Completed by operation Representative

Fuel Usage

All reporting operations will be asked to submit data on fuel usage and must continue to retain all records used to quantify emissions, including fuel purchase records and fuel meter outputs.

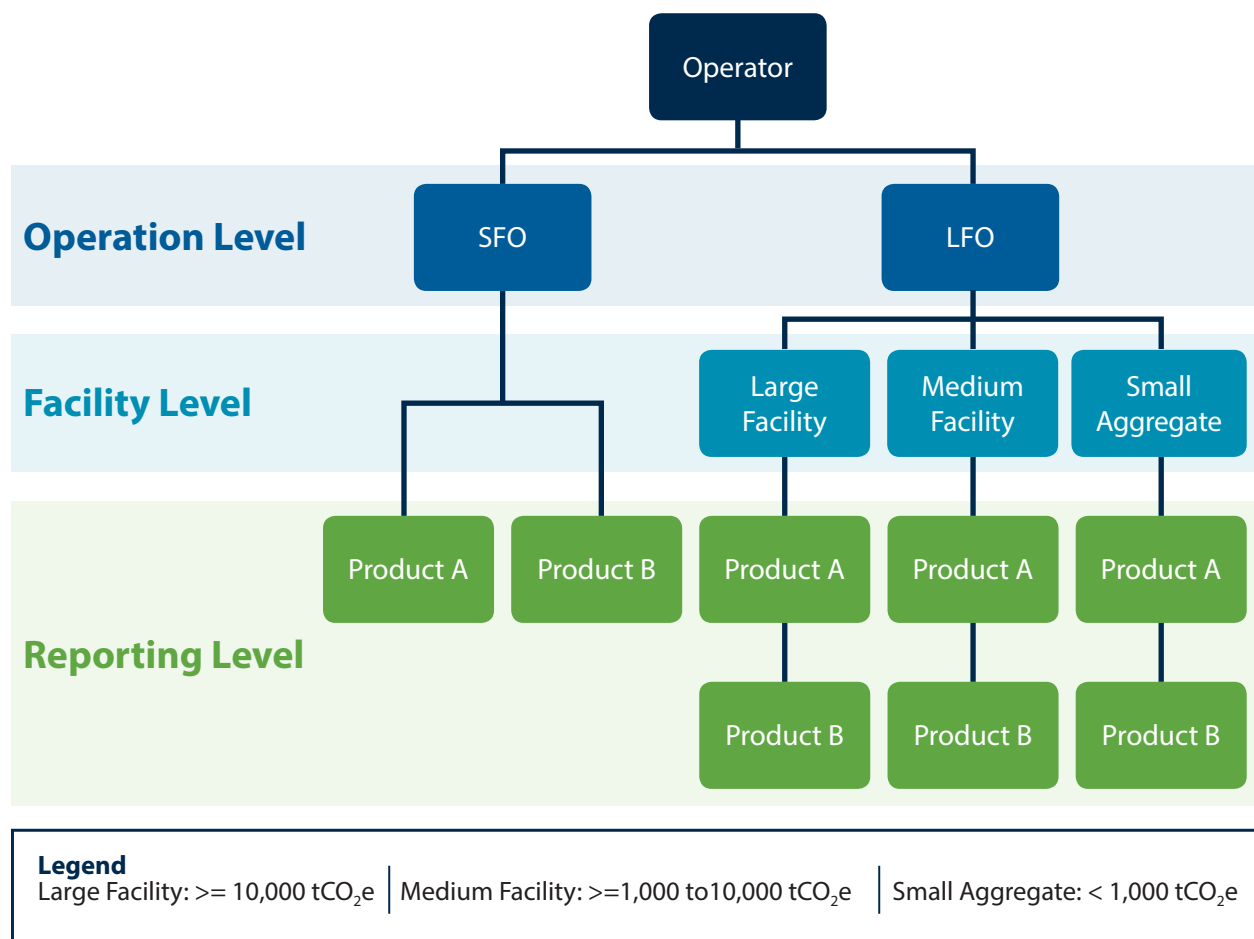
Linear facilities operations (LFOs) with emissions from pneumatic venting or flaring must include detailed fuel usage information in their emission report. Fuel usage information should include:

- a) Whether the substance vented or flared is *sweet* or *sour* or processed or unprocessed natural gas, or another substance.
- b) If it is another substance, identify the substance and
- c) The amount of the substance used or flared, measured in standard cubic meters.

Production Reporting

In the Annual Report, regulated operations will be required to report production data for each regulated product they produce during the compliance period. For operations with multiple facilities, production data will need to be disaggregated by facility (see Figure 5).

Figure 5. Types of operations and their reporting level



Emission Allocation

For operations with multiple products, operators will need to allocate emissions between each product and describe the methodology used to complete the allocations. For sector-specific guidance on emission allocation, please see Appendix B.

Operators must report the amount of regulated product(s) produced during the compliance period, in the units set out in the GGERR (see Appendix A), including the methodology used to quantify the production. If applicable, operators must report the amount of product in storage at the beginning and end of the compliance period, and the amount sold or throughput at the point of sale during the compliance period.

UPDATED REPORTING REQUIREMENTS

Extended Submission Deadline

Operators now have 90 days (increased from 60 days) to submit supplementary reports after discovering an omission, inaccuracy, or change in information.

New Reporting Thresholds

If correcting an omission, inaccuracy, or change increases total emissions during the compliance period from an amount that is less than 10,000 tonnes of CO₂e to an amount that is greater or equal to 10,000 tonnes of CO₂e (not including CO₂ from woody biomass), a supplementary report is required. The previous threshold for omissions, inaccuracies, or changes was 25,000 tonnes of CO₂e.

Reporting Corrections

The Director can now require corrected reports to be received by a specified date. Corrected reports must include corrections, updates, reasons for omissions or inaccuracies, and any other necessary information, as specified by the Director.

Record Keeping and Retention

Reporting operations, including regulated operations, must keep records for at least 7 years after submission. Regulated operations must now also retain records related to an Annual Report and Compliance Obligation report, including but not limited to:

- Emissions quantification
- Fuel usage
- Product quantification
- Emission allocation

Carbon Tax Exemption Responsibilities

The carbon tax exemption applies to fuel that is used, or combustibles that are burned, by a regulated operation to produce a regulated product or by a new entrant. Greenhouse gas emissions from using the fuel or burning the combustibles must be attributable to the regulated operation or new entrant. “Attributable” means attributable under section 3 of the *Greenhouse Gas Emission Reporting Regulation*—for example, carbon dioxide from use of reducing agents in zinc production.

Purchaser

Purchasers claim the B.C. OBPS exemption when buying fuel by giving the seller a fully completed FIN 467 *Certificate of Exemption B.C. Output-Based Pricing System* at or before the time of the sale. A purchaser who cannot support qualifying use, or attribute greenhouse gases from using the fuel to the regulated operation or new entrant, must pay carbon tax on the fuel unless another carbon tax exemption applies.

A purchaser who claims the B.C. OBPS exemption when purchasing fuel on behalf of a regulated operation or new entrant must be able to support qualifying use by the regulated operation or new entrant and attribute greenhouse gases from using the fuel to the regulated operation or new entrant.

Seller

Sellers who grant the B.C. OBPS exemption must obtain the FIN 467 exemption certificate from the purchaser at or before the time of the sale and retain the certificate to substantiate the non-collection of tax. Sellers do not have to verify information on the FIN 467 or obtain evidence that exemption applies.

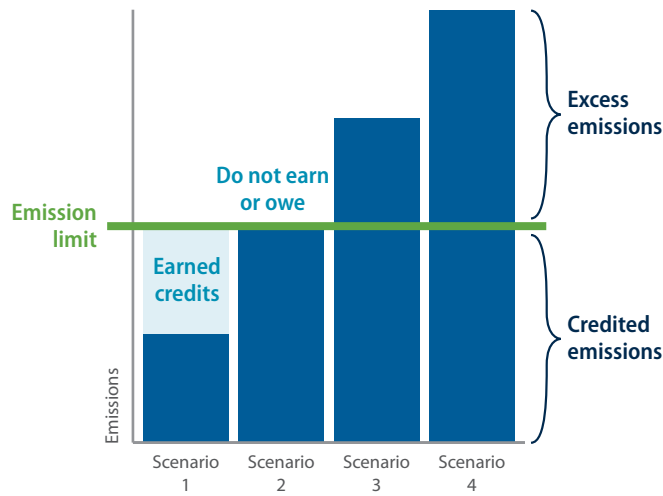
COMPLIANCE SUMMARY

Once operators have input all necessary information for the Annual Report, the BCIERS app will provide a compliance summary, including:

- The calculated emission limit
- The calculated emissions attributable for compliance
- Any calculated excess emissions
- Any calculated credited emissions
- A summary of regulatory values: reduction factor, tightening rate, production-weighted average emission intensity, etc.
- A summary of each product’s emissions attributable for compliance, quantified production, allocated emissions, and allocated industrial process emissions.

The compliance summary is only based on data that is provided by the operator and not an assessment from the Ministry. Operators are responsible for ensuring that their data and calculations are correct, including the calculated emission limit, as well as any excess or credited emissions.

Figure 6. Emission limits and compliance scenarios



If an operator is found to have excess emissions, they will be required to submit a Compliance Obligation Report on November 30th of the submission period.

SIGN-OFF AND VERIFICATION

Operators will be asked to sign-off on the accuracy and completion of data within the Annual Report and submit a verification statement from a third-party accredited verifier. More information about the verification statement template will be available in 2024.

COMPLIANCE OBLIGATION REPORT

The Compliance Obligation Report includes information needed to assess whether a regulated operation with excess emissions has met its compliance obligation and is due November 30th of the submission period.

Based on the data submitted for the Annual Report, operators will know if they have excess emissions. The compliance obligation for excess emissions can be met through:

- Compliance units up to a specified amount each year (see Table 1):
 - Earned credits either from previous years or purchased from other regulated operations
 - Offset units purchased from the [B.C. Carbon Registry](#)
- A direct payment based on the [carbon tax rate schedule](#) for the compliance period.

Table 1. B.C. OBPS credit usage limits

Year	Credit Usage Limit
2024	50%
2025	40%
2026	30%
2027	30%
2028	30%
2029	30%
2030	30%

If a regulated operation uses compliance units, they will identify eligible units and trade or purchase units on the registry. Once all trading, purchasing, and direct payments are complete, regulated operations will submit the Compliance Obligation Report by November 30th of the submission period including:

- Serial numbers of compliance units
- Any record of monetary payment to ENV

The combined total of compliance units (earned credits and offset units) must not exceed the credit usage limit for the compliance period, measured as a percentage of excess emissions.

Compliance units

Operators may use, transfer, or sell earned credits at their discretion, or hold for future use. Operators with multiple operations will be able to use earned credits from one operation to meet the compliance obligation of another, up to the annual credit usage limit (see Table 1). A regulated operation can only use an offset unit if the vintage year is less than 3 years before the beginning of the compliance period. Regulated operations who wish to purchase offset units should open a holding account and a compliance account in the B.C. Carbon Registry. Offsets may be purchased by contacting offset project proponents through contact information available on the B.C. Carbon Registry.

Table 2: Offset vintage eligibility in B.C. OBPS

Oldest Eligible Offset Vintage	Compliance Period (Jan 1-Dec 31)	Compliance Obligation Deadline
2022	2025	30-Nov-26
2023	2026	30-Nov-27
2024	2027	30-Nov-28
2025	2028	30-Nov-29
2026	2029	30-Nov-30

NEW ENTRANTS

Reporting operations that produce, or are designed and constructed to produce, regulated products may apply to the Director of GGIRCA for a new entrant designation. If accepted, new entrants will have the same reporting and verification obligations as other regulated operations under the B.C. OBPS but will not owe for any excess emissions, nor earn any credits, during their new entrant period.

In addition to the reporting requirements outlined previously, a new entrant must include the following information in their Annual Report:

- Date of first of shipment, if applicable
- The operation's authorization date, if applicable

If an operator is designated as a new entrant after the due date of the Annual Report (May 31st) for the compliance period that their new entrant period starts, they must submit an additional report with the new entrant-specific information from an Annual Report within 30 days after receiving notice of designation as a new entrant.

GLOSSARY

Activities: Actions taken by industrial operators that result in attributable emissions.

Annual Report: The annual report that all reporting operations submit by May 31st of the submission period to report emissions data, among other types of data as required.

Compliance period: Refers to the calendar year which the operator of a regulated operation has been emitting greenhouse gases and has a compliance obligation, also sometimes referred to as the reporting period.

Compliance Obligation Report: includes information needed to assess whether a regulated operation with excess emissions has met its compliance obligation and is due November 30th of the submission period.

Director of GGIRCA: Statutory Decision Maker for the *Greenhouse Gas Industrial Reporting and Control Act*.

Emission category: a grouping of source types, as listed in column 2 of the table in Schedule B of the GGERR.

Gas type: a specific greenhouse gas, such as carbon dioxide, methane, and nitrous oxide, among others.

Linear-facilities operation (LFO): is a reporting operation where oil and gas activities are carried out at one or more (typically smaller) facilities that are controlled and directed by the same operator. For example, multiple well sites or a pipeline.

Opted-in operation: An industrial operation that produces a regulated product and emits less than 10,000 tonnes of CO₂e annually that voluntarily participates in the B.C. OBPS.

Regulated operation: Regulated operations are reporting operations that produce, or are designed and constructed to produce, a regulated product and must participate in the B.C. OBPS. Regulated operations have a compliance obligation to emit less than their annual emissions limit, or else pay for any excess emissions above their annual emission limit.

Reporting operation: Industrial operations that emit 10,000 or more tonnes of CO₂e in attributable emissions under section 3 of GGERR in a calendar year and must report their emissions to ENV.

Reporting period: same as compliance period (see above).

Single-facility operation (SFO): is a reporting operation where specified industrial activities are carried out at a single facility by an operator. For example, a mine or a pulp mill.

Submission period: the year following the compliance period that reporting operations submit data through an Annual Report, and if necessary, a Compliance Obligation report.

Source type: a source of greenhouse gas emissions, as identified in column 3 of table 1 and 2 of Schedule A of the GGERR.

Sour gas: is natural gas that contains measurable amounts of hydrogen sulphide.

Sweet gas: is natural gas that is free of hydrogen sulphide.

Payment period: the period of time between the due dates of the Annual Report (May 31st) and the Compliance Obligation Report (November 30th) of every submission period.

APPENDIX A. List of regulated products, NAICS, and units for the B.C. OBPS by sector

Sector	NAICS	Regulated product(s)	Unit
Aluminum	331313: Primary Production of Alumina and Aluminum	Smelting: Aluminum	Tonne saleable aluminum
		Sold Electricity	GWh
Bituminous coal	212114: Bituminous Coal Mining	Mining: Coal	Tonne saleable coal
Cement	327310: Cement Manufacturing	Cement equivalent	Tonne cement equivalent
Chemical manufacturing	325189: All Other Basic Inorganic Chemical Manufacturing	Chemicals: Pure hydrogen peroxide	Tonne per hydrogen peroxide
Gypsum manufacturing	327420: Gypsum Product Manufacturing	Gypsum wallboard	Thousand square feet
Lead-zinc	331410: Non-Ferrous Metal (except Aluminum) Production and Processing	Smelting: Lead-Zinc	Tonne lead-zinc
		Sold Electricity	GWh
Lime manufacturing	327410: Lime Manufacturing	Lime at 94.5% CaO and Lime Kiln Dust	Tonne lime@94.5% CaO + LKD
		Limestone for sale	Tonne limestone
Metal Ore Mining	212233: Copper-zinc Ore Mining 212220: Gold and Silver Ore Mining	Mining – Copper equivalent, open pit	Tonne copper equivalent
		Mining – Copper equivalent, underground	
		Mining- Gold equivalent	Tonne gold equivalent
Oil and Gas*	211110: Oil and Gas Extraction (except oil sands) 486210: Pipeline Transportation of Natural Gas Sub-sectors: Natural Gas Processing Plants Natural Gas Compressor Stations	Processing sour gas – oil-equivalent	Cubic meter oil-equivalent
		Processing sweet gas – oil-equivalent	
		Compression, centrifugal – consumed energy	MWh consumed energy
		Compression, positive displacement – consumed energy	
Petroleum refineries	324110: Petroleum Refiners	BC-specific Refinery Complexity Throughput	BCRCT
Pulp and Paper	322111: Mechanical Pulp Mills 322112: Chemical Pulp Mills 322121: Paper (except newsprint) Mills 322122: Newsprint Mills 322130: Paperboard Mills	Pulp and Paper: Chemical Pulp	Tonne saleable dry chemical pulp
		Pulp and Paper: Non-chemical pulp	Tonne saleable dry non-chemical pulp
		Pulp and Paper: Paper (except newsprint)	Tonne saleable paper
		Pulp and Paper: Tissue Paper	Tonne saleable tissue paper
		Sold electricity	GWh
		Sold heat	GJ

Sector	NAICS	Regulated product(s)	Unit
Rendering	311614: Rendering and Meat Processing Sub sector: Food Manufacturing, Animal Slaughtering and Processing	Rendering and meat processing: Protein and Fat (P+F)	Tonne protein and fat
Steel Wire	331222: Steel Wire Production	Steel wire: HDG-process (hot dip galvanization)	Tonne hot dip galvanization wire
		Steel wire: Non-HDG	Tonne Non-HDG wire
Sugar Refining	311310: Sugar Manufacturing	Sugar: Solid	Tonne solid sugar
		Sugar Liquid	Tonne solid sugar content
Wood Products	32111: Sawmills (except Shingle and Shake Mills)	Wood products: Lumber	Cubic metre saleable lumber
	3211112: Shingle and Shake Mills	Wood products: Medium density fibreboard	Cubic metre saleable MDF
	321212: Softwood veneer and plywood mills	Wood products: Plywood	Cubic metre saleable plywood
	321216: Particle board and fibreboard mills	Wood products: Veneer	Cubic metre saleable veneer
	321999: All other miscellaneous wood product manufacturing	Wood products: Wood chips	Cubic metre saleable wood chips
		Wood products: Wood pellets	Tonne saleable wood pellets
		Sold electricity	GWh
		Sold heat	GJ

*Liquified Natural Gas (LNG) information is not available at this time.

APPENDIX B. Methodologies

This appendix provides the methodologies for each sector and their products listed in Appendix A and includes:

1. Methodologies for quantifying emissions
2. Emission scope differences
3. Methodologies for quantifying production and allocating emissions to regulated products

For sectors that need to do either emission or production allocation, operators can also use the B.C. OBPS Allocation Calculator to help with estimation. Please note that some of the information included in this guide, and specifically this appendix, may change throughout 2024 as sector working groups continue to collaborate with the Ministry on issues of product definition and emission allocation.

Overview of Required Information

In addition to the emissions and related data typically required in an emission report, starting Jan 1, 2024, each regulated operation must have systems in place to monitor, collect, and measure, as applicable, additional data required to quantify and meet its compliance obligation. These include:

- For each regulated product:
 - Amount produced (or sold, for sold heat or sold electricity) from Jan 1 to Dec 31;
 - Amount in storage on Jan 1, if applicable;
 - Amount in storage on Dec 31, if applicable;
 - Amount sold or throughput at point of sale from Jan 1 to Dec 31, if applicable;
 - Only for 2024, the amount produced (or sold, for energy products) from Apr 1 to Dec 31.
- For self-generated energy (hydroelectricity, other electricity, heat):
 - Amount generated (GWh for electricity and GJ for heat);
 - Amount sold (GWh for electricity and GJ for heat).
- All data which are inputs, as specified below, required to calculate regulated operation emissions and production, including methodology used.
- All data which are inputs, as specified below, required to allocate emissions to multiple products, including methodology used.
- For new entrants, additional information as specified in the GGERR s. 23(2).

1. ALUMINUM

Methodologies for Quantifying Emissions and Related Information

Quantification and reporting of greenhouse gas emissions and related information must comply with the *Greenhouse Gas Industrial Reporting and Control Act* (GGIRCA) and the Greenhouse Gas Emission Reporting Regulation (GGERR), including with the referenced in GGERR Western Climate Initiative (WCI) quantification methodologies.

The [WCI methodologies](#) typically applicable to aluminum smelting operations are:

- WCI.020 General Stationary Combustion
- WCI.040 Electricity Generation
- WCI.070 Primary Aluminum Production
- WCI.280 Mobile Equipment at Facilities

Emission scope differences: totals for reporting versus compliance purposes



As shown in the diagram above, the regulated operation's emissions total for compliance purposes (GGERR s.23(1)(e)) differs from its attributable emissions total for reporting purposes (GGERR s.14(3)(a)) as follows¹:

- Emissions (CO₂, CH₄, and N₂O) from combustion of fuels listed in Schedules C and C.1 of GGERR are excluded,
- Fugitive emissions are excluded.

Or, equivalently,

$$E_{Attr.}^{Compliance} = E_{Attr.}^{E Report} - E_{listed\ fuels}^{E Report} - E_{Fugitive}^{E Report}$$

¹ If a source type happens to belong to more than one of the following categories, it is excluded only once.

Methodologies for Quantifying Production and Allocating Emissions to Regulated Products

Production Quantification Methodology

Since the regulated product directly corresponds to the industry product, quantifying production simply means recording the amount of:

- Produced saleable aluminum, in tonnes, where ‘saleable’ is defined in Schedule A.1 of GGERR to mean “produced for the purposes of sale and, for certainty, is not a byproduct or intermediate product produced during the production of a product for the purposes of sale”

during the compliance period, and, only for 2024, during the period Apr 1 – Dec 31.

Emissions Allocation Methodology

There is only one regulated product. Consequently, the compliance emissions total is allocated to it:

$$E_{Aluminum}^{Compliance} = E_{Attr.}^{Compliance}$$

2. BITUMINOUS COAL

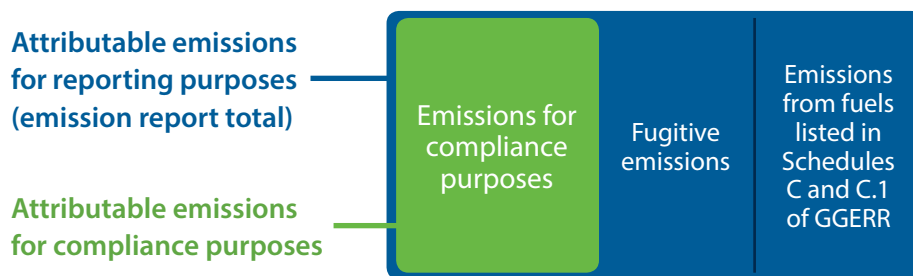
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The [WCI methodologies](#) typically applicable to bituminous coal operations are:

- WCI.020 General Stationary Combustion
- WCI.040 Electricity Generation
- WCI.280 Mobile Equipment at Facilities

Emission scope differences: totals for reporting versus compliance purposes



As shown in the diagram above, the regulated operation's emissions total for compliance purposes differs from its attributable emissions total for reporting purposes as follows²:

- Emissions (CO₂, CH₄, and N₂O) from combustion of fuels listed in Schedules C and C.1 of GGERR are excluded,
- Fugitive emissions are excluded.

Or, equivalently,

$$E_{Attr.}^{Compliance} = E_{Attr.}^{E Report} - E_{listed\ fuels}^{E Report} - E_{Fugitive}^{E Report}$$

² If a source type happens to belong to more than one of the following categories, it is excluded only once.

Methodologies for Quantifying Production and Allocating Emissions to Regulated Products

Production Quantification Methodology

Since the regulated product directly corresponds to the industry product, quantifying production simply means recording the amount of:

- Produced saleable coal, in tonnes, where ‘saleable’ is defined in Schedule A.1 of GGERR to mean “produced for the purposes of sale and, for certainty, is not a byproduct or intermediate product produced during the production of a product for the purposes of sale

during the compliance period, and, only for 2024, during the period Apr 1 – Dec 31.

Emissions Allocation Methodology

There is only one regulated product. Consequently, the compliance emissions total is allocated to it:

$$E_{Coal}^{Compliance} = E_{Attr.}^{Compliance}$$

3. CEMENT MANUFACTURING

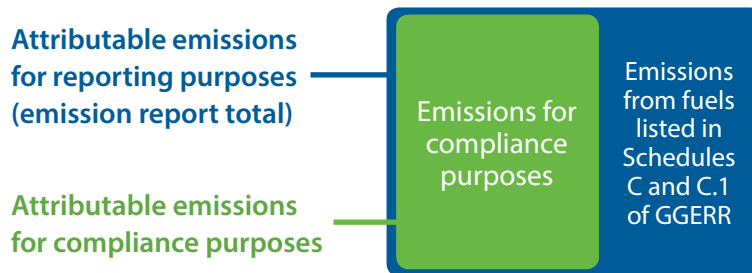
Methodologies for Quantifying Emissions and Related Information

Quantification and reporting of greenhouse gas emissions and related information must comply with the *Greenhouse Gas Industrial Reporting and Control Act* (GGIRCA) and the Greenhouse Gas Emission Reporting Regulation (GGERR), including with the referenced in GGERR Western Climate Initiative (WCI) quantification methodologies.

The [WCI methodologies](#) typically applicable to cement operations are:

- WCI.020 General Stationary Combustion
- WCI.090 Cement Manufacturing
- WCI.100 Coal Storage
- WCI.280 Mobile Equipment at Facilities

Emission scope differences: totals for reporting versus compliance purposes



As shown in the diagram above, the regulated operation's emissions total for compliance purposes differs from its attributable emissions total for reporting purposes as follows:

- Emissions (CO_2 , CH_4 , and N_2O) from combustion of fuels listed in Schedules C and C.1 of GGERR are excluded,

Or, equivalently,

$$E_{Attr.}^{Compliance} = E_{Attr.}^{E Report} - E_{listed fuels}^{E Report}$$

Methodologies for Quantifying Production and Allocating Emissions to Regulated Products

Production Quantification Methodology

Regulated operations must report production in tonnes of cement equivalent. To calculate production as cement equivalent, operations will need to have information on:

- Cement production CE^P (tonnes) – annual and, for 2024 only, Apr 1 – Dec 31
- Clinker production CL^P (tonnes) – annual and, for 2024 only, Apr 1 – Dec 31
- Clinker sales CL^S (tonnes) – annual and, for 2024 only, Apr 1 – Dec 31
- Clinker inventories (tonnes), on January 1st, April 1st (for 2024 only), and December 31st of the reporting year

Cement production (CE^P) means the amount of cement produced during the reporting year, regardless of whether it is sold during the year or added to inventory. It does not include cement sold from a previous year's production.

Clinker production (CL^P) means all clinker produced during the reporting year, regardless of whether it is converted into cement, sold as clinker, or added to inventory. It does not include clinker sold from inventory from a previous year's production.

Clinker sales (CL^S) means clinker sold which was produced during the reporting year as well as clinker sold from inventory.

The annual cement-equivalent production is then determined as follows:

If

CE^P	(input) is cement produced (annual amount)
CL^P	(input) is clinker produced (annual amount)
CL^S	(input) is clinker sold (annual amount)
$CL^I_{Jan 1}$	(input) is clinker amount in inventory on January 1
$CL^I_{Dec 31}$	(input) is clinker amount in inventory on December 31
CUC	is clinker used to produce cement (annual amount)
CE_{eq}	is cement equivalent (annual amount)

Then

$$CE_{eq} = CE^P \times \left(\frac{CL^P}{CUC} \right)$$

Where

$$CUC = CL^P - CL^S - (CL^I_{Dec 31} - CL^I_{Jan 1})$$

In addition, only for 2024,

If

$CE_{Apr-Dec}^P$ (input) is cement produced (Apr 1 – Dec 31 amount)

$CL_{Apr-Dec}^P$ (input) is clinker produced (Apr 1 – Dec 31 amount)

$CL_{Apr-Dec}^S$ (input) is clinker sold (Apr 1 – Dec 31 amount)

$CL_{Apr 1}^I$ (input) is clinker amount in inventory on April 1

$CL_{Dec 31}^I$ (input) is clinker amount in inventory on December 31

$CUC_{Apr-Dec}$ is clinker used to produce cement (Apr 1 – Dec 31 amount)

$CE_{Apr-Dec}$ is cement equivalent (Apr 1 – Dec 31 amount)

Then

$$CE_{Apr-Dec} = CE_{Apr-Dec}^P \times \left(\frac{CE_{Apr-Dec}^P}{CUC_{Apr-Dec}} \right)$$

Where

$$CUC_{Apr-Dec} = CL_{Apr-Dec}^P - CL_{Apr-Dec}^S - (CL_{Dec 31}^I - CL_{Apr 1}^I)$$

Emissions Allocation Methodology

There is only one regulated product. Consequently, the compliance emissions total is allocated to it:

$$E_{Cement-eq}^{Compliance} = E_{Attr.}^{Compliance}$$

4. CHEMICALS MANUFACTURING

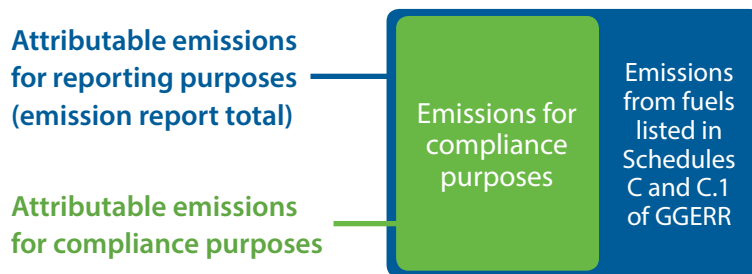
Methodologies for Quantifying Emissions and Related Information

Quantification and reporting of greenhouse gas emissions and related information must comply with the *Greenhouse Gas Industrial Reporting and Control Act* (GGIRCA) and the Greenhouse Gas Emission Reporting Regulation (GGERR), including with the referenced in GGERR Western Climate Initiative (WCI) quantification methodologies.

The [WCI methodologies](#) typically applicable to chemicals operations are:

- WCI.020 General Stationary Combustion
- WCI.130 Hydrogen Production
- WCI.280 Mobile Equipment at Facilities

Emission scope differences: totals for reporting versus compliance purposes



As shown in the diagram above, the regulated operation's emissions total for compliance purposes differs from its attributable emissions total for reporting purposes as follows:

- Emissions (CO_2 , CH_4 , and N_2O) from combustion of fuels listed in Schedules C and C.1 of GGERR are excluded,

Or, equivalently,

$$E_{Attr.}^{Compliance} = E_{Attr.}^{E Report} - E_{listed fuels}^{E Report}$$

Methodologies for Quantifying Production and Allocating Emissions to Regulated Products

Production Quantification Methodology

Regulated operations must report production in tonnes of pure hydrogen peroxide.

Hydrogen Peroxide production includes all hydrogen peroxide (H_2O_2) produced during the reporting year, regardless of whether it is sold during the year or added to inventory. It does not include hydrogen peroxide sold from a previous year's production.

To calculate production as pure (100%) hydrogen peroxide, operations will need to have information, for each batch i of n_B batches produced during the compliance period, and, only for 2024, during the period Apr 1 – Dec 31, on:

- H_2O_2 production H_i^P (tonnes) for batch i
- H_2O_2 concentration HC_i (%) for batch i

The total production of 100% pure hydrogen peroxide in tonnes pure H_2O_2 for the compliance period is then determined as follows:

$$HP_{Pure}^{Total} = \sum_{i=1}^{n_B} \{H_i^P \times HC_i\}$$

In addition, for 2024, the total production of 100% pure hydrogen peroxide in tonnes pure H_2O_2 during Apr 1 – Dec 31 $HP_{Pure}^{Apr-Dec}$ is determined using the formula above but only for the batches produced during Apr 1 – Dec 31.

Emissions Allocation Methodology

There is only one regulated product. Consequently, the compliance emissions total is allocated to it:

$$E_{Pure\ H_2O_2}^{Compliance} = E_{Attr.}^{Compliance}$$

5. GYPSUM MANUFACTURING

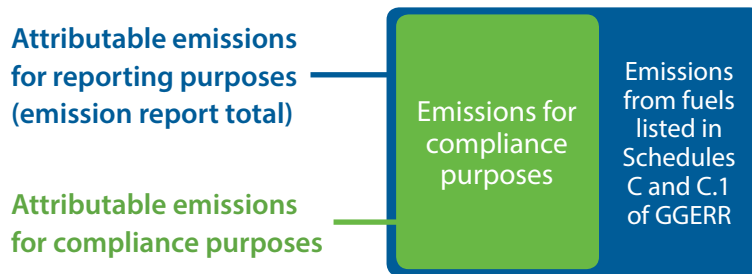
Methodologies for Quantifying Emissions and Related Information

Quantification and reporting of greenhouse gas emissions and related information must comply with the *Greenhouse Gas Industrial Reporting and Control Act* (GGIRCA) and the *Greenhouse Gas Emission Reporting Regulation* (GGERR), including with the referenced in GGERR Western Climate Initiative (WCI) quantification methodologies.

The [WCI methodologies](#) typically applicable to gypsum operations are:

- WCI.020 General Stationary Combustion
- WCI.280 Mobile Equipment at Facilities

Emission scope differences: totals for reporting versus compliance purposes



As shown in the diagram above, the regulated operation's emissions total for compliance purposes differs from its attributable emissions total for reporting purposes as follows:

- Emissions (CO₂, CH₄, and N₂O) from combustion of fuels listed in Schedules C and C.1 of GGERR are excluded,

Or, equivalently,

$$E_{Attr.}^{Compliance} = E_{Attr.}^{E Report} - E_{listed fuels}^{E Report}$$

Methodologies for Quantifying Production and Allocating Emissions to Regulated Products

Production Quantification Methodology

Since the regulated product directly corresponds to the industry product, quantifying production simply means recording the amount of produced gypsum wallboard (thousands square feet during the compliance period, and, only for 2024, during the period Apr 1 – Dec 31).

Emissions Allocation Methodology

There is only one regulated product. Consequently, the compliance emissions total is allocated to it:

$$E_{Gypsum\ wallboard}^{Compliance} = E_{Attr.}^{Compliance}$$

6. LEAD-ZINC SMELTING

Methodologies for Quantifying Emissions and Related Information

Quantification and reporting of greenhouse gas emissions and related information must comply with the *Greenhouse Gas Industrial Reporting and Control Act* (GGIRCA) and the Greenhouse Gas Emission Reporting Regulation (GGERR), including with the referenced in GGERR Western Climate Initiative (WCI) quantification methodologies.

The [WCI methodologies](#) typically applicable to lead-zinc smelting operations are:

- WCI.020 General Stationary Combustion
- WCI.040 Electricity Generation
- WCI.100 Coal Storage
- WCI.160 Lead Production
- WCI.240 Zinc Production
- WCI.280 Mobile Equipment at Facilities

Emission scope differences: totals for reporting versus compliance purposes



As shown in the diagram above, the regulated operation's emissions total for compliance purposes differs from its attributable emissions total for reporting purposes as follows³:

- Emissions (CO₂, CH₄, and N₂O) from combustion of biomass and fuels listed in Schedules C and C.1 of GGERR are excluded,
- Fugitive emissions are excluded.

Or, equivalently,

$$E_{Attr.}^{Compliance} = E_{Attr.}^{E Report} - E_{listed\ fuels}^{E Report} - E_{Fugitive}^{E Report}$$

³ If a source type happens to belong to more than one of the following categories, it is excluded only once.

Methodologies for Quantifying Production and Allocating Emissions to Regulated Products

Production Quantification Methodology

Since the regulated product directly corresponds to the industry product, quantifying production simply means recording the amount of:

- Produced lead-zinc, in tonnes

during the compliance period, and, only for 2024, during the period Apr 1 – Dec 31.

Emissions Allocation Methodology

There is only one regulated product. Consequently, the compliance emissions total is allocated to it:

$$E_{Lead-zinc}^{Compliance} = E_{Attr.}^{Compliance}$$

7. LIME MANUFACTURING

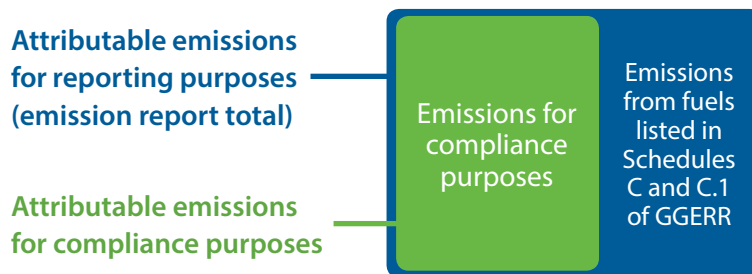
Methodologies for Quantifying Emissions and Related Information

Quantification and reporting of greenhouse gas emissions and related information must comply with the *Greenhouse Gas Industrial Reporting and Control Act* (GGIRCA) and the Greenhouse Gas Emission Reporting Regulation (GGERR), including with the referenced in GGERR Western Climate Initiative (WCI) quantification methodologies.

The [WCI methodologies](#) typically applicable to lime operations are:

- WCI.020 General Stationary Combustion
- WCI.170 Lime Manufacturing
- WCI.280 Mobile Equipment at Facilities

Emission scope differences: totals for reporting versus compliance purposes



As shown in the diagram above, the regulated operation's emissions total for compliance purposes differs from its attributable emissions total for reporting purposes as follows:

- Emissions (CO_2 , CH_4 , and N_2O) from combustion of fuels listed in Schedules C and C.1 of GGERR are excluded,

Or, equivalently,

$$E_{Attr.}^{Compliance} = E_{Attr.}^{E Report} - E_{listed fuels}^{E Report}$$

Methodologies for Quantifying Production and Allocating Emissions to Regulated Products

Production Quantification Methodology

Regulated operations must report production, in tonnes, of lime at 94.5% CaO plus LKD (Lime Kiln Dust).

To calculate production of {94.5% CaO lime + LKD}, operations will need to have information, for each month m on:

- Lime production P_m^{Lime} (tonnes) for month
- Lime CaO content CaO_m (% fraction) for month
- LKD production P_m^{LKD} (tonnes) for month

The total production of {lime at 94.5% CaO + LKD} for the compliance period is then determined as follows:

If

P_m^{Lime} (input) is the monthly amount of lime, in tonnes;

CaO_m (input) is the associated monthly average fraction (%) of CaO in that lime;

P_m^{LKD} (input) is the monthly amount of LKD, in tonnes;

0.945 is the reference fraction of CaO (%) for lime equivalency;

Then

$$P_{94.5\%}^{Lime+LKD} = \frac{1}{0.945} * \sum_{m=1}^{12} (P_m^{Lime} * CaO_m) + \sum_{m=1}^{12} (P_m^{LKD})$$

Also, for 2024, the total production of {lime at 94.5% CaO + LKD} during Apr 1 – Dec 31 is determined using the formula above but only for the months of April to December.

The second regulated product, limestone for sale, directly corresponds to the industry product, therefore quantifying its production simply means recording the amount of non-calcinated limestone produced for sale, out of the total limestone production, during the compliance period, and, only for 2024, during the period Apr 1 – Dec 31.

Emissions Allocation Methodology

Emissions are allocated to the two regulated products as follows:

If

$E^{dryerGSC}$ (input) are the facility's general stationary combustion emissions associated with the drying limestone for sale only;

E^{MC} (input) are the facility's mobile combustion emissions;

$P^{LS_{total}}$ (input) is the total limestone production;

$P^{LS_{for\ sale}}$ (input) is the limestone for sale production, out of the total;

Then

$$E_{LS_{for\ sale}}^{MC} = \left(\frac{P^{LS_{for\ sale}}}{P^{LS_{total}}} \right) * E^{MC}$$

And

$$E_{Limestone_{for\ sale}}^{Compliance} = E^{dryerGSC} + E_{LS_{for\ sale}}^{MC}$$

$$E_{94.5\%}^{Lime+LKD} = E_{Attr.}^{Compliance} - E_{Limestone_{for\ sale}}^{Compliance}$$

Allocation of emissions is to be reported by GSC and MC emission categories.

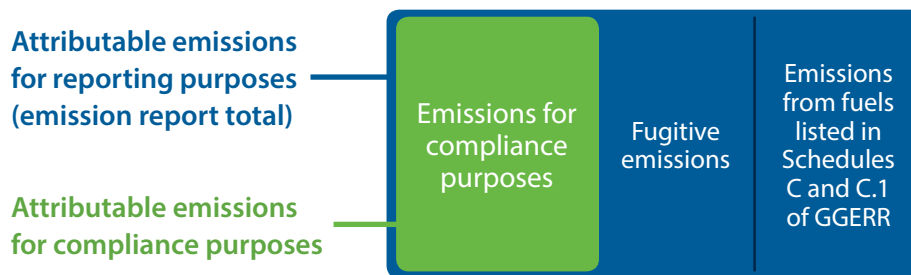
8. METAL ORE MINING SECTOR

Methodologies for Quantifying Emissions and Related Information

Quantification and reporting of greenhouse gas emissions and related information must comply with the *Greenhouse Gas Industrial Reporting and Control Act* (GGIRCA) and the Greenhouse Gas Emission Reporting Regulation (GGERR), including with the referenced in GGERR Western Climate Initiative (WCI) metal ore mining smelting operations are:

- WCI.020 General Stationary Combustion
- WCI.040 Electricity Generation
- WCI.200 (203 (f)) Petroleum Storage Tanks
- WCI.200 (203 (g)) Industrial Wastewater Processing
- WCI.280 Mobile Equipment at Facilities

Emission scope differences: totals for reporting versus compliance purposes



As shown in the diagram above, the regulated operation's emissions total for compliance purposes differs from its attributable emissions total for reporting purposes as follows⁴:

- Emissions (CO₂, CH₄, and N₂O) from combustion of fuels listed in Schedules C and C.1 of GGERR are excluded,
- Fugitive emissions are excluded.

Or, equivalently,

$$E_{Attr.}^{Compliance} = E_{Attr.}^{E Report} - E_{listed\ fuels}^{E Report} - E_{Fugitive}^{E Report}$$

⁴ If a source type happens to belong to more than one of the following categories, it is excluded only once.

Methodologies for Quantifying Production and Allocating Emissions to Regulated Products

Production Quantification Methodology

Regulated operations must report primary mineral production, in tonnes of the applicable mineral equivalent, during the compliance period, and, only for 2024, during the period Apr 1 – Dec 31.

An operation's primary mineral is the metal, ore of a metal, mineral, or ore of a mineral that yields the highest revenue on the basis of average market price. If the operation had a previously determined primary metal equivalent through participation in the CIIP, the operation's primary mineral in 2024 is the primary metal determined in the CIIP. The primary mineral determined for the 2024 compliance period remains the same for the 2024, 2025, and 2026 compliance periods.

Minerals currently mined in B.C. include, but may not be limited to, copper, gold, silver, molybdenum, lead, and zinc. The prices for each mineral are the 3-year average of the daily settlement prices per unit of mineral, over the 3-year period specified by the Director within the preceding five years, as reported by the London Metals Exchange (LME), or if there is no price on the LME, a comparable index. The LME Official Settlement Price is the last cash offer price.

The LME reports copper, lead, zinc, and molybdenum metal prices in United States Dollars per pound (USD/lb), Gold and silver are reported in United States Dollars per troy ounce (USD/ozt). Since the prices are only used as a scaling factor, the USD value must not be converted to Canadian Dollar (CAD) value.

When determining the operation's primary mineral, revenue is determined using the amount of each metal, ore of a metal, mineral, or ore of a mineral that was mined, beneficiated, or otherwise prepared by the regulated operation during the 3-year period specified by the Director within the five years preceding the reporting year, and the associated average price on the LME, or a comparable index if not on the LME, over the same period.

Total (annual) mine production in primary mineral equivalent is calculated by dividing the total revenue from all minerals by the average price of the primary mineral over the 3-year period specified by the Director in the preceding 5 years:

$$P_{Mineral_{eq}}^{(lbs\ or\ ozt)} = \frac{Total_{revenue}}{Price_{Primary\ Mineral}}$$

Where:

- $P_{Mineral_{eq}}^{(lbs\ or\ ozt)}$ is the total production, during the compliance period, in primary mineral equivalent, in the same mass units of the primary mineral as its price;
- $Total_{revenue}$ is the sum of estimated revenues for each mineral produced during the compliance period, in USD;
- $Price_{Primary\ Mineral}$ is the 3-year average price of the primary mineral, in USD (per lb if copper, molybdenum, lead, zinc, or per ozt if gold, silver).

And where total revenue is determined as follows:

$$Total_{revenue}^{Apr-Dec} = \sum_{i=1}^{n_M} \{P_{Mineral_i}^{Apr-Dec} \times Price_{Mineral_i}\}$$

Where:

$P_{Mineral_i}$ is the annual production of mineral i ;

$Price_{Mineral_i}$ is the price, as defined above, of mineral i ;

n_M is the number of minerals produced.

In addition, only for 2024:

Total Apr 1 – Dec 31 production in primary mineral-equivalent is calculated by dividing the Apr 1 – Dec 31 total revenue from all minerals by the price of the primary mineral:

$$P_{Mineral_{eq}}^{Apr-Dec} = \frac{Total_{revenue}^{Apr-Dec}}{Price_{Primary Mineral}}$$

Where:

$P_{Mineral_{eq}}^{(lbs\ or\ ozt)}$ is the Apr 1 – Dec 31 production in primary mineral equivalent, in the same mass units of the primary mineral as its price;

$Total_{revenue}^{Apr-Dec}$ is the sum of revenues for each mineral produced during Apr 1 - Dec 31, in USD,

And where total revenue for the Apr 1 – Dec 31 period is determined as follows:

$$Total_{revenue} = \sum_{i=1}^{n_M} \{P_{Mineral_i} \times Price_{Mineral_i}\}$$

Where:

$P_{Mineral_i}^{Apr-Dec}$ is the Apr 1 – Dec 31 production of mineral i ;

Emissions Allocation Methodology

There is only one regulated product (at a time). Consequently, the compliance emissions total is allocated to it:

$$E_{Mineral-eq}^{Compliance} = E_{Attr.}^{Compliance}$$

9. OIL AND GAS

Additional Required Information

For linear facilities operations and individual facilities within with emissions from pneumatic venting or flaring, fuel usage information as follows:

- Type of substance vented or flared (sweet/processed or sour/unprocessed natural gas, or other);
- The amount of each substance vented or flared (Sm^3)

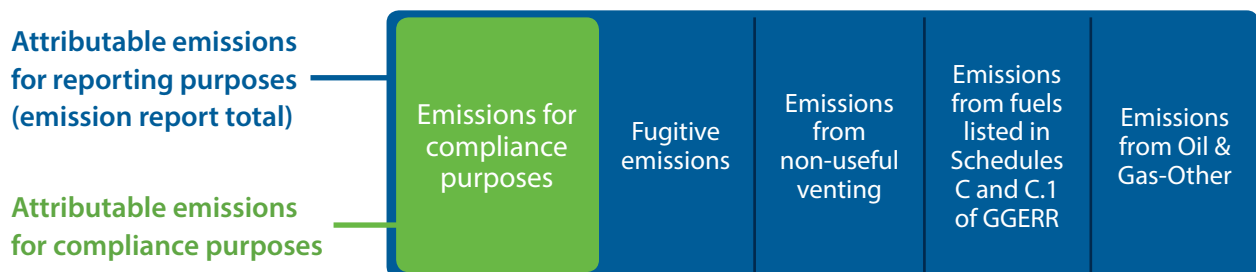
Methodologies for Quantifying Emissions and Related Information

Quantification and reporting of greenhouse gas emissions and related information must comply with the *Greenhouse Gas Industrial Reporting and Control Act* (GGIRCA) and the Greenhouse Gas Emission Reporting Regulation (GGERR), including with the referenced in GGERR Western Climate Initiative (WCI) quantification methodologies.

The [WCI methodologies](#) typically applicable to oil and gas operations are:

- WCI.020 General Stationary Combustion
- WCI.040 Electricity Generation
- WCI.350 Natural Gas Transmission and Distribution
- WCI.360 Petroleum and Natural Gas Production and Natural Gas Processing

Emission scope differences: totals for reporting versus compliance purposes



As shown in the diagram above, the regulated operation's emissions total for compliance purposes differs from its attributable emissions total for reporting purposes as follows⁵:

- Emissions (CO₂, CH₄, and N₂O) from combustion of fuels listed in Schedules C and C.1 of GGERR are excluded,
- Emissions from non-useful venting are excluded,
- Fugitive emissions are excluded,
- Oil & Gas- Other (non-compression and non-processing) emissions are excluded.

Or, equivalently,

$$E_{Attr.}^{Compliance} = E_{Attr.}^{E Report} - E_{listed\ fuels}^{E Report} - E_{non-useful\ venting}^{E Report} - E_{fugitive}^{E Report} - E_{O\&G-Other}^{E Report}$$

NOTE: Non-useful venting emissions are emissions from venting emission sources other than from the following, considered useful venting, emission sources:

- NG Distribution: NG continuous high bleed devices venting
- NG Distribution: NG continuous low bleed devices venting
- NG Distribution: NG intermittent devices venting
- NG Distribution: NG pneumatic pumps venting
- Onshore NG Transmission Compression/Pipelines: NG continuous high bleed devices venting
- Onshore NG Transmission Compression/Pipelines: NG continuous low bleed devices venting
- Onshore NG Transmission Compression/Pipelines: NG intermittent devices venting
- Onshore NG Transmission Compression/Pipelines: NG pneumatic pumps venting
- Onshore Petroleum and NG Production: NG continuous high bleed devices venting
- Onshore Petroleum and NG Production: NG continuous low bleed devices venting
- Onshore Petroleum and NG Production: NG intermittent devices venting
- Onshore Petroleum and NG Production: NG pneumatic pump venting

⁵ If a source type happens to belong to more than one of the following categories, it is excluded only once.

Methodologies for Quantifying Production and Allocating Emissions to Regulated Products

For compliance purposes, there are three distinct combinations of oil/gas facility types and activities:

Oil/Gas facility types:

- Gas processing plant
- Compressor station

Oil/Gas activities:

- Processing (sweet or sour gas)
- Compression – inlet/sales/transmission (I/S/T)

CASE 1: Gas processing plant, no I/S/T compression (could have other compression)

- Only one (1) product applicable depending on the gas processed:
 - If sour gas: Processing sour gas – oil-equivalent
 - If sweet gas: Processing sweet gas – oil-equivalent
- Calculate oil-equivalent production (m³OE) (see below for details)
- All compliance emissions are allocated to the gas processing product (sweet or sour)

CASE 2: Gas processing plant with I/S/T compression (and could have other compression)

- 1 processing and 1 or 2 compression products applicable
- Calculate oil-equivalent production (m³OE), total energy generated, and energy consumed (MWh) for centrifugal/positive displacement compression (see below for details)
- Allocate all gas processing, including ancillary processes such as process compression, to the gas processing product – sweet or sour (see below for details)
- Allocate all I/S/T compression emissions to the respective compression products – positive displacement and/or centrifugal – in proportion to the total energy consumed.
- Report emission allocation by emission category.

CASE 3: Compressor station or another facility with non-zero emissions from compression

- 1 or 2 compression products applicable:
 - Compression, centrifugal – consumed energy
 - Compression, positive displacement – consumed energy
- Calculate total energy generated, and energy consumed (MWh) for centrifugal/positive displacement compression see below for details)
- Facility emissions not associated with compression are excluded from the facility's OBPS Facility emissions
- Allocate all I/S/T compression to the respective compression products – positive displacement and/or centrifugal – in proportion to the total energy consumed.
- Report emission allocation by emission category.

NOTE: In CASE 1 and CASE 2 (gas processing plant), the processed gas type is determined as sweet or sour based on the mole percentage composition of the input gas. At minimum, the following components must be included: CH₄, C2, C3+, H₂S, CO₂ and H₂O. Based on the annual average composition, then, the following definitions apply:

- Sour gas: If hydrogen sulfide (H₂S) mole percentage is greater than or equal to two percent
- Sweet gas: If hydrogen sulfide (H₂S) mole percentage is less than two percent.

Production Quantification Methodology

Regulated operations must report total oil-equivalent production (if applicable based on the CASES outlined above), in cubic metres of oil equivalent, during the compliance period, and, only for 2024, during the period Apr 1 – Dec 31.

Cubic metres of oil equivalent (m³OE) is a unit of energy based on the energy released by combusting one cubic metre (m³) of crude oil⁶. Total oil-equivalent production is calculated as the sum of oil-equivalent production for each of six industry products – natural gas, liquid propane, liquid ethane, liquid butane, NGL-mix, and Pentanes+.

The oil-equivalent production for each of the above products is calculated by multiplying the amount of product in native units by a conversion factor.

The conversion factor for natural gas depends on its high-heating value (HHV) as follows⁷:

$$Conv_{Factor\ NG} = 0.987 * \left(\frac{HHV_{NG}}{38} \right)$$

The conversion factors for the other five products are constants and provided below.

Regulated operations must also report total energy consumed for centrifugal compression and/or positive displacement compression (if applicable based on the CASES outlined above), in MWh, during the compliance period, and, only for 2024, during the period Apr 1 – Dec 31.

The total energy consumed, for each compression type, is the sum of the energy consumed by all compressors of that type, each reported individually using one of three methods:

- Direct metering of energy consumed, in MWh; or, if not available,
- Quantification of energy consumed, in MWh, from
 - Fuel consumption and fuel HHV, assuming 35% energy generation efficiency, or
 - Rated power (MW), runtime (h), and load factor, depending on available data.

⁶ One barrel (42 US gallons) of crude oil is assumed to contain 5.8 MBTU, where 1 BTU = 1055.056 J. Converting to metric units yields 1 m³OE = 38.4894 GJ energy.

⁷ The conversion factor for natural gas of 0.987 is based on an HHV_{NG} of 38 GJ/e³m³ of marketable gas.

Emissions Allocation Methodology

CASE 1

There is only one regulated product (either sweet or sour gas processing). Consequently, the compliance emissions total is allocated to that regulated product:

$$E_{gas\ processing}^{Compliance} = E_{Attr.}^{Compliance}$$

CASE 2

There is one gas processing product (either sweet or sour gas processing as determined above). In addition, there are 1 or 2 compression-related products, depending on whether the facility employs compressors of both centrifugal and positive displacement type, or of just one of those types.

If

- $E_{consumed}^{compr\cdot total}$ are the total emissions associated with energy consumed;
- $P_{consumed}^{centr.}$ is the total energy consumed for centrifugal compression as determined from the data reported for all centrifugal compressors;
- $P_{consumed}^{pos\cdot displ.}$ is the total energy consumed for positive displacement compression as determined from the data reported for all compressors with positive displacement;

Then

$$E_{centr.}^{Compliance} = \left(\frac{P_{consumed}^{centr.}}{P_{consumed}^{compr\cdot total}} \right) * E_{consumed}^{compr\cdot total}$$

$$E_{pos\cdot displ.}^{Compliance} = \left(\frac{P_{consumed}^{pos\cdot displ.}}{P_{consumed}^{compr\cdot total}} \right) * E_{consumed}^{compr\cdot total}$$

$$E_{gas\ processing}^{Compliance} = E_{Attr.}^{Compliance} - E_{centr.}^{Compliance} - E_{pos\cdot displ.}^{Compliance}$$

CASE 3

There are 1 or 2 compression-related products, depending on whether the facility employs compressors of both centrifugal and positive displacement type, or of just one of those types. Since these are the only regulated products,

$$E_{centr.}^{Compliance} + E_{pos\text{-}displ.}^{Compliance} = E_{consumed}^{compr\text{-}total} = E_{Attr.}^{Compliance}$$

Where

$$E_{centr.}^{Compliance} = \left(\frac{P_{consumed}^{centr.}}{P_{consumed}^{compr\text{-}total}} \right) * E_{consumed}^{compr\text{-}total}$$

$$E_{pos\text{-}displ.}^{Compliance} = \left(\frac{P_{consumed}^{pos\text{-}displ.}}{P_{consumed}^{compr\text{-}total}} \right) * E_{consumed}^{compr\text{-}total}$$

10. PETROLEUM REFINERIES

Methodologies for Quantifying Emissions and Related Information

Quantification and reporting of greenhouse gas emissions and related information must comply with the *Greenhouse Gas Industrial Reporting and Control Act* (GGIRCA) and the Greenhouse Gas Emission Reporting Regulation (GGERR), including with the referenced in GGERR Western Climate Initiative (WCI) quantification methodologies.

The [WCI methodologies](#) typically applicable to petroleum refineries operations are:

- WCI.020 General Stationary Combustion
- WCI.030 Refinery Fuel Gas Combustion
- WCI.200 Petroleum Refineries
- WCI.280 Mobile Equipment at Facilities

Emission scope differences: totals for reporting versus compliance purposes



As shown in the diagram above, the regulated operation's emissions total for compliance purposes differs from its attributable emissions total for reporting purposes as follows⁸:

- Emissions (CO₂, CH₄, and N₂O) from combustion of fuels listed in Schedules C and C.1 of GGERR are excluded,
- Emissions associated with line tracing are excluded,
- Emissions from non-useful venting are excluded.

Or, equivalently,

$$E_{Attr.}^{Compliance} = E_{Attr.}^{E Report} - E_{listed\ fuels}^{E Report} - E_{Line\ tracing} - E_{non-useful\ venting}^{E Report}$$

⁸ If a source type happens to belong to more than one of the following categories, it is excluded only once.

Methodologies for Quantifying Production and Allocating Emissions to Regulated Products

Production Quantification Methodology

Refinery production must be reported in BC-Specific Refinery Complexity Throughput (BCRCT) units.

A set of BC-specific refinery complexity weighting factors (BCRCFs) were developed to recognize the processing complexity and unique operating conditions of BC refineries. Each of these factors represents the ratio of the stated emissions intensity of a given processing unit relative to that of an atmospheric crude distillation unit. A list of these emissions intensities and corresponding BCRCFs is provided in Table 1 of Schedule A.1 of GGERR, and they are incorporated in the calculator below.

The following methodology is used to determine production in BCRCT units:

If

$BCRCF_i$ is BC-specific refinery complexity weighting factor for processing $Unit_i$

P^{Unit_i} is the average daily throughput in the appropriate unit of measurement for processing $Unit_i$ (annual)

P^{BCRCT} is refinery production in BC-Specific Refinery Complexity Throughput (BCRCT) units (annual)

N is the total number of refinery processing units

Then

$$P^{BCRCT} = 365 * \sum_{i=1}^N (BCRCF_i * P^{Unit_i})$$

In addition, only for 2024:

$$P_{Apr-Dec}^{BCRCT} = 365 * \sum_{i=1}^N (BCRCF_i * P_{Apr-Dec}^{Unit_i})$$

Where

P^{Unit_i} is the average daily throughput in the appropriate unit of measurement for processing $Unit_i$ for the Apr 1 – Dec 31 period

Emissions Allocation Methodology

There is only one regulated product. Consequently, the compliance emissions total is allocated to it:

$$E_{BCRCT}^{Compliance} = E_{Attr.}^{Compliance}$$

11. PULP AND PAPER

Methodologies for Quantifying Emissions and Related Information

Quantification and reporting of greenhouse gas emissions and related information must comply with the *Greenhouse Gas Industrial Reporting and Control Act* (GGIRCA) and the Greenhouse Gas Emission Reporting Regulation (GGERR), including with the referenced in GGERR Western Climate Initiative (WCI) quantification methodologies.

The [WCI methodologies](#) typically applicable to pulp and paper operations are:

- WCI.020 General Stationary Combustion
- WCI.040 Electricity Generation
- WCI.210 Pulp and Paper Manufacturing
- WCI.280 Mobile Equipment at Facilities

Emission scope differences: totals for reporting versus compliance purposes



As shown in the diagram above, the regulated operation’s emissions total for compliance purposes differs from its attributable emissions total for reporting purposes as follows⁹:

- Emissions (CO₂, CH₄, and N₂O) from combustion¹⁰ of fuels listed in Schedules C and C.1 of GGERR are excluded,
- Emissions associated with sold electricity and sold heat are excluded.

Or, equivalently,

$$E_{Attr.}^{Compliance} = E_{Attr.}^{E Report} - E_{listed fuels}^{E Report} - E_{Sold}^{Electr} - E_{Sold}^{Heat}$$

⁹ If a source type happens to belong to more than one of the following categories, it is excluded only once.

¹⁰ This includes from combustion of spent liquor even though that combustion source is otherwise classified in Schedule B as industrial process emissions.

Methodologies for Quantifying Production and Allocating Emissions to Regulated Products

Production Quantification Methodology

Since the regulated products directly correspond to industry products, quantifying production simply means recording the amount of:

- Produced saleable air-dried chemical pulp, non-chemical pulp, paper, and tissue paper, in tonnes, where 'saleable' is defined in Schedule A.1 of GGERR to mean "produced for the purposes of sale and, for certainty, is not a byproduct or intermediate product produced during the production of a product for the purposes of sale,
- Sold electricity, in GWh, and
- Sold heat, in GJ,

during the compliance period, and, only for 2024, during the period Apr 1 – Dec 31.

Emissions Allocation Methodology

Emissions are allocated to the energy products according to the following methodology:

$$E_{EL} = \left[\frac{P_{EL}}{\left(\frac{e_{EL}}{e_H}\right) P_H + P_{EL}} \right] * E_{EL+H}$$

$$E_H = E_{EL+H} - E_{EL}$$

where:

- E_{EL} are the emissions associated with all self-generated electricity (tCO₂e)
- E_H are the emissions associated with all self-generated heat (steam) (tCO₂e)
- E_{EL+H} (input) are the emissions associated with all self-generated energy (tCO₂e)
- P_{EL} (input) is total generated electricity (GJ; 1 GWh = 3600 GJ)
- P_H (input) is total generated heat (steam) (GJ)
- e_{EL} (input) is efficiency of electricity generation (default value = 0.35)
- e_H (input) is efficiency of heat (steam) generation (default value = 0.80)

And

$$\begin{aligned}E_{EL_{sold}} &= \left(\frac{P_{EL_{sold}}}{P_{EL}}\right) * E_{EL} \\E_{H_{sold}} &= \left(\frac{P_{H_{sold}}}{P_H}\right) * E_H \\E_{EL_{consumed}} &= E_{EL} - E_{EL_{sold}} \\E_{H_{consumed}} &= E_H - E_{H_{sold}}\end{aligned}$$

Also

$$\begin{aligned}E_{consumed}^{EL+H} &= E_{EL_{consumed}} + E_{H_{consumed}} \\E_{sold}^{EL+H} &= E_{EL_{sold}} + E_{H_{sold}} \\E_{EL+H} &= E_{consumed}^{EL+H} + E_{sold}^{EL+H}\end{aligned}$$

where:

$E_{EL_{sold}}$	are the emissions associated with sold electricity (tCO ₂ e)
$E_{H_{sold}}$	are the emissions associated with sold heat (tCO ₂ e)
$P_{EL_{sold}}$	(input) is sold electricity (GJ; 1 GWh = 3600 GJ)
$P_{H_{sold}}$	(input) is sold heat (steam) (GJ)
$E_{EL_{consumed}}$	are the emissions associated with consumed electricity (tCO ₂ e)
$E_{H_{consumed}}$	are the emissions associated with consumed heat (tCO ₂ e)
$P_{consumed}^{EL+H}$	are the emissions associated with all consumed energy (tCO ₂ e)

Emissions are allocated to the pulp and paper products based on the share of:

- general stationary combustion excluding energy generation,
- mobile combustion,
- industrial process,
- waste emissions,
- emissions associated with electricity consumed,
- emissions associated with heat consumed,

for each product. Allocation of emissions is to be reported for each of these emission categories.

12. RENDERING

Methodologies for Quantifying Emissions and Related Information

Quantification and reporting of greenhouse gas emissions and related information must comply with the *Greenhouse Gas Industrial Reporting and Control Act* (GGIRCA) and the Greenhouse Gas Emission Reporting Regulation (GGERR), including with the referenced in GGERR Western Climate Initiative (WCI) quantification methodologies.

The [WCI methodologies](#) typically applicable to rendering operations are:

- WCI.020 General Stationary Combustion
- WCI.280 Mobile Equipment at Facilities

Emission scope differences: totals for reporting versus compliance purposes



As shown in the diagram above, the regulated operation’s emissions total for compliance purposes differs from its attributable emissions total for reporting purposes as follows¹¹:

- Emissions (CO₂, CH₄, and N₂O) from combustion of fuels listed in Schedules C and C.1 of GGERR are excluded,
- General Stationary Combustion (GSC) emissions associated with refined and stored Fat, Oil and Grease (FOG) are excluded.

Or, equivalently,

$$E_{Attr.}^{Compliance} = E_{Attr.}^{E Report} - E_{listed\ fuels}^{E Report} - E_{FOG}^{GSC}$$

¹¹ If a source type happens to belong to more than one of the following categories, it is excluded only once.

Methodologies for Quantifying Production and Allocating Emissions to Regulated Products

Production Quantification Methodology

The total annual amount of “protein plus fat” produced by the rendering process in the facility, in tonnes, is calculated using the following formula:

$$P_{P+F} = P^{Blood} + P^{Fish} + P^{Porcine} + P^{Poultry} + P^{Feather} \\ + P^{Fish\ oil} + P^{Fat} + P^{Lard}$$

Where

P^{Blood} is the annual amount of Blood Meal, in tonnes;

P^{Fish} is the annual amount of Fish Meal, in tonnes;

$P^{Porcine}$ is the annual amount of Porcine Meal, in tonnes;

$P^{Poultry}$ is the annual amount of Poultry Meal, in tonnes;

$P^{Feather}$ is the annual amount of Feather Meal, in tonnes;

$P^{Fish\ oil}$ is the annual amount of Fish Oil, in tonnes;

P^{Fat} is the annual amount of Animal Fats, in tonnes;

P^{Lard} is the annual amount of Lard, in tonnes;

In addition, only for 2024:

$$P_{P+F}^{Apr-Dec} = P_{Apr-Dec}^{Blood} + P_{Apr-Dec}^{Fish} + P_{Apr-Dec}^{Porcine} + P_{Apr-Dec}^{Poultry} + P_{Apr-Dec}^{Feather} \\ + P_{Apr-Dec}^{Fish\ Oil} + P_{Apr-Dec}^{Fat} + P_{Apr-Dec}^{Lard}$$

Where

$P_{Apr-Dec}^{Blood}$ is the Apr 1 – Dec 31 amount of Blood Meal, in tonnes;

$P_{Apr-Dec}^{Fish}$ is the Apr 1 – Dec 31 of Fish Meal, in tonnes;

$P_{Apr-Dec}^{Porcine}$ is the Apr 1 – Dec 31 of Porcine Meal, in tonnes;

$P_{Apr-Dec}^{Poultry}$ is the Apr 1 – Dec 31 of Poultry Meal, in tonnes;

$P_{Apr-Dec}^{Feather}$ is the Apr 1 – Dec 31 of Feather Meal, in tonnes;

$P_{Apr-Dec}^{Fish\ oil}$ is the Apr 1 – Dec 31 of Fish Oil, in tonnes;

$P_{Apr-Dec}^{Fat}$ is the Apr 1 – Dec 31 of Animal Fats, in tonnes;

$P_{Apr-Dec}^{Lard}$ is the Apr 1 – Dec 31 of Lard, in tonnes;

Emissions Allocation Methodology

General Stationary Combustion (GSC) emissions associated with fat, oil, and grease (FOG) which are excluded from attribution for compliance purposes, are calculated as follows:

If

E_{onsite}^{GSC} are the reporting operation's general stationary combustion emissions;

S_{Total} is the total quantity of the steam generated onsite;

S_{FOG} is the quantity of steam used in FOG refining, unloading, storage and export;

Then

$$E_{FOG}^{GSC} = E_{onsite}^{GSC} * \left(\frac{S_{FOG}}{S_{Total}} \right)$$

There is only one regulated product. Consequently, the compliance emissions total is allocated to it:

$$E_{P+F}^{Compliance} = E_{Attr.}^{Compliance}$$

13. STEEL WIRE

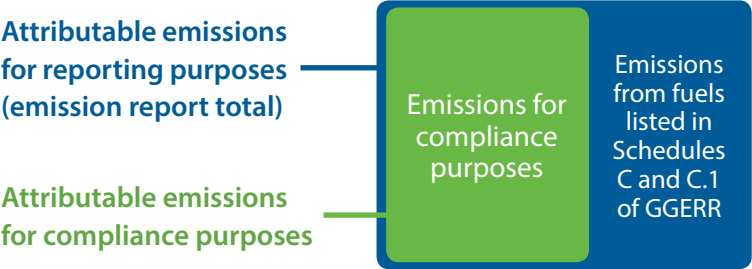
Methodologies for Quantifying Emissions and Related Information

Quantification and reporting of greenhouse gas emissions and related information must comply with the *Greenhouse Gas Industrial Reporting and Control Act* (GGIRCA) and the Greenhouse Gas Emission Reporting Regulation (GGERR), including with the referenced in GGERR Western Climate Initiative (WCI) quantification methodologies.

The [WCI methodologies](#) typically applicable to steel wire operations are:

- WCI.020 General Stationary Combustion
- WCI.280 Mobile Equipment at Facilities

Emission scope differences: totals for reporting versus compliance purposes



As shown in the diagram above, the regulated operation’s emissions total for compliance purposes differs from its attributable emissions total for reporting purposes as follows:

- Emissions (CO₂, CH₄, and N₂O) from combustion of fuels listed in Schedules C and C.1 of GGERR are excluded,

Or, equivalently,

$$E_{Attr.}^{Compliance} = E_{Attr.}^{E Report} - E_{listed fuels}^{E Report}$$

Methodologies for Quantifying Production and Allocating Emissions to Regulated Products

Production Quantification Methodology

Since the regulated products directly correspond to industry products, quantifying production simply means recording the amount of:

- Produced HDG-process steel wire, in tonnes, and
- Produced non-HDG steel wire, in tonnes,

during the compliance period, and, only for 2024, during the period Apr 1 – Dec 31.

Emissions Allocation Methodology

The following methodology is used to determine allocation of emissions between HDG-process steel wire and non-HDG steel wire:

If

E^{GSC} (input) are the facility's general stationary combustion emissions (excluding emissions from listed biomass and non-biomass fuels);

E^{MC} (input) are the facility's mobile combustion emissions (excluding emissions from listed biomass and non-biomass fuels);

Average Daily Fuel^{Generator HDG Only} is the generator's average daily fuel consumption for HDG-only production;

Annual Fuel^{Generator All} (input) is the generator's annual fuel consumption for all production;

P^{HDG} (input) is the HDG steel wire production;

P^{nonHDG} (input) is the non-HDG steel wire production;

Then

$$E_{HDG}^{GSC} = \left(\frac{365 * \textit{Average Daily Fuel}^{Generator HDG Only}}{\textit{Annual Fuel}^{Generator All}} \right) * E^{GSC}$$

and

$$E_{HDG}^{MC} = \left(\frac{P^{HDG}}{P^{nonHDG} + P^{HDG}} \right) * E^{MC}$$

Therefore

$$E_{HDG}^{Compliance} = E_{HDG}^{GSC} + E_{HDG}^{MC}$$

$$E_{nonHDG}^{Compliance} = E_{Attr.}^{Compliance} - E_{HDG}^{Compliance}$$

Emissions allocation is to be reported by emission category (General stationary combustion, mobile combustion).

14. SUGAR REFINING

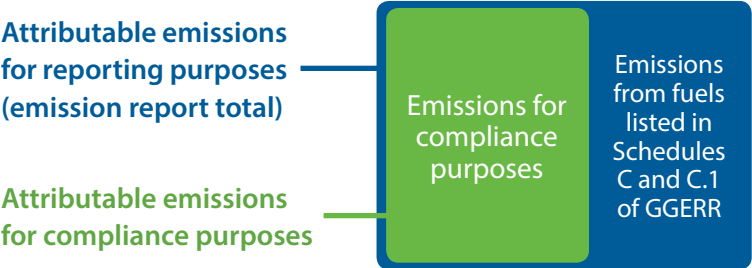
Methodologies for Quantifying Emissions and Related Information

Quantification and reporting of greenhouse gas emissions and related information must comply with the *Greenhouse Gas Industrial Reporting and Control Act* (GGIRCA) and the Greenhouse Gas Emission Reporting Regulation (GGERR), including with the referenced in GGERR Western Climate Initiative (WCI) quantification methodologies.

The [WCI methodologies](#) typically applicable to sugar refining operations are:

- WCI.020 General Stationary Combustion
- WCI.040 Electricity Generation
- WCI.280 Mobile Equipment at Facilities

Emission scope differences: totals for reporting versus compliance purposes



As shown in the diagram above, the regulated operation’s emissions total for compliance purposes differs from its attributable emissions total for reporting purposes as follows:

- Emissions (CO₂, CH₄, and N₂O) from combustion of fuels listed in Schedules C and C.1 of GGERR are excluded,

Or, equivalently,

$$E_{Attr.}^{Compliance} = E_{Attr.}^{E Report} - E_{listed fuels}^{E Report}$$

Methodologies for Quantifying Production and Allocating Emissions to Regulated Products

Production Quantification Methodology

Since the regulated products directly correspond to sums of industry products, quantifying production simply means recording:

- The sum of all solid products, P_S , in tonnes (granulated, cubes, brown, demerara, golden yellow, icing, and plantation raw), and
- The sum of all liquid products, P_L , in tonnes sold sugar content (invert, sucrose, Rogers golden syrup, Remelt syrup and molasses),

produced during the compliance period, and, only for 2024, during the period Apr 1 – Dec 31.

Emissions Allocation Methodology

The following methodology is used to determine emission allocation between the two products:

If

- P_S is total solid sugar production (tonnes)
- P_L is total liquid sugar production (tonnes solid sugar content)
- $E_{Solid\ sugar}^{Compliance}$ are the emissions allocated to solid sugar (tCO₂e)
- $E_{Liquid\ sugar}^{Compliance}$ are the emissions allocated to liquid sugar (tCO₂e)

Then

$$E_{Liquid\ sugar}^{Compliance} = \frac{0.018 * P_L + \left(\frac{P_L}{P_S}\right) * E_{Attr.}^{Compliance}}{1 + \left(\frac{P_L}{P_S}\right)}$$

$$E_{Solid\ sugar}^{Compliance} = E_{Attr.}^{Compliance} - E_{Liquid\ sugar}^{Compliance}$$

15. WOOD PRODUCTS

Methodologies for Quantifying Emissions and Related Information

Quantification and reporting of greenhouse gas emissions and related information must comply with the *Greenhouse Gas Industrial Reporting and Control Act* (GGIRCA) and the Greenhouse Gas Emission Reporting Regulation (GGERR), including with the referenced in GGERR Western Climate Initiative (WCI) quantification methodologies.

The [WCI methodologies](#) typically applicable to wood products operations are:

- WCI.020 General Stationary Combustion
- WCI.040 Electricity Generation
- WCI.280 Mobile Equipment at Facilities

Emission scope differences: totals for reporting versus compliance purposes



As shown in the diagram above, the regulated operation’s emissions total for compliance purposes differs from its attributable emissions total for reporting purposes as follows¹²:

- Emissions (CO₂, CH₄, and N₂O) from combustion of fuels listed in Schedules C and C.1 of GGERR are excluded,
- Emissions associated with sold electricity and sold heat are excluded.

Or, equivalently,

$$E_{Attr.}^{Compliance} = E_{Attr.}^{E Report} - E_{listed fuels}^{E Report} - E_{Sold}^{Electr.} - E_{Sold}^{Heat}$$

¹² If a source type happens to belong to more than one of the following categories, it is excluded only once.

Methodologies for Quantifying Production and Allocating Emissions to Regulated Products

Production Quantification Methodology

Since the regulated products directly correspond to industry product, quantifying production simply means recording the amount of:

- Produced, across all processing units, total saleable lumber, MDF, plywood, veneer, and wood chips, in cubic metres, where 'saleable' is defined in Schedule A.1 of GGERR to mean "produced for the purposes of sale and, for certainty, is not a byproduct or intermediate product produced during the production of a product for the purposes of sale,
- Produced, across all processing units, total saleable wood pellets, in tonnes, by using a reference density of 0.641 tonnes/m³ to convert from native units of cubic metres to tonnes,
- Sold electricity, in GWh, and
- Sold heat, in GJ,

during the compliance period, and, only for 2024, during the period Apr 1 – Dec 31.

Emissions Allocation Methodology

Emissions are allocated to the energy products according to the following methodology:

$$E_{EL} = \left[\frac{P_{EL}}{\left(\frac{e_{EL}}{e_H}\right) P_H + P_{EL}} \right] * E_{EL+H}$$
$$E_H = E_{EL+H} - E_{EL}$$

where:

- E_{EL} are the emissions associated with all self-generated electricity (tCO₂e)
- E_H are the emissions associated with all self-generated heat (steam) (tCO₂e)
- E_{EL+H} (input) are the emissions associated with all self-generated energy (tCO₂e)
- P_{EL} (input) is total generated electricity (GJ; 1 GWh = 3600 GJ)
- P_H (input) is total generated heat (steam) (GJ)
- e_{EL} (input) is efficiency of electricity generation (default value = 0.35)
- e_H (input) is efficiency of heat (steam) generation (default value = 0.80)

And

$$\begin{aligned}E_{EL_{sold}} &= \left(\frac{P_{EL_{sold}}}{P_{EL}}\right) * E_{EL} \\E_{H_{sold}} &= \left(\frac{P_{H_{sold}}}{P_H}\right) * E_H \\E_{EL_{consumed}} &= E_{EL} - E_{EL_{sold}} \\E_{H_{consumed}} &= E_H - E_{H_{sold}}\end{aligned}$$

Also

$$\begin{aligned}E_{consumed}^{EL+H} &= E_{EL_{consumed}} + E_{H_{consumed}} \\E_{sold}^{EL+H} &= E_{EL_{sold}} + E_{H_{sold}} \\E_{EL+H} &= E_{consumed}^{EL+H} + E_{sold}^{EL+H}\end{aligned}$$

where:

$E_{EL_{sold}}$	are the emissions associated with sold electricity (tCO ₂ e)
$E_{H_{sold}}$	are the emissions associated with sold heat (tCO ₂ e)
$P_{EL_{sold}}$	(input) is sold electricity (GJ; 1 GWh = 3600 GJ)
$P_{H_{sold}}$	(input) is sold heat (steam) (GJ)
$E_{EL_{consumed}}$	are the emissions associated with consumed electricity (tCO ₂ e)
$E_{H_{consumed}}$	are the emissions associated with consumed heat (tCO ₂ e)
$P_{consumed}^{EL+H}$	are the emissions associated with all consumed energy (tCO ₂ e)

Emissions are allocated to the wood products based on the share of each emission category:

- emissions from general stationary combustion (excluding energy generation)
- emissions from mobile combustion,
- emissions associated with electricity consumed,
- emissions associated with heat consumed,

for each processing unit, multiplying the share, within a processing unit, of volume produced of each product. Allocation of emissions is to be reported by emission category.



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our nature. our power. our future.