CleanBC Industrial Incentive Program
Metal Ore Mining Sector Guidance
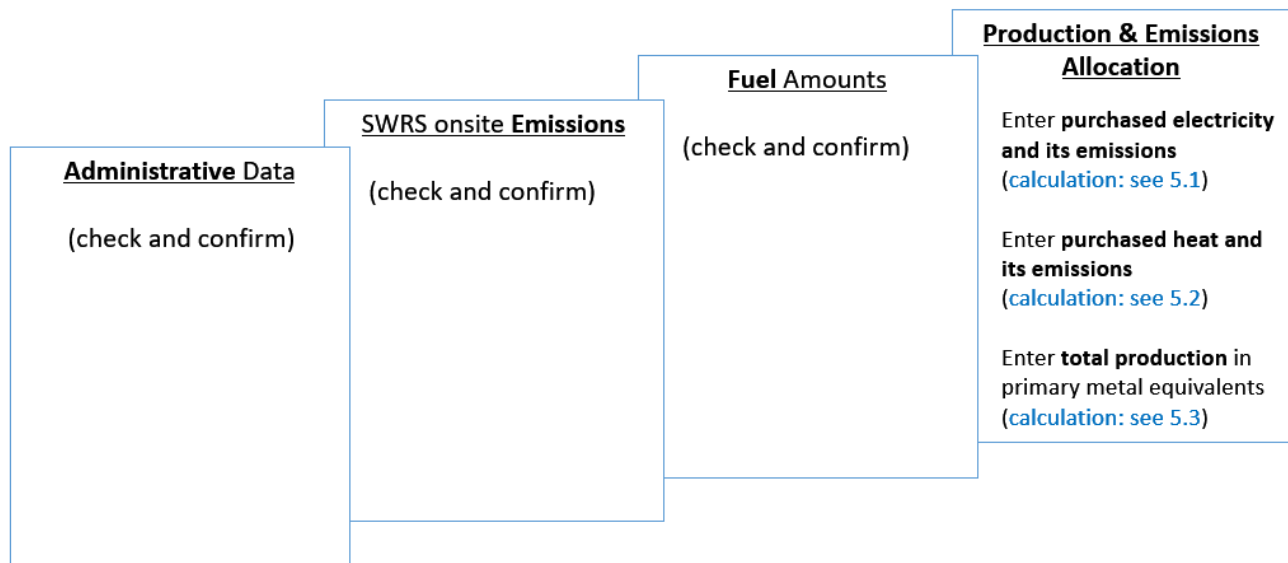
1. **Applicable NAICS codes:**

   - **NAICS – 212233: Copper-Zinc Ore Mining**
   - **NAICS – 212220: Gold and Silver Ore Mining**

| Sub-Sector	CIIP Product
Primary Copper mining – Open Pit	Mining - copper equivalent, open pit
Primary Copper mining – Underground	Mining - copper equivalent, underground
Primary Gold Mining	Mining - gold equivalent
Primary Silver Mining	Mining - silver equivalent

2. **Quick Summary – Main Steps in CIIP application**

   2.1 Complete and submit a facility emission report in the Single Window Reporting System (SWRS)
   2.2 Complete and submit a CIIP application (it is pre-filled with SWRS data where applicable)

Administrative Data

(check and confirm)

SWRS onsite Emissions

(check and confirm)

Fuel Amounts

(check and confirm)

Production & Emissions Allocation

Enter **purchased electricity and its emissions** (calculation: see 5.1)

Enter **purchased heat and its emissions** (calculation: see 5.2)

Enter **total production** in primary metal equivalents (calculation: see 5.3)

(calculation) steps are detailed in section **5. Calculation Methodologies** below.

3. Facility Emissions for CIIP purposes
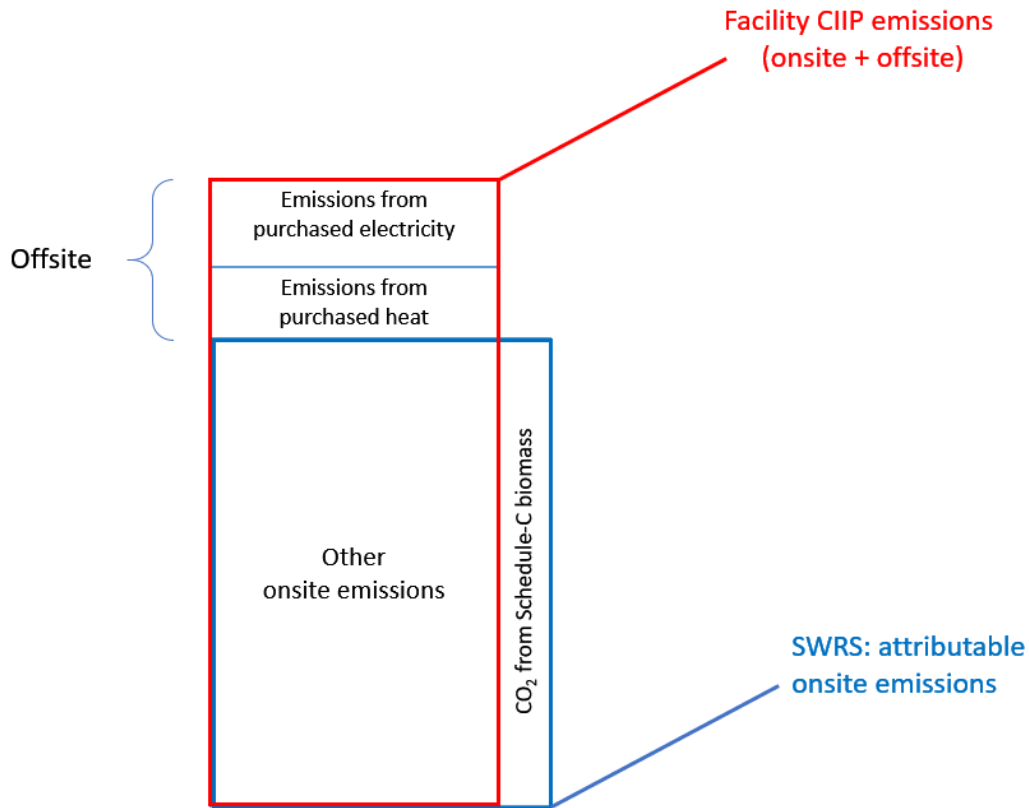
For the Facility emission total for CIIP purposes:

- Facility onsite emissions CO2 from Schedule C biomass are excluded, and
- Facility offsite emissions from purchased electricity and/or heat are included.
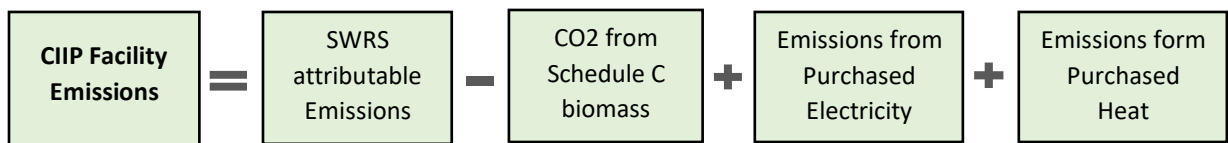
Or, equivalently,

$$E_{Facility}^{CIIP} = E_{Attr.}^{SWRS} - E_{CO2bioC}^{SWRS} + E_{Purchased}^{Electr.} + E_{Purchased}^{Heat}$$

Facility onsite emissions are pre-filled in the CIIP application with data submitted through the SWRS system.

Facility offsite emissions associated with purchased electricity and/or heat must be calculated from electricity/heat amounts purchased. Both amounts and emissions are entered in the *Production and Emissions Allocation* section of the CIIP application.

4. Completing a CIIP Application

The CIIP application has four sections. Where possible, the *Administrative*, *SWRS Onsite Emissions* and *Fuels* sections are pre-populated with data reported though the SWRS system. Applicants must review, confirm, and, if applicable, update this information and also enter production and emissions allocation information in the *Production and Emissions Allocation* section.

Administrative Data

Most information in the administrative section will be pre-populated from SWRS.

- Review pre-populated data for accuracy
- Enter the BC Corporate Registry number as it appears on orgbook.gov.bc.ca

NOTE: The BC Corporate Registry number and the operator's legal name on the CIIP application must match the entry on OrgBook. The incentive payment will be issued to the legal business name as it appears on the CIIP application.

- Please ensure all mailing addresses follow the Canada Post address format
- Enter at least one application contact. The Primary Application Contact field will be pre-populated based on the user who starts an application; please confirm or edit as applicable. This will be the primary contact CAS will use for all application-related correspondence: questions, application status changes, review results, etc. A Secondary Application Contact can be added, if applicable. Please note that automated system messages such as application status updates will only be sent to the primary contact.
- Choose the primary NAICS code that the facility operates under from the available list. The NAICS codes in the pre-populated list reflect the sectors eligible to apply for CIIP. You will not be able to enter a NAICS code that is not on the list. The production information required to be entered in the *Production and Emissions Allocation* section will depend on the NAICS code selection

If you believe your facility's sector is eligible but your NAICS code is not on the list, please contact the CIIP team at GHGRegulator@gov.bc.ca.

SWRS Onsite Emissions

This section is pre-filled with data from the facility's SWRS report. Please review and confirm. If the information needs updating, this likely means that the SWRS report has to be updated first.

Fuels

This section is pre-filled with data from the facility's SWRS report. Please review and confirm. If the information needs updating, this likely means that the SWRS report has to be updated first.

Production & Emissions Allocation

NOTE: The ministry provides a calculator spreadsheet with the appropriate calculation formulas built in, to assist in calculations at this step of the CIIP application process (available at this link).

NOTE: To enter data as required in this section, first select 'Offsite Emissions: Purchased Electricity', then 'Offsite Emissions: Purchased Heat' and finally the appropriate metal-equivalent product, as applicable, from the 'Product or Service' dropdown menu.

Allocating CIIP Facility emissions

CIIP facility emissions, calculated as shown in section 3, are automatically allocated to the selected metal-equivalent product.

Select '**Offsite Emissions: Purchased Electricity**'
- Enter purchased electricity (in GWh). Enter 0 if not applicable.
- Calculate and enter the emissions associated with purchased electricity:
  - multiply the amount of purchased electricity by the published grid electricity emission intensity for the year, or
  - if preferred, use the calculator (see section **5.1** below for details)

Select '**Offsite Emissions: Purchased Heat**'
- Enter purchased heat (in GJ). Enter 0 if not applicable.
- Calculate and enter the emissions associated with purchased heat:
  - multiply the amount of purchased heat by 0.063 tCO2e/GJ, or
  - if preferred, using the calculator (see section **5.2** below for details)

Select **applicable primary metal product** (see below how to determine primary metal)
- Calculate and enter salable primary metal production in tonnes of the applicable metal equivalent, using the calculator (see section **5.3** below for steps to determine primary metal and calculate metal-equivalent production in tonnes primary metal)
- If copper is the primary metal, also select whether the mine primarily uses open pit or underground mining methods.

Summary

Review your application for accuracy, review the terms and conditions, and submit the application.

The system will automatically perform some checks for consistency. If inconsistencies are found, the application will show a warning message, highlighting the issue requiring attention. To address any highlighted inconsistencies, you must go back to the relevant application section/tab and either correct the reported values or provide an explanation by entering a comment in the relevant section.

Additionally, the system may detect errors in your application, such as missing data. These errors must be corrected in order to submit an application. In certain exceptional cases when the issue cannot be addressed through the application system, you will have the ability to override the error message by providing an explanation and then submit the application.

Any unresolved warnings or errors may delay the processing of your application.

5. Calculation Methodologies

Unless explicitly stated otherwise in CIIP guidance, quantification and reporting of greenhouse gas emissions and related information under CIIP 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 metal mining reporting 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

A CIIP applicant must first submit an emission report in SWRS (SWRS report) complying with GGIRCA and GGERR and using the WCI methodologies. A CIIP application is then pre-filled where possible with applicable information from the SWRS report.

5.1 Calculating emissions associated with purchased grid electricity

The ministry provides a calculator spreadsheet with the appropriate calculation formulas built in, to assist in calculations at this step of the CIIP application process (available at this link).

In the calculator, in the section on Purchased Electricity, select the applicable electrical grid (Integrated or Fort Nelson) from the pulldown menu in cell E11. This will cause the appropriate electricity intensity factor in tCO2e/GWh to be displayed in cell G11.

In the blue cell, enter the amount of purchased electricity (in GWh).

Emissions associated with purchased grid electricity are then automatically calculated and displayed in cell G13, in tonnes CO2e. For example:

Purchased Electricity (for information purposes only)

INPUT each variable listed below:

Purchased Electricity

	Electrical Grid:		Amount	Units
Emissions Intensity Factor of Grid	Integrated Grid	$EIF_{El\ Grid}$	11.3	tCO$_2$e/GWh
Amount of electricity purchased		$Q_{EL\_PURCHASED}$		GWh
Emissions from Purchased Electricity		$E_{EL\_PURCHASED}$		tCO$_2$e

Enter the amount of emissions from purchased grid electricity in the CIIP application.

The calculator uses the following methodology to determine emissions associated with purchased grid electricity:

If

$$EIF^{El \cdot Grid}$$ (selection) is the grid electricity emission factor for the selected grid and applicable year, in tCO2e/GWh;

$$Q^{Electr \cdot}_{Purchased}$$ (input) is the quantity of purchased grid electricity, in GWh;

$$E^{Electr \cdot}_{Purchased}$$ are the emissions associated with purchased grid electricity, in tCO2e.

Then

$$E^{Electr \cdot}_{Purchased} = EIF^{El \cdot Grid} * Q^{Electr \cdot}_{Purchased}$$

where $EIF^{El \cdot Grid}$ data comes from the published electricity emission intensity factor for grid-connected entities for the selected grid for applicable year.

5.2 Calculating emissions associated with purchased heat

The ministry provides a calculator spreadsheet with the appropriate calculation formulas built in, to assist in calculations at this step of the CIIP application process (available at this link).

In the calculator, in the section on Purchased Heat, in the blue cell, enter the amount of purchased heat (in GJ).

Emissions associated with purchased heat are then automatically calculated and displayed in cell G22, in tonnes CO2e. For example:

Purchased Heat

			Amount	Units
Emissions Intensity Factor of Purchased		EIF $_{BC\ Heat}$	0.063	tCO$_2$e/GJ
Amount of heat purchased		Q$_{H\_PURCHASED}$	40,000.00	GJ
Emissions from Purchased Heat		E$_{BC\ Heat}$	2,520.00	tCO$_2$e

Enter the amount of emissions from purchased heat in the CIIP application.

The calculator uses the following methodology to determine emissions associated with purchased heat:

If:

0.063   is the BC-specific heat emission factor, in tCO2e/GJ;

$Q_{Purchased}^{Heat}$ (input) is the quantity of purchased heat, in GJ;

$E_{Purchased}^{Heat}$ are the emissions associated with purchased heat, in tCO2e.

Then

$$E_{Purchased}^{Heat} = 0.063 * Q_{Purchased}^{Heat}$$

5.3 Calculating total facility production in terms of primary metal equivalent

CIIP applicants must report salable primary metal production, in tonnes of the applicable metal equivalent. The term "salable" means products produced with the intention of either being sold as a product or as an input to another production process. This includes all salable metal produced during the reporting year, regardless of whether it is sold during the year or added to inventory. It does not include salable metal sold from a previous year's production.

Production must not include any waste products.

Metals currently mined in B.C. include, but may not be limited to, copper, gold, silver, molybdenum, lead, and zinc.

<u>Calculating facility production in tonnes of primary metal equivalent using the calculator</u>

The ministry provides a calculator spreadsheet with the appropriate calculation formulas built in, to assist in calculations at this step of the CIIP application process (available <u>at this link</u>).

5.3.1 <u>Determining Primary Metal</u>

The primary metal is the metal which yields the highest revenue in the reporting year of a facility's first CIIP application using the metal prices provided in that year's calculator and data about the amount of each salable metal produced. The metal equivalent determined by this process must be used for all subsequent years, until at least 2025.

(a) If this year's CIIP application is <u>not</u> the first for the facility:

In the calculator below the 2023 metal prices, select the primary metal determined in the facility's first CIIP application; for example, if copper was the primary metal in the first CIIP application:

SELECT primary metal determined in 1ˢᵗ CIIP year (if applicable):

Copper	▼
Copper	
Gold	
Silver	
N/A	

INPUT the amount of each metal produced in 2023 (pounds or troy ounc...
Leave blank if metal was not produced; when all production has bee[n]... [qu]estion below

Below the 2023 metal prices, in the blue cells, enter the amounts of each metal produced in 2023, in the indicated units (pounds or troy ounces). Leave blank if metal was not produced. The revenue estimate for each metal is calculated automatically using the metal prices provided.

When all production has been entered, answer 'Y' to the question "Has all information been entered".

Because this is not the first CIIP application, the primary metal will remain as selected regardless of the metal with highest 2023 revenue, if different. For example, if copper was the determined to be the primary metal in the facility's first CIIP application, it would remain so even if for 2023 gold had the highest revenue:

INPUT the amount of each metal produced in 2023 (pounds or troy ounces):
Leave blank if metal was not produced; when all production has been entered, answer 'Y' to the question below

Metal	Production Amount	Units	Revenue Estimate (USD)		Metal Equivalent to Apply Under
Copper	5,500,000	lbs	$ 21,175,000.00		Copper
Gold	100,000	ozt	$ 194,147,000.00		
Silver	1,500,000	ozt	$ 35,025,000.00		
Molybdenum	500	lbs	$ 12,160.00		
Lead	50	lbs	$ 48.50		
Zinc	500	lbs	$ 600.00		

Has all production information been entered?
INPUT "Y" if YES (blank if NO):   Y

(b) If this is the facility's first CIIP application:

The calculator provides the following annual average metal prices for 2023 determined as described in the two paragraphs below:

Average Metal Prices in 2023

Metal	Average Metal Price	Units
Copper	3.85	USD/lb
Gold	1,941.47	USD/ozt
Silver	23.35	USD/ozt
Molybdenum	24.32	USD/lb
Lead	0.97	USD/lb
Zinc	1.20	USD/lb

To align with BC Hydro's Mining Customer Payment Plan, the metal prices for each metal are the annual average of the daily settlement prices per unit of metal, over the period from January 1 to

December 31 of the reporting year, as reported by the London Metals Exchange (LME). 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.

Below the 2023 metal prices, in the blue cells, enter the amounts of each metal produced in 2023, in the indicated units (pounds or troy ounces). Leave blank if metal was not produced. The revenue estimate for each metal is calculated automatically using the metal prices provided.

When all production has been entered, answer 'Y' to the question "Has all information been entered". At that moment the calculator will display the metal equivalent to apply under, based on the highest revenue.

The following shows an example, with copper as the metal with highest revenue:

INPUT the amount of each metal produced in 2023 (pounds or troy ounces):
Leave blank if metal was not produced; when all production has been entered, answer 'Y' to the question below

Metal	Production Amount	Units	Revenue Estimate (USD)		Metal Equivalent to Apply Under
Copper	5,500,000	lbs	$	21,175,000.00	Copper
Gold	10,000	ozt	$	19,414,700.00	
Silver	150,000	ozt	$	3,502,500.00	
Molybdenum	500	lbs	$	12,160.00	
Lead	50	lbs	$	48.50	
Zinc	500	lbs	$	600.00	

Has all production information been entered?
INPUT "Y" if YES (blank if NO):   Y

5.3.2   Calculating Total Production in Primary Metal Equivalent

Non-primary metal amounts are converted into equivalent primary metal based on the price of the primary metal. Total mine production in primary metal-equivalent is automatically calculated by dividing the total revenue from all metals by the price of the primary metal:

$$P_{Metal\_eq}^{(lbs\ or\ ozt)} = \frac{Total\_revenue}{Price_{Primary\ Metal}}$$

Where:

$P_{Metal\_eq}^{(lbs\ or\ ozt)}$ is the total production in primary metal equivalent, in the same mass units of the primary metal as its price;

$Total\_revenue$ is the sum of estimated revenue, in USD;

$Price_{Primary\ Metal}$ is the price of the primary metal per mass unit primary metal, in lbs (copper; molybdenum, lead; zinc) or ozt (gold; silver).

This total production in primary metal equivalent is then automatically converted from pounds (in the case of copper, molybdenum, lead, or zinc) or troy ounces (in the case of gold or silver) to tonnes.

For example, if copper is the primary metal:

Calculation of Metal Equivalent:

Sum of Estimated Revenue | $ | 44,105,008.50 | USD

Therefore, mass of metal equivalent =

11,455,846.36 lbs of Copper Equivalent

5,196.291 Tonnes of Copper Equivalent