CleanBC Industrial Incentive Program

Aluminum Sector Guidance

This guidance applies to reporting operations with primary NAICS codes as follows:

- NAICS – 331313: Primary Production of Alumina and Aluminum

Sub-sector: Aluminum Smelting

CIIP Product: Smelting - aluminum

In addition to this guidance document, to assist in calculating inputs for the CleanBC Industrial Incentive Program (CIIP) application process, the ministry provides a spreadsheet with the appropriate calculation formulas built in (available via e-mail and online).

Quantification and Reporting of Emissions and Related Information

Unless explicitly stated otherwise in the 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 aluminum smelting reporting operations include, but may not be limited to, the following:

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

In addition to the information required in the GGERR, applicants to CIIP must also report the GHG emissions associated with self-generated hydro electricity used at the reporting operation and emissions associated with purchased electricity or heat, if any.

Hydro electricity emissions are quantified by multiplying the supplied emission intensity factor $E_{HF_{Hydro}}$ by the amount of self-generated hydro electricity used, $Q_{HF_{Hydro used}}$, in GWh:

$$P_{HF_{Hydro used}} = E_{HF_{Hydro}} * Q_{HF_{Hydro used}}$$

where

$E_{HF_{Hydro}}$ is 10.5 tCO2e/GWh.
• Self-generated hydro electricity sold to the grid must not be included for CIIP purposes as there are no taxable emissions associated with sold electricity in the aluminum sector.

• Purchased grid electricity emissions are quantified by multiplying the published electricity emission intensity factor for grid-connected entities $EIF_{grid}^{Electr.}$ for the applicable reporting year and electricity grid (i.e. integrated or Fort Nelson grid) by the amount of purchased grid electricity $Q_{Purchased}^{Electr.}$ in GWh:

$$E_{grid}^{Electr.} = EIF_{grid}^{Electr.} \times Q_{Purchased}^{Electr.}$$

The reporting operation’s emissions for CIIP purposes are:

$$E^{CIIP} = E_{onsite} + E_{Hydro used} + E_{grid}^{Electr.} - E_{Coke Calcin.}^{Process} - E_{Anode Baking}^{Process} - E^{GSC} - E^{MC}$$

where

- $E_{onsite}$ are the reporting operation’s emissions total as required to be reported under GGIRCA and submitted in the Single Window Reporting System;
- $E_{Hydro used}^{Electr.}$ are the emissions associated with self-generated hydro electricity;
- $E_{grid}^{Electr.}$ are the emissions associated with purchased electricity;
- $E_{Coke Calcin.}^{Process}$ are the industrial process emissions from green coke calcination;
- $E_{Anode Baking}^{Process}$ are the industrial process emissions from anode/cathode production;
- $E^{GSC}$ are the total stationary combustion emissions; and
- $E^{MC}$ are the total mobile combustion emissions.

• The benchmark for the sector does not currently include emissions associated with green coke calcination, anode production, or electricity not used on site. Consequently, the process emissions for green coke calcination and anode production are excluded from the emissions intensity for aluminium production. In addition, emissions from stationary combustion (which are generated exclusively in the green coke calcination and anode production processes) and those from mobile combustion (which were not included in the benchmarking process) are excluded from the emission total for CIIP purposes.

In the CIIP application, self-generated hydro electricity used on site and purchased electricity are reported under the ‘Production’ tab. Note that for the 2019 reporting year for the aluminum sector, generated electricity must be reported as if it were purchased electricity but with a different emission intensity factor (as described above). Therefore, if the facility is reporting both purchased and generated electricity, there will be two line-items/product entries of ‘Purchased Electricity’.
To report purchased and/or generated electricity, from the ‘Product or Service’ dropdown menu, select ‘Purchased Electricity’ (do not use the ‘Generated Electricity’ product). Enter the amount of electricity purchased or generated (in gigawatt hours and the emissions associated with the purchased or generated electricity. For generated electricity, exclude any electricity sold to the grid, and the associated emissions.

Quantification of Production

Applicants to the CIIP must report the following in tonnes, if produced at the operation within the reporting year:

- Salable Aluminum production $P_{Sal,Aluminum}$, in tonnes;
- Calcined Coke production $P_{Calcin.Coke}$, in tonnes; and
- Baked Anode production $P_{Baked Anode}$, in tonnes; and

This includes all salable aluminum produced during the reporting year, regardless of whether it is sold during the year or added to inventory. It does not include salable aluminum sold from a previous year’s production.

Production must not include any waste products.

Emission Allocation between Products

Applicants to CIIP must allocate GHG emissions between aluminum, calcined coke, and baked anodes.

$$E_{Aluminum} = E^{CIIP}; \text{ see above}$$

$$E_{Calcin.Coke} = E^{process \, Coke \, Calcin.} + E^{GSC \, Calcin.} + E^{MC \, Calcin.}$$

$$E_{Baked \, Anode} = E^{process \, Baking.} + E^{GSC \, Baking.} + E^{MC \, Baking.}$$

where:

- $E_{Aluminum}$ are the emissions allocated to aluminum (tCO2e);
- $E_{Calcin.Coke}$ are the emissions allocated to green coke calcination (tCO2e);
- $E_{Baked \, Anode}$ are the emissions allocated to anode production (tCO2e);

In the absence of other measurement, assume $E^{MC \, Calcin.} = E^{MC \, Baking.} = \frac{E^{MC}}{2}$

Emissions associated with purchased electricity or self-generated hydro electricity must be allocated to the production of aluminum.
**Emission Intensity**

For the purposes of CIIP, the Emission Intensity of salable aluminum $EI_{S,\text{Aluminum}}$ will be calculated as:

$$EI_{S,\text{Aluminum}} = \frac{E^{CIIP}}{P_{S,\text{Aluminum}}}$$