

chapter Q-2, r. 46.1

Regulation respecting a cap-and-trade system for greenhouse gas emission allowances

Environment Quality Act

(chapter Q-2, ss. 46.1, 46.5, 46.6, 46.8 to 46.16 and 95.1).

Act respecting certain measures enabling the enforcement of environmental and dam safety legislation
(chapter M-11.6, ss. 30 and 45).

O.C. 1297-2011; I.N. 2019-12-01; S.Q. 2022, c. 8, s. 1.

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TITLE I**GENERAL****CHAPTER I****SCOPE, APPLICATION AND INTERPRETATION**

1. The purpose of this Regulation is to set rules for the operation of the cap-and-trade system for greenhouse gas emission allowances established pursuant to section 46.5 of the Environment Quality Act (chapter Q-2). For that purpose, it determines which emitters are required to cover their emissions, the terms and conditions for registering for the system, the emission allowances that can be validly used, the terms and conditions for the issue, use and trading of emission allowances, and the information that must be provided by emitters and other persons or municipalities that may register for in the system.

O.C. 1297-2011, s. 1; O.C. 1184-2012, s. 1.

2. For the purposes of this Regulation, an emitter is any person or municipality operating an enterprise in a sector of activity listed in Appendix A and reporting for an establishment or, if applicable, for the enterprise, in accordance with the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere (chapter Q-2, r. 15), annual greenhouse gas emissions in a quantity equal to or greater than 25,000 metric tonnes CO₂ equivalent, excluding the emissions referred to in the second paragraph of section 6.6 of that Regulation.

(1) *(subparagraph replaced);*

(2) *(subparagraph replaced);*

(3) *(subparagraph replaced);*

(4) *(subparagraph replaced);*

(5) *(subparagraph replaced);*

(6) *(subparagraph replaced).*

A person or municipality operating an enterprise is also considered to be an emitter if the person or municipality

(1) acquires electricity generated outside Québec, except electricity produced in the territory of a partner entity in a province or territory of Canada, for its own consumption or for sale in Québec, if the greenhouse gas emissions attributable to the generation of the quantity of electricity acquired, calculated in accordance with the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere, are equal to or exceed 25,000 metric tonnes CO₂ equivalent;

(2) distributes 200 litres or more of fuel within the meaning of protocol QC.30 of Schedule A.2 to the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere (chapter Q-2, r. 15), except fuel for which an emitter referred to in the first paragraph or in subparagraph 3 of the second paragraph of this section or in section 2.1, including the emitter itself if applicable, is required to cover its emissions pursuant to section 19 for an emitter referred to in this section and pursuant to section 19.0.1 for an emitter referred to in section 2.1;

(3) is in a sector of activity listed in Appendix A for which the person or municipality can demonstrate, in accordance with the conditions of section 7, that the emissions attributable to an establishment which will be

verified in accordance with the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere will be equal to or exceed 25,000 metric tonnes CO₂ equivalent.

O.C. 1297-2011, s. 2; O.C. 1184-2012, s. 2; O.C. 1138-2013, s. 1; O.C. 902-2014, s. 1; O.C. 1089-2015, s. 1; O.C. 1125-2017, s. 1; O.C. 1288-2020, s. 1; O.C. 824-2021, s. 1.

2.1. For the purposes of this Regulation, a person or municipality operating an enterprise in a sector of activity referred to in Appendix A that is not an emitter within the meaning of section 2, reporting for an establishment, in accordance with paragraph 1 of section 6.1 of the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere (chapter Q-2, r. 15), annual greenhouse gas emissions in a quantity equal to or greater than 10,000 metric tonnes CO₂ equivalent and that registers for the system for one of its establishments covered by the reporting without being required to do so, is also an emitter.

A person or municipality operating an enterprise in a sector of activity referred to in Appendix A that is not an emitter within the meaning of the first paragraph or of section 2, that registers for the system for one of its establishments and that can demonstrate, in accordance with the conditions of section 7.2, that the emissions attributable to that establishment reported pursuant to the first paragraph of section 6.1 of the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere will be equal to or exceed 10,000 metric tonnes CO₂ equivalent, and that registers for the system for one of its establishments covered by the reporting without being required to do so, is also an emitter within the meaning of this Regulation.

O.C. 1125-2017, s. 2; O.C. 1462-2022, s. 1.

3. For the purposes of this Regulation,

(1) “biomass fuel” means any fuel whose entire energy generating capacity is derived from biomass;

(2) “biomass” means a non-fossilized plant or part of a plant, an animal carcass or part of an animal, manure, liquid manure, a micro-organism and any other product derived from such matters;

(3) “emissions report” means a greenhouse gas emissions report made in accordance with Division II.1 of the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere (chapter Q-2, r. 15);

(4) “compliance deadline” means the deadline referred to in the first paragraph of section 21 for covering greenhouse gas emissions in a compliance period;

(4.1) “officer” means the president, chief executive officer, chief operating officer, chief financial officer or secretary of a legal person or partnership or any person having similar functions, and any person designated as such by a resolution of the board of directors;

(5) “emission allowance” means any emission allowance referred to in the second paragraph of section 46.6 of the Environment Quality Act (chapter Q-2), namely a greenhouse gas emission unit, offset credit or early reduction credit, and any emission allowance issued by a partner entity, each allowance having a value corresponding to one metric ton of greenhouse gas CO₂ equivalent;

(6) “reported emissions” means greenhouse gas emissions that are

(a) reported in accordance with the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere but that do not need to be verified pursuant to that Regulation; or

(b) calculated using data provided by the emitter when the emitter was not required, prior to 1 January 2011, to report emissions pursuant to the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere;

(7) “verified emissions” means the greenhouse gas emissions mentioned in a verification report and, where applicable, a notice of correction in accordance with the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere, in metric tonnes CO₂ equivalent or determined by the Minister in accordance with section 6.11 of that Regulation;

(8) “partner entity” means a government other than the Government of Québec, a department of such a government, an international organization, or an agency of such a government or organization, with which an agreement has been entered into in accordance with section 46.14 of the Environment Quality Act and that is referred to in Appendix B.1 to this Regulation;

(9) “covered establishment” means an establishment referred to in the first paragraph of section 2 or in section 2.1 or an enterprise referred to in the second paragraph of section 2, for which the emitter is required to cover greenhouse gas emissions in accordance with Chapter III of Title II;

(9.1) “newly operational establishment” means an establishment that

(a) is not considered on a sectoral basis pursuant to Division C of Part II of Appendix C;

(b) first became operational after 31 December 2022;

(c) was not covered by a GHG emissions report pursuant to the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere before becoming operational;

(d) emitted into the atmosphere, from its first year of operation, a quantity equal to or greater than 25,000 metric tonnes CO₂ equivalent excluding the emissions referred to in the second paragraph of section 6.6 of the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere, or that is operated by a person or municipality that covered the emissions of the establishment pursuant to subparagraph 3.0.1 of the third paragraph of section 19 or the second paragraph of section 19.0.1 from its first year of operation;

(10) “greenhouse gas” or “GHG” means one or more of the gases listed in the second paragraph of section 46.1 of the Environment Quality Act, namely carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF₆), as well as nitrogen trifluoride (NF₃);

(10.1) “working day” means any day other than a Saturday, Sunday or statutory holiday, including statutory holidays in the territory of a partner entity;

(11) “new facility” means either

(a) a combination of apparatus and equipment intended for a specific purpose, installed and commissioned on or after 1 January 2012 on the site of a covered establishment to pursue the same type of activity, to which GHS emissions in one of the following quantities are attributable:

i. a quantity equal to or exceeding 10,000 metric tonnes CO₂ equivalent per year;

ii. a quantity representing over 15% of the average annual emissions of the establishment for the period 2007-2010; or

(b) part of all of the combination of apparatus and equipment intended for a specific purpose at a covered establishment that is modified and commissioned on or after 1 January 2012 with the result that the establishment pursues a type of activity referred to in Table B of Part I of Schedule C or any other type of activity that it did not previously pursue;

(12) “compliance periods” means any period for which an emitter is required to cover its greenhouse gas emissions, the first period starting on 1 January 2013 and ending on 31 December 2014, and the following periods are of 3 calendar years as of 1 January 2015;

(12.1) “promoter” means a person or municipality responsible for the implementation of a project eligible for the issuance of offset credits;

(12.1.1) “total quantity of reference units” means the quantity of reference units produced or used during a year by an emitter

(a) for the years 2007 to 2011, calculated using the information provided by the emitter; and

(b) for the years 2012 and following, mentioned in the verification report in accordance with section 6.9 of the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere;

(13) “emissions threshold” means the level of greenhouse gas emissions or, by assimilation, the quantity of fuel determined in the first and second paragraphs of section 2;

(14) “system” means the cap-and-trade system for greenhouse gas emission allowances;

(15) “reference unit” means a standard unit of measurement for a raw material used to pursue an activity or for a product resulting from an activity of an emitter, referred to in Table B of Part I of Schedule C.

O.C. 1297-2011, s. 3; O.C. 1184-2012, s. 3; O.C. 1089-2015, s. 2; I.N. 2016-01-01 (NCCP); O.C. 1125-2017, s. 3; O.C. 824-2021, s. 2 ; O.C. 1462-2022, s. 2.

CHAPTER II

INFORMATION AND DOCUMENTS

4. Every person or municipality to which the provisions of this Regulation apply must keep a copy of all the information and documents that must be filed under this Regulation or relating to any transaction within the system for a minimum period of 7 years starting on the date on which they are produced.

Documents and information relating to a project involving early reduction credits referred to in Chapter III of Title III must be kept for a minimum period of 7 years starting on the date on which the application for credits was forwarded to the Minister.

Documents and information relating to an offset credit project referred to in Chapter IV of Title III must be kept for the duration of the project and for a minimum period of 7 years starting on the date on which the project ended.

Documents and information relating to an application for access to the electronic system pursuant to section 10 must be kept for the entire period during which a natural person has access to the electronic system and for a minimum period of 7 years following the date on which that person no longer has access to the system.

In addition, in the case of a designation or authorization made in accordance with section 11, 12 or 18.2, a copy of the information and documents relating to the designation or authorization must be kept for the entire period of the designation or authorization of the person concerned and for a minimum period of 7 years following the end of that period.

Documents and information referred to in this section must also be provided to the Minister on request.

Documents and information provided pursuant to this Regulation are dealt with confidentially, subject to the Act respecting Access to documents held by public bodies and the Protection of personal information (chapter A-2.1).

O.C. 1297-2011, s. 4; O.C. 1184-2012, s. 4; O.C. 1089-2015, s. 3; O.C. 1125-2017, s. 4.

5. Any information or document required to be provided under this Regulation must be sent to the Minister in electronic format using the forms or templates available on the website of the Ministère du Développement durable, de l'Environnement, de la Faune et des Parcs.

Despite the first paragraph, where all or part of the system is delegated to a person or a body pursuant to the second paragraph of section 46.13 of the Environment Quality Act (chapter Q-2), the information and documents indicated in the notice published in accordance with the third paragraph of that section must be sent to the delegatee.

O.C. 1297-2011, s. 5; O.C. 1184-2012, s. 5; O.C. 902-2014, s. 2; O.C. 1125-2017, s. 5; O.C. 1462-2022, s. 3.

TITLE II

CAP-AND-TRADE SYSTEM FOR GREENHOUSE GAS EMISSION ALLOWANCES

CHAPTER I

ADMINISTRATIVE ACCOUNTS

6. For system administration purposes, the Minister keeps the following accounts:

(1) an issuance account, containing the emission units created on the basis of the caps established in accordance with section 46.7 of the Environment Quality Act (chapter Q-2);

(1.1) an allocation account, containing the emission units available for allocation without charge, calculated in accordance with Part II of Appendix C of this Regulation;

(2) an auction account, containing the emission units to be sold at auction;

(3) a reserve account, containing emission units intended for sale by mutual agreement by the Minister or to be used to adjust the quantity of emission units allocated without charge;

(4) a retirement account, in which emission allowances retired from the system are recorded in accordance with this Regulation;

(5) an environmental integrity account, containing the offset credits that may be extinguished to replace the illegitimate offset credits not surrendered by a promoter;

(6) an invalidation account, containing offset credits issued and cancelled by a partner entity and emission allowances withdrawn from the environmental integrity account to replace illegitimate offset credits in accordance with the third and fourth paragraphs of section 70.5;

(7) a cancellation account in which cancelled emission allowances are recorded when created by error.

O.C. 1297-2011, s. 6; O.C. 1184-2012, s. 6; O.C. 902-2014, s. 3; O.C. 1089-2015, s. 4; O.C. 1125-2017, s. 6; O.C. 824-2021, s. 3; O.C. 1462-2022, s. 4.

CHAPTER II

REGISTRATION OF EMITTERS AND PARTICIPANTS

7. Every emitter referred to in section 2 must register for the system by providing the Minister with the following information and documents:

(1) the name and contact information for the enterprise, any other name used by the enterprise in Québec to identify itself in the pursuit of its activities, its legal status, the date and place of its constitution and the business number assigned under the Act respecting the legal publicity of enterprises (chapter P-44.1);

(2) a list of its directors and officers with, at the Minister's request, their position within the enterprise and their professional contact information;

(3) in the case of an emitter referred to in the first paragraph of section 2 or in subparagraph 3 of the second paragraph of section 2, the name and contact information for each establishment covered, the type of operation, the activities pursued, the processes and equipment used and, if applicable, the 6-digit code under the North American Industry Classification System (NAICS Canada) and establishment number assigned under the Inventaire québécois des émissions atmosphériques kept by the Ministère du Développement durable, de l'Environnement, de la Faune et des Parcs;

(3.1) in the case of an emitter referred to in subparagraphs 1 and 2 of the second paragraph of section 2, if applicable, the 6-digit code under the North American Industry Classification System (NAICS Canada) and the operator number assigned under the Inventaire québécois des émissions atmosphériques kept by the Ministère du Développement durable, de l'Environnement, de la Faune et des Parcs;

(4) except for the emitter referred to in subparagraphs 1 and 3 of the second paragraph of section 2, for each of the 3 years preceding the application for registration and for each establishment covered that exercises an activity listed in Table A in Part I of Appendix C, if the data are available,

(a) the total quantity of GHG emissions, either reported or verified, by category of GHG emissions referred to in Division B of Part II of Schedule C, in metric tonnes CO₂ equivalent, calculated using the global warming potential values provided for in Schedule A.1 to the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere (chapter Q-2, r. 15);

(b) the total quantity of each reference unit;

(c) the total quantity of GHG emissions, by category of GHG emissions referred to in Division B of Part II of Schedule C, for each reference unit, in metric tonnes CO₂ equivalent, calculated using the global warming potential values provided for in Schedule A.1 to the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere;

(d) the total quantity of fuel used, by type of fuel and by reference unit; and

(e) the calculation methods used;

(4.1) a description of the processes used, including a diagram describing, in particular, the processes that emit greenhouse gases, the product inputs, outputs and recycling, the energy used, the measurement of the greenhouse gases emitted and the reference units;

(4.2) in the case of an emitter referred to in subparagraph 3 of the second paragraph of section 2, a demonstration that the emissions from one of its establishments for the period for which it will be required to cover its emissions in accordance with subparagraph 3.0.1 of the third paragraph of section 19 will be equal to or exceed 25,000 metric tonnes CO₂ equivalent, the demonstration to be made using one of the following documents or items of information:

(a) an environmental impact assessment for the establishment prepared pursuant to section 31.3 of the Environment Quality Act (chapter Q-2);

(b) a mass balance calculation for greenhouse gas emissions, which must be based on the emissions attributable to the materials that contribute 0.5% or more of the total carbon introduced in the establishment's process;

(c) a technical calculation using an emission factor used for the purposes of the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere;

(d) an emissions report made pursuant to the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere accompanied by data explaining the anticipated production increase;

(5) *(subparagraph revoked)*;

(6) a list of the subsidiaries, parent legal persons and persons having control of the emitter within the meaning of the second paragraph of section 9, with the control percentage between each entity, which information may also be provided in the form of a diagram;

(7) in the case of a business corporation, the names of the persons controlling over 10% of the voting rights attached to all the outstanding voting securities of the emitter and, at the Minister's request, their contact information;

(8) in the case of a partnership, the name and contact information of each partner or, in the case of a limited partnership, the name and contact information of each general partner and the name and contact information of each special partner having provided over 10% of the common stock;

(8.1) in the case of an emitter that has no domicile or establishment in Québec, the name and contact information of its attorney designated under section 26 of the Act respecting the legal publicity of enterprises (chapter P-44.1), along with proof of designation if requested by the Minister;

(9) a declaration signed by a director or any other officer, or a resolution of the board of directors including an undertaking to comply with the conditions of this Regulation and attesting that the information and documents provided are valid and that consent has been given as to their communication when necessary for the purposes of this Regulation and of the corresponding rules and regulations of a partner entity.

An application for registration for the system must be sent to the Minister

(1) on or after 1 May 2012 but not later than 1 September 2012, in the case of an emitter other than an emitter referred to in subparagraph 2 of this paragraph whose reported emissions for 2009, 2010 or 2011 for an establishment are equal to or exceed the emissions threshold;

(2) not later than 1 September 2014, in the case of an emitter pursuing fuel distribution activities whose reported emissions for 2013 are equal to or exceed the emissions threshold;

(3) not later than 1 September following the submission of the first emissions report reporting emissions equal to or exceeding the threshold, in the case of an emitter referred to in subparagraph 1 of this paragraph whose verified emissions for an establishment are equal to or exceed the emissions threshold during a year following the year mentioned in that subparagraph;

(3.1) on or after 1 June preceding the year for which a demonstration that the verified emissions for an establishment will be equal to or exceed 25,000 metric tonnes CO₂ equivalent must be made, in the case of an emitter referred to in subparagraph 3 of the second paragraph of section 2 that is not to operate a newly operational establishment;

(3.2) on or after 1 June 3 years before the year for which a demonstration that the verified emissions for an establishment will be equal to or exceed 25,000 metric tonnes CO₂ equivalent must be made, in the case of an emitter referred to in subparagraph 3 of the second paragraph of section 2 that is to operate a newly operational establishment;

(3.3) on or after 1 June preceding the year for which a demonstration that the verified emissions for an establishment will be equal to or exceed 10,000 metric tonnes CO₂ equivalent must be made, in the case of an emitter referred to in the second paragraph of section 2.1;

(4) not later than 1 September 2015, in the case of an emitter pursuing fuel distribution activities whose verified emissions for 2014 for those activities are equal to or exceed 25,000 metric tonnes CO₂ equivalent;

(5) on or after 1 January 2016 but not later than 1 September 2016, in the case of an emitter pursuing fuel distribution activities who can prove that the verified emissions for 2015 for those activities will be equal to or exceed 25,000 metric tonnes CO₂ equivalent;

(6) on or after 1 January of the year concerned, but not later than 1 September following the submission of the first emissions report reporting emissions equal to or exceeding the threshold, in the case of an emitter pursuing fuel distribution activities who can demonstrate that the verified emissions for 2016 or a subsequent year will be equal to or exceed the emissions threshold.

O.C. 1297-2011, s. 7; O.C. 1184-2012, s. 7; O.C. 1138-2013, s. 2; O.C. 902-2014, s. 4; O.C. 1089-2015, s. 5; O.C. 1125-2017, s. 7; O.C. 1288-2020, s. 2; O.C. 1462-2022, s. 5.

7.1. Before a person or municipality referred to in section 2.1 registers for the system, a written notice must be sent to the Minister, not later than May 1 of the year during which the person or municipality intends to register, stating its intention.

An emitter to which section 2 ceases to apply and that wishes to remain registered for the system as an emitter referred to in section 2.1 must send written notice of its intention to the Minister not later than 1 September of the year in which the situation occurs.

O.C. 1125-2017, s. 8; O.C. 1288-2020, s. 3.

7.2. Any person or municipality referred to in section 2.1 must, at the time of registering for the system, provide the Minister with the information and documents referred to in the first paragraph of section 7 except, in the case of a person or municipality referred to in the second paragraph of section 2.1, the information and documents referred to in subparagraph 4 of the first paragraph of section 7.

The person or municipality referred to in the first paragraph of section 2.1 must also, at the same time, provide to the Minister, for each covered establishment carrying on an activity referred to in Table A of Part I of Appendix C, the emissions reports for the 3 consecutive years immediately preceding the year during which it registers, if available, as well as a verification report of its emissions report of the year preceding the year in which the person or municipality registers. If not all the reports are available, the person or municipality must at least send the report for the year preceding the year during which the person or municipality registers.

Any person or municipality referred to in the second paragraph of section 2.1 must in addition, at the time of registering, demonstrate to the Minister that the emissions from one of its establishments for which it will be required to cover its emissions in accordance with section 19.0.1 will be equal to or exceed 10,000 metric tonnes CO₂ equivalent, the demonstration to be made using one of the following documents or items of information:

(1) an environmental impact assessment for the establishment prepared pursuant to section 31.3 of the Environment Quality Act (chapter Q-2);

(2) a mass balance calculation for greenhouse gas emissions, which must be based on the emissions attributable to the materials that contribute 0.5% or more of the total carbon introduced in the establishment's process;

(3) a technical calculation using an emission factor used for the purposes of the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere (chapter Q-2, r. 15);

(4) an emissions report made pursuant to the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere accompanied by data explaining the anticipated production increase.

O.C. 1125-2017, s. 8; O.C. 1288-2020, s. 4; O.C. 1462-2022, s. 6.

8. Only a natural person domiciled in Canada or another person or municipality having an establishment in Canada may register with the Minister as a participant in the system in order to acquire emission allowances. The applicant must provide the Minister with the following information and documents:

- (1) the applicant's name and contact information;
- (2) in the case of an applicant other than a natural person or a municipality, the information and documents referred to in subparagraphs 1 to 3 and 6 to 9 of the first paragraph of section 7, with the necessary modifications;
 - (2.1) in the case of a natural person, a list of the entities the person owns or controls with the control percentage between each entity, the name and contact information for the business corporations in which the person controls over 10% of the voting rights attached to all the outstanding voting securities of the business corporation, and the name and contact information of all partnerships in which the person is a partner, general partner or special partner, and in which the person provided over 10% of the common stock;
 - (2.2) the main reason why the applicant wishes to register as a participant in the system;
- (3) if the application is made by a mandatary who is not domiciled in Québec, the name and contact information of a natural person domiciled in Québec who is designated to represent the applicant;
- (4) if the application is made by a natural person, a declaration signed by the person including an undertaking to comply with the conditions of this Regulation.

However, a natural person employed by an emitter, by a participant, or by a person who belongs to the same group as that emitter or participant within the meaning of section 9 or whose function or family connection makes it reasonable to believe that the natural person could have privileged information about the operation of the system, may not be registered as a participant in the system.

Despite the second paragraph, in the case of a natural person employed by an emitter or a participant who registered as a participant before 22 October 2014, the person's registration will be authorized until 22 October 2016, after that it will be terminated. Until that date, the person may not participate in an auction sale of emission units.

O.C. 1297-2011, s. 8; O.C. 1184-2012, s. 8; O.C. 902-2014, s. 5; O.C. 1089-2015, s. 6; O.C. 1125-2017, s. 9; O.C. 1462-2022, s. 7.

8.1. Every person or municipality that is already registered as an emitter or clearing house pursuant to this Regulation or as an emitter or clearing house in the cap-and-trade system for GHG emission allowances of a partner entity is considered to be registered for the system and cannot register again as a participant or clearing house with the Minister.

O.C. 1184-2012, s. 8; O.C. 1138-2013, s. 3; O.C. 1089-2015, s. 7; O.C. 1125-2017, s. 10.

9. Every person or municipality referred to in section 7, 7.2 or 8 must also, when registering for the system, disclose to the Minister any business relationship with an emitter or participant registered for or subject to the system, including those registered with a partner entity, by providing the following information in particular:

- (1) the name of any other emitter or participant with which the applicant is related, and of any other parent legal person, subsidiary or group concerned by the relationship and, upon request, their contact information;
- (2) the type of business relationship between the emitters or participants with which it has a business relationship and their respective status, such as parent legal person, subsidiary, group, partner or other, along with any explanation allowing the business relationship to be understood and the control percentage between each entity, which information may also be provided in the form of a diagram;

(2.1) where applicable, the general account number of the emitter or participant with which it has a business relationship and, if the emitter or participant is not a natural person, its legal status;

(3) where applicable, the percentage share of the overall holding limit and of the overall purchasing limit at an auction that is attributed to each related entity in the distributions made, respectively, in accordance with section 33 and the fifth paragraph of section 50;

(4) in the case of a legal person and at the Minister's request, the name of every person it employs whose function or family connection makes it reasonable to believe that the natural person could have privileged information about the operation of the system or about the activities of another emitter or participant in the system as well as the measures put in place by that legal person to prevent such information from being used to threaten the integrity of the system.

For the purposes of this section,

(1) “business relationship” means any direct or indirect relationship between several different emitters or participants when one of them

(a) holds more than 20% of the securities of another emitter or participant or holds a call provision or call option for such securities;

(b) shares more than 20% of its officers or directors with another emitter or participant, or may appoint more than 20% of its officers or directors;

(c) holds more than 20% of the voting rights in another emitter or participant;

(d) controls over 20% of the business of another emitter or participant by any means; or

(e) belongs to the same group as another emitter or participant;

(2) “subsidiary” means a person controlled by another person or by persons controlled by that other person; the subsidiary of a person that is, itself, the subsidiary of another person is deemed to be a subsidiary of that other person;

(3) “group” means 2 or more persons when

(a) one is a subsidiary of the other;

(b) all the persons are subsidiaries of the same person; or

(c) they are all controlled by the same person;

(4) “control” means a person that, with regard to another person,

(a) owns or has control or direction, whether direct or indirect, over securities of the other person or company carrying votes which, if exercised, would entitle the person to elect a majority of the directors of the other person, unless the person holds the voting securities only to secure an obligation;

(b) in the case of a partnership other than a limited partnership, holds more than 50% of the interests of the partnership or may determine collective decisions;

(c) in the case of a limited partnership, is the general partner; or

(d) has, with regard to that other person, a business relationship defined in subparagraphs *a*, *c* and *d* of subparagraph 1 that involves a percentage of over 50%;

(5) “related entity” means an emitter or a participant that has, in relation with another emitter or participant, as the case may be, the business relationship as defined in subparagraph 1 involving a percentage of over 50%, one of which is the subsidiary of the other, that belongs to the same group as the emitter or participant or that shares an account representative with that emitter or participant who also works for one of them. Two emitters or participants that share a related entity are entities related to each other.

O.C. 1297-2011, s. 9; O.C. 1184-2012, s. 9; O.C. 902-2014, s. 7; O.C. 1089-2015, s. 8; O.C. 1125-2017, s. 11; O.C. 1462-2022, s. 8.

9.1. A person referred to in section 9 that retains the services of an advisor for the application of this Regulation must send to the Minister the name and professional contact information of the advisor, the nature of the services that the advisor will provide and, where applicable, the name of the advisor’s employer.

A person referred to in section 9 who advises another person for the application of this Regulation must send to the Minister a list of all the persons provided with advisory services for the same purpose and the nature of the advisory services provided.

O.C. 1125-2017, s. 12; O.C. 1462-2022, s. 9.

10. To register for the system, an emitter, participant or clearing house or, if they are not natural persons, their account representatives, must first obtain access to the electronic system by providing the Minister with the following information and documents:

(1) the person’s name and contact information;

(2) the person’s date of birth;

(3) copies of at least 2 identity documents, including one with a photograph, issued by the government or one of its departments or bodies or by the Government of Canada, the government of another province or the government of a partner entity, bearing the person’s name and date of birth, along with an attestation from a notary or advocate, completed less than 3 months prior to the application for registration, stating that the notary or advocate has established the identity of the person and certifying the authenticity of the copies of the identity documents;

(4) the name and contact information of the person’s employer;

(5) confirmation from a financial institution situated in Canada that the person has a deposit account, credit account or loan account with the institution, which may be an original document from the institution or a copy certified true by the institution;

(6) any conviction for a criminal offence or an offence referred to in section 13 from the 5 years prior to the submission of the information and documents;

(7) a declaration, signed by the person and attesting

(a) that the information and document provided are valid and that the person consents to their communication when necessary for the purposes of this Regulation and the corresponding rules and regulations of a partner entity;

(a.1) that the person consents to a judicial record verification by the Minister or a person mandated for that purpose; and

(b) that the person undertakes to comply with the conditions of this Regulation.

A natural person authorized to act as an account viewing agent pursuant to section 12 must also obtain access to the electronic system in accordance with the first paragraph if the person has not already obtained access to the electronic system of a partner entity.

The account viewing agent designated by the emitter or the participant, under section 11, after they register for the system, must also obtain access to the electronic system in accordance with the first paragraph.

The emitter, the participant, the clearing house or the account viewing agent or, if they are not natural persons, their account representatives, that requests access to the electronic system under this section must, in order for the request to be admissible, send the documents listed in the first paragraph in the 12 months following the date of the request.

A person who, under this section, must obtain access to the electronic system but already has one, obtained from a partner entity, is considered to have met the obligation under this Regulation and may not obtain new access from the Minister. The person must provide the Minister with the information referred to in subparagraphs 1, 2, 4, 6 and 7 of the first paragraph. If the access has not been obtained in accordance with sections 95834(a)(b) and (d) of the California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms or in accordance with paragraph 2 of section 45 of O.Reg. 144/16: The Cap and Trade Program, the person must also provide the information referred to in subparagraph 3 of the first paragraph.

O.C. 1297-2011, s. 10; O.C. 1184-2012, s. 10; O.C. 902-2014, s. 8; O.C. 1125-2017, s. 13; O.C. 1462-2022, s. 10.

11. When registering for the system, an emitter or participant that is not a natural person must also designate at least 2 and at most 5 natural persons to act as account representatives and perform any operation within the system on its behalf.

The emitter or participant must also identify a primary account representative who is the resource person to be contacted for any information concerning the emitter or participant.

For the purposes of the designation, the emitter or participant must provide the Minister with the following information and documents:

- (1) the name and contact information of the emitter or participant;
 - (1.1) *(subparagraph revoked)*;
- (2) the name and contact information of the designated account representatives;
- (3) a declaration signed by a director or by any other officer, or a resolution of the board of directors of the emitter or participant attesting that the account representatives have been duly designated to act on behalf of the emitter or participant for the purposes of this Regulation;
- (4) an attestation from a notary or advocate confirming the link between an account representative and the emitter or participant who designated the representative;
- (5) a declaration, signed by each of the account representatives, attesting that they have been duly designated for that purpose by the authorized representatives of the emitter or participant, that they accept the duties they have been assigned and that they undertake to comply with the conditions of this Regulation. The declaration must also indicate the name and contact information of any other emitter or participant on whose behalf the account representative acts for that purpose.

The attestation referred to in subparagraph 4 of the third paragraph must be sent to the Minister within 3 months after the date of the attestation.

An emitter or participant that is not a natural person must have at least 2 account representatives at all times, including a primary account representative.

All representations, acts, errors or omissions made by the account representatives in the performance of their duties are deemed to be made by the emitter or participant.

The duties of the account representatives terminate when a request for revocation is received from the emitter or participant. When an emitter or a participant has only 2 representatives, a new account representative must be designated by the emitter or participant within 30 days after the request for revocation is received. The duties of the account representatives also terminate when all the accounts of the emitter or participant are closed.

If the participant is a natural person, any act that must be performed by an account representative pursuant to this Regulation must be performed by the participant.

At the written request of an emitter or participant, the Minister may, before a request for revocation of mandate is sent to the Minister by the emitter or participant under the seventh paragraph, where the urgency of the situation warrants it, withdraw access to the electronic system from one of its account representatives.

O.C. 1297-2011, s. 11; O.C. 1184-2012, s. 10; O.C. 902-2014, s. 9; O.C. 1125-2017, s. 14; O.C. 1462-2022, s. 11.

12. An emitter or participant that is not a natural person may authorize up to 5 natural persons to act as account viewing agent to observe, within the electronic system, the operations involving the accounts of the emitter or participant.

For the purposes of the authorization, the emitter or participant must provide the following information and documents:

- (1) the name, contact information and account numbers of the emitter or participant;
- (2) the name and contact information of the authorized account viewing agents;
- (3) a declaration signed by a director or any other officer, or a resolution of the board of directors of the emitter or participant attesting that the account viewing agents are duly authorized to observe the account operations;
- (4) an attestation from a notary or advocate confirming the link between the account viewing agent and the emitter or participant that authorized the account viewing agent.

The authorization of an account viewing agent ends when a request for revocation is received from the emitter or participant or when all the accounts of the emitter or participant are closed.

The attestation referred to in subparagraph 4 of the second paragraph must be sent to the Minister within 3 months of its date of issue.

O.C. 1297-2011, s. 12; O.C. 1184-2012, s. 10; O.C. 902-2014, s. 10; O.C. 1125-2017, s. 15; O.C. 1462-2022, s. 12.

13. No person applying for registration as a participant, and no person designated as an account representative or authorized as an account viewing agent, may have been found guilty, in the 5 years prior to the application for registration or the sending of the notice of designation or authorization, of fraud or any other criminal offence connected with the activities for which registration is requested or a notice is sent, or may have been found guilty on an offence under sections 28 to 31 of this Regulation or under a fiscal Act, the Derivatives Act (chapter I-14.01), the Securities Act (chapter V-1.1) or their regulations, unless a pardon has been obtained.

Every participant, every account representative and every account viewing agent who is found guilty of a criminal offence or an offence referred to in the first paragraph must inform the Minister of the conviction without delay, and the registration, designation or authorization of that natural person, account representative or account viewing agent will be terminated or revoked.

The emission allowances recorded in the account of a participant whose registration is terminated pursuant to the second paragraph are recovered by the Minister who allocates them as follows:

- (1) the emission units are paid into the auction account to be sold at a later date;
- (2) the early reduction credits and offset credits issued by a partner entity are paid into the retirement account to be extinguished;
- (3) the other offset credits are paid into the environmental integrity account.

This section applies to any conviction in any foreign court for a criminal offence or offence referred to in the first paragraph that, had it been committed in Canada, could have led to criminal or penal proceedings.

O.C. 1297-2011, s. 13; O.C. 1184-2012, s. 10; O.C. 1125-2017, s. 16; O.C. 1462-2022, s. 13.

14. When an application for registration meets the requirements of sections 7 to 13 that apply to it, the Minister opens, in the electronic system,

- (1) for each emitter or participant, a general account in which the emission allowances that may be traded are recorded; and
- (2) for each emitter, a compliance account in which the emission allowances used to cover the GHG emissions of its covered establishments at the end of a compliance period must be recorded.

O.C. 1297-2011, s. 14; O.C. 1184-2012, s. 10; O.C. 902-2014, s. 11; O.C. 1125-2017, s. 17.

14.1. Any change to the information and documents provided pursuant to subparagraph 6 of section 10 or to section 11 must be communicated to the Minister without delay and, in the case of those provided pursuant to section 7, except the list of subsidiaries referred to in subparagraph 6 of the first paragraph that must be provided at the Minister's request, sections, 7.2, 8, 9 and 9.1, subparagraphs 1 to 5 and subparagraph 7 of section 10 or section 12, within 30 days from this amendment.

The communication of a change referred to in the first paragraph must include a signed declaration attesting that the information and documents provided are valid and that they may be communicated when necessary for the purposes of this Regulation and the corresponding rules and regulations of a partner entity.

The Minister may suspend access to the electronic system obtained pursuant to section 10 when a change referred to in the first paragraph has not been communicated to the Minister in accordance with that paragraph.

O.C. 1184-2012, s. 10; O.C. 902-2014, s. 12; O.C. 1125-2017, s. 18; O.C. 1462-2022, s. 14.

14.2. A participant may request that the Minister close the participant's general account and cancel the participant's registration by providing the following information:

- (1) the participant's name and contact information;
- (2) the participant's account number;
- (3) the participant's signature or, if the participant is not a natural person, the signature of one of the participant's account representatives, of a director or any other officer, or a resolution of its board of directors, with the date of the request.

When the Minister notes, in the enterprise register, that a participant's registration has been cancelled for at least 1 year, the Minister notifies the participant that, after 30 days, the Minister may close the participant's account and terminate the participant's registration if the participant provides no valid reason for maintaining the account. When the account is closed, if it still contains emission allowances, the Minister may, as the case may be, recover them

- (1) by transferring the emission units in the account to the auction account;

(2) by transferring the offset credits issued by a partner entity and early reduction credits to the retirement account; and

(2.1) by transferring the other offset credits to the environmental integrity account;

(3) by transferring the reserve units to the reserve account.

When the request referred to in the first paragraph concerns a general account that still contains emission allowances, a participant that is not a natural person must provide the signature of a director or officer.

When the Minister closes a general account that still contains emission allowances, the rules of the second paragraph concerning the recovery of emission allowances apply.

O.C. 1184-2012, s. 10; O.C. 1125-2017, s. 19; O.C. 1462-2022, s. 15.

15. The Minister may close an emitter's compliance account and transfer the emission allowances recorded in it to the emitter's general account

(1) if the emitter has not been required to cover the GHG emissions of any of its establishments pursuant to section 19 or, as the case may be, section 19.0.1 and has met all the requirements of Chapter III;

(2) if the covered establishment is no longer operated by the emitter, the emitter operates no other covered establishments, and the emitter meets the conditions of section 17; or

(3) if the emitter is closing a covered establishment, operates no other covered establishments, meets the conditions of section 18 and has met all the requirements of Chapter III.

The emitter then becomes a participant for the purposes of this Regulation.

The Minister may open a general account for any person whose general account has been closed pursuant to section 14.2 and a compliance account for any person whose compliance account has been closed pursuant to the first paragraph to allow that person, as the case may be,

(1) to place in the account any offset credit paid and cancelled by a partner entity that it used, as an emitter, to cover GHG emissions;

(2) to place in the account any illegitimate offset credit referred to in section 70.5 or 70.7;

(3) to place emission allowances in the account to cover its GHG emissions in accordance with section 23.1.

The Minister, when opening an account pursuant to the third paragraph, may require the person concerned to provide the Minister, as soon as possible, with the information and documents referred to in sections 7 to 13.

O.C. 1297-2011, s. 15; O.C. 1125-2017, s. 20; O.C. 1462-2022, s. 16.

16. When a participant's general account has been inactive for at least 6 years, the Minister notifies the participant of the situation and of the fact that the Minister may, after 30 days, close the account and terminate the participant's registration if no emission allowance is placed in the account during that period or if the participant provides no valid reason for maintaining the account.

When the participant's general account still contains emission allowances, the Minister may, when closing the account, as the case may be, recover the allowances

(1) by transferring the emission units in the account to the auction account;

(2) by transferring the offset credits issued by a partner entity and early reduction credits to the retirement account; and

(2.1) by transferring the other offset credits to the environmental integrity account;

(3) by transferring the reserve units to the reserve account.

O.C. 1297-2011, s. 16; O.C. 1125-2017, s. 21; O.C. 1462-2022, s. 17.

17. When the operator of a covered establishment changes during a year, the emitter who previously operated the establishment must so notify the Minister as soon as possible.

The new operator becomes an emitter to which this Regulation applies and must, within 30 days of the change of operator, register for the system in accordance with this Chapter.

The new operator is required, in place of the former operator, to meet all the requirements that applied to the former operator pursuant to this Regulation.

O.C. 1297-2011, s. 17; O.C. 1125-2017, s. 22.

17.1. When an emitter or a participant changes its legal structure, by merger or otherwise, the person resulting from the change must so notify the Minister as soon as possible. If the change leads to the dissolution of the emitter or participant, the person resulting from the change must, within 30 days of the change, register for the system in accordance with this Chapter. The new emitter or new participant is required, in place of the former emitter or former participant, as the case may be, to meet all the requirements that applied to the former emitter or participant pursuant to this Regulation.

If the change referred to in the first paragraph concerns at least 2 covered emitters or participants, the person resulting from the change must revoke or confirm the mandate of the account representatives and viewing agents referred to in sections 11 and 12 to ensure that their number does not exceed the limits set in those sections.

O.C. 1462-2022, s. 18.

18. An emitter that is permanently closing a covered establishment must, within 45 days of the date of the last emissions report filed in accordance with the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere (chapter Q-2, r. 15), surrender to the Minister,

(1) in accordance with section 46.10 of the Environment Quality Act (chapter Q-2), the same number of emission units as the number allocated without charge pursuant to Division II of Chapter II of Title III and issued on the basis of the estimated GHG emissions of the covered establishment, for the period after the operation of the covered establishment ceased, the surrendered units, if they have a vintage, must be of the year on which they were allocated or from previous years; and

(2) any emission allowance needed to cover the GHG emissions of the covered establishment for the period during which it was operated.

For that purpose, the emitter must transfer into the emitter's compliance account the emission units referred to in subparagraph 1 of the first paragraph to allow them to be paid into the Minister's auction account and the emission allowances referred to in subparagraph 2 of the first paragraph to allow them to be deducted by the Minister and paid into the retirement account to be extinguished.

If the emitter fails to surrender emission allowances in accordance with this section,

(1) if they are emission units referred to in subparagraph 1 of the first paragraph, the Minister deducts them from the emitter's accounts; and

(2) if they are emission allowances referred to in subparagraph 2 of the first paragraph, the Minister recovers them in accordance with section 22 and applies the administrative sanction provided for in that section.

O.C. 1297-2011, s. 18; O.C. 1184-2012, s. 11; O.C. 902-2014, s. 13.

CHAPTER II.1

REGISTRATION OF CLEARING HOUSES

O.C. 1089-2015, s. 9.

18.1. A clearing house for derivatives having an establishment in Canada, recognized by a regulatory authority responsible for supervising financial markets in Canada, may register for the system in order to clear transactions involving emission allowances. For that purpose, it must provide the Minister with the following information and documents:

- (1) its name and contact information, and the date and place of its constitution;
- (2) a list of its directors and officers and their work contact information;
- (3) a list of its subsidiaries or parent legal persons with a diagram representing the relations between those entities, including the control percentage between each entity;
- (4) a document issued by the regulatory authority supervising the clearing house confirming that fact and giving the date on which supervision started and the rules to be followed by the clearing house;
- (5) a declaration signed by a director or any other officer, or a resolution of the board of directors of the clearing house including an undertaking to comply with the conditions of this Regulation and attesting that the information and documents provided are valid and that consent has been given to their communication when necessary for the purposes of this Regulation or the corresponding regulations of a partner entity.

O.C. 1089-2015, s. 9; O.C. 1125-2017, s. 23.

18.2. When registering for the system, the clearing house must also designate account representatives in accordance with section 11 that applies, with the necessary modifications.

It may also designate account viewing agents in accordance with section 12 that applies, with the necessary modifications.

Section 8.1 and subparagraphs 1, 2 and 2.1 of the first paragraph of section 9 also apply to the clearing house and sections 10 and 13 apply to its account representatives and account viewing agents, with the necessary modifications.

O.C. 1089-2015, s. 9.

18.3. When an application for registration meets the requirements of sections 18.1 and 18.2, the Minister opens a clearing house account for the clearing house in the electronic system.

O.C. 1089-2015, s. 9.

18.4. Any change to the information and documents provided under section 18.1 must be communicated to the Minister within 30 days and, if provided under section 18.2, immediately.

In addition, the clearing house must notify the Minister immediately if its activities are suspended by the regulatory authority that supervises it, or if supervision ceases. No transaction may be carried out in the account of the clearing house until the suspension has been lifted by the regulatory authority or until new supervision is established by the regulatory authority. If emission allowances are recorded in its account when

supervision is suspended or ceases, they are returned to the emitter or participant who transferred them into the account.

O.C. 1089-2015, s. 9.

18.5. A clearing house may request the closure of its clearing house account in accordance with section 14.2, with the necessary modifications.

Section 16 also applies to an inactive clearing house account, with the necessary modifications.

O.C. 1089-2015, s. 9.

CHAPTER III

COVERAGE OF GREENHOUSE GAS EMISSIONS

19. Every emitter referred to in section 2 is required, in accordance with the terms and conditions of this Chapter, to cover each metric tonne CO₂ equivalent of the verified emissions from an establishment or, if applicable, an enterprise referred to in the same section when its GHG emissions are equal to or exceed the emissions threshold, until 31 December following the third consecutive emissions report for which the emissions from the establishment or enterprise are below the emissions threshold or, where applicable, following the permanent closure of the establishment or the permanent stop in production of a reference unit if the emissions attributable to the other activities of the establishment have been below the emissions threshold for the last 3 years.

As for emitters referred to in subparagraph 2 of the second paragraph of section 2, they are bound by the obligation provided for in the first paragraph until 31 December of the first year covered by an enterprise's verified emissions report, sent to the Minister, in which the enterprise's GHG emissions are equal to zero.

The emitter is required to comply with the first paragraph

(1) beginning with the compliance period starting on 1 January 2013, in the case of an emitter that on 1 January 2012 operates an establishment or, if applicable, an enterprise for which the reported emissions for 2009, 2010 or 2011, attributable to activities other than those referred to in subparagraph 2 of this paragraph, are equal to or exceed the emissions threshold;

(2) beginning with the compliance period starting on 1 January 2015, in the case of the activities of an emitter referred to in subparagraph 2 of the second paragraph of section 2 whose verified emissions in connection with the fuel distributed for 2013 are equal to or exceed the emissions threshold;

(2.1) beginning on 1 January 2016, in the case of an emitter for whom emissions attributable to fuel distribution activities in 2014 are equal to or exceed 25,000 metric tonnes CO₂ equivalent;

(2.2) beginning on 1 January 2016, in the case of an emitter for whom emissions attributable to fuel distribution activities in 2015 are equal to or exceed 25,000 metric tonnes CO₂ equivalent;

(2.3) beginning on 1 January 2016, in the case of an emitter who distributed 200 litres or more of fuel in 2015 but whose corresponding declared emissions are lower than 25,000 metric tonnes CO₂ equivalent;

(3) in the case where an emitter's verified emissions are equal to or greater than the emissions threshold during a year after the year mentioned in subparagraph 1, beginning on 1 January of the year following the year in which the first report for emissions equal to or greater than the threshold, and for the years that follow 2020, beginning on 1 January of the year in which an emitter's verified emissions are equal to or exceed the threshold;

(3.0.1) beginning on 1 January of the year for which the demonstration is made, in the case of an emitter referred to in subparagraph 3 of the second paragraph of section 2 that has demonstrated that the emissions of an establishment will be equal to or exceed 25,000 metric tonnes CO₂ equivalent;

(3.1) beginning on 1 January of the year concerned, in the case where fuel distribution activities of an emitter are equal to or exceed the emissions threshold for 2016 or a subsequent year;

(4) beginning in the year in which it becomes operational, in the case of a new facility referred to in subparagraph *a* of paragraph 11 of section 3.

When the operator of a covered establishment changes, the new operator is required, in place of the former operator, to cover all the GHG emissions from the establishment that have not been covered in accordance with this Chapter.

Notwithstanding subparagraphs 1 and 2 of the second paragraph, an emitter that ceases its activities permanently in the year preceding the year in which the compliance period referred to in those subparagraphs begins is not required to cover the emitter's GHG emissions, provided it notifies the Minister in writing not later than 6 months following the start date of the period.

Despite the first paragraph, every emitter referred to in section 2, except an emitter referred to in subparagraph 2 of the second paragraph of that section, that ceases to be subject to the coverage requirement provided for in the first paragraph, that does not meet the requirements of section 2.1, and that wishes to continue to cover emissions from an establishment or, as the case may be, its enterprise, must send the Minister a written notice setting out its intention not later than 1 September following the third consecutive emissions report for which the emissions from the establishment or enterprise are below the emissions threshold.

An emitter that sends a notice under the sixth paragraph has, for a period of 5 consecutive years beginning on 1 January following the end of its coverage requirement under the first paragraph, the same rights and obligations as an emitter referred to in section 2.

O.C. 1297-2011, s. 19; O.C. 1184-2012, s. 12; O.C. 1138-2013, s. 4; O.C. 902-2014, s. 14; O.C. 1089-2015, s. 10; O.C. 1125-2017, s. 24; O.C. 1288-2020, s. 5; O.C. 1462-2022, s. 19.

19.0.1. An emitter referred to in section 2.1 is bound, in accordance with the terms and conditions in this Chapter, to cover each tonne CO₂ equivalent of the verified emissions of an establishment referred to in that section, as the case may be,

(1) until 31 December of the last year of the compliance period during which the emitter informs the Minister, not later than 1 September of that last year, of its intent to request that the Minister cancel its registration in the system;

(2) for the period ending in 2020, until 31 December of the year following the year during which GHG emissions are equal to or exceed the emissions threshold;

(2.1) for the period beginning in 2021, until 31 December of the year preceding the year during which GHG emissions are equal to or exceed the emissions threshold;

(3) until 31 December following the third consecutive emissions reporting for which the emissions of that establishment are below the reporting threshold referred to in section 6.1 of the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere (chapter Q-2, r. 15);

(4) until 31 December following the date of permanent closure of the establishment.

The emitter is bound by the obligation provided for in the first paragraph as of the following dates:

(1) where the emitter's registration in the system is done on or before 1 September of a given year, as of 1 January following that date;

(2) where the emitter's registration in the system is done after 1 September of a given year, as of 1 January of the second year following the year of registration in the system;

(3) as of 1 January following the date on which the notice of intention referred to in the second paragraph of section 7.1 is sent.

Despite the first paragraph, an emitter referred to in section 2.1 that ceases to be subject to the coverage requirement provided for in the first paragraph and that wishes to continue to cover emissions from its establishment or, as the case may be, its enterprise, must send the Minister a written notice setting out its intention not later than 1 September following the third consecutive emissions report for which the emissions from the establishment or enterprise are below the emissions threshold referred to in section 6.1 of the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere.

An emitter that sends a notice under the third paragraph has, for a period of 5 consecutive years beginning on 1 January following the end of its coverage requirement under the first paragraph or until it is once again required to cover its emissions, the same rights and obligations as an emitter referred to in section 2.1.

Despite the fourth paragraph, an emitter that continues to cover the emissions from its establishment cannot ask the Minister to cancel its registration until the expiry of the 5-year period provided for in that paragraph.

O.C. 1125-2017, s. 25; O.C. 1288-2020, s. 6; O.C. 1462-2022, s. 20.

19.1. Where, on 1 August following the end of a compliance period, the verification report on the emissions report for 1 or more years of that compliance period does not allow to confirm in whole or in part the quantities of GHG emissions reported in accordance with the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere (chapter Q-2, r. 15) and the relative importance threshold referred to in subparagraph 1 of the first paragraph of section 6.7 of that Regulation is reached, the emitter is required for those years to cover the increased quantity of GHG emissions as follows:

Total increased quantity of GHG emissions = total GHG emissions reported $\times$ (1+ RUGHG)

Where

RUGHG = Relative uncertainty of GHG emissions reported, calculated in accordance with paragraph 7.5 of section 6.9 of the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere.

Even if the emitter submits a verification report confirming compliance of the emissions report with the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere after the date provided for in the first paragraph, the emission allowances corresponding to the difference between the total increased quantity of GHG emissions and the total quantity of GHG emissions verified once again may not be recovered.

O.C. 1089-2015, s. 11.

20. To be valid for the purpose of covering GHG emissions, the emission allowances used to cover GHG emissions must meet the requirements of section 37 and must not have been issued for a year after the compliance period, except for offset credits, which may be used if they were issued in the first year following the year of expiry of the compliance period, and emission allowances issued under the second and third paragraphs of section 42.

In addition, the total quantity of offset credits that the emitter may use to cover the GHG emissions of its covered establishment cannot exceed 8% of the GHG emissions to be covered for the compliance period.

O.C. 1297-2011, s. 20; O.C. 1184-2012, s. 13; O.C. 902-2014, s. 15; O.C. 1288-2020, s. 7.

21. On 1 November following expiry of a compliance period or, if that day is not a business day, on the first following business day, at 8:00 p.m., every emitter must have at least as many emission allowances in its compliance account as its verified emissions and, where applicable, as the emissions increased in accordance with the first paragraph of section 19.1 for every covered establishment during the compliance period or, where applicable, during the years following the last compliance period for which emissions coverage was required.

The Minister deducts the required emission allowances in chronological order, from the least recent to the most recent according to their year of issue and vintage, in the following order:

- (1) offset credits, up to the limit provided for in the second paragraph of section 20;
 - (1.1) emissions units from the Minister's reserve account, using units from categories C, B and A, in that order;
- (2) early reduction credits;
- (3) emission units other than units referred to in subparagraph 1.1.

The emission allowances deducted by the Minister in accordance with this section are placed in the Minister's retirement account and are extinguished.

O.C. 1297-2011, s. 21; O.C. 1184-2012, s. 14; O.C. 1138-2013, s. 5; O.C. 902-2014, s. 16; O.C. 1089-2015, s. 12.

21.1. An emitter that ceases to be subject to this Regulation and that has, in its compliance account, enough emission allowances to meet its coverage requirement under section 19 or 19.0.1 may, at any time during a compliance period, request that the Minister deduct its emission allowances in accordance with the second paragraph of section 21 to be paid into the Minister's retirement account and extinguished.

O.C. 1462-2022, s. 21.

22. A failure by an emitter to cover the GHG emissions of a covered establishment on the expiry of the compliance deadline leads to the suspension of its general account and the application of an administrative sanction equal to 3 emission units or early reduction credits for each missing emission allowance needed to complete the coverage.

The Minister recovers the missing emission allowances by deducting an equivalent number of valid emission allowances from the emitter's general account in the manner provided for in the second paragraph of section 21.

The Minister also recovers the emission units and early reduction credits required for the administrative sanctions referred to in the first paragraph in the following manner and order, until all the units have been recovered:

- (1) the Minister deducts 3 valid emission units or early reduction credits from the emitter's general account for each missing emission allowance using reserve units from categories C, B and A, early reduction credits and units identified by vintage from the least recent to the most recent, in that order;
- (2) the Minister deducts 3 emission units issued for a year following the compliance period, from the most recent to the least recent, from the emitter's compliance account for each missing emission allowance;

(3) the Minister deducts 3 emission units issued for a year following the compliance period, from the most recent to the least recent, from the emitter's general account for each missing emission allowance.

When the emitter's accounts do not contain enough emission allowances to recover all or part of the missing emission allowances as well as emission units and early reduction credits required for the application of the administrative sanction, the Minister notifies the emitter, who must surrender them within 30 days from the failure to provide coverage.

Upon a failure to comply, if the emitter is eligible for the allocation without charge of emission units, the Minister removes a quantity equivalent to the emission allowances, emission units and early reduction credits referred to in the fourth paragraph from the quantity that would normally have been allocated to the emitter without charge for the following compliance period pursuant to Division II of Chapter II of Title III.

O.C. 1297-2011, s. 22; O.C. 1184-2012, s. 15; O.C. 902-2014, s. 17.

23. Every missing emission allowance, recovered and deducted in accordance with section 22, is placed in the Minister's retirement account to be extinguished.

The emission units deducted following the application of the administrative sanction provided for in that section are placed in the Minister's auction account to be auctioned at a later date, and early reduction credits deducted are placed in the Minister's retirement account to be extinguished.

Once these actions have been taken, the suspension of the emitter's general account is lifted.

O.C. 1297-2011, s. 23; O.C. 902-2014, s. 18; O.C. 1089-2015, s. 13.

23.1. An emitter who, in accordance with section 6.5 of the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere (chapter Q-2, r. 15), communicates a notice of correction to raise the quantity of GHG emissions reported in an emissions report filed in the previous 7 years must, for every compliance period that includes one of those years and for which the compliance deadline has expired, cover the GHG emissions that have not been covered by an equivalent number of additional emission allowances if the situation corresponds to one of the following criteria:

Criterion 1

$$[(\text{GHG}_{\text{corr}} - \text{Allowances}_{\text{surrendered}}) / \text{Allowances}_{\text{surrendered}}] \geq 0.05$$

Criterion 2

$$(\text{GHG}_{\text{corr}} - \text{Allowances}_{\text{surrendered}}) \geq 500 \text{ metric tonnes CO}_2 \text{ equivalent}$$

Where:

GHG_{corr} = Corrected GHG emissions, in metric tonnes CO₂ equivalent;

$\text{Allowances}_{\text{surrendered}}$ = Quantity of emission allowances surrendered for the compliance period to which the correction applies, expressed in metric tonnes CO₂ equivalent.

Not later than 8:00 p.m. on the 180th day following the notice of correction or, if that day is not a business day, on the first following business day, the emitter must transfer into its compliance account the additional emission allowances, which must meet the following conditions:

(1) emission allowances identified by vintage must be from the current year or a previous year;

(2) the offset credits used, along with the offset credits already deducted for the compliance period during which the correction is recorded, must not exceed 8% of the GHG emissions to be covered for that period.

The Minister deducts the additional emission allowances required in the manner provided for in the second paragraph of section 21 and places them in the Minister's retirement account to be extinguished.

If the additional emission allowances are not surrendered by the emitter in the time prescribed in the second paragraph, the provisions of sections 22 and 23 apply, with the necessary modifications.

No emission allowances will be reimbursed in the case of a notice of correction whose purpose is to reduce the emissions referred to in the first paragraph.

O.C. 902-2014, s. 19; O.C. 1462-2022, s. 22.

CHAPTER IV

TRANSACTIONS OF EMISSION ALLOWANCES

O.C. 1297-2011, c. IV; O.C. 1184-2012, s. 16.

24. An emission allowance may be traded only between emitters, participants and clearing houses registered with the Minister or a partner entity.

An emitter or a participant may only hold emission allowances for their own use and not on behalf of another person having an interest in or control the emission allowances.

In addition, only emission allowances recorded in a general account may be traded. Subject to section 15, once recorded in a compliance account, emission allowances may only be used to cover GHG emissions.

O.C. 1297-2011, s. 24; O.C. 1184-2012, s. 17; O.C. 1089-2015, s. 14.

25. Every emitter or participant who wishes to trade emission allowances with another emitter or participant must follow the procedure established in section 26 and send the Minister a transaction request containing the following information:

- (1) the general account number of the seller;
- (2) the general account number of the buyer;
- (3) the quantity, type and, where applicable, vintage of the emission allowances to be traded;
- (4) the settlement price of each type and, where applicable, each vintage of emission allowances, as well as the method used to determine the settlement price;
- (5) the type of emissions trading agreement, the date of signing of the agreement and the agreed upon trading date;
- (6) where applicable, all other transactions or products covered by the agreement, a description of those transactions or products, and the name and contact information of the other parties involved.

Despite subparagraph 4 of the first paragraph, an emitter or participant is not required to disclose the settlement price of the emission allowances when the transaction is between related entities or is a bundled transfer.

O.C. 1297-2011, s. 25; O.C. 1184-2012, s. 18; O.C. 1138-2013, s. 6; O.C. 902-2014, s. 20; O.C. 1125-2017, s. 26.

26. A transaction request for emission allowances must be proposed by one of the seller's account representatives.

The transaction request is then submitted to all the seller's other account representatives, for confirmation by one of them within 2 days of being submitted.

When the transaction request is confirmed, a notice is sent to all the seller's account representatives and the request is submitted to the buyer's account representatives, for acceptance by one of them within 3 days of the proposal of the transaction request.

Unless otherwise indicated by one of the account representatives or if the Minister has serious grounds to believe that an offence under this Regulation has been committed, once the transaction request has been accepted the emission allowances concerned by the request are transferred from the seller's to the buyer's general account.

At each step in the transaction request, the account representative concerned must attest to holding due authorization to complete the transaction for the emitter or participant, and that the information contained in the transaction request is true, accurate and complete.

The account representatives involved in the transaction of emission allowances must provide the Minister, on request and as soon as possible, with any additional information concerning the transaction.

O.C. 1297-2011, s. 26; O.C. 1184-2012, s. 18; O.C. 902-2014, s. 21.

26.1. Every emitter or participant who wishes to transfer emission allowances to a clearing house must, in accordance with the second paragraph, send the Minister a transaction request for the clearing house containing the following information:

- (1) the general account number of the seller;
- (2) the account number of the clearing house;
- (3) the quantity, type and, where applicable, vintage of the emission allowances to be traded;
- (4) the settlement price of each type and, where applicable, each vintage of emission allowances;
- (5) the type of emission allowances trading agreement and the transaction date scheduled;
- (6) where applicable, the codes of the exchange and of the contract.

The transaction request must be sent in accordance with the procedure established in section 26, with the necessary modifications, subject to the acceptance provided for in the third paragraph of that section which does not apply to that type of transaction.

O.C. 1089-2015, s. 15.

26.2. A clearing house that wishes to use emission allowances to compensate for a transaction must, in accordance with the procedure established in section 26.3, send the Minister an application for compensation containing the following information:

- (1) the account number of the clearing house;
- (2) the general account number of the emitter or participant who is compensated;
- (3) the quantity, type and, where applicable, vintage of the emission allowances used for compensation;
- (4) the settlement price of each type and, where applicable, each vintage of emission allowances;
- (5) the type of emission allowances trading agreement and the transaction date scheduled;

(6) where applicable, the codes of the exchange and of the contract.

O.C. 1089-2015, s. 15.

26.3. An application for compensation must be proposed by one of the clearing house's account representatives.

The application for compensation is then submitted to all the other account representatives at the clearing house for confirmation by one of them.

Once the application is confirmed, a notice to that effect is sent to all the account representatives and the emission allowances are transferred to the general account of the emitter or participant who is compensated.

The account representatives involved in an application for compensation of emission allowances must provide the Minister, on request and as soon as possible, with any additional information concerning the compensation.

O.C. 1089-2015, s. 15.

26.4. Emission allowances transferred to a clearing house account that are not used within 5 days for a transaction by an emitter or participant are returned to the seller.

O.C. 1089-2015, s. 15.

27. Every emitter who wishes to transfer emission allowances from the emitter's general account to the emitter's compliance account, or every emitter or participant who wishes to retire from the system emission allowances recorded in the emitter's general account must send to the Minister a request including

- (1) the emitter's or participant's general, and where applicable, compliance account number;
- (2) the quantity, type and, where applicable, vintage of the emission allowances to be transferred or retired;
- (3) the reason for which the emitter or participant wishes to retire the emission allowances, if applicable.

An emitter or a participant may retire no more than 10,000 emission units per year.

O.C. 1297-2011, s. 27; O.C. 1184-2012, s. 18; O.C. 1138-2013, s. 7; O.C. 1125-2017, s. 27; O.C. 1462-2022, s. 23.

27.1. A transfer or retirement request for emission allowances must be proposed by an account representative.

The transfer or retirement request is then submitted to all the other account representatives, for confirmation by one of them within 2 days of being submitted.

When the transfer or retirement request is confirmed, a notice is sent to all the emitter's or participant's account representatives.

No request for the retirement of emission allowances may be made for compliance purposes under another cap-and-trade system for GHG emission allowances or GHG emissions reduction program.

Unless otherwise indicated by one of the account representatives or if the Minister has serious grounds to believe that an offence under this Regulation has been committed, once the transfer or retirement request has been confirmed the emission allowances concerned by the request are transferred from the emitter's general account to the emitter's compliance account, or from the emitter's or participant's general account to the Minister's retirement account, where they are extinguished.

Account representatives who have sent a transfer or retirement request for emission allowances must provide the Minister, on request and as soon as possible, with any additional information concerning transfer or the retirement.

O.C. 1184-2012, s. 18; O.C. 1138-2013, s. 8; O.C. 902-2014, s. 22; O.C. 1462-2022, s. 24.

27.2. When a transaction cannot be completed because of an error or omission in connection with the information included in the request, because the request does not meet the requirements of one of sections 25 to 27.1, because an account does not contain enough emission allowances or because of any other reason, a notice is sent to the parties concerned within 5 working days following the failure to complete the transaction.

O.C. 1184-2012, s. 18; O.C. 1138-2013, s. 9; I.N. 2016-01-01 (NCCP).

28. No person holding privileged information on an emission allowance may trade that emission allowance, disclose the information or recommend that another person trade the emission allowance, except if the person has reason to believe that the information is known to the public or to the other party in the transaction.

However, the person may disclose the information or recommend that another person trade the emission allowance, if the person is required to disclose the information in the course of business, and if nothing leads the person to believe that the information will be used or disclosed in contravention of this section or section 29.

O.C. 1297-2011, s. 28.

29. No person prevented from trading an emission allowance pursuant to section 28 may use the privileged information in any other way, unless the person has reason to believe that the information is known to the public. In particular, the person may not carry out operations on futures contracts or other derivatives within the meaning of the Derivatives Act (chapter I-14.01) involving an emission allowance.

O.C. 1297-2011, s. 29.

30. A person with knowledge of material order information may not carry out or recommend that another person carry out a transaction involving an emission allowance, or disclose the information to any other person, except if

- (1) the person has reason to believe that the other person is already aware of the information;
- (2) the person must disclose the information in the course of business, and nothing leads the person to believe that it will be used or disclosed in contravention of this section;
- (3) the person carries out a transaction involving the emission allowances concerned by the information in order to perform a written obligation that the person contracted before becoming aware of the information.

For the purposes of this section, material order information is any information concerning an order to buy or an order to sell an emission allowance that could have a major impact on the price of an emission allowance.

O.C. 1297-2011, s. 30.

31. No person may disclose false or misleading information or information that must be filed pursuant to this Regulation, before it is filed, in order to carry out a transaction, in particular when it could influence the price of an emission allowance.

For the purposes of this section, false or misleading information is any information likely to mislead on an important fact, as well as the simple omission of an important fact; an important fact is any fact that may reasonably be believed to have a significant impact on the price or value of an emission allowance.

O.C. 1297-2011, s. 31.

32. The total number of emission units of the current or prior vintage, of emission units from the reserve account and of early reduction credits that an emitter or a participant may hold in its general account and, where applicable, its compliance account is subject to the holding limit calculated using equation 32-1:

Equation 32-1

$$HL_i = 0.1 \times \text{Baseline} + 0.025 \times (C_i - \text{Baseline})$$

Where:

HL_i = Holding limit for year i ;

0.1 = Maximum proportion of the number of emission units constituting the Baseline that an emitter or a participant may hold;

Baseline = 25,000,000;

0.025 = Maximum proportion of the number of emission units in excess of the Baseline that an emitter or a participant may hold;

C_i = Sum of the annual cap of emission units for year i set by order in accordance with section 46.7 of the Environment Quality Act (chapter Q-2) and the cap set by a partner entity;

i = Current year.

The total number of emission units of a vintage subsequent to the current year that an emitter or participant may hold in its general account and, where applicable, its compliance account is subject to the holding limit calculated using equation 32-2:

Equation 32-2

$$HL_j = 0.1 \times \text{Baseline} + 0.025 \times (C_j - \text{Baseline})$$

Where:

HL_j = Holding limit for an emission unit of vintage j ;

0.1 = Maximum proportion of the number of emission units constituting the Baseline that an emitter or participant may hold;

Baseline = 25,000,000;

0.025 = Maximum proportion of the number of emission units in excess of the Baseline that an emitter or participant may hold;

C_j = Sum of the annual cap of emission units for year j set by order in accordance with section 46.7 of the Environment Quality Act and of the cap set by a partner entity;

j = Year subsequent to the current year.

Despite the first paragraph, the emission units and early reduction credits recorded in the compliance account of an emitter and needed to cover estimated GHG emissions for the current year or emissions for preceding years are not subject to the holding limit.

Furthermore, an emitter or a participant that reaches or exceeds one-half of its holding limit must, at the Minister's request, explain its strategy and the reason for holding the emission units concerned.

Every transaction request for emission units that would cause the buyer's holding limit to be exceeded will be refused by the Minister.

When the holding limited is exceeded, the emitter or participant must, within 5 business days after the limit is exceeded, divest itself of the excess emission allowances, pay into its compliance account the emissions units or early reduction credits needed to cover its emissions for the current year or preceding years or, in the case of related entities, amend the distribution of the overall holding limit determined in accordance with section 33 in order to become compliant. Upon a failure to comply, the Minister takes back a quantity of emission units equivalent to the excess emission allowances in the following order:

- (1) the emission units from the Minister's reserve account;
- (2) the early reduction credits;
- (3) the other emission units, chronologically, from the least recent to the most recent, according to their vintage.

The units referred to in subparagraphs 1 and 3 of the sixth paragraph are transferred to the Minister's auction account and the early reduction credits are transferred to the Minister's retirement account.

O.C. 1297-2011, s. 32; O.C. 1184-2012, s. 19; O.C. 1138-2013, s. 10; O.C. 902-2014, s. 23; O.C. 1125-2017, s. 28.

33. For the purposes of the holding limit referred to in section 32, related entities are considered to be a single entity with an overall holding limit that they must distribute among themselves by allotting percentage shares.

The distribution must be disclosed to the Minister when the related entities register for the system in accordance with subparagraph 3 of the first paragraph of section 9 or, in the case of a new business relationship within the meaning of subparagraph 1 of the second paragraph of that section, within 30 days from the creation of that relationship. The information must, however, be sent to the Minister not more than 40 days before an auction when one of the related entities wishes to be registered as a bidder.

The distribution referred to in the second paragraph must be confirmed by all the related entities subject to the distribution. Despite section 32, until all the related entities have confirmed the distribution, the holding limit of the last emitter or participant to join the group of related entities is set at zero.

O.C. 1297-2011, s. 33; O.C. 1184-2012, s. 20; O.C. 1462-2022, s. 25.

34. The Minister may, on the Minister's own initiative, correct any material error that occurs in an account in the system. The Minister must inform the parties concerned as soon as possible, stating the reasons for the correction.

O.C. 1297-2011, s. 34; O.C. 1089-2015, s. 16.

35. The Minister posts, at least once every year, on the website of the department, a list of all emitters, participants and clearing houses registered for the system as well as a summary of transactions conducted the previous year.

The Minister may post, on the website of the department, a compilation of the information obtained pursuant to subparagraphs 2 and 3 of the first paragraph of section 27.

O.C. 1297-2011, s. 35; O.C. 1184-2012, s. 21; O.C. 902-2014, s. 24; O.C. 1089-2015, s. 17; O.C. 1462-2022, s. 26.

TITLE III

EMISSION ALLOWANCES

CHAPTER I

GENERAL

36. Emission allowances are issued in electronic form and identified in a way that allows them to be differentiated, in particular by type.

Reserve emission units are also identified according to the categories provided for in the first paragraph of section 58, whereas other emission units as well as offset credits are also identified by vintage.

O.C. 1297-2011, s. 36; O.C. 1184-2012, s. 22; O.C. 902-2014, s. 25.

37. The following emission allowances may be traded through the system and used for compliance purposes:

- (1) every emission unit and early reduction credit referred to in this Title;
- (2) every offset credit issued by the Minister pursuant to subparagraph 2 of the first paragraph of section 46.8 of the Environment Quality Act (chapter Q-2);
- (3) every emission allowance issued by a partner entity, according to the rules for the equivalent types of emission allowances issued under this Regulation, as indicated in Appendix B.1

Despite the first paragraph, the following emission allowances may not be traded or used for compliance purposes:

- (1) any emission allowance that has been suspended, cancelled or extinguished by the Minister or by a partner entity;
- (2) any emission allowance that has been used for compliance purposes under another cap-and-trade system for GHG emission allowances or GHG emissions reduction program.

O.C. 1297-2011, s. 37; O.C. 1184-2012, s. 23.

CHAPTER II

GREENHOUSE GAS EMISSION UNITS

DIVISION I

GENERAL

38. Based on the cap on emission units set by order in accordance with section 46.7 of the Environment Quality Act (chapter Q-2), the Minister places in the Minister's reserve account a quantity of emission units that may be used in adjusting the allocation made without charge in accordance with Division II or may be sold by mutual agreement in accordance with Division IV of this Chapter.

The quantity of emission units represents

- (1) 1% of the emission units available under the cap set for the years 2013 and 2014;
- (2) 4% of the emission units available under the cap set for the years 2015 to 2017;
- (3) 7% of the emission units available under the cap set for the years 2018 to 2020; and
- (4) 4% of the emission units available under the cap set for the years 2021 and following.

The Minister places the unreserved emission units in the Minister's allocation account. The units may be allocated without charge in accordance with Division II of this Chapter.

The emission units in excess of the total estimated quantities that may be allocated without charge for a given year are placed in the Minister's auction account to be sold in accordance with Division III of this Chapter.

O.C. 1297-2011, s. 38.

DIVISION II

ALLOCATION

39. An emitter operating a covered establishment and pursuing an activity referred to in Table A of Part I of Appendix C is eligible for the allocation of emission units without charge.

Despite the first paragraph, an emitter referred to in the second paragraph of section 2.1 operating a covered establishment and pursuing an activity referred to in Table A of Part I of Appendix C is not eligible for the allocation of emission units without charge until the year in which the emissions attributable to that establishment, reported in accordance with the first paragraph of section 6.1 of the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere (chapter Q-2, r. 15), are equal to or exceed 10,000 metric tonnes CO₂ equivalent.

O.C. 1297-2011, s. 39; O.C. 1462-2022, s. 27.

40. The Minister estimates annually the total quantity of emission units that may be allocated without charge to an eligible emitter.

Until the year 2023, the estimated total quantity is calculated in accordance with Part II of Appendix C using, depending on the year concerned, equation 1-1 or 7-1, and replacing

(1) the factors " P_{Rij} ", " P_{Ri} ", " P_{RcuI} ", " P_{RSMi} " and " P_{RcathI} " in equations 2-1, 2-9, 3-1, 3-10, 4-1, 4-8, 4-9, 4-15, 4-25, 4-31, 5-1, 5-2, 5-3, 6-2, 6-7, 6-8, 6-9, 6-10.1, 6-10.2, 6-10.5, 6-10.9, 6-12 to 6-16, 8-1, 9-1, 10-1, 11-1, 13-1 and 14-1 by the factors " P_{Rij-2} ", " P_{Ri-2} ", " P_{Rcu-2} ", " P_{RSM-2} " and " $P_{Rcath-2}$ " which correspond to the total quantity of reference units produced or used in the year 2 years before the allocation year;

(2) the factors " EC_{TOTALI} ", " $GHG_{FP I}$ " and " GHG_{OI} " in equations 4-21, 4-37, 5-3, 6-10.1, 6-14, 6-15, 11-5 and 14-5 by the factors " $EC_{TOTAL i-2}$ ", " $GHG_{FP i-2}$ ", " $GHG_{FP cu i-2}$ " and " $GHG_{OI i-2}$ ", which correspond respectively to the energy consumption, fixed process emissions and other emissions in the year 2 years before the allocation year;

(3) the factors " $EC_{NF TOTAL I}$ ", " $GHG_{NF FP I}$ " and " $GHG_{NF OI}$ " in equations 6-10.3 and 6-10.4 by the factors " $EC_{NF TOTAL i-2}$ ", " $GHG_{NF FP i-2}$ " and " $GHG_{NF OI i-2}$ ", which correspond respectively to the energy consumption, fixed process emissions and other emissions at the new facility in the year 2 years before the allocation year;

(4) the factor " $H_{2,I}$ " of equation 6-10.2 by factor " $H_{2,i-2}$ ", which corresponds to the hydrogen consumption in the year 2 years before the allocation year;

(5) the factor “ $A_{\text{recycl},i}$ ” in equations 6-12, 6-13 and 6-14 by the factor “ $A_{\text{recycl},i-2}$ ”, which corresponds to GHG emissions attributable to the carbon content of recycled secondary materials introduced into the process materials in the year 2 years before the allocation year.

Despite equations 4-1 to 4-8 in Part II of Appendix C, if the only data available are data on emissions for the year in which an establishment became operational, the Minister uses those data to estimate the emission units allocated without charge for the first year.

Beginning in the year 2024, the total quantity of emission units that may be allocated without charge to an eligible emitter is calculated in accordance with Part II of Appendix C using, depending on the year concerned, equation 18-1, and replacing

(1) the factor “ $P_{Ri,j}$ ” in equations 19-1, 20-1, 21-1, 21-3, 23-1 and 24-1 by the factor “ $P_{Ri-2,j}$ ”, which corresponds to the total quantity of reference units produced or used in the year 2 years before the allocation year;

(2) the factors “ $EC_{\text{TOTAL } i,j}$ ”, “ $GHG_{\text{FP } i,j}$ ”, “ $GHG_{\text{O } i,j}$ ” and “ $GHG_{i,j}$ ” in equations 21-2, 22-1 and 24-7 by the factors “ $EC_{\text{TOTAL } i-2,j}$ ”, “ $GHG_{\text{FP } i-2,j}$ ”, “ $GHG_{\text{O } i-2,j}$ ” and “ $GHG_{i-2,j}$ ”, which correspond respectively to energy consumption, fixed process emissions, other emissions and total emissions in the year 2 years before the allocation year;

(3) where the data needed to use the factors “ $GHG_{\text{FP } 2023,j}$ ”, “ $GHG_{\text{FP } \text{cu}, 2023}$ ”, “ $GHG_{\text{C}, 2023 \text{ RSM}}$ ”, “ $F_{\text{H } 2023}$ ”, “ $P_{\text{R } 2023,j}$ ”, “ $P_{\text{R } \text{cu}, 2023}$ ”, “ $P_{\text{R } \text{RSM}, 2023}$ ” and “ $A_{\text{recycl}, 2023}$ ” in equations 19-13, 19-14, 19-15, 19-16 and 19-18 are not available, by the factors “ $GHG_{\text{FP } 2022,j}$ ”, “ $GHG_{\text{FP } \text{cu}, 2022}$ ”, “ $GHG_{\text{C}, 2022 \text{ RSM}}$ ”, “ $F_{\text{H } 2022}$ ”, “ $P_{\text{R } 2022,j}$ ”, “ $P_{\text{R } \text{cu}, 2022}$ ”, “ $P_{\text{R } \text{RSM}, 2022}$ ” and “ $A_{\text{recycl}, 2022}$ ”, which correspond respectively to fixed process emissions, hydrogen consumption, the total quantity of reference units produced or used and the carbon content of recycled secondary materials introduced into the process during year 2022.

Beginning in the year 2024, the Minister estimates annually the part of the emission units allocated without charge to be paid to an emitter.

The part is calculated in accordance with Part II of Appendix C using, depending on the year concerned, equation 18-2, and replacing

(1) the factor “ $P_{Ri,j}$ ” in equations 19-5, 20-4, 21-3, 23-3 and 24-4 by the factor “ $P_{Ri-2,j}$ ”, which corresponds to the total quantity of reference units produced or used in the year 2 years before the allocation year;

(2) the factors “ $EC_{\text{TOTAL } i,j}$ ”, “ $GHG_{\text{FP } i,j}$ ”, “ $GHG_{\text{O } i,j}$ ” and “ $FFP_{i,j}$ ” in equations 19-7, 22-3, 22-5, 24-6 and 24-8 by the factors “ $EC_{\text{TOTAL } i-2,j}$ ”, “ $GHG_{\text{FP } i-2,j}$ ”, “ $GHG_{\text{O } i-2,j}$ ” and “ $FFP_{i-2,j}$ ”, which correspond respectively to the energy consumption, fixed process emissions, other emissions and proportion factor of fixed process emissions in the year 2 years before the allocation year.

Beginning in the year 2024, the Minister also estimates annually the part of the emission units allocated without charge to an emitter that is to be auctioned.

That part is calculated in accordance with Part II of Appendix C using, depending on the year concerned, equation 18-3, and replacing

(1) the factor “ $P_{Ri,j}$ ” in equations 19-1, 19-5, 20-1, 20-4, 21-1, 21-3, 23-1, 23-3, 24-1 and 24-4 by the factor “ $P_{Ri-2,j}$ ”, which corresponds to the total quantity of reference units produced or used in the year 2 years before the allocation year;

(2) the factors “ $EC_{TOTAL\ i,j}$ ”, “ $GHG_{FP\ i,j}$ ” and “ $GHG_{O\ i,j}$ ” in equations 22-1, 22-3, 24-7 and 24-8 by the factors “ $EC_{TOTAL\ i-2,j}$ ”, “ $GHG_{FP\ i-2,j}$ ” and “ $GHG_{O\ i-2,j}$ ”, which correspond respectively to the energy consumption, fixed process emissions and other emissions in the year 2 years before the allocation year.

On 1 May 2013 and on 14 January of every following year, or, if that day is not a working day, on the first following working day, the Minister issues the emission units corresponding to 75% of the total estimated quantity of emission units that may be allocated without charge, from which, beginning in 2024, 75% of the part of the units to be auctioned has been subtracted.

Beginning in the year 2024, on 14 January of each year or, if that day is not a working day, on the first following working day, provided that an agreement on the implementation by the emitter of a project referred to in Part III of Appendix C has been signed by the emitter and the Minister in accordance with section 46.8.1 of the Environment Quality Act (chapter Q-2) before the previous 1 September, the Minister pays into the Minister’s auction account 75% of the quantity of emission units calculated in accordance with the seventh paragraph.

When the operator of a covered establishment changes before 14 January of a given year, the emission units referred to in the ninth paragraph are allocated to the new operator if, not later than the business day immediately before that date, the former operator notified the Minister of the change pursuant to the first paragraph of section 17.

O.C. 1297-2011, s. 40; O.C. 1184-2012, s. 24; O.C. 1138-2013, s. 11; I.N. 2016-01-01 (NCCP); O.C. 1125-2017, s. 29; O.C. 1462-2022, s. 28.

40.1. To be considered in the calculation of emission units allocated without charge referred to in the first, second, fifth and seventh paragraphs of section 40, any change to the information provided for in subparagraph 4 of the first paragraph of section 7 and provided by the emitter when registering for the system must be sent to the Minister, together with any supporting document, not later than 1 June following the end of the compliance period affected by the change. Any change sent to the Minister within the time limit applies from the beginning of that compliance period.

In addition, to be considered in the calculation of emission units allocated without charge, any change concerning the type of reference unit used must be sent to the Minister not later than 1 June prior to the beginning of a compliance period. Any change sent within the time limit applies from the beginning of that compliance period.

Beginning in the year 2024, when the changes to the information provided for in subparagraph 4 of the first paragraph of section 7 lead to an increase in the number of emission units allocated without charge to be auctioned, they are paid by the Minister into the Minister’s auction account. When the changes lead to a decrease in the number of such units, an equivalent number of emission units is deducted from the next payments of the emission units allocated without charge to that emitter to be auctioned.

O.C. 1462-2022, s. 29.

41. After the filing of the emissions report for the year during which the issue referred to in the ninth and tenth paragraphs of section 40 is made, an adjustment is made to the remaining 25% of the total estimated quantity of emission units that may be allocated without charge.

The Minister calculates the adjustment by subtracting the quantity of emission units issued from the actual total quantity of emission units that may be allocated without charge to an eligible emitter for the year covered by the emissions report, determined in accordance with Part II of Appendix C.

On 14 September of each year beginning in 2014 or, if that day is not a working day, on the first following working day, the Minister places, either in the emitter’s general account or in the Minister’s auction account, the quantity of emission units corresponding to any positive result of the adjustment calculation.

When the result of the adjustment calculation for units paid in accordance with the ninth paragraph of section 40 is negative, the Minister notifies the emitter who must, within 30 working days, place in its compliance account a quantity of emission units, of the vintage of the year for which the allocation referred to in the fourth paragraph of section 40 was made or of a prior vintage, equal to the excess quantity issued following the estimate made in accordance with that section; upon a failure to comply, the emission units are taken from the emitter's general account. The emission units are then transferred to the Minister's reserve account when units are required to be surrendered in accordance with the fourth paragraph of section 42, or transferred to the Minister's auction account.

Upon a failure by the emitter to place the emission units in its compliance account within the time provided for in the fourth paragraph or to have enough emission units in the emitter's general account, the Minister reduces the following payment of such units by an equivalent quantity of emission units.

When the result of the calculation for the adjustment of units paid in accordance with the tenth paragraph of section 40 is negative, the Minister notifies the emitter. The Minister then removes an equivalent quantity of emission units from the following payments of such emission units.

When the operator of a covered establishment changes before 14 September of a given year, the new operator receives the allocation provided for in the third paragraph, when it concerns emission units paid in accordance with the ninth paragraph of section 40, or, where applicable, meets the requirements of the fourth paragraph, if, not later than the business day immediately preceding that date, the former operator has notified the Minister of the change pursuant to the first paragraph of section 17.

O.C. 1297-2011, s. 41; O.C. 1184-2012, s. 25; O.C. 1089-2015, s. 18; I.N. 2016-01-01 (NCCP); O.C. 1125-2017, s. 30; O.C. 1288-2020, s. 8; O.C. 1462-2022, s. 30.

41.1. An emitter who, in accordance with section 6.5 of the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere (chapter Q-2, r. 15), communicates a notice of correction to its emissions report to increase the allocation without charge of emission units referred to in the ninth paragraph of section 40 or the third paragraph of section 41, receives at the next payment a quantity of additional emission units equal to the difference between the quantity calculated for the first emissions report and the quantity calculated for the corrected emissions report, in accordance with Part II of Appendix C. At the next payment of emission units referred to in the tenth paragraph of section 40 or the third paragraph of section 41, the Minister also places in the Minister's auction account a quantity of additional emission units equal to the difference between the quantity of emission units allocated without charge, for auction, to an emitter that has signed an agreement in accordance with the tenth paragraph of section 40, as calculated for the first emissions report, and the quantity calculated for the corrected emissions report in accordance with Part II of Appendix C.

No additional emission units are paid for a notice of correction to an emissions report communicated after 1 August of the year following the year concerned by the allocation without charge.

When the notice of correction referred to in the first paragraph reduces the allocation without charge of emission units referred to in the ninth paragraph of section 40 or the third paragraph of section 41, the Minister subtracts, in the same proportion, a quantity of emission units from the next payments of such emission units whether or not the compliance deadline has expired.

O.C. 902-2014, s. 26; O.C. 1462-2022, s. 31.

41.2. Where, on 1 August following the end of a compliance period, the verification report on the emissions report for 1 or more years of that compliance period does not allow to confirm in whole or in part the quantity of reference units reported in accordance with the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere (chapter Q-2, r. 15) and the relative importance threshold referred to in subparagraph 2 of the first paragraph of section 6.7 of that Regulation is reached, the total allowance free of charge for those years is based on the adjusted value of the reported quantity of reference units, calculated as follows:

Total adjusted quantity of reference units = Total reported reference units $\times$ (1- RURU)

Where

RURU = Relative uncertainty of reported reference units, calculated in accordance with paragraph 7.5 of section 6.9 of the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere.

Even if the emitter submits a verification report confirming compliance of the quantity of reported reference units with the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere after the date provided for in the first paragraph, no emission unit will be allocated for a difference between the total adjusted quantity of reference units and the total quantity of reference units verified once again.

O.C. 1089-2015, s. 19.

42. The emission units referred to in the ninth paragraph of section 40 and the first paragraph of section 41.1 are placed in the general account of the emitter.

The units referred to in this Division come from the allocation account of the Minister or, if that account does not contain enough units, from the Minister's reserve account using, in order,

- (1) the Category C, B and A emission units as determined in section 58;
- (2) within a given category, emission units of the vintage of the year of the free allocation, emission units of the vintage of a previous year from the most recent to the least recent, and non-vintage units.

When all the emission units in the Minister's reserve account have been paid in accordance with this Division, the units that remain to be paid come from the auction account or the issuance account using, in order, emission units of the vintage of a previous year whose sale was not announced in the notice of auction, emission units of the vintage of the current year whose sale was not announced in the notice of auction, and emission units of the vintage of the following year.

The reserve account is replenished using the emission units in excess of the total estimated quantity that may be allocated free of charge for a year that may be sold in accordance with Division III of this Chapter. The emission units paid into the reserve account in this way are identified as belonging to the category replenished.

O.C. 1297-2011, s. 42; O.C. 1184-2012, s. 26; O.C. 902-2014, s. 27; O.C. 1288-2020, s. 9; O.C. 1462-2022, s. 32.

43. The Minister may suspend the allocation of emission units without charge to any emitter that fails to comply with the provisions of the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere (chapter Q-2 r. 15) or with the provisions of this Regulation, or when the Minister has reasonable grounds to believe that the integrity of the system is threatened.

O.C. 1297-2011, s. 43; O.C. 1462-2022, s. 33.

43.1. The Minister publishes, on the website of the Ministère du Développement durable, de l'Environnement et des Parcs, within 45 days after the payment of emission units allocated without charge in accordance with sections 40 and 41, a summary of the payment including, in particular, the following information:

- (1) the total quantity of emission units allocated without charge to all emitters;
- (2) the total quantity of emission units allocated without charge that have been paid to all emitters and a list of the emitters concerned;

(3) the total quantity of emission units allocated without charge to be auctioned that have been paid into the Minister's auction account in accordance with sections 40 and 41, and a list of the emitters on whose behalf the payment was made.

O.C. 1462-2022, s. 34.

44. *(Revoked).*

O.C. 1297-2011, s. 44; O.C. 1184-2012, s. 27; O.C. 1125-2017, s. 31.

DIVISION III

AUCTION

45. The Minister auctions emission units in a specific place or online, at most 4 times per year.

At least 60 days before an auction, the Minister publishes a notice of auction on the website of the Ministère du Développement durable, de l'Environnement et des Parcs and, if the Minister considers it appropriate, in a newspaper or other publication, stating the rules set out in this Regulation and including, in particular, the following information:

- (1) the place or Internet address, the date and the time of the auction;
- (2) the terms and conditions for registering as a bidder;
- (3) the form of a bid, and the procedure for submitting a bid;
- (4) the procedure for the auction;
- (5) the number and vintage of the emission units to be auctioned and the composition of each lot;
- (6) the minimum settlement price for the units, set in accordance with the third paragraph of section 49 and, in the case of a joint auction with a partner entity, the minimum price set by that entity and the procedure used to set a joint minimum price set out in subparagraph 2 of the fourth paragraph of section 49.

O.C. 1297-2011, s. 45; O.C. 1184-2012, s. 28.

46. Every emitter or participant registered in the system, except an emitter or a participant whose accounts have been suspended or revoked for a reason other than a failure to cover the GHG emissions of a covered establishment, may take part in an auction of emission units.

For that purpose, the emitter or participant must, at least 30 days before the date of the auction in which the emitter or participant wishes to take part, register with the Minister as a bidder by submitting the following information and documents:

- (1) the emitter or participant's name, contact information and general account number;
- (2) if the emitter or participant is not a natural person, the names of its account representatives;
- (3) if the participant is a natural person, the person's social insurance number;
- (4) the form of the financial guarantee that will be submitted pursuant to section 48.

In all cases, an emitter or a participant must, at least 40 days before the date of each auction, send the Minister an update of the following information:

(1) all information or documents required under section 7 or 7.2 concerning the identity, ownership, administration and structure of the emitter's or participant's establishment or enterprise;

(2) the existence of any business relationship referred to in section 9;

(3) the allocation of the purchasing limit among the related entities;

(4) the allocation of the holding limit among the related entities.

O.C. 1297-2011, s. 46; O.C. 1184-2012, s. 29; O.C. 902-2014, s. 28; O.C. 1089-2015, s. 20; O.C. 1125-2017, s. 32; I.N. 2017-12-31; O.C. 1462-2022, s. 35.

47. The Minister may refuse to register, for any auction, an emitter or participant that fails to comply with this Regulation.

O.C. 1297-2011, s. 47; O.C. 1462-2022, s. 36.

48. Every bidder must, at least 12 days before the date of the auction, submit a financial guarantee to the Minister.

The guarantee must be valid for a period of at least 26 days following the date of the auction, must be sufficient to purchase a lot of emission units at the minimum price set pursuant to the third paragraph of section 49, and must be provided in the form of

(1) bank transfer;

(1.1) an irrevocable letter of credit issued by a bank constituted under the Bank Act (S.C. 1991, c. 46) or by a financial services cooperative constituted under the Act respecting financial services cooperatives (chapter C-67.3);

(2) a letter of guarantee issued by a bank constituted under the Bank Act or by a financial services cooperative constituted under the Act respecting financial services cooperatives;

(3) *(subparagraph revoked)*;

(4) *(subparagraph revoked)*.

The guarantee must be submitted in Canadian dollars. However, in the case of an auction for which the required guarantee is held jointly with a partner entity in the United States, the guarantee may also be submitted in US dollars.

If the Minister has delegated the administration of the financial services for the system in accordance with section 46.13 of the Environment Quality Act (chapter Q-2), the financial guarantee must be made out to the delegatee and or, where applicable, the delegatee's financial institution, and deposited with the delegatee or the financial institution.

O.C. 1297-2011, s. 48; O.C. 1184-2012, s. 30; O.C. 1138-2013, s. 12; O.C. 902-2014, s. 29; O.C. 1089-2015, s. 21; O.C. 488-2017, s. 26; O.C. 1462-2022, s. 37.

49. The auction of emission units consists of a single round of bidding, using sealed bids.

Except for the last lot of emission units, which may consist of a lesser quantity, the emission units are auctioned in lots of 1,000 emission units of the same vintage when the units belong to the vintage for a subsequent year, and in lots of 1,000 emission units of various vintages when the units belong to the vintage for the current or a previous year and are sold in accordance with section 54.

The minimum price of the emission units is set

(1) at \$10 per emission unit, for auctions conducted in 2012;

(2) for auctions conducted in any year after 2012, the price is set annually using the minimum price set for the previous year increased by 5% and adjusted in the manner provided for in section 83.3 of the Financial Administration Act (chapter A-6.001), as per the equation below:

$$MP_t = MP_{(t-1)} \times (1 + 0.05 + Ir)$$

Where:

MP_t = Minimum price set for a year;

$MP_{(t-1)}$ = Minimum price set for the previous year;

Ir = Indexation rate.

If the auction is conducted jointly with a partner entity,

(1) the lots may contain emission units from each of the partner entities;

(2) the joint minimum price of the emission units is the higher, on the day of the auction, of the price set under the third paragraph and the price set by the partner entity, at the daily average exchange rate published on the website of the Bank of Canada on the day prior to the sale.

A bid submitted at less than the minimum price set in accordance with the third and fourth paragraphs will be refused.

O.C. 1297-2011, s. 49; O.C. 1184-2012, s. 31; O.C. 1138-2013, s. 13; O.C. 902-2014, s. 30; O.C. 1125-2017, s. 33.

50. During an auction, the account representative of a bidder may submit more than one bid, subject to the terms and conditions specified in the notice published in accordance with the second paragraph of section 45, stating the quantity of lots requested and the price offered per emission unit in dollars and whole cents, provided the maximum amount of all the bidder's bids does not exceed the amount of the guarantee submitted in accordance with section 48.

For the purposes of the first paragraph, the maximum amount of all a bidder's bids is calculated as follows:

(1) by determining, for each bid submitted by the bidder, the value of a lot by multiplying the price offered for the lot by the total quantity of bids submitted at that price or at a higher price;

(2) the maximum amount of a bidder's bids corresponds to the maximum value of the lots calculated under subparagraph 1.

The total quantity of emission units of the current or a prior vintage or of a vintage subsequent to the current year that may be purchased by the same bidder at each auction is, however, limited to:

(1) 25% of the units to be auctioned in the case of an emitter; and

(2) 4% of the units to be auctioned in the case of a participant.

Bidders that are related entities have an overall purchasing limit. However, the purchasing limit for a group of participants related to an emitter may not exceed 4%.

In accordance with subparagraph 3 of the first paragraph of section 9, the related entities must indicate to the Minister the allocation of the overall purchasing limit among the related entities, by percentage. The allocation must be confirmed by all the related entities concerned. Until all the related entities have confirmed

the allocation, the overall purchasing limit of the last emitter or participant to join the group of related entities is set at zero.

If the auction is conducted jointly with a partner entity, the bids must be submitted in the same currency as the financial guarantee submitted in accordance with section 48.

Despite subparagraph 1 of the third paragraph, beginning on 1 January 2023, the total quantity of emission units that may be purchased by the same bidder is limited, for the years preceding the year in which the bidder's coverage requirement begins, to 4% of the units to be auctioned.

O.C. 1297-2011, s. 50; O.C. 1184-2012, s. 32; O.C. 1138-2013, s. 14; O.C. 902-2014, s. 31; O.C. 1462-2022, s. 38.

51. A bidder or participant must not disclose whether or not it is taking part in an auction, or any other confidential information relating to its participation in an auction, including:

- (1) its identity;
- (2) its bidding strategy;
- (3) the amount of its bids and the quantity of emission units concerned;
- (4) the financial information submitted to the Minister.

In addition, a bidder that retains the services of an advisor to develop its bidding strategy must ensure that the advisor does not disclose any of the information listed in the first paragraph and does not coordinate the bidding strategy of any other bidder.

O.C. 1297-2011, s. 51; O.C. 902-2014, s. 32; O.C. 1125-2017, s. 34.

52. At the close of the auction, when the total bids submitted by a bidder exceed that bidder's holding limit determined in accordance with sections 32 and 33 or its purchase limit determined in accordance with section 50, the Minister removes from the bidder's bids the quantity of excess lots, beginning with the lots awarded at the lowest price.

Notwithstanding the first paragraph, when an emitter's total bid exceeds its holding limit but the number of emission units and early reduction credits in its compliance account is below the quantity referred to in the third paragraph of section 32, the emitter's bids are accepted up to that quantity.

When a bid submitted by a bidder takes the maximum value of the bidder's bids to beyond the amount of its financial guarantee submitted in accordance with section 48, the Minister removes the excess lots from the bid.

The lots removed pursuant to the third paragraph are then re-evaluated based on the prices offered in the bids submitted by all the bidders, by descending value, beginning with the price immediately below the price in the bid that exceeded the bidder's guarantee. The lots are considered by the Minister to be new bids submitted by the bidder when, at a given price, the re-evaluation means that their maximum value does not exceed the amount of the financial guarantee submitted.

The Minister then awards emission units, beginning with the bidders that submitted the highest bids and with the lots containing emission units allocated without charge to be auctioned in accordance with Division II of this Chapter, until all available units have been awarded.

The final sale price per emission unit is, for all the emission units put up for auction, the lowest price bid for which the Minister awards units.

When more than 1 bid has been submitted at that price, and the total quantity of the bids is greater than the quantity of emission units available, the Minister divides the emission units between the bidders at that price

(1) by establishing the share of each bidder by dividing the quantity of emission units requested by each bidder by the total quantity of units bid at that price;

(2) by determining the number of emission units to be awarded to each bidder by multiplying the bidder's share by the quantity of emission units available, rounding down to the nearest whole number;

(3) when emission units remain to be awarded, by assigning a random number to each bidder and by awarding 1 emission unit per bidder, in ascending order of the numbers assigned, until all the emission units have been awarded.

When the auction is a joint auction, the final sale price is rounded off to the nearest cent of the reference currency used by the partner entities, using the application conversion rate.

O.C. 1297-2011, s. 52; O.C. 1184-2012, s. 33; O.C. 1138-2013, s. 15; O.C. 902-2014, s. 33; O.C. 1462-2022, s. 39.

53. Within 7 days after the results of the auction are sent to the bidders, every winning bidder must pay in full, by transfer, for the emission units awarded in accordance with section 52. If the financial guarantee has been submitted in the form provided for in subparagraph 1 of the second paragraph of section 48, the payment is withheld from the guarantee.

If the emission units are not paid for in full in the time prescribed under the first paragraph, the Minister withholds the amount owed from the financial guarantee provided in accordance with section 48. When more than one type of guarantee has been provided, the Minister uses the guarantees in the order set out in the second paragraph of that section.

Upon receiving payment from a winning bidder, made out to the Minister of Finance, or after applying all or part of a winning bidder's guarantee used, the Minister records the emission units awarded in the bidder's general account and, in the case referred to in the second paragraph of section 52, in the winning bidder's compliance account.

All or part of a guarantee provided in accordance with subparagraph 1 of the first paragraph of section 48 that has not been used for the purposes of an auction is returned to the bidder.

The amounts collected during the auction are paid into the Electrification and Climate Change Fund established under the Act respecting the Ministère du Développement durable, de l'Environnement et des Parcs (chapter M-30.001).

O.C. 1297-2011, s. 53; O.C. 1184-2012, s. 34; O.C. 1138-2013, s. 16; O.C. 902-2014, s. 34; S.Q. 2017, c. 4, s. 265; S.Q. 2020, c. 19, s. 30; O.C. 1462-2022, s. 40.

54. Emission units of the vintage of the current or a previous year that remain unsold after an auction may be put up for sale as soon as the final sale price of the emission units has been above the minimum price for 2 auctions, except for units allocated without charge to be auctioned in accordance with Division II of this Chapter, which are put up for sale at the next auction.

Emission units of the vintage of a year subsequent to the year of the auction are put up for sale again when their vintage becomes the vintage of the current year.

However, the quantity of emission units put up for sale again in accordance with the first paragraph cannot exceed 25% of the quantity of emission units initially planned for the auction and cannot, for units allocated without charge to be auctioned, increase the total quantity of emission units put up for sale at the next auction.

All emissions units to be auctioned that have not been sold at the expiry of a 3-year period after first being put up for sale as units of the vintages of the current year or of the previous years are transferred to the Minister's reserve account.

O.C. 1297-2011, s. 54; O.C. 1184-2012, s. 34; O.C. 902-2014, s. 35; O.C. 1462-2022, s. 41.

54.1. The sums collected at an auction of emission units allocated without charge to an emitter to be auctioned in accordance with Division II of this Chapter are determined, for each emitter having signed an agreement for the implementation by the emitter of a project referred to in Part III of Appendix C, by multiplying the quantity of the emission units by the final auction sale price in US dollars, converted into Canadian dollars using the daily average exchange rate published on the website of the Bank of Canada on the day prior to the sale.

When the emission units allocated without charge to be auctioned in accordance with Division II of this Chapter are not all sold at the auction, the quantity referred to in the first paragraph is determined as follows:

- (1) the part of such units attributable to the emitter is obtained by dividing the quantity of such units by the total quantity of emission units allocated without charge to be auctioned in accordance with Division II of this Chapter and put up for sale;
- (2) the part of units attributable to the emitter is then multiplied by the quantity of emission units allocated without charge to be auctioned in accordance with Division II of this Chapter that were sold, and the result is rounded down to the nearest whole number;
- (3) when emission units remain to be allocated, the Minister assigns a random number to each emitter and allocates 1 emission unit per emitter, in ascending order of the numbers assigned, until all the emission units have been allocated.

In accordance with the fifth paragraph of section 53, the sums determined pursuant to the first and second paragraphs are paid into the Electrification and Climate Change Fund established under the Act respecting the Ministère du Développement durable, de l'Environnement et des Parcs (chapter M-30.001) and reserved in the Fund in the emitter's name for a period of 5 years beginning on 31 December of the year of the payment to be paid to the emitter in accordance with the rules of Part III of Appendix C and the rules of the agreement entered into by the emitter and the Minister in accordance with section 46.8.1 of the Environment Quality Act (chapter Q-2).

When the operator of a covered establishment that has entered into an agreement with the Minister for the implementation of a project referred to in Part III of Appendix C has notified the Minister, pursuant to the first paragraph of section 17, that the operator of the establishment has changed, the new operator may, if it has also entered into such an agreement with the Minister, use the sums determined pursuant to the first paragraph that have not yet been paid to the former operator. The new operator is subject, in accordance with the third paragraph of section 17, to all the obligations of the former operator concerning the project implemented pursuant to that Part.

O.C. 1462-2022, s. 42.

55. The Minister publishes a summary of the auction within 45 days on the website of the Ministère du Développement durable, de l'Environnement et des Parcs, including the following information:

- (1) the names of the persons registered as bidders;
- (2) the settlement price of the emission units;
- (3) the total quantity and distribution of the units sold, in non-nominative form;
- (4) the quantity of units allocated without charge that were put up for auction;

- (5) the quantity of units referred to in paragraph 4 that were sold;
- (6) the sums collected from the auctioning of the units referred to in paragraph 4.

O.C. 1297-2011, s. 55; O.C. 1462-2022, s. 43.

DIVISION IV

SALE BY MUTUAL AGREEMENT

56. Only emitters registered in the system in accordance with this Regulation and not holding emission units in their general account that can be used to cover GHG emissions for the current compliance period are eligible for a sale of emission units by mutual agreement in accordance with this Division.

O.C. 1297-2011, s. 56; O.C. 1184-2012, s. 35; O.C. 1288-2020, s. 10.

57. The Minister organizes a sale of emission units by mutual agreement in a determined place or online, at most 4 times per year.

At least 60 days before a sale by mutual agreement, the Minister publishes a notice of sale by mutual agreement on the website of the Ministère du Développement durable, de l'Environnement et des Parcs and, if the Minister considers it appropriate, in a newspaper or other publication, including the following information:

- (1) the place or Internet address, the date and the time of the sale by mutual agreement;
- (2) the terms and conditions for registering as a purchaser;
- (3) the form of an offer, and the procedure for submitting an offer;
- (4) the procedure for the sale by mutual agreement;
- (5) the number of emission units available for sale for each category;
- (6) the settlement price for the units.

O.C. 1297-2011, s. 57; O.C. 1184-2012, s. 36.

58. Until 31 December 2020, the emission units placed in the reserve account are divided equally into 3 categories and are sold at the following prices, increased annually by 5% since 2014 and adjusted from that date in the manner provided for in section 83.3 of the Financial Administration Act (chapter A-6.001):

- (1) for reserve emission units in Category A, \$40 per emission unit;
- (2) for reserve emission units in Category B, \$45 per emission unit;
- (3) for reserve emission units in Category C, \$50 per emission unit.

As of 1 January 2021, the emission units in the reserve account are sold at the following prices, increased annually by 5% since 2021 and adjusted from that date in the manner provided for in section 83.3 of the Financial Administration Act:

- (1) for reserve emission units in Category A, \$41.40 per emission unit;
- (2) for reserve emission units in Category B, \$53.20 per emission unit;
- (3) for reserve emission units in Category C, \$65 per emission unit.

Despite the second paragraph, if partner entities have set higher prices per emission unit for a corresponding category as defined in Appendix B.1, the emission units are sold at the highest of the prices fixed by those entities, according to the daily average exchange rate of the Bank of Canada published on its website, in force on the day preceding the sale by mutual agreement.

O.C. 1297-2011, s. 58; O.C. 902-2014, s. 36; O.C. 1125-2017, s. 35; O.C. 1288-2020, s. 11.

59. Every emitter that wishes to purchase emission units at a sale by mutual agreement must, at least 30 days before the sale, register with the Minister as a purchaser by submitting the following information and documents:

- (1) the emitter's name, contact information and compliance account number;
- (2) the names of the emitter's account representatives;
- (3) *(subparagraph revoked)*.

In addition, at least 12 days before the date of the sale by mutual agreement, the emitter must submit a financial guarantee in Canadian dollars valid for a period of at least 26 days following the date of the sale, in one of the forms referred to in the second paragraph of section 48.

In all cases, an emitter must, at least 40 days before the date of each sale by mutual agreement, send the Minister an update of the following information:

- (1) all information or documents required under section 7 or 7.2 concerning the identity, ownership, administration and structure of the emitter's establishment or enterprise;
- (2) the existence of any business relationship referred to in section 9;
- (3) the allocation of the holding limit among the related entities.

O.C. 1297-2011, s. 59; O.C. 1184-2012, s. 37; O.C. 1138-2013, s. 17; O.C. 902-2014, s. 37; O.C. 1089-2015, s. 22; O.C. 1125-2017, s. 36; O.C. 1288-2020, s. 12; O.C. 1462-2022, s. 44.

60. The Minister may refuse to register an emitter, for a sale by mutual agreement, that fails to comply with this Regulation.

O.C. 1297-2011, s. 60; O.C. 1462-2022, s. 45.

60.1. During a sale by mutual agreement, an emitter's account representative may not submit more than 1 offer, in Canadian dollars and in the form and using the procedure set out in the notice published in accordance with the second paragraph of section 57, indicating the number of units requested and the category corresponding to the maximum price per unit it is willing to pay for the units.

When the offer submitted by a purchaser exceeds the quantity of emission units needed by the purchaser to meet the purchaser's coverage obligation under section 19, exceeds the purchaser's holding limit determined in accordance with section 32 and 33, or exceeds the value of the financial guarantee submitted in accordance with the second paragraph of section 59, the Minister removes from the purchaser's offer the quantity of excess emission units.

For the purposes of the second paragraph, the quantity of emission units needed by the purchaser to meet the purchaser's coverage obligation under section 19 is determined by subtracting the quantity of emission units, early reduction credits and offset credits that may be used to cover the purchaser's emissions from the quantity of declared and verified emissions that have not yet been covered in accordance with section 19.

O.C. 1184-2012, s. 38; O.C. 1138-2013, s. 18; O.C. 1288-2020, s. 13.

61. At the close of the sale by mutual agreement, the Minister sells the reserve emission units by allocating the units from categories A, B and C, in that order and in accordance with the provisions of sections 61.1 to 61.5.

O.C. 1297-2011, s. 61; O.C. 1184-2012, s. 39; O.C. 902-2014, s. 38; O.C. 1288-2020, s. 14.

61.1. When the total number of offers to purchase Category A, B and C units is equal to or below the quantity of Category A reserve emission units available, the Minister allocates the Category A emission units among the purchasers based on the offers received.

However, when the total of the offers to purchase is in excess of the quantity of Category A reserve emission units available, the Minister allocates the emission units

(1) by establishing the share of each purchaser by dividing the quantity of emission units requested in their offer to purchase by the total of the offers to purchase;

(2) by determining the number of Category A emission units to be assigned to each purchaser by multiplying each purchaser's share by the quantity of emission units available in that category, rounding down to the nearest whole number; and

(3) when Category A emission units remain to be awarded, by assigning a random number to each purchaser and by awarding 1 emission unit per purchaser, in ascending order of the numbers assigned, until all the emission units have been awarded.

O.C. 1288-2020, s. 14.

61.2. When all Category A reserve emission units have been awarded and the total of the remaining offers to purchase Category B and C units is equal to or below the quantity of Category B reserve emission units available, the Minister allocates the emission units in that category among the purchasers based on the remaining offers received.

O.C. 1288-2020, s. 14.

61.3. When all Category A reserve emission units have been awarded and the total of the remaining offers to purchase Category B and C units is in excess of the quantity of Category B reserve emission units available, the Minister allocates the emission units

(1) by establishing the share of each purchaser by dividing the quantity of emission units requested in their offer to purchase that has not been met by Category A reserve emission units by the total of the offers to purchase that have not been met by units in that category;

(2) by determining the number of Category B emission units to be assigned to each purchaser by multiplying each purchaser's share by the quantity of emission units available in that category, rounding down to the nearest whole number; and

(3) when Category B emission units remain to be awarded, by assigning a random number to each purchaser and by awarding 1 emission unit per purchaser, in ascending order of the numbers assigned, until all the emission units have been awarded.

O.C. 1288-2020, s. 14.

61.4. When all Category A and B reserve emission units have been awarded, and the total of the remaining offers to purchase Category C units is equal to or below the quantity of Category C reserve emission units available, the Minister allocates the emission units in that category among the purchasers based on the remaining offers received.

O.C. 1288-2020, s. 14.

61.5. When all Category A and B reserve emission units have been awarded and the total of the remaining offers to purchase Category C units is in excess of the quantity of Category C reserve emission units available, the Minister allocates the emission units

(1) by establishing the share of each purchaser by dividing the quantity of emission units requested in their offer to purchase that has not been met by Category A and B reserve emission units by the total of the offers to purchase that have not been met by units in those categories;

(2) by determining the number of Category C emission units to be assigned to each purchaser by multiplying each purchaser's share by the quantity of emission units available in that category, rounding down to the nearest whole number; and

(3) when Category C emission units remain to be awarded, by assigning a random number to each purchaser and by awarding 1 emission unit per purchaser, in ascending order of the numbers assigned, until all the emission units have been awarded.

O.C. 1288-2020, s. 14.

62. Within 7 days after the results of the sale are sent to the purchasers, every purchaser must pay in full, by transfer, for the emission units awarded in accordance with sections 61 to 61.5. If the financial guarantee submitted in accordance with the second paragraph of section 59 was in the form provided for in subparagraph 1 of the second paragraph of section 48, the payment is withheld from the guarantee.

If the emission units are not paid for in full in the time prescribed under the first paragraph, the Minister withholds the amount owed from the financial guarantee provided in accordance with the second paragraph of section 59. When more than one type of guarantee has been provided, the Minister uses the guarantees in the order set out in the second paragraph of section 48.

Upon receiving payment from a purchaser, made out to the Minister of Finance, or after applying all or part of a purchaser's guarantee, the Minister records the emission units sold in the purchaser's compliance account.

The amounts collected during a sale by mutual agreement are paid into the Electrification and Climate Change Fund established under the Act respecting the Ministère du Développement durable, de l'Environnement et des Parcs (chapter M-30.001).

O.C. 1297-2011, s. 62; O.C. 1184-2012, s. 40; O.C. 1138-2013, s. 19; S.Q. 2017, c. 4, s. 266; S.Q. 2020, c. 19, s. 30; O.C. 1288-2020, s. 15.

63. All or part of a guarantee provided in accordance with the second paragraph of section 59 that has not been used for the purposes of a sale by mutual agreement is returned to the purchaser.

O.C. 1297-2011, s. 63; O.C. 1184-2012, s. 41; O.C. 1288-2020, s. 16.

64. Emission units that remain unsold after a sale by mutual agreement are retained for a sale at a later date.

O.C. 1297-2011, s. 64.

64.1. The Minister publishes a summary of the sale by mutual agreement within 45 days on the website of the Ministère du Développement durable, de l'Environnement, de la Faune et des Parcs, including the following information:

- (1) the names of the persons registered as purchasers;
- (2) the settlement price of the emission units;

- (3) the total quantity and distribution of the units sold, in non-nominative form.

O.C. 1138-2013, s. 20.

CHAPTER III

EARLY REDUCTION CREDITS

65. Reductions in GHG emissions made during the eligibility period starting on 1 January 2008 and ending on 31 December 2011 are eligible for early reduction credits.

The period during which the reductions are recorded, hereafter referred to as the reduction period, must correspond to the 4 full calendar years of the eligibility period or must have started on 1 January 2009, 2010 or 2011 and ended without interruption on 31 December 2011.

The reference period used to determine reductions in GHG emissions runs from 1 January 2005 to 31 December 2007, inclusively.

O.C. 1297-2011, s. 65.

66. Every emitter referred to in the first paragraph of section 2 that is required to cover its GHG emissions starting with the compliance period starting on 1 January 2013 is eligible for early reduction credits if the reductions

(1) result directly from an action or decision of the emitter and began during the eligibility period determined in the first paragraph of section 65;

(2) are made in one of the emitter's covered establishments;

(3) reduce the GHG emissions that the emitter is required to cover pursuant to section 19;

(4) belong to and can be demonstrated by the emitter;

(5) are calculated using the same calculation method and the same factors for each of the years 2005 to 2011;

(6) represent at least 1 metric tonne CO₂ equivalent;

(7) do not result from a decrease in production or the closure of an establishment, or from an increase in GHG emissions at another establishment located in Québec or elsewhere;

(8) are voluntary, meaning that they were not made in response to a legislative or regulatory provision, a permit or another type of authorization;

(9) are permanent and irreversible;

(10) are additional, meaning that they meet the following conditions:

(a) the average annual GHG emissions of the establishment during the reduction period are below those of the reference period;

(b) the average intensity compared to at least 1 reference unit referred to in Table B of Part I of Appendix C during the reduction period, calculated using equation 66-1 below, is below the average intensity for the reference period, calculated using equation 66-2:

Equation 66-1

$$I_{Reduction\ j} = \frac{\sum_{i=n}^{2011} GHG_{i\ j}}{\sum_{i=n}^{2011} P_{i\ j}}$$

Equation 66-2

$$I_{Reference\ j} = \frac{\sum_{i=2005}^{2007} GHG_{ij}}{\sum_{i=2005}^{2007} P_{ij}}$$

Where:

$I_{\text{Reduction } j}$ = Average intensity of GHG emissions for reference unit j during the reduction period;

$I_{\text{Reference } j}$ = Average intensity of GHG emissions for reference unit j during the reference period;

j = Reference unit for the establishment referred to in Table B of Part I of Appendix C;

GHG_{ij} = GHG emissions of the establishment, relating to the production or use of reference unit j for year i , in metric tonnes CO₂ equivalent;

i = Year;

n = First year of the reduction period;

P_{ij} = Annual quantity of reference units j produced or used by the establishment for year i ;

(11) are verifiable; and

(12) have not been credited or financed, in whole or in part, under another cap-and-trade system for GHG emission allowances or a reduction program for GHG emissions.

However, reductions in GHG emissions resulting from on-site transportation activities and the sequestration of GHG emissions are not eligible for early reduction credits.

O.C. 1297-2011, s. 66; O.C. 1184-2012, s. 42.

67. In addition to the conditions set out in sections 65 and 66, to be eligible for early reduction credits, a reduction resulting from a project to substitute a low-GHG fuel for a fuel must also meet one of the following conditions:

(1) the average purchase cost of the substitute fuel or combustible paid by the emitter during the reduction period must be higher than the average cost of the fuel substituted during the reduction period;

(2) the emitter must have made an investment, other than an equipment maintenance investment, to modify or replace equipment in order to substitute the fuel during the eligibility period.

O.C. 1297-2011, s. 67.

68. An emitter that wishes to be issued early reduction credits must send the Minister, not later than 31 May 2013, an application containing the following information and documents:

(1) the emitter's name, contact information and account numbers;

(2) a description of the activities pursued at the emitter's establishment where the reductions have occurred;

(3) a description of the reduction project and proof that it meets the conditions set out in sections 65 to 67;

(4) the dates of the reduction period during which the reductions in GHG emissions occurred;

(5) the quantity of the GHG emission reduction, in metric tonnes CO₂ equivalent, calculated using one of the following methods:

(a) one of the calculation methods provided for in Schedule A.2 to the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere (chapter Q-2, r. 15);

(b) a mass balance calculation method, or a method recognized by the industry and meeting the requirements of the ISO 14064-2 standard;

(6) all the information and documents used to calculate GHG emissions in accordance with paragraph 5;

(7) a verification report on the project and the reductions, carried out by an organization accredited to ISO 14065 by a member of the International Accreditation Forum under an ISO 17011 program, confirming a reasonable level of assurance under the ISO 14064-3 standard that the reduction meets the conditions of this Chapter;

(8) the information needed to calculate the maximum quantity of early reduction credits provided for in section 69;

(9) the signature of the chief officer of the emitter and the date of the application.

O.C. 1297-2011, s. 68; O.C. 1184-2012, s. 43.

69. The maximum quantity of early reduction credits that may be issued to an emitter that meets the requirements of this Chapter is calculated using equations 69-1 to 69-5:

Equation 69-1

$$ERC_{\max} = N_Y \times \sum_{j=1}^k ((E_{\text{Reference}(j)} - E_{\text{Reduction}(j)}) \times P_j)$$

Where:

$ERC_{\max}$ = Maximum quantity of early reduction credits that may be issued;

N_Y = Number of calendar years included in the reduction period;

k = Total number of reference units of the establishment referred to in Table B of Part I of Appendix C;

j = Reference unit;

$E_{\text{Reference } (j)}$ = Average annual GHG emissions resulting from the production or use of reference unit j during the reference period, calculated using equation 69-2, in metric tonnes CO₂ equivalent;

$E_{\text{Reduction } (j)}$ = Average annual GHG emissions resulting from the production or use of reference unit j during the reduction period, calculated using equation 69-3, in metric tonnes CO₂ equivalent;

$$P_j = \begin{cases} -1 & \text{if } P_{\text{Reference } (j)} \leq P_{\text{Reduction } (j)}; \\ - (P_{\text{Reduction } (j)} / P_{\text{Reference } (j)}) & \text{if } P_{\text{Reference } (j)} > P_{\text{Reduction } (j)}; \end{cases}$$

Where: $P_{\text{Reference } (j)}$ = Average annual quantity of reference units j produced or used during the reference period, calculated using equation 69-4;

$P_{\text{Reduction } (j)}$ = Average annual quantity of reference units j produced or used during the reduction period, calculated using equation 69-5.

Equation 69-2

$$E_{\text{Reference}(j)} = \frac{\sum_{i=2005}^{2007} E_{ij}}{3}$$

Where:

$E_{\text{Reference } (j)}$ = Average annual GHG emissions resulting from the production or use of reference unit j during the reference period, in metric tonnes CO₂ equivalent;

E_{ij} = GHG emissions resulting from the production or use of reference unit j for year i , in metric tonnes CO₂ equivalent;

j = Reference unit;

i = Each year included in the reference period, namely 2005, 2006 or 2007;

Equation 69-3

$$E_{\text{Reduction}(j)} = \frac{\sum_{i=m}^{2011} E_{ij}}{n}$$

Where:

$E_{\text{Reduction } (j)}$ = Average annual GHG emissions resulting from the production or use of reference unit j during the reduction period, in metric tonnes CO₂ equivalent;

E_{ij} = GHG emissions resulting from the production or use of reference unit j for year i , in metric tonnes CO₂ equivalent;

i = Each year included in the reduction period, namely 2008, 2009, 2010 and 2011;

j = Reference unit;

m = Year in which the reduction period begins;

n = Number of consecutive years in the reduction period;

Equation 69-4

$$P_{Reference(j)} = \frac{\sum_{i=2005}^{2007} P_{ij}}{3}$$

Where:

$P_{\text{Reference}(j)}$ = Average annual quantity of reference units produced or used during the reference period;

P_{ij} = Quantity of reference units produced or used during year i ;

i = Each year included in the reference period, namely 2005, 2006 or 2007;

j = Reference unit;

Equation 69-5

$$P_{\text{Reduction}(j)} = \frac{\sum_{i=m}^{2011} P_{ij}}{n}$$

Where:

$P_{\text{Reduction}(j)}$ = Average annual quantity of reference units produced or used during the reduction period;

P_{ij} = Quantity of reference units produced or used during year i ;

i = Each year included in the reduction period, namely 2008, 2009, 2010 or 2011;

j = Reference unit;

m = Year in which the reduction period begins;

n = Number of consecutive years in the reduction period.

O.C. 1297-2011, s. 69.

70. The Minister issues, to every emitter that meets the conditions of this Chapter, a quantity of early reduction credits corresponding to the lesser of

- (1) the quantity calculated in accordance with section 69; and
- (2) the quantity corresponding to the reductions that meet the conditions of this Chapter.

The credits are issued to the emitter's general account by the Minister not later than 14 January 2014.

O.C. 1297-2011, s. 70; O.C. 1184-2012, s. 44.

CHAPTER IV

OFFSET CREDITS

O.C. 1184-2012, s. 45.

70.1. For the purposes of this Chapter,

(1) “eligibility period” means the period, set in the ministerial regulation that is applicable to the project, during which a project is eligible for the issuance of offset credits, subject to compliance with the eligibility conditions in effect when the project notice or renewal notice provided for in the regulation is filed;

(2) “reporting period” means a continuous period, within an eligibility period, during which reductions in GHG emissions or offset credits corresponding to removals of GHG from the atmosphere attributable to a project eligible for the issuance of offset credits are quantified pursuant to the ministerial regulation that is applicable to that project for the issuance of offset credits;

(3) “ministerial regulation” means a regulation made pursuant to section 46.8.2 of the Environment Quality Act (chapter Q-2).

In addition, for the purposes of this Chapter and of any ministerial regulation, chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) are greenhouse gases.

O.C. 1138-2013, s. 21; O.C. 902-2014, s. 39; O.C. 824-2021, s. 4.

70.2. A promoter must file with the Minister an issuance request for offset credits for the first reporting period for a project, established in accordance with the ministerial regulation that is applicable to the project not later than 6 months following the end of that period.

The promoter may then file with the Minister an issuance request for offset credits for up to three continuous reporting periods included within the same eligibility period. The request must be filed not later than 6 months following the end of the last reporting period covered by the request.

When the eligibility period for a project is renewed, the promoter must file with the Minister an issuance request for the first reporting period in the new eligibility period, established in accordance with the ministerial regulation that is applicable to the project, not later than 6 months after the end of that reporting period. The second paragraph applies to subsequent requests for the issuance of offset credits.

O.C. 1184-2012, s. 45; O.C. 902-2014, s. 40; O.C. 1125-2017, s. 37; O.C. 824-2021, s. 4.

70.3. Every issuance request for offset credits must include the following information:

- (1) the information needed to identify the promoter and the promoter's representative, if any;
- (2) the code assigned to the project by the Minister in accordance with the ministerial regulation that is applicable to it;
- (3) the start and end dates of each reporting period covered by the request;
- (4) the quantity of offset credits covered by the request.

In addition, every issuance request must include the following documents:

- (1) a project report for each reporting period covered by the request, consistent with the ministerial regulation that is applicable to the project;
- (2) a verification report on the project report or reports, consistent with the ministerial regulation that is applicable to the project and produced by a person qualified for that purpose within the meaning of the regulation.

O.C. 1184-2012, s. 45; O.C. 902-2014, s. 41; O.C. 824-2021, s. 4.

70.4. The Minister, after receiving an issuance request accompanied by a verification report that includes a positive or qualified positive verification opinion, issues, as the case may be, an offset credit for each metric tonne CO₂ equivalent of reduction in GHG emissions attributable to the project, quantified in accordance with the ministerial regulation that is applicable to the project, or offset credits corresponding to removals of GHG from the atmosphere attributable to the project, quantified in accordance with the ministerial regulation that is applicable to the project.

The Minister places 97% of the offset credits, rounded down to the nearest whole number, into the promoter's general account.

The remaining offset credits are placed into the Minister's environmental integrity account.

Despite the first paragraph, the Minister cannot issue offset credits, in whole or in part, after noting in a project report submitted with an issuance request,

- (1) false or misleading information;
- (2) errors, omissions or inaccuracies in the quantification, in accordance with the ministerial regulation applicable to the project, of the GHG emission reductions or offset credits corresponding to the removals of GHG from the atmosphere attributable to the project; or
- (3) a failure to comply with a condition in the ministerial regulation applicable to the project.

O.C. 1184-2012, s. 45; O.C. 824-2021, s. 4.

70.5. The Minister may require the promoter to replace any offset credit placed for a project under the second paragraph of section 70.4 in the following cases:

- (1) the information or documents provided by the promoter contain false or misleading information;
- (2) the quantification, in accordance with the ministerial regulation that is applicable to the project, of the GHG emission reductions or offset credits corresponding to removals of GHG from the atmosphere attributable to the project contains errors, omissions or inaccuracies;
- (3) the project was not carried out in accordance with the ministerial regulation that is applicable to the project;
- (4) a reduction in GHG emissions or a removal of GHG from the atmosphere for which offset credits are issued pursuant to this regulation has already been credited under another GHG offset program.

The Minister notifies the promoter who must, within 3 months of receiving the notification, place in its general account one emission allowance for each illegitimate offset credit that must be replaced.

The Minister, after being notified that the promoter has placed the offset credits in the general account, deducts the replacement emission allowances designated by the promoter and places them in the invalidation account to be extinguished. The Minister also transfers the number of offset credits placed into the environmental integrity account for the project under third paragraph of section 70.4, in proportion to the number of offset credits replaced by the promoter, into the invalidation account to be extinguished.

Without prejudice to the Minister's other recourses against the promoter, if the promoter has failed to surrender the replacement emission allowances on the expiry of the 3-month period, the Minister replaces the illegitimate offset credits by withdrawing an equivalent number of offset credits from the environmental integrity account and placing them in the invalidation account to be extinguished.

No offset credit may be issued to the promoter for the project unless the promoter has replaced the illegitimate offset credits within the time limit provided for in the second paragraph.

O.C. 1184-2012, s. 45; O.C. 1138-2013, s. 22; O.C. 902-2014, s. 42; O.C. 1125-2017, s. 38; O.C. 824-2021, s. 4.

70.6. If a partner entity cancels offset credits held in the account of an emitter or a participant registered pursuant to this Regulation, the Minister notifies the emitter or participant of his intention to cancel the offset credits, in accordance with the second paragraph of section 46.12 of the Environment Quality Act (chapter Q-2). After the offset credits concerned have been cancelled, they are transferred into the Minister's invalidation account to be surrendered to the partner entity.

If a partner entity cancels offset credits that were used for emitter compliance purposes, the Minister notifies the emitter, who must, within 6 months after receiving the notice, replace the cancelled offset credits by placing an equivalent number of emission allowances in its compliance account. The emission allowances are deducted in the order prescribed in section 21 and placed in the Minister's retirement account to be extinguished. The cancelled offset credits recorded in the Minister's retirement account are transferred into the Minister's invalidation account to be surrendered to the partner entity.

If the emission allowances required under the second paragraph are not placed by the emitter within the prescribed time, the provisions of sections 22 and 23 apply, with the necessary modifications, and the year of issue of the emission allowances is not taken into account.

O.C. 1184-2012, s. 45; O.C. 902-2014, s. 43; O.C. 1125-2017, s. 39; O.C. 824-2021, s. 4.

70.7. If a partner entity cancels offset credits that were used by a promoter to replace illegitimate offset credits in accordance with section 70.5, the Minister notifies the promoter, who must, within 3 months after receiving the notice, place in its general account one emission allowance for each cancelled offset credit that

must be replaced. Such emission allowances are placed in the Minister's invalidation account to be extinguished and the cancelled offset credits are surrendered to the partner entity.

No offset credit may be issued for a project for which illegitimate offset credits have been replaced in accordance with section 70.5 to a promoter who has not replaced the offset credits within the time prescribed in the first paragraph of this section.

O.C. 1184-2012, s. 45; O.C. 902-2014, s. 44; O.C. 1125-2017, s. 40; O.C. 824-2021, s. 4.

70.8. Any change to the information provided in accordance with this Chapter must be communicated to the Minister within 30 days.

O.C. 1184-2012, s. 45; O.C. 902-2014, s. 45; O.C. 1125-2017, s. 41; O.C. 824-2021, s. 4.

70.9. *(Revoked).*

O.C. 1184-2012, s. 45; O.C. 902-2014, s. 46.

70.10. *(Replaced).*

O.C. 1184-2012, s. 45; O.C. 902-2014, s. 47; O.C. 824-2021, s. 4.

70.11. *(Replaced).*

O.C. 1184-2012, s. 45; O.C. 1138-2013, s. 23; O.C. 902-2014, s. 48; O.C. 824-2021, s. 4.

70.12. *(Replaced).*

O.C. 1184-2012, s. 45; O.C. 902-2014, s. 49; O.C. 1125-2017, s. 42; O.C. 824-2021, s. 4.

70.13. *(Replaced).*

O.C. 1184-2012, s. 45; O.C. 1125-2017, s. 43; O.C. 824-2021, s. 4.

70.13.1. *(Replaced).*

O.C. 1125-2017, s. 44; O.C. 824-2021, s. 4.

70.14. *(Replaced).*

O.C. 1184-2012, s. 45; O.C. 902-2014, s. 50; O.C. 1125-2017, ss. 45 and 65; I.N. 2017-12-31; O.C. 824-2021, s. 4.

70.15. *(Replaced).*

O.C. 1184-2012, s. 45; O.C. 1138-2013, s. 24; O.C. 902-2014, s. 51; O.C. 824-2021, s. 4.

70.15.1. *(Replaced).*

O.C. 1125-2017, s. 46; O.C. 824-2021, s. 4.

70.16. *(Replaced).*

O.C. 1184-2012, s. 45; O.C. 1125-2017, s. 47; O.C. 824-2021, s. 4.

70.17. *(Replaced).*

O.C. 1184-2012, s. 45; O.C. 902-2014, s. 52; O.C. 1125-2017, s. 48; O.C. 824-2021, s. 4.

70.18. *(Replaced).*

O.C. 1184-2012, s. 45; O.C. 1125-2017, s. 49; O.C. 824-2021, s. 4.

70.19. *(Replaced).*

O.C. 1184-2012, s. 45; O.C. 902-2014, s. 53; O.C. 1125-2017, s. 50; O.C. 824-2021, s. 4.

70.20. *(Replaced).*

O.C. 1184-2012, s. 45; O.C. 1138-2013, s. 25; O.C. 902-2014, s. 54; O.C. 1125-2017, ss. 51 and 65; I.N. 2017-12-31; O.C. 824-2021, s. 4.

70.21. *(Replaced).*

O.C. 1184-2012, s. 45; O.C. 902-2014, s. 55; O.C. 1089-2015, s. 23; O.C. 1125-2017, s. 52; O.C. 824-2021, s. 4.

70.21.1. *(Replaced).*

O.C. 902-2014, s. 56; O.C. 824-2021, s. 4.

70.22. *(Replaced).*

O.C. 1184-2012, s. 45; O.C. 824-2021, s. 4.

TITLE IV

ADMINISTRATIVE PROVISIONS, OFFENCES AND FINAL PROVISIONS

O.C. 1297-2011, title IV; O.C. 1184-2012, s. 46.

CHAPTER I

MONETARY ADMINISTRATIVE SANCTIONS

O.C. 1297-2011, c. I; O.C. 1184-2012, s. 47.

71. A monetary administrative sanction of \$500 in the case of a natural person and \$2,500 in all other cases may be imposed on any person who

(1) contravenes section 4, 8, 9, 11 or 12, the second paragraph of section 13, section 14.1, the second paragraph of section 18, section 18.1, 18.2 or 18.4, the second paragraph of section 19, the second paragraph of section 19.0.1, the sixth paragraph of section 26, the fourth paragraph of section 26.3, the sixth paragraph of section 27.1, the second paragraph of section 33 or 51, section 53, 62, 70.2, 70.3 or 70.8;

(2) in contravention of this Regulation, refuses or neglects to send notification or provide any other information, study, research or expertise, information, report, summary, plan or other document, or who fails to comply with the time limits for providing such documents, in cases where no monetary administrative sanction is otherwise provided for.

O.C. 1297-2011, s. 71; O.C. 1184-2012, s. 47; O.C. 1138-2013, s. 26; O.C. 902-2014, s. 57; O.C. 1089-2015, s. 24; O.C. 1125-2017, s. 53; O.C. 824-2021, s. 5; O.C. 1462-2022, s. 46.

72. A monetary administrative sanction of \$1,000 in the case of a natural person and \$5,000 in all other cases may be imposed on any person who contravenes subparagraph 1 of the first paragraph of section 18, section 32, or the second or third paragraph of section 50.

O.C. 1297-2011, s. 72; O.C. 1184-2012, s. 47; O.C. 902-2014, s. 58; O.C. 824-2021, s. 6.

73. A monetary administrative sanction of \$2,500 in the case of a natural person and \$10,000 in all other cases may be imposed on any person who

(1) contravenes section 7 or 17, the first or third paragraph of section 19, the first paragraph of section 19.0.1, section 19.1 or 20, the first paragraph of section 21, the first or second paragraph of section 23.1 or section 24, section 28, 29, 30 or 31, the second paragraph of section 37, the first paragraph of section 51, the second paragraph of section 70.5 or 70.6 or the first paragraph of section 70.7;

(2) fails to place emission allowances or emission units pursuant to subparagraph 2 of the first paragraph of section 18, or the fourth paragraph of section 22 or 41, in cases where no other administrative sanction may be applied.

O.C. 1184-2012, s. 47; O.C. 902-2014, s. 59; O.C. 1089-2015, s. 25; O.C. 1125-2017, s. 54; O.C. 824-2021, s. 7.

CHAPTER I.1

OFFENCES

O.C. 1184-2012, s. 47.

74. A person who contravenes section 4, 8, 9, 11 or 12, the second paragraph of section 13, section 14.1, the second paragraph of section 18, section 18.1, 18.2 or 18.4, the second paragraph of section 19, the second paragraph of section 19.0.1, the sixth paragraph of section 26, the fourth paragraph of section 26.3, the sixth paragraph of section 27.1, the second paragraph of section 33 or 51 or section 53, 62, 70.2, 70.3 or 70.8 is guilty of an offence and is liable,

(1) in the case of a natural person, to a fine of \$3,000 to \$100,000; and

(2) in other cases, to a fine of \$10,000 to \$600,000.

A person who contravenes any other requirement of this Regulation is guilty of an offence and liable, in cases where no penalty is otherwise provided for in this Chapter or in the Environment Quality Act (chapter Q-2), in the case of a natural person, to a fine of \$3,000 to \$100,000 and, in other cases, to a fine of \$10,000 to \$600,000.

O.C. 1297-2011, s. 74; O.C. 1184-2012, s. 47; O.C. 1138-2013, s. 27; O.C. 902-2014, s. 60; O.C. 1089-2015, s. 26; O.C. 1125-2017, s. 55; O.C. 824-2021, s. 8; O.C. 1462-2022, s. 47.

75. A person who contravenes subparagraph 1 of the first paragraph of section 18, section 32 or the second or third paragraph of section 50 is guilty of an offence and is liable,

(1) in the case of a natural person, to a fine of \$6,000 to \$250,000; and

(2) in other cases, to a fine of \$25,000 to \$1,500,000.

O.C. 1297-2011, s. 75; O.C. 1184-2012, s. 47; O.C. 902-2014, s. 61; O.C. 824-2021, s. 9.

75.1. A person who contravenes section 7 or 17, the first or second paragraph of section 24, the second paragraph of section 37, the fourth paragraph of section 41, the first paragraph of section 51 or the second paragraph of section 70.5 is guilty of an offence and is liable,

(1) in the case of a natural person, to a fine of \$10,000 to \$500,000 or, despite article 231 of the Code of Penal Procedure (chapter C-25.1), to imprisonment for a maximum term of 18 months; and

(2) in other cases, to a fine of \$40,000 to \$3,000,000.

O.C. 1184-2012, s. 47; O.C. 902-2014, s. 62; O.C. 1089-2015, s. 27; O.C. 824-2021, s. 10.

75.2. A person who communicates false or misleading information to the Minister for the purposes of this Regulation is guilty of an offence and is liable,

(1) in the case of a natural person, to a fine of \$5,000 to \$500,000 or, notwithstanding article 231 of the Code of Penal Procedure (chapter C-25.1), to imprisonment for a maximum term of 18 months; and

(2) in other cases, to a fine of \$15,000 to \$3,000,000.

O.C. 1184-2012, s. 47.

75.3. A person who contravenes section 28, 29, 30 or 31 or who directly or indirectly engages or participates in any transaction, series of transactions or trading method relating to an emission allowance, or in any act, practice or course of conduct is guilty of an offence if the person knows, or ought reasonably to know, that the transaction, series of transactions, trading method, act, practice or course of conduct

(1) creates or contributes to create a misleading appearance of trading activity in, or an artificial price for, an emission allowance; or

(2) perpetrates a fraud on any person.

A person referred to in the first paragraph is liable,

(1) in the case of a natural person, to a fine of \$10,000 to 500,000 or, despite article 231 of the Code of Penal Procedure (chapter C-25.1), to imprisonment for a maximum term of 18 months; and

(2) in other cases, to a fine of \$40,000 to \$3,000,000.

O.C. 1184-2012, s. 47; O.C. 902-2014, s. 63.

75.4. An emitter who fails to cover GHG emissions in accordance with subparagraph 2 of the first paragraph of section 18, the first or third paragraph of section 19, the first paragraph of section 19.0.1, section 19.1 or 20, the first paragraph of section 21, the fourth paragraph of section 22, the first or second paragraph of section 23.1, the second paragraph of section 70.6 or the first paragraph of section 70.7 is guilty of an offence for each metric tonne of GHG not covered and is liable, for each metric tonne, to a fine of \$3,000 to \$600,000.

O.C. 1184-2012, s. 47; O.C. 902-2014, s. 64; O.C. 1089-2015, s. 28; O.C. 1125-2017, s. 56; O.C. 824-2021, s. 11.

CHAPTER I.2

OTHER SANCTIONS

O.C. 1125-2017, s. 57.

75.5. The Minister may suspend or cancel the registration for the system of a person other than an emitter referred to in section 2, when the Minister has reasonable grounds to believe that the integrity of the system is threatened.

The Minister may, in addition, when the Minister has reasonable grounds to believe that the integrity of the system is threatened, refuse to register an emitter for an auction of emission units or suspend all emission allowance transactions pursuant to Chapter IV of Title II.

The Minister must, before exercising a power under the first or second paragraph, send the interested party a notice of intention setting out the grounds for exercising the power and granting the interested party at least 10 days to present its observations.

O.C. 1125-2017, s. 57; O.C. 1462-2022, s. 48.

CHAPTER II

FINAL

76. *(Omitted).*

O.C. 1297-2011, s. 76.

APPENDIX A

(s. 2)

Sectors of activity targeted by the cap-and-trade system for greenhouse gas emission allowances

Sector	Type of activity	6-digit NAICS* code beginning with:
Mining, quarrying and oil and natural gas extraction	Extraction of naturally occurring minerals	211 or 212
Electric power generation, transmission and distribution	Generation of bulk electric power, transmission from generating facilities to distribution centres, and/or distribution to end users	2211
Natural gas distribution	Distribution, through a system of mains, of natural or synthetic gas to consumers, also including the trade of the sale of natural gas by marketers and brokers, that arrange the sale of natural gas over distribution systems operated by others	2212 488990 (natural gas regasification or liquefaction)
Steam and airconditioning production for industrial purposes	Production and distribution of steam and heated or cooled air for industrial purposes	22133
Manufacturing	Mechanical or physical transformation of materials or substances into new products	31, 32 or 33
Pipeline transportation	Transportation of crude oil, refined products and natural gas, gas fields, processing plants and local distribution systems	486 488990 (natural gas regasification or liquefaction)

* The numbers indicated for each category of industrial or commercial activity mentioned in Appendices A and C correspond to the codes assigned by the North American Industry Classification System (NAICS). The description of each category of activity found in the document “North American Industry Classification

System, Canada 2007” published by Statistics Canada (Catalogue no. 12-501-XIE2007001, 2007, ISBN 0-662-44519-8) applies for the purposes of this Regulation.

O.C. 1297-2011, Sch. A; O.C. 1184-2012, s. 48; O.C. 1089-2015, s. 29; O.C. 1125-2017, s. 58; O.C. 1462-2022, s. 49.

APPENDIX B

(Revoked)

O.C. 1297-2011, Sch. B; O.C. 1184-2012, s. 49.

APPENDIX B.1

(s. 37)

Partner entities**(1) State of California**

The emission allowances issued by the State of California pursuant to the document California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms, Title 17, California Code of Regulations, Sections 95800 and seq. are deemed to be equivalent to the emission allowances issued pursuant to this Regulation, based on the correspondence indicated in the following tables for each type of emission allowance

Table A Types of emission allowance

	Québec	California
Types of emission allowance (each having a value corresponding to 1 metric tonne CO ₂ equivalent)	Emission unit	California Greenhouse Gas Emissions Allowance (CA GHG Allowance)
	Early reduction credit	
	Offset credit	ARB Offset Credit Early Action Offset Credit
		Price ceiling units

Table B Reserve emission units - corresponding categories

	Québec	California
Reserve emission units (s. 58)	Category A	First Reserve tier
	Category B	Second Reserve tier
	Category C	Price ceiling account

D. 1184-2012, a. 50; D. 1137-2013, a. 1; D. 1181-2013; O.C. 1125-2017, s. 59; O.C. 1288-2020, s. 17.

APPENDIX C

(ss. 39, 40 and 41)

Part I

Table A Activities eligible for the allocation without charge of greenhouse gas emission units

Activity	6-digit NAICS* code beginning with
Mining and quarrying (except oil and gas)	212
Electric power generation sold under a contract signed prior to 1 January 2008, that has not been renewed or extended after that date, in which the sale price is fixed for the duration of the contract, with no possibility of adjusting the price to take into account the costs relating to the implementation of a cap-and-trade system for greenhouse gas emission allowances	2211
Until 2020, Acquisition, for the consumption of the enterprise or for sale in Québec, of power generated in another Canadian province or territory or in a state in which the government has established a cap-and-trade system for greenhouse gas emission allowances targeting power generation, but has not signed an agreement referred to in section 46.14 of the Environment Quality Act (chapter Q-2)	
Steam and air-conditioning supply for industrial purposes	22133
Manufacturing	31, 32 or 33
Beginning in 2021: Acquisition, for the consumption of the enterprise or for sale in Québec, of power generated in a state in which the government has established, within its territory, a cap-and-trade system for greenhouse gas emission allowances targeting power generation, but has not signed an agreement referred to in section 46.14 of the Environment Quality Act	

Table B Reference units¹

Sector of activity of the establishment	Type of activity	Reference unit
Agrifood	Beer production	Hectolitre of beer
Agrifood	Alcohol production	Kilolitre of alcohol
Agrifood	Sugar production	Metric tonne of sugar
Agrifood	Oilseed processing	Metric tonne of processed oilseed
Agrifood	Milk processing	Kilolitre of whole unpasteurized milk Metric tonne of milk powder with 5% or less moisture Metric tonne of unpasteurized raw milk solids and lactoserum received
Agrifood	Food manufacturing	Metric tonne of cleaned flour
Agrifood	Animal slaughtering	Metric tonne of pork products finished at the slaughterhouse after cutting and boning
Agrifood	Poultry processing	Metric tonne of processed poultry products
Aluminum	Baked cathode production	Metric tonne of baked cathodes removed from furnace
Aluminum	Aluminum production	Metric tonne of liquid aluminum (leaving potroom)
Aluminum	Baked anode production	Metric tonne of baked anodes removed from furnace
Aluminum	Aluminum hydroxide production and secondary activities	Metric tonne of aluminum hydroxide hydrate expressed as Al_2O_3 equivalent calculated at the precipitation stage
Aluminum	Calcinated coke production	Metric tonne of calcinated coke
Aluminum	Production of aluminum billets	Metric tonne of remelted aluminum

Other ²	Dismembering	Metric tonne of treated matter
Other ²	Graphite electrode manufacturing	Metric tonne of graphite electrodes
Other ²	Gypsum panel manufacturing	Cubic metre of gypsum panel
Other ²	Glass container manufacturing	Metric tonne of glass
Other ²	Steam production (for sale to a third person)	Metric tonne of steam
Other ²	Production of semi-conductors and other electronic components	Square metre of silicon substrate associate with deep reactive ion etching Square metre of silicon substrate associated with an etching process other than deep reactive ion etching Square metre of silicon substrate associated with plasma enhanced chemical vapour deposition
Other ²	Carbon dioxide production	Metric tonne of carbon dioxide
Other ²	Manufacturing of aerospace products and parts	Number of aircraft delivered Number of aerospace parts delivered Number of aircraft with internal fittings manufactured on site Number of aircraft painted at the paint shop on site Number of aircraft tested prior to delivery

Other ²	Laminate production	Number of laminate sheet equivalents leaving press (typical sheet: minimum surface of 4 feet by 8 feet, 0.67 mm thickness)
Other ²	Asphalt shingle production	Square metre of asphalt shingles (membrane base)
Lime	Lime production	Metric tonne of calcic lime and metric tonne of calcic lime kiln dust sold Metric tonne of dolomitic lime and metric tonne of dolomitic lime kiln dust sold
Chemical	Ethanol production	Kilolitre of ethanol
Chemical	Tire production	Metric tonne of tires
Chemical	Fabrication of rigid foamed insulation	Board foot of rigid insulation
Chemical	Production of titanium dioxide (Ti O ₂)	Metric tonne of titanium pigment equivalent (raw material)
Chemical	Production of linear alkylbenzene (LAB)	Metric tonne of LAB
Chemical	Production of catalyzer	Metric tonne of catalyzer (including additives)
Chemical	Production of hydrogen	Metric tonne of hydrogen
Chemical	Production of purified terephthalic acid (PTA)	Metric tonne of PTA
Chemical	Production of paraxylene	Metric tonne of xylene and toluene Metric tonne of steam sold to a third person
Chemical	Production of sodium silicate	Metric tonne of sodium silicate
Chemical	Production of sulphur (refinery gas)	Metric tonne of sulphur
Chemical	Polyethylene terephthalate (PET) production	Metric tonne of polyethylene therephthalate (PET)

Cement	Cement production	Metric tonne of clinker and metric tonne of mineral additives (gypsum and limestone) added to the clinker produced
Electricity	Electricity production	Megawatt-hour (MWh)
Electricity	Acquisition of electricity produced outside Québec for the consumption of the enterprise or for sale in Québec	Megawatt-hour (MWh)
Electricity	Steam production (except steam produced by cogeneration)	Metric tonne of steam
Metallurgy	Steel production (steelworks)	Metric tonne of steel (slabs, pellets or ingots)
Metallurgy	Wrought steel production	Metric tonne of wrought steel
Metallurgy	Steel pellet or slab rolling	Metric tonne of rolled steel
Metallurgy	Copper anode production	Metric tonne of copper anodes Metric tonne of recycled secondary materials
Metallurgy	Copper cathode production	Metric tonne of recycled secondary materials
Metallurgy	Iron ore concentrate pellet reduction	Metric tonne of reduced iron pellets
Metallurgy	Copper cathode production	Metric tonne of copper cathodes
Metallurgy	Ferrosilicon production	Metric tonne of ferrosilicon (50% and 75% concentration)
Metallurgy	Lead production	Metric tonne of lead

Metallurgy	Metal powder manufacturing	Metric tonne of saleable iron powder and steel powder
Metallurgy	Titanium dioxide (TiO ₂) slag manufacturing	Metric tonne of TiO ₂ slag cast at the reduction furnaces
Metallurgy	Silicon metal production	Metric tonne of silicon metal
Metallurgy	Zinc production	Metric tonne of iron load Metric tonne of cathodic zinc
Metallurgy	Steel forging stock production	Metric tonne of steel forging stock
Metallurgy	Production of copper drawing stock	Metric tonne of copper drawing stock
Metallurgy	Magnesium production	Metric tonne of primary magnesium entering the foundry Metric tonne of magnesium produced

Mining and pelletization	Pellet production	Metric tonne of flux pellets
		Metric tonne of standard pellets
		Metric tonne of low silica flux pellets
		Metric tonne of direct reduction pellets
		Metric tonne of blast furnace pellets
		Metric tonne of intermediate pellets
Mining and pelletization	Iron concentrate production	Metric tonne of iron concentrate
Mining and pelletization	Nickel concentrate production	Metric tonne of nickel produced
Mining and pelletization	Nickel concentrate and copper concentrate production	Metric tonne of nickel and copper produced
Mining and pelletization	Diamond production	Metric tonne of kimberlite processed
Mining and pelletization	Gold production	Metric tonne of auriferous ore processed
Pulp and paper	Electricity production through cogeneration	Megawatt-hour (MWh) of electricity produced through cogeneration

Pulp and paper	Production of pulp and paper	Metric tonne of various saleable air-dried products Metric tonne of saleable commercial pulp air-dried to 10% moisture content Metric tonne of saleable newsprint air-dried to 10% moisture content Metric tonne of saleable fine paper (from kraft pulp or deinked kraft pulp) air-dried to 10% moisture content Metric tonne of saleable semi-fine uncoated paper (from mechanical pulp) air-dried to 10% moisture content Metric tonne of saleable semi-fine coated paper air-dried to 10% moisture content Metric tonne of saleable sanitary tissue air-dried to 10% moisture content Metric tonne of saleable uncoated cardboard air-dried to 10% moisture content Metric tonne of saleable coated cardboard air-dried to 10% moisture content Metric tonne of saleable corrugated board and linerboard air-dried to 10% moisture content Metric tonne of saleable cellulosic filament air-dried to 10% moisture content
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Pulp and paper	Production of wood-fibre based products	Metric tonne of various air-dried saleable products
Pulp and paper	Steam production	Metric tonne of various saleable air-dried products of each of the establishments common to a steam network
Pulp and paper	Sawmill	Thousand board feet (MFBM) (dry)
Refining	Oil refining	Kilolitre of total crude oil refinery load

¹ An establishment pursuing a type of activity that is not listed in this table must use the reference unit declared in its emissions report under the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere (chapter Q-2, r. 15).

² These reference units must be used when the type of activity is not exercised in another sector of activity specifically referred to in this Table.

Part II

Calculation methods for the allocation of emission units without charge

(A) Definition

For the purposes of the calculation methods,

(0.1) “old GWP values” : global warming potential values provided for in Schedule A.1 to the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere (chapter Q-2, r. 15) in force on 31 December 2020;

(1) “covered establishment as of 2013” means an establishment for which the GHG reported emissions for 2009, 2010 or 2011 are equal to or exceed the emissions threshold;

(2) “covered establishment after 2013” means an establishment for which the verified GHG emissions for 2012, 2013, 2014 or 2015 are equal to or exceed the emissions threshold;

(3) “covered establishment as of 2018” means an establishment for which the verified GHG emissions for 2016, 2017 or 2018 are equal to or exceed the emissions threshold;

(4) “establishment covered prior to 2021” means an establishment referred to in paragraph 1, 2 or 3, or an establishment referred to in section 2.1 before 2021 that is still targeted by the system in 2021;

(5) “covered establishment as of 2021” means an establishment for which the verified GHG emissions for 2019 to 2023 are equal to or exceed the emissions threshold;

(5.1) “covered establishment prior to 2024” means an establishment referred to in paragraph 1, 2, 3, 4 or 5, or an establishment referred to in section 2.1 prior to 2024, that is still targeted by the system in 2024;

(5.2) “covered establishment as of 2024” means an establishment the operator of which must cover the emissions under, as the case may be, section 19 or 19.0.1 as of 2024 or a subsequent year;

(6) “new GWP values” : global warming potential values provided for in Schedule A.1 to the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere in force on 1 January 2021.

(B) Categories of GHG emissions by origin

GHG emissions are divided into 3 categories on the basis of their origin: fixed process emissions, combustion emissions and other emissions.

Fixed process emissions are the CO₂ emissions resulting from a fixed chemical reaction process for production purposes that generates CO₂, from chemically-bonded carbon in the raw material, or from the carbon used to remove an undesirable component from the raw material where there is no substitutable raw material.

Combustion emissions are the emissions resulting from the exothermic reaction of any fuel, except CO₂ emissions attributable to the combustion of biomass or biomass fuels.

Other emissions are the emissions that do not meet the criteria for fixed process emissions or combustion emissions.

(C) Establishments and new facilities considered on a sectoral basis for the allocation of emission units without charge

For the purpose of calculating the number of emission units that may be allocated without charge to an emitter, establishments and new facilities pursuing the following activities are considered on a sectoral basis:

- (1) lime production;
- (2) cement production;
- (3) prebaked anode production and aluminum production using prebaked anode technologies until 2020;
- (4) prebaked anode production and aluminum production using prebaked anode technologies except a side-worked prebaked anode technology as of 2021;
- (5) aluminum production using inert anode cells installed in a building which, when the cells were installed, already contained prebaked anode cells;
- (6) aluminum production using inert anode cells installed in a building to replace the prebaked anode cells installed in that building;
- (7) aluminum production, in an establishment covered on 1 September 2022, using inert anode cells installed in a building adjacent to the building in which prebaked anode cells are installed.

(D) Calculation methods

For the application of the methods set out in this Part, the result of an intensity target of emissions calculation is rounded off to 4 significant figures and the result of an emission unit allocation calculation is rounded up to the nearest whole number.

For the application of the calculation methods set out in this Part, the GHG emissions data used are

- (1) for the years 2007 to 2011, the data for reported emissions, minus the emissions referred to in the second paragraph of section 6.6 of the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere (chapter Q-2, r. 15)
- (2) for the years 2012 and following, the verified emissions.

Subject to the fifth paragraph, the total quantity of GHG emission units allocated without charge to an emitter referred to in section 2 is calculated in accordance with the following methods:

- (1) in the case of an establishment covered as of 2013 that is not considered on a sectoral basis and that possesses GHG emissions data for 2007-2010, using equations 1-1 and 2-1 to 2-9;
 - (1.1) in the case of an establishment covered as of 2013 that is not considered on a sectoral basis and that does not possess GHG emissions data for 2007-2010, using equations 1-1 and 4-1 to 4-8;
- (2) in the case of an establishment covered as of 2013 that is considered on a sectoral basis and that possesses GHG emissions data for 2007-2010, using equations 1-1 and 3-1 to 3-10;
 - (2.1) in the case of an establishment covered as of 2013 that is considered on a sectoral basis and that does not possess GHG emissions data for 2007-2010, using equations 1-1, 5-1 and 5-2;
- (3) in the case of an establishment covered after 2013 that is not considered on a sectoral basis, using equations 1-1 and 4-1 to 4-8;
- (4) in the case of an establishment covered after 2013 that is considered on a sectoral basis, using equations 1-1 and 5-1 for the years 2013 to 2014, using equation 5-2 for the years 2015 to 2017 and using equation 5-3 for the years 2018 to 2020;

- (5) in the case of a covered establishment as of 2018 that is not considered on a sectoral basis and that possesses all the GHG emissions data for years $d-2$ to d , using equations 1-1 and 4-9 to 4-14;
- (6) in the case of a covered establishment as of 2018 that is not considered on a sectoral basis, that does not possess all the GHG emissions data for years $d-2$ to d , and for which, as the case may be,
 (a) the GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, are all available, using equations 1-1 and 4-15 to 4-20;
 (b) the GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, are not all available, using equations 1-1, 4-21 and 4-22, until the data are all available;
- (7) in the case of a covered establishment as of 2018 that is not considered on a sectoral basis, that does not possess a determined reference unit, and for which, as the case may be,
 (a) the GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, are all available, using equations 1-1 and 4-23 and 4-24;
 (b) the GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, are not all available, using equations 1-1, 4-21 and 4-22, until those data are all available;
- (8) in the case of an establishment covered prior to the year 2021 that is not considered on a sectoral basis, using equations 7-1 and 8-1 to 8-10 for the years 2021 to 2023;
- (9) in the case of an establishment covered prior to the year 2021 that produces cement, lime, prebaked anodes or aluminum by using a prebaked anode technology other than the side-worked prebaked anode technology, using equations 7-1 and 9-1 for the years 2021 to 2023;
- (10) in the case of a covered establishment as of 2021 that is not considered on a sectoral basis and that possesses all the GHG emissions data for years $d-2$ to d , using equations 7-1 and 10-1 to 10-4;
- (11) in the case of a covered establishment as of 2021 that is not considered on a sectoral basis, that does not possess all the GHG emissions data for years $d-2$ to d , and for which, as the case may be,
 (a) the GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, are all available, using equations 7-1 and 11-1 to 11-4;
 (b) the GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, are not all available, using equations 7-1, 11-5 and 11-6, until the data are all available;
- (12) in the case of a covered establishment as of 2021 that does not possess a determined reference unit and for which, as the case may be,
 (a) the GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, are all available, using equations 7-1, 12-1 and 12-2;
 (b) the GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, are not all available, using equations 7-1, 11-5 and 11-6, until the data are all available;
- (13) in the case of an establishment that produces liquid aluminum by using a side-worked prebaked anode technology, using equations 7-1 and 8-1 to 8-7 for the years 2021 to 2023;
- (14) *(subparagraph revoked)*;
- (15) in the case of an establishment that produces steel (slabs, pellets or ingots), metallic silicon, ferrosilicon, reduced iron pellets or titanium dioxide (TiO_2), using equations 7-1 and 6-15 for the years 2021 to 2023;
- (16) in the case of a copper refinery, using equations 7-1 and 6-16 for the years 2021 to 2023;
- (17) in the case of an establishment covered prior to the year 2024, other than a newly operational establishment, that is not considered on a sectoral basis for the years 2024 to 2030, using equations 18-1 and 19-1;
- (18) in the case of an establishment that is considered on a sectoral basis for the years 2024 to 2030, using equations 18-1 and 20-1;

(19) in the case of a newly operational establishment, that is not considered on a sectoral basis for the years 2024 to 2030 and for which the GHG emissions data for years d to $d+2$ or $d+1$ to $d+3$, where d is the year in which the establishment became operational, are all available, using equations 18-1 and 21-1;

(20) in the case of a newly operational establishment, that is not considered on a sectoral basis for the years 2024 to 2030 and for which the GHG emissions data for years d to $d+2$ or $d+1$ to $d+3$, where d is the year in which the establishment became operational, are not all available, using equations 18-1 and 22-1;

(21) in the case of a covered establishment as of 2024 that is not considered on a sectoral basis, for which the GHG emissions data for years $d-2$ to d , are all available and that is not a newly operational establishment, using equations 18-1 and 23-1;

(22) in the case of a covered establishment as of 2024 that is not considered on a sectoral basis, for which the GHG emissions data for years $d-2$ to d are not all available and that is not a newly operational establishment, using equations 18-1 and 24-1;

(23) in the case of a covered establishment as of 2024 that is not considered on a sectoral basis and for which the GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, are not all available, using equations 18-1 and 24-7.

Subject to the fifth paragraph, the total quantity of GHG emission units allocated without charge to an emitter referred to in section 2.1 is calculated in accordance with the following methods:

(1) in the case of a covered establishment referred to in section 2.1 that is not considered on a sectoral basis and that possesses all the GHG emissions data for years $e-3$ to $e-1$, using equations 1-1 and 4-25 to 4-30 for the years 2018 to 2020;

(2) in the case of a covered establishment referred to in section 2.1 that is not considered on a sectoral basis, that does not possess all the GHG emissions data for years $e-3$ to $e-1$ and for which, as the case may be,

(a) the GHG emissions data for years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational, are all available, using equations 1-1 and 4-31 to 4-36 for the years 2018 to 2020;

(b) the GHG emissions data for years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational, are not all available, using equations 1-1 and 4-37 and 4-38 for the years 2018 to 2020, until the data are all available;

(3) in the case of a covered establishment referred to in section 2.1 that does not possess a determined reference unit, that is not considered on a sectoral basis and for which, as the case may be,

(a) the GHG emissions data, for years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational, are all available, using equations 1-1, 4-39 and 4-40 for the years 2018 to 2020;

(b) the GHG emissions data, for years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational, are not all available, using equations 1-1 and 4-37 and 4-38 for the years 2018 to 2020, until the data are all available;

(4) in the case of a covered establishment referred to in section 2.1 that is not considered on a sectoral basis and that possesses all the GHG emissions data for years $e-3$ to $e-1$, using equations 7-1 and 13-1 to 13-4 for the years 2021 to 2023;

(5) in the case of a covered establishment referred to in section 2.1 that is not considered on a sectoral basis, that does not possess all the GHG emissions data for years $e-3$ to $e-1$ and for which, as the case may be,

(a) the GHG emissions data for years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational, are all available, using equations 7-1 and 14-1 to 14-4 for the years 2021 to 2023;

(b) the GHG emissions data for years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational, are not all available, using equations 7-1, 14-5 and 14-6 for the years 2021 to 2023, until the data are all available;

(6) in the case of a covered establishment referred to in section 2.1 that does not possess a determined reference unit and for which, as the case may be,

(a) the GHG emissions data, for years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational, are all available, using equations 7-1, 15-1 and 15-2 for the years 2021 to 2023;

(b) the GHG emissions data for years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational, are not all available, using equations 7-1, 14-5 and 14-6 for the years 2021 to 2023, until the data are all available;

(7) in the case of an establishment covered prior to the year 2024, other than a newly operational establishment that is not considered on a sectoral basis for the years 2024 to 2030, using equations 18-1 and 19-1;

(8) in the case of an establishment that is considered on a sectoral basis for the years 2024 to 2030, using equations 18-1 and 20-1;

(9) in the case of a newly operational establishment, that is not considered on a sectoral basis for the years 2024 to 2030 and for which the GHG emissions data for years $e+1$ to $e+3$ or years $e+2$ to $e+4$, where $e+1$ is the year in which the establishment became operational, are all available, using equations 18-1 and 21-1;

(10) in the case of a newly operational establishment, that is not considered on a sectoral basis for the years 2024 to 2030 and for which the GHG emissions data for years $e+1$ to $e+3$ or years $e+2$ to $e+4$, where e is the year in which the establishment became operational, are not all available, using equations 18-1 and 22-1;

(11) in the case of a covered establishment as of 2024 that is not considered on a sectoral basis, for which the GHG emissions data for years $e-3$ to $e-1$ are all available and that is not a newly operational establishment, using equations 18-1 and 23-1;

(12) in the case of a covered establishment as of 2024 that is not considered on a sectoral basis, for which the GHG emissions data for years $e-3$ to $e-1$ are not all available and that is not a newly operational establishment, using equations 18-1 and 24-1;

(13) in the case of a covered establishment as of 2024 that is not considered on a sectoral basis and for which the GHG emissions data for years $e-1$ to $e+1$ or e to $e+2$ where $e-1$ is the year in which the establishment became operational are not all available, using equations 18-1 and 24-7.

In the special cases provided for below, the emission units allocated without charge to an emitter are calculated:

(1) in the case of an establishment producing aluminum anodes using Söderberg anode technology after 2014, using equation 2-9 but replacing the factor “ I_{2020_i} ” by the factor “ $I_{2020_{sod}}$ ” calculated using equation 6-1;

(2) in the case of an establishment producing alumina from bauxite, using equation 6-2;

(3) in the case of an establishment producing rigid foamed insulation, using equation 2-1 for 2013 and 2014, calculating the factor “ I_{2013} ” using equations 6-3 to 6-6, and using equation 6-7 for 2015 to 2020;

(4) in the case of an establishment producing zinc and generally using hydrogen as a fuel to supply its furnaces, using equations 6-8 to 6-10 for the years 2013 to 2020 and using equations 6-10.1 and 6-10.2 for the years 2021 to 2023;

(5) in the case of a new facility and the production of a new reference unit, using the methods in subdivision 6.5;

(6) in the case of an establishment covered after 2013 whose production replaces all or part of the production of another establishment or facility of the same emitter in Québec that closed after 1 January 2008, using the methods in subdivision 6.6;

(7) in the case of an enterprise who acquires, for the consumption of the enterprise or for sale in Québec, power generated in another Canadian province or territory or in a state in which the government has

established a cap-and-trade system for greenhouse gas emission allowances targeting power generation, but has not signed an agreement referred to in section 46.14 of the Environment Quality Act (chapter Q-2), using equation 6-11 for the years 2013 to 2020 and using equation 6-11.1 for the years 2021 to 2023;

(8) in the case of a copper foundry, using equations 6-12 and 6-13 for the years 2013 to 2020 and using equation 6-14 for the years 2021 to 2023;

(9) beginning in the year 2023, in the case of an establishment in the pulp and paper sector producing electricity through cogeneration, excluding the emissions data attributable to the production of electricity by cogeneration in metric tonnes CO₂ equivalent calculated using equations 25-1 to 25-6.

The total quantity of GHG emission units allocated without charge and paid to an emitter is calculated in accordance with the following methods:

(1) in the case of an establishment covered prior to the year 2024, other than a newly operational establishment, that is not considered on a sectoral basis for the years 2024 to 2030, using equations 18-2 and 19-5;

(2) in the case of an establishment that is considered on a sectoral basis for the years 2024 to 2030, using equations 18-2 and 20-4;

(3) in the case of a newly operational establishment, that is not considered on a sectoral basis for the years 2024 to 2030 and for which the GHG emissions data for years d to $d+2$ or $e+1$ to $e+3$ or years $d+1$ to $d+3$ or $e+2$ to $e+4$, where d or $e+1$ is the year in which the establishment became operational, are all available, using equations 18-2 and 21-3;

(4) in the case of a newly operational establishment, that is not considered on a sectoral basis for the years 2024 to 2030 and for which the GHG emissions data for years d to $d+2$ or $d+1$ to $d+3$, where d is the year in which the establishment became operational, or years $e+1$ to $e+3$ or $e+2$ to $e+4$, where $e+1$ is the year in which the establishment became operational, are not all available, using equations 18-2 and 22-3;

(5) in the case of a covered establishment as of 2024 that is not considered on a sectoral basis and for which the GHG emissions data for years $d-2$ to d or $e-3$ to $e-1$ are all available, using equations 18-2 and 23-3;

(6) in the case of a covered establishment as of 2024 that is not considered on a sectoral basis and for which the GHG emissions data for years $d-2$ to d or $e-3$ to $e-1$ are not all available, using equations 18-2 and 24-4;

(7) in the case of a covered establishment as of 2024 that is not considered on a sectoral basis and for which the GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, or $e-1$ to $e+1$ or e to $e+2$ where $e-1$ is the year in which the establishment became operational, are not all available, using equations 18-2 and 24-8.

The total quantity of GHG emission units allocated without charge to be auctioned for an establishment is calculated in accordance with equation 18-3.

Despite the third and fourth paragraphs,

(1) the quantity of GHG emission units allocated without charge to a covered emitter beginning in the year 2023 is calculated using the methods applicable to the emitter during the last year of its first registration for the system;

(2) the quantity of GHG emission units allocated without charge to an emitter whose registration was interrupted for a period of less than 3 years is calculated using the methods applicable to the last year during which the emitter was eligible for an allocation free of charge.

1. Calculation of the total quantity of GHG emission units allocated without charge for an establishment for the years 2013 to 2020

Equation 1-1 Calculation of the total quantity of GHG emission units allocated without charge for an establishment

$$A_{\text{establishment } i,j} = \sum_{j=1}^m A_{i,j}$$

Where:

$A_{\text{establishment } i j}$ = Total quantity of GHG emission units allocated without charge for an establishment for year i for all types of activities j in Table B of Part I of this Schedule for that establishment;

i = Each year included in the period 2013 to 2020;

j = Each type of activity at the establishment;

m = Total number of types of activity at the establishment;

A_{ij} = Number of GHG emission units allocated without charge by type of activity j for year i , calculated using equations 2-1, 2-9, 3-1, 3-10, 4-1, 4-8, 4-9, 4-15, 4-21, 4-23, 4-25, 4-31, 4-37, 4-39, 5-1, 5-2, 5-3, 6-2, 6-7, 6-8, 6-9 and 6-10.3.

2. Covered establishment as of 2013 that is not considered on a sectoral basis

(2.1) Calculation method for the years 2013 and 2014

Equation 2-1 Calculation of the number of GHG emission units allocated without charge by type of activity at an establishment that is not considered on a sectoral basis for the years 2013 and 2014

$$A_{ij} = I2013_j \times P_{Rij}$$

Where:

A_{ij} = Total number of GHG emission units allocated without charge for type of activity j at an establishment for year i ;

i = Each year included in the first compliance period, namely 2013 and 2014;

j = Type of activity;

$I2013_j$ = Intensity target of GHG emissions attributable to the type of activity at the establishment for the years 2013 and 2014 calculated using equation 2-2, in metric tonnes CO₂ equivalent per reference unit;

P_{Rij} = Total quantity of reference units produced or used at the establishment for type of activity j during year i .

Equation 2-2 Calculation of the intensity target of GHG emissions by type of activity at an establishment that is not considered on a sectoral basis for the years 2013 and 2014

$$I2013_j = I_{FPavj} + RxI_{Cavj} + I_{Oavj}$$

Where:

$I2013_j$ = Intensity target of GHG emissions attributable to type of activity j at the establishment for the years 2013 and 2014, in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

I_{FPavj} = Average intensity of GHG fixed process emissions attributable to type of activity j at the establishment for the period 2007-2010, calculated using equation 2-3, in metric tonnes CO₂ equivalent per reference unit;

R = Multiplication factor for GHG combustion emissions intensity at the establishment calculated using equations 2-4 and 2-5 or, in the case of an establishment producing pulp and paper described by NAICS code 3221 or 321216, a value of 1;

I_{Cavj} = Average intensity of GHG combustion emissions attributable to type of activity j at the establishment for the period 2007-2010, calculated using equation 2-6, in metric tonnes CO₂ equivalent per reference unit;

I_{Oavj} = Average intensity of other GHG emissions attributable to type of activity j at the establishment for the period 2007-2010, calculated using equation 2-7, in metric tonnes CO₂ equivalent per reference unit.

Equation 2-3 Average intensity GHG fixed process emissions by type of activity at an establishment that is not considered on a sectoral basis for the period 2007-2010

$$I_{FP\ a\ j} = \frac{\sum_{i=2007}^{2010} GHG\ FP_{i\ j}}{\sum_{i=2007}^{2010} P_{Ri\ j}}$$

Where:

I_{FPavj} = Average intensity of GHG fixed process emissions attributable to type of activity j at the establishment for the period 2007-2010, in metric tonnes CO₂ equivalent per reference unit;

i = Each year included in the period 2007-2010;

j = Type of activity;

GHG FP_{ij} = GHG fixed process emissions attributable to type of activity j at the establishment for year i , in metric tonnes CO₂ equivalent;

P_{Rij} = Total quantity of reference units produced or used at the establishment for type of activity j during year i .

Equation 2-4 Calculation of the intensity multiplication factor for combustion emissions at an establishment that is not considered on a sectoral basis

$$R = 0.80 \times GFR + (1-GFR)$$

Where:

R = Multiplication factor for GHG combustion emissions intensity at the establishment;

0.80 = Proportion corresponding to 80% of the GFR ratio;

GFR = Ratio between total GHG combustion emissions attributable to the use of natural gas, gasoline, diesel, heating oil, propane, petroleum coke and coal, excluding refinery fuel gas, and total GHG combustion emissions at the establishment, calculated using equation 2-5.

Equation 2-5 Calculation of the GFR ratio for an establishment that is not considered on a sectoral basis

$$GFR = \frac{\sum_{i=2007}^{2010} GHG_i GFR_i}{\sum_{i=2007}^{2010} GHG_i C_i}$$

Where:

GFR = Ratio between total GHG combustion emissions attributable to the use of natural gas, gasoline, diesel, heating oil, propane, petroleum coke and coal, excluding refinery fuel gas, and total GHG combustion emissions at the establishment;

i = Each year included in the period 2007-2010;

GHG GFR _{i} = GHG combustion emissions attributable to the use of natural gas, gasoline, diesel, heating oil, propane, petroleum coke and coal, excluding refinery fuel gas, at the establishment during year i , in metric tonnes CO₂ equivalent;

GHG C i = Total GHG combustion emissions attributable to the use of fuel at the establishment during year i , in metric tonnes CO₂ equivalent.

Equation 2-6 Average intensity of GHG combustion emissions by type of activity at an establishment that is not considered on a sectoral basis for the period 2007-2010

$$I_{C\ av\ j} = \frac{\sum_{i=2007}^{2010} GHG\ C_{i\ j}}{\sum_{i=2007}^{2010} P_{Ri\ j}}$$

Where:

$I_{Cav\ j}$ = Average intensity of GHG combustion emissions attributable to type of activity j at the establishment for the period 2007-2010, in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

i = Each year included in the period 2007-2010;

GHG $Ci\ j$ = GHG combustion emissions attributable to type of activity j at the establishment for year i , in metric tonnes CO₂ equivalent;

$P_{Ri\ j}$ = Total quantity of reference units produced or used at the establishment for type of activity j during year i .

Equation 2-7 Average intensity of other GHG emissions by type of activity at an establishment that is not considered on a sectoral basis for the period 2007-2010

$$I_{O_{av}j} = \frac{\sum_{i=2007}^{2010} GES_{O_{ij}}}{\sum_{i=2007}^{2010} P_{R_{ij}}}$$

Where:

$I_{O\ av\ j}$ = Average intensity of other GHG emissions attributable to type of activity j at the establishment for the period 2007-2010, in metric tonnes CO₂ equivalent per reference unit;

i = Each year included in the period 2007-2010;

j = Type of activity;

GHG O_{ij} = Other GHG emissions attributable to type of activity j at the establishment for year i , in metric tonnes CO₂ equivalent;

$P_{Ri\ j}$ = Total quantity of reference units produced or used at the establishment for type of activity j during year i .

Equation 2-8 Calculation of the intensity target of GHG emissions by type of activity at an establishment that is not considered on a sectoral basis for year 2020

$$I_{2020\ j} = I_{FP\ 2020\ j} + I_{C\ 2020\ j} + I_{O\ 2020\ j}$$

Where:

$I_{2020\ j}$ = Intensity target of GHG emissions attributable to type of activity j at the establishment for year 2020, in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

$I_{FP\ 2020\ j}$ = Intensity of fixed process emissions calculated for year 2020 for type of activity j , using equation 2-8.1;

$I_{C\ 2020\ j}$ = Intensity of combustion emissions calculated for year 2020 for type of activity j , using equation 2-8.2;

$I_{O\ 2020\ j}$ = Intensity of other emissions calculated for year 2020 for type of activity j , using equation 2-8.3.

Equation 2-8.1 Calculation of the intensity target of fixed process emissions by type of activity at an establishment that is not considered on a sectoral basis for year 2020

$$I_{FP\ 2020\ j} = I_{FP\ av\ j}$$

Where:

$I_{FP\ 2020\ j}$ = Intensity of fixed process emissions calculated for year 2020 for type of activity j ;

j = Type of activity;

$I_{FP\ av\ j}$ = Average intensity of fixed process emissions attributable to type of activity j at the establishment for the period 2007-2010, calculated using equation 2-3, in metric tonnes CO₂ equivalent per reference unit.

Equation 2-8.2 Calculation of the intensity target of combustion emissions by type of activity at an establishment that is not considered on a sectoral basis for year 2020

$$I_{C\ 2020\ j} = R \times \min[(0.95)I_{C\ min\ j}; (0.90)I_{C\ av\ j}]$$

Where:

$I_{C\ 2020\ j}$ = Intensity of combustion emissions calculated for year 2020 for type of activity j ;

j = Type of activity;

R = Intensity multiplication factor for combustion emissions at the establishment calculated using equations 2-4 and 2-5 or, in the case of an establishment producing pulp and paper described by NAICS code 3221, having a value of 1;

$\min$ = Minimum value, representing the lesser of the 2 elements calculated;

0.95 = Proportion corresponding to 95% of the minimum intensity of combustion emissions;

$I_{C\ \min\ j}$ = Minimum annual intensity of combustion emissions attributable to type of activity j at the establishment for the years 2007 to 2010 inclusively, in metric tonnes CO₂ equivalent per reference unit;

0.90 = Proportion corresponding to 90% of the average intensity of combustion emissions;

$I_{C\ av\ j}$ = Average intensity of combustion emissions attributable to type of activity j at the establishment for the years 2007 to 2010, calculated using equation 2-6, in metric tonnes CO₂ equivalent per reference unit.

Equation 2-8.3 Calculation of the intensity target of other emissions by type of activity at an establishment that is not considered on a sectoral basis for the year 2020

$$I_{O\ 2020\ j} = \min[(0.95)I_{O\ \min\ j}; (0.90)I_{O\ av\ j}]$$

Where:

$I_{O\ 2020\ j}$ = Intensity of other emissions calculated for the year 2020 for type of activity j ;

j = Type of activity;

$\min$ = Minimum value, representing the lesser of the 2 elements calculated;

0.95 = Proportion corresponding to 95% of the minimum intensity of other emissions;

$I_{O\ \min\ j}$ = Minimum annual intensity of other emissions attributable to type of activity j at the establishment for the years 2007 to 2010 inclusively, in metric tonnes CO₂ equivalent per reference unit;

0.90 = Proportion corresponding to 90% of the average intensity of other emissions;

$I_{O\ av\ j}$ = Average intensity of other emissions attributable to type of activity j at the establishment for the years 2007 to 2010, calculated using equation 2-7, in metric tonnes CO₂ equivalent per reference unit.

(2.2) Calculation method for the years 2015-2020

Equation 2-9 Calculation of the number of GHG emission units allocated without charge by type of activity at an establishment that is not considered on a sectoral basis for the years 2015-2020

$$A_{i\ j} = \frac{(6 - x) I_{2013\ j} + x I_{2020\ j}}{6} \times P_{Ri\ j}$$

Where:

A_{ij} = Total number of GHG emission units allocated without charge by type of activity j at an establishment for year i ;

i = Each year included in the second and third compliance periods, namely 2015, 2016, 2017, 2018, 2019 and 2020;

j = Type of activity;

6 = 6 years in the linear regression, namely 2015, 2016, 2017, 2018, 2019 and 2020;

$x = (i - 2015) + 1$;

$I2013_j$ = Intensity target of GHG emissions attributable to type of activity j at the establishment for the years 2013 and 2014, calculated using equation 2-2, in metric tonnes CO₂ equivalent per reference unit;

$I2020_j$ = Intensity target of GHG emissions attributable to type of activity j at the establishment for the year 2020, calculated using equation 2-8, in metric tonnes CO₂ equivalent per reference unit;

P_{Rij} = Total quantity of reference units produced or used at the establishment for type of activity j for year i .

3. Covered establishment as of 2013 that is considered on a sectoral basis

(3.1) Calculation method for the years 2013 and 2014

Equation 3-1 Calculation of the number of GHG emission units allocated without charge by type of activity at an establishment that is considered on a sectoral basis for the years 2013 and 2014

$$A_{ij} = \max(I2013_j; I2020s_j) \times P_{Rij}$$

Where:

A_{ij} = Total number of GHG emission units allocated without charge by type of activity j at an establishment for year i ;

i = Each year included in the first compliance period, namely 2013 and 2014;

j = Type of activity;

max = Maximum value, representing the greater of the values $I2013_j$ and $I2020s_j$;

$I2013_j$ = Intensity target of GHG emissions attributable to type of activity j at the establishment for the years 2013 and 2014 calculated using equation 2-2, in metric tonnes CO₂ equivalent per reference unit;

$I2020s_j$ = Intensity target of GHG emissions attributable to type of activity j in the sector for the year 2020, calculated using equation 3-2, in metric tonnes CO₂ equivalent per reference unit;

P_{Rij} = Total quantity of reference units produced or used for type of activity j at the establishment for year i .

Equation 3-2 Calculation of the intensity target of GHG emissions by type of activity at an establishment that is considered on a sectoral basis for the year 2020

$$I2020s_j = I_{FPav(S)_j} + R_s \times \min[(0.95)I_{Cmin(S)_j}; (0.90)I_{Cav(S)_j}] + \min[(0.95)I_{Omin(S)_j}; (0.90)I_{Oav(S)_j}]$$

Where:

I_{2020s_j} = Intensity target of GHG emissions attributable to type of activity j in the sector for the year 2020, in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

$I_{FPav(S)_j}$ = Average intensity of GHG fixed process emissions attributable to type of activity j in the sector for the period 2007-2010, calculated using equation 3-3, in metric tonnes CO₂ equivalent per reference unit;

R_s = Sectoral multiplication factor for the intensity of GHG combustion emissions calculated using equations 3-4 and 3-5;

$\min$ = Minimum value, representing the lesser of the 2 elements calculated;

0.95 = Proportion corresponding to 95% of the minimum intensity of combustion emissions or of the minimum intensity of other GHG emissions;

$I_{Cmin(S)_j}$ = Minimum annual average intensity of GHG combustion emissions attributable to type of activity j in the sector for the years 2007 to 2010 inclusively, calculated using equation 3-6, in metric tonnes CO₂ equivalent per reference unit;

0.90 = Proportion corresponding to 90% of the average intensity of combustion emissions or the average intensity of other GHG emissions;

$I_{Cav(S)_j}$ = Average intensity of GHG combustion emissions attributable to type of activity j in the sector for the period 2007-2010, calculated using equation 3-7, in metric tonnes CO₂ equivalent per reference unit;

$I_{Omin(S)_j}$ = Minimum annual average intensity of other GHG emissions attributable to type of activity j in the sector for the years 2007 to 2010 inclusively, calculated using equation 3-8, in metric tonnes CO₂ equivalent per reference unit;

$I_{Oav(S)_j}$ = Average intensity of other GHG emissions attributable to type of activity j in the sector for the period 2007-2010, calculated using equation 3-9, in metric tonnes CO₂ equivalent per reference unit.

Equation 3-3 Average intensity of GHG fixed process emissions attributable to the type of activity in the sector for the period 2007-2010

$$I_{FPav(S)_j} = \frac{\sum_{i=2007}^{2010} \sum_{k=1}^1 GHGFP_{i,jk}}{\sum_{i=2007}^{2010} \sum_{k=1}^1 P_{R1,jk}}$$

Where:

$I_{FPav(S)j}$ = Average intensity of GHG fixed process emissions attributable to type of activity j in the sector for the period 2007-2010, in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

i = Each year included in the period 2007-2010;

l = Number of covered establishments as of 2013 in the sector;

GHG FP_{ijk} = GHG fixed process emissions attributable to type of activity j at establishment k for year i , in metric tonnes CO₂ equivalent;

k = Covered establishment as of 2013 in the sector;

P_{rijk} = Total quantity of reference units produced or used at establishment k for type of activity j for year i .

Equation 3-4 Calculation of the combustion intensity multiplication factor at an establishment that is considered on a sectoral basis

$$R_s = 0.80 \times GFR_s + (1 - GFR_s)$$

Where:

R_s = Sectoral multiplication factor for the intensity of GHG combustion emissions at the establishment;

0.80 = Proportion corresponding to 80% of the GFRs ratio;

GFR_s = Ratio between the total GHG combustion emissions attributable to the use of natural gas, gasoline, diesel, heating oil, propane, petroleum coke and coal, excluding refinery fuel gas, and total GHG combustion emissions at establishments in the sector, calculated using equation 3-5.

Equation 3-5 Calculation of the GFRs ratio for an establishment that is considered on a sectoral basis

$$GFR_s = \frac{\sum_{i=2007}^{2010} \sum_{k=1}^i GHG_{sik} GFR_{sik}}{\sum_{i=2007}^{2010} \sum_{k=1}^i GHG_{sik} C_{sik}}$$

Where:

GFR_s = Ratio between the total GHG combustion emissions attributable to the use of natural gas, gasoline, diesel, heating oil, propane, petroleum coke and coal, excluding refinery fuel gas, and total GHG combustion emissions at establishments in the sector;

i = Each year included in the period 2007-2010;

l = Number of establishments in the sector covered as of 2013;

k = Establishment in the sector covered as of 2013 in the sector;

$GHG\ GFR_{s\ i\ k}$ = GHG combustion emissions attributable to the use of natural gas, gasoline, diesel, heating oil, propane, petroleum coke and coal, excluding refinery fuel gas, at the establishment k during year i , in metric tonnes CO_2 equivalent;

$GHG\ C_{s\ i\ k}$ = Total GHG combustion emissions attributable to the use of fuel at establishment k for year i , in metric tonnes CO_2 equivalent.

Equation 3-6 Calculation of the minimum average annual intensity of GHG combustion emissions attributable to the type of activity in the sector for 2007 to 2010

$$I_{C\min(e)j} = \min \left[\frac{\sum_{k=1}^l GHG C_{2007,jk}}{\sum_{k=1}^l P_{2007,jk}}; \frac{\sum_{k=1}^l GHG C_{2008,jk}}{\sum_{k=1}^l P_{2008,jk}}; \frac{\sum_{k=1}^l GHG C_{2009,jk}}{\sum_{k=1}^l P_{2009,jk}}; \frac{\sum_{k=1}^l GHG C_{2010,jk}}{\sum_{k=1}^l P_{2010,jk}} \right]$$

Where:

$I_{Cmin(s)j}$ = Minimum average annual intensity of GHG combustion emissions attributable to type of activity j in the sector for the years 2007 to 2010 inclusively, in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

min = Minimum value, representing the lesser of the intensity values for the years 2007, 2008, 2009 and 2010;

l = Number of establishments covered as of 2013 in the sector;

GHG C_{ijk} = GHG combustion emissions attributable to type of activity j at establishment k during the years i corresponding to 2007, 2008, 2009 and 2010, in metric tonnes CO₂ equivalent;

k = Establishment in the sector covered as of 2013;

P_{ijk} = Total quantity of reference units produced or used at establishment k for type of activity j during the years i corresponding to 2007, 2008, 2009 and 2010.

Equation 3-7 Average intensity of GHG combustion emissions attributable to a type of activity in the sector for the period 2007-2010

$$I_{Cav(S)_j} = \frac{\sum_{i=2007}^{2010} \sum_{k=1}^I GHG_{i,jk}}{\sum_{i=2007}^{2010} \sum_{k=1}^I P_{R1,jk}}$$

Where:

$I_{Cav(S)j}$ = Average intensity of GHG combustion emissions attributable to type of activity j in the sector for the period 2007-2010, in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

i = Each year included in the period 2007-2010;

l = Number of covered establishments as of 2013 in the sector;

GHG C_{ijk} = GHG combustion emissions attributable to type of activity j at establishment k for year i , in metric tonnes CO₂ equivalent;

k = Covered establishment as of 2013 in the sector;

P_{ijk} = Total quantity of reference units produced or used at establishment k for type of activity j for year i .

Equation 3-8 Calculation of the minimum average annual intensity of other GHG emissions attributable to a type of activity in the sector for 2007 to 2010

$$I_{O \min(s)j} = \min \left[\frac{\sum_{k=1}^l GHG O_{2007,jk}}{\sum_{k=1}^l P_{2007,jk}}; \frac{\sum_{k=1}^l GHG O_{2008,jk}}{\sum_{k=1}^l P_{2008,jk}}; \frac{\sum_{k=1}^l GHG O_{2009,jk}}{\sum_{k=1}^l P_{2009,jk}}; \frac{\sum_{k=1}^l GHG O_{2010,jk}}{\sum_{k=1}^l P_{2010,jk}} \right]$$

Where:

$I_{\text{Omin}(s)j}$ = Minimum average annual intensity of other GHG emissions attributable to type of activity j in the sector for 2007 to 2010 inclusively, in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

min = Minimum value, representing the lesser of the intensity values for the years 2007, 2008, 2009 and 2010;

l = Number of establishments covered as of 2013 in the sector;

GHG O_{ijk} = Other GHG emissions attributable to type of activity j at establishment k for the years i corresponding to 2007, 2008, 2009 and 2010, in metric tonnes CO₂ equivalent;

k = Establishment covered in the sector beginning in 2013;

P_{ijk} = Total quantity of reference units produced or used at establishment k for type of activity j during the years i corresponding to 2007, 2008, 2009 and 2010.

Equation 3-9 Average intensity of other GHG emissions attributable to a type of activity in the sector for the period 2007-2010

$$I_{\text{Env}(S)_j} = \frac{\sum_{i=2007}^{2010} \sum_{k=1}^I GHG O_{i,jk}}{\sum_{i=2007}^{2010} \sum_{k=1}^I P_{Rijk}}$$

Where:

$I_{O_{av(S)j}}$ = Average intensity of other GHG emissions attributable to type of activity j in the sector for the period 2007-2010, in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

i = Each year included in the period 2007-2010;

l = Number of covered establishments as of 2013 in the sector;

GHG O_{ijk} = GHG other emissions attributable to type of activity j at establishment k for year i , in metric tonnes CO₂ equivalent;

k = Covered establishment as of 2013 in the sector;

P_{Rijk} = Total quantity of reference units produced or used by establishment k for to type of activity j for year i .

(3.2) Calculation methods for the years 2015 to 2020

Equation 3-10 Calculation of the number of GHG emission units allocated without charge by type of activity at an establishment that is considered on a sectoral basis for the years 2015 to 2020

$$A_{ij} = \max \left| \frac{(6-x) I_{2013j} + x I_{2020s_j}}{6}; I_{2020s_j} \right| \times P_{Rij}$$

Where:

A_{ij} = Total number of GHG emission units allocated without charge by type of activity j at an establishment for year i ;

i = Each year included in the second and third compliance periods, namely 2015, 2016, 2017, 2018, 2019 and 2020;

j = Type of activity;

max = Maximum value, representing the greater of the 2 intensity values calculated;

6 = 6 years in the linear regression, namely 2015, 2016, 2017, 2018, 2019 and 2020;

$x = (i - 2015) + 1$;

I_{2013j} = Intensity target of GHG emissions attributable to type of activity j at the establishment for the years 2013 and 2014 calculated using equation 2-2, in metric tonnes CO₂ equivalent per reference unit;

I_{2020s_j} = Intensity target of GHG emissions attributable to type of activity j in the sector for the year 2020, calculated using equation 3-2, in metric tonnes CO₂ equivalent per reference unit;

P_{Rij} = Total quantity of reference units produced or used at the establishment for type of activity j during year i .

4. Covered establishment as of 2013 that does not possess GHG emissions data for 2007-2010, covered establishment after 2013, covered establishment as of 2018 and covered establishment referred to in section 2.1 that is not considered on a sectoral basis

(4.1) Calculation method for the years 2013 and 2014

Equation 4-1 Calculation of the number of GHG emission units allocated without charge by type of activity at a covered establishment covered as of 2013 and without data for 2007-2010 or after 2013 that is not considered on a sectoral basis for the years 2013 and 2014

$$A_{ij} = I_{depj} \times P_{Rij}$$

Where:

A_{ij} = Total number of GHG emission units allocated without charge by type of activity j at an establishment for year i ;

i = Each year included in the first compliance period, namely 2013 and 2014;

j = Type of activity;

I_{depj} = Intensity target of GHG emissions attributable to type of activity j at an establishment, calculated using equation 4-2, in metric tonnes CO₂ equivalent per reference unit;

P_{Rij} = Total quantity of reference units produced or used at the establishment for type of activity j during year i .

Equation 4-2 Calculation of the intensity target of GHG emissions for the years 2013 and 2014 by type of activity at a covered establishment covered as of 2013 and without data for 2007-2010 or after 2013

$$I_{depj} = I_{FPdepj} + (R \times I_{Cdepj}) + I_{Odepj}$$

Where:

I_{depj} = Intensity target of GHG emissions attributable to type of activity j at an establishment, in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

I_{FPdepj} = Average intensity of GHG fixed process emissions attributable to type of activity j at the establishment for the years $d-2$ to $d+1$, when available, excluding the year in which the establishment is brought into service, calculated using equation 4-3, in metric tonnes CO₂ equivalent per reference unit;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold;

R = Multiplication factor for GHG combustion emissions at the establishment calculated using equations 4-6 and 4-7 or, in the case of an establishment producing pulp and paper described by NAICS code 3221 or 321216, a value of 1;

I_{Cdepj} = Average intensity of GHG combustion emissions attributable to type of activity j at the establishment for the years $d-2$ to $d+1$, when available, excluding the year in which the establishment is brought into service, calculated using equation 4-4, in metric tonnes CO₂ equivalent per reference unit;

I_{Odepj} = Average intensity of other GHG emissions attributable to type of activity j at the establishment for the years $d-2$ to $d+1$, when available, excluding the year in which the establishment is brought into service, calculated using equation 4-5, in metric tonnes CO₂ equivalent per reference unit.

Equation 4-3 Average intensity of GHG fixed process emissions by type of activity at a covered establishment covered as of 2013 and without data for 2007-2010 or after 2013 for the reference years $d-2$ to $d+1$

$$I_{FPdepj} = \frac{\sum_{i=(d-2)}^{d+1} GHGFP_{ij}}{\sum_{i=(d-2)}^{d+1} P_{Ri j}}$$

Where:

$I_{FPdep\ j}$ = Average intensity of GHG fixed process emissions attributable to type of activity j at the establishment for the years $d-2$ to $d+1$, when available, excluding the year in which the establishment is brought into service, in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

i = Years $d-2$, $d-1$, d and $d+1$, when available, excluding the year in which the establishment is brought into service;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold;

GHG FP_{ij} = GHG fixed process emissions attributable to type of activity j at the establishment for year i , in metric tonnes CO₂ equivalent;

$P_{Ri\ j}$ = Total quantity of reference units produced or used at the establishment for type of activity j during year i .

Equation 4-4 Average intensity of GHG combustion emissions by type of activity for a covered establishment covered as of 2013 and without data for 2007-2010 or after 2013 for the reference years $d-2$ to $d+1$

$$I_{Cdep_j} = \frac{\sum_{i=(d-2)}^{d+1} GHG C_{ij}}{\sum_{i=(d-2)}^{d+1} P_{Ri_j}}$$

Where:

$I_{Cdep\ j}$ = Average intensity of GHG combustion emissions attributable to type of activity j at the establishment for the years $d-2$ to $d+1$, when available, excluding the year in which the establishment is brought into service, in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

i = Years $d-2$, $d-1$, d and $d+1$, when available, excluding the year in which the establishment is brought into service;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold;

GHG $C_{i\ j}$ = GHG combustion emissions attributable to type of activity j at the establishment for year i , in metric tonnes CO₂ equivalent;

$P_{Ri\ j}$ = Total quantity of reference units produced or used at the establishment for type of activity j during year i .

Equation 4-5 Average intensity of other GHG emissions by type of activity for a covered establishment covered as of 2013 and without data for 2007-2010 or after 2013 for the reference years $d-2$ to $d+1$

$$I_{Odepj} = \frac{\sum_{i=(d-2)}^{d+1} GHG O_{ij}}{\sum_{i=(d-2)}^{d+1} P_{Rij}}$$

Where:

I_{Odepj} = Average intensity of other GHG emissions attributable to type of activity j at the establishment for the years $d-2$ to $d+1$, when available, excluding the year in which the establishment is brought into service, in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

i = Years $d-2$, $d-1$, d and $d+1$, when available, excluding the year in which the establishment is brought into service;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold;

GHG O_{ij} = GHG other emissions attributable to type of activity j at the establishment for year i , in metric tonnes CO₂ equivalent;

P_{Rij} = Total quantity of reference units produced or used at the establishment for type of activity j during year i .

Equation 4-6 Calculation of the intensity multiplication factor for combustion emissions at an establishment covered as of 2013 and without data for 2007-2010 or covered after 2013 that is not considered on a sectoral basis

$$R = 0.80 \times GFR + (1 - GFR)$$

Where:

R = Intensity multiplication factor for GHG combustion emissions at the establishment;

0.80 = Proportion corresponding to 80% of the GFR ratio;

GFR = Ratio between the total GHG combustion emissions attributable to the use of natural gas, gasoline, diesel, heating oil, propane, petroleum coke and coal, excluding refinery fuel gas, and total GHG combustion emissions at the establishment, calculated using equation 4-7.

Equation 4-7 Calculation of the GFR ratio for an establishment covered as of 2013 and without data for 2007-2010 or covered after 2013 that is not considered on a sectoral basis

$$GFR = \frac{\sum_{i=(d-1)}^{(d+1)} GHG \ GFR_i}{\sum_{i=(d-1)}^{(d+1)} GHG \ C_i}$$

Where:

GFR = Ratio between the total GHG combustion emissions attributable to the use of natural gas, gasoline, diesel, heating oil, propane, petroleum coke and coal, excluding refinery fuel gas, and total GHG combustion emissions at the establishment;

i = Years $d-2$, $d-1$, d and $d+1$, when available, excluding the year in which the establishment is brought into service;

GHG GFR_i = GHG combustion emissions attributable to the use of natural gas, gasoline, diesel, heating oil, propane, petroleum coke and coal, excluding refinery fuel gas, at the establishment during year i , in metric tonnes CO₂ equivalent;

GHG C_i = Total GHG combustion emissions attributable to the use of fuel at the establishment for year i , in metric tonnes CO₂ equivalent.

(4.2) Calculation method for the years 2015 to 2020 for covered establishments as of 2013 and for covered establishments after 2013

Equation 4-8 Calculation of the number of GHG emission units allocated without charge by type of activity at an establishment covered as of 2013 and without data for 2007-2010 or covered after 2013 that is not considered on a sectoral basis for the years 2015 to 2020

$$A_{ij} = [I_{FPdepj} + (R)(0.99)^n I_{Cdepj} + (0.99)^n I_{Odepj}] \times P_{Rij}$$

Where:

A_{ij} = Total number of GHG emission units allocated without charge by type of activity j for an establishment for year i ;

j = Type of activity;

i = Each year in the period 2015-2020 for which the emitter is required to cover GHG emissions;

I_{FPdepj} = Average intensity of the GHG fixed process emissions attributable to type of activity j at the establishment for the years $d-2$ to $d+1$, when available, excluding the year in which the establishment is brought into service, calculated using equation 4-3, in metric tonnes CO₂ equivalent per reference unit;

R = Multiplication factor for GHG combustion emissions at the establishment calculated using equations 4-6 and 4-7 or, in the case of an establishment producing pulp and paper described by NAICS code 3221 or 321216, a value of 1;

0.99 = Proportion corresponding to an annual improvement of 1% in the intensity factor;

$n = i - (d + 2)$;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold;

I_{Cdepj} = Average intensity of the GHG combustion emissions attributable to type of activity j at the establishment for the years $d-2$ to $d+1$, when available, excluding the year in which the establishment is brought into service, calculated using equation 4-4, in metric tonnes CO₂ equivalent per reference unit;

I_{Odepj} = Average intensity of the other GHG emissions attributable to type of activity j at the establishment for the years $d-2$ to $d+1$, when available, excluding the year in which the establishment is brought into service, calculated using equation 4-5, in metric tonnes CO₂ equivalent per reference unit;

$P_{Ri,j}$ = Total quantity of reference units produced or used at the establishment for type of activity j during year i .

(4.3) Calculation method for the years 2018 to 2020 for covered establishments as of 2018

(4.3.1) Covered establishment as of 2018 that is not considered on a sectoral basis for the years 2018 to 2020 and that possesses all the GHG emissions data for years $d-2$ to d

Equation 4-9 Calculation of the number of GHG emission units allocated without charge by type of activity at a covered establishment as of 2018 that is not considered on a sectoral basis for the years 2018 to 2020 and that possesses GHG emissions data for years $d-2$ to d

$$A_{ij} = [I_{FP\ dep\ j} \times a_{FP,i} + R \times I_{C\ dep\ j} \times a_{C,i} + I_{O\ dep\ j} \times a_{O,i}] \times P_{Ri,j}$$

Where:

A_{ij} = Total number of GHG emission units allocated without charge by type of activity j at an establishment for year i ;

i = Each year in the period 2018-2020 for which the emitter is required to cover its GHG emissions;

j = Type of activity;

$I_{FP\ dep\ j}$ = Average intensity of fixed process emissions attributable to type of activity j at the establishment for years $d-2$ to d , calculated using equation 4-10, in metric tonnes CO₂ equivalent per reference unit;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold; in the case of a dismembering establishment covered as of 2018, d corresponds to the year 2016;

$a_{FP,i}$ = Cap adjustment factor for the allocation of fixed process emissions for year i for establishments covered between 2018 and 2020, as defined in Table 4 of this Appendix, where $n=i-(d+2)$;

R = Intensity multiplication factor for combustion emissions at the establishment, calculated using equation 4-11 or, in the case of an establishment producing pulp and paper described by NAICS code 3221, having a value of 1;

$I_{C\ dep\ j}$ = Average intensity of combustion emissions attributable to type of activity j at the establishment for years $d-2$ to d , calculated using equation 4-13, in metric tonnes CO₂ equivalent per reference unit;

$a_{C,i}$ = Cap adjustment factor for the allocation of combustion emissions for year i for establishments covered between 2018 and 2020, as defined in Table 4 of this Appendix, where $n=i-(d+2)$;

$I_{O\ dep\ j}$ = Average intensity of other emissions attributable to type of activity j at the establishment for years $d-2$ to d , calculated using equation 4-14, in metric tonnes CO₂ equivalent per reference unit;

$a_{O,i}$ = Cap adjustment factor for the allocation of other emissions for year i for establishments covered between 2018 and 2020, as defined in Table 4 of this Appendix, where $n=i-(d+2)$;

$P_{Ri,j}$ = Total quantity of reference units produced or used at the establishment for type of activity j during year i .

Equation 4-10 Calculation of the intensity of fixed process emissions by type of activity at a covered establishment as of 2018 that is not considered on a sectoral basis and that possesses GHG emissions data for years $d-2$ to d

$$I_{FP\ dep\ j} = \frac{\sum_{i=(d-2)}^d GHG\ FP_{ij}}{\sum_{i=(d-2)}^d P_{Rij}}$$

Where:

$I_{FP\ dep\ j}$ = Average intensity of fixed process emissions attributable to type of activity j at the establishment for years $d-2$ to d , in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold;

i = Years $d-2$, $d-1$ and d ;

GHG $FP_{i\ j}$ = Fixed process emissions attributable to type of activity j at the establishment for year i , in metric tonnes CO₂ equivalent;

$P_{Ri\ j}$ = Total quantity of reference units produced or used at the establishment for type of activity j during year i .

Equation 4-11 Calculation of the intensity multiplication factor for combustion emissions at a covered establishment as of 2018 that is not considered on a sectoral basis and that possesses GHG emissions data for years $d-2$ to d

$R = 0.80 \times GFR + (1 - GFR)$

Where:

R = Intensity multiplication factor for combustion emissions at the establishment;

0.80 = Proportion corresponding to 80% of the GFR ratio;

GFR = Ratio between the total combustion emissions attributable to the use of natural gas, gasoline, diesel, heating oil, propane, petroleum coke and coal, excluding refinery fuel gas, and total combustion emissions at the establishment, calculated using equation 4-12.

Equation 4-12 Calculation of the GFR ratio for a covered establishment as of 2018 that is not considered on a sectoral basis and that possesses GHG emissions data for years $d-2$ to d

$$GFR = \frac{\sum_{i=(d-2)}^{(d)} GHG \ GFR_i}{\sum_{i=(d-2)}^{(d)} GHG \ C_i}$$

Where:

GFR = Ratio between the total combustion emissions attributable to the use of natural gas, gasoline, diesel, heating oil, propane, petroleum coke and coal, excluding refinery fuel gas, and total combustion emissions at the establishment;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold;

i = Years $d-2$, $d-1$ and d ;

GHG GFR_i = Combustion emissions attributable to the use of natural gas, gasoline, diesel, heating oil, propane, petroleum coke and coal, excluding refinery fuel gas, at the establishment during year i , in metric tonnes CO₂ equivalent;

GHG C_i = Total combustion emissions attributable to the use of fuel at the establishment during year i , in metric tonnes CO₂ equivalent.

Equation 4-13 Calculation of the intensity of combustion emissions by type of activity at a covered establishment as of 2018 that is not considered on a sectoral basis and that possesses GHG emissions data for years $d-2$ to d

$$I_{C\ dep\ j} = \frac{\sum_{i=(d-2)}^d GHG\ C_{ij}}{\sum_{i=(d-2)}^d P_{Rij}}$$

Where:

$I_{C\ dep\ j}$ = Average intensity of combustion emissions attributable to type of activity j at the establishment for years $d-2$ to d , in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold;

i = Years $d-2$, $d-1$ and d ;

GHG $C_{i\ j}$ = Combustion emissions attributable to type of activity j at the establishment for year i , in metric tonnes CO₂ equivalent;

$P_{Ri\ j}$ = Total quantity of reference units produced or used at the establishment for type of activity j during year i .

Equation 4-14 Calculation of the intensity of other emissions by type of activity at a covered establishment as of 2018 that is not considered on a sectoral basis and that possesses GHG emissions data for years $d-2$ to d

$$I_{o\ dep\ j} = \frac{\sum_{i=(d-2)}^d GHG\ O_{ij}}{\sum_{i=(d-2)}^d P_{Rij}}$$

Where:

$I_{O\ dep\ j}$ = Average intensity of other emissions attributable to type of activity j at the establishment for years $d-2$ to d , in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold;

i = Years $d-2$, $d-1$ and d ;

GHG $O_{i\ j}$ = Other emissions attributable to type of activity j at the establishment for year i , in metric tonnes CO₂ equivalent;

$P_{Ri\ j}$ = Total quantity of reference units produced or used at the establishment for type of activity j during year i .

(4.3.2) Covered establishment as of 2018 that is not considered on a sectoral basis and that does not possess all the GHG emissions data for years $d-2$ to d

The total quantity of GHG emission units allocated without charge to an emitter is calculated in accordance with the following methods:

(1) in the case of an establishment for which the GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, are all available, using equation 4-15;

(2) in the case of an establishment for which the GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, are not all available, using equation 4-21.

Equation 4-15 Calculation of the number of GHG emission units allocated without charge by type of activity at a covered establishment as of 2018 that is not considered on a sectoral basis for the years 2018 to 2020 and that does not possess all the GHG emissions data for years $d-2$ to d

$$A_{ij} = [I_{FP\ dep\ j} \times a_{FP,i} + R \times I_{C\ dep\ j} \times a_{c,i} + I_{O\ dep\ j} \times a_{O,i}] \times P_{Ri\ j}$$

Where:

$A_{i\ j}$ = Total number of GHG emission units allocated without charge by type of activity j at an establishment for year i ;

i = Each year in the period 2018-2020 for which the emitter is required to cover its GHG emissions;

j = Type of activity;

$I_{FP\ dep\ j}$ = Average intensity of fixed process emissions attributable to type of activity j at the establishment for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, calculated using equation 4-16, in metric tonnes CO₂ equivalent per reference unit;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold;

$a_{FP,i}$ = Cap adjustment factor for the allocation of fixed process emissions for year i for establishments covered between 2018 and 2020, as defined in Table 4 of this Appendix, where $n=i-(d+2)$;

R = Intensity multiplication factor for combustion emissions at the establishment calculated using equation 4-17 or, in the case of an establishment producing pulp and paper described by NAICS code 3221, having a value of 1;

$I_{C \text{ dep } j}$ = Average intensity of combustion emissions attributable to type of activity j at the establishment for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, calculated using equation 4-19, in metric tonnes CO₂ equivalent per reference unit;

$a_{C,i}$ = Cap adjustment factor for the allocation of combustion emissions for year i for establishments covered between 2018 and 2020, as defined in Table 4 of this Appendix, where $n=i-(d+2)$;

$I_{O \text{ dep } j}$ = Average intensity of other emissions attributable to type of activity j at the establishment for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, calculated using equation 4-20, in metric tonnes CO₂ equivalent per reference unit;

$a_{O,i}$ = Cap adjustment factor for the allocation of other emissions for year i for establishments covered between 2018 and 2020, as defined in Table 4 of this Appendix, where $n=i-(d+2)$;

$P_{Ri \ j}$ = Total quantity of reference units produced or used at the establishment for type of activity j during year i .

Equation 4-16

- Calculation of the intensity of fixed process emissions by type of activity at a covered establishment as of 2018 that is not considered on a sectoral basis and that does not possess all the GHG emissions data for years $d-2$ to d

$$I_{FP\ dep\ j} = \frac{\sum_{i=(d)}^{d+2} GHG\ FP_{ij}}{\sum_{i=(d)}^{d+2} P_{Rij}}$$

Or

- Calculation of the intensity of fixed process emissions by type of activity, for years 2021 to 2023, at a covered establishment as of 2013, that does not possess data for years 2007-2010 and does not possess data for at least 3 of years $d-2$ to $d+1$, or at a covered establishment after year 2013 that does not possess data for at least 3 of years $d-2$ to $d+1$

$$I_{FP\ dep\ j} = \frac{\sum_{i=(d+1)}^{d+3} GHG\ FP_{ij}}{\sum_{i=(d+1)}^{d+3} P_{Rij}}$$

Where:

$I_{FP\ dep\ j}$ = Average intensity of fixed process emissions attributable to type of activity j at the establishment for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold;

i = Years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational;

GHG $FP_{i\ j}$ = Fixed process emissions attributable to type of activity j at the establishment for year i , in metric tonnes CO₂ equivalent;

$P_{Ri\ j}$ = Total quantity of reference units produced or used at the establishment for type of activity j during year i .

Equation 4-17 Calculation of the intensity multiplication factor for combustion emissions at a covered establishment as of 2018 that is not considered on a sectoral basis and that does not possess all the GHG emissions data for years $d-2$ to d

$$R = 0.80 \times GFR + (1 - GFR)$$

Where:

R = Intensity multiplication factor for combustion emissions at the establishment;

0.80 = Proportion corresponding to 80% of the GFR ratio;

GFR = Ratio between the total combustion emissions attributable to the use of natural gas, gasoline, diesel, heating oil, propane, petroleum coke and coal, excluding refinery fuel gas, and total combustion emissions at the establishment, calculated using equation 4-18.

Equation 4-18 Calculation of the GFR ratio for a covered establishment as of 2018 that is not considered on a sectoral basis and that does not possess all the GHG emissions data for years $d-2$ to d

$$GFR = \frac{\sum_{i=(d)}^{(d+2)} GHG \ GFR_i}{\sum_{i=(d)}^{(d+2)} GHG \ C_i}$$

Or

$$GFR = \frac{\sum_{i=(d+1)}^{(d+3)} GHG_i GFR_i}{\sum_{i=(d+1)}^{(d+3)} GHG_i C_i}$$

Where:

GFR = Ratio between the total combustion emissions attributable to the use of natural gas, gasoline, diesel, heating oil, propane, petroleum coke and coal, excluding refinery fuel gas, and total combustion emissions at the establishment;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold;

i = Years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational;

GHG GFR_i = Combustion emissions attributable to the use of natural gas, gasoline, diesel, heating oil, propane, petroleum coke and coal, excluding refinery fuel gas, at the establishment during year i , in metric tonnes CO₂ equivalent;

GHG C_i = Total combustion emissions attributable to the use of fuel at the establishment during year i , in metric tonnes CO₂ equivalent.

Equation 4-19

- Calculation of the intensity of combustion emissions by type of activity at a covered establishment as of 2018 that is not considered on a sectoral basis and that does not possess all the GHG emissions data for years $d-2$ to d

$$I_{C \text{ dep } j} = \frac{\sum_{i=(d)}^{d+2} GHG \ C_{ij}}{\sum_{i=(d)}^{d+2} P_{Rij}}$$

Or

- Calculation of the intensity of combustion emissions by type of activity, for years 2021 to 2023, at a covered establishment as of 2013, that does not possess data for years 2007-2010 and does not possess data for at least 3 of years $d-2$ to $d+1$, or at a covered establishment after year 2013 that does not possess data for at least 3 of years $d-2$ to $d+1$

$$I_{C\ dep\ j} = \frac{\sum_{i=(d+1)}^{d+3} GHG\ C_{ij}}{\sum_{i=(d+1)}^{d+3} P_{Rij}}$$

Where:

$I_{C\ dep\ j}$ = Average intensity of combustion emissions attributable to type of activity j at the establishment for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold;

i = Years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational;

GHG $C_{i\ j}$ = Combustion emissions attributable to type of activity j at the establishment for year i , in metric tonnes CO₂ equivalent;

$PR_{i\ j}$ = Total quantity of reference units produced or used at the establishment for type of activity j during year i .

Equation 4-20

- Calculation of the intensity of other emissions by type of activity at a covered establishment as of 2018 that is not considered on a sectoral basis and that does not possess all the GHG emissions data for years $d-2$ to d

$$I_{O\ dep\ j} = \frac{\sum_{i=(d)}^{d+2} GHG\ O_{ij}}{\sum_{i=(d)}^{d+2} P_{Rij}}$$

Or

Calculation of the intensity of other emissions by type of activity, for years 2021 to 2023, at a covered establishment as of 2013, that does not possess data for years 2007-2010 and does not possess data for at least 3 of years $d-2$ to $d+1$, or at a covered establishment after year 2013 that does not possess data for at least 3 of years $d-2$ to $d+1$

$$I_{O\ dep\ j} = \frac{\sum_{i=(d+1)}^{d+3} GHG\ O_{ij}}{\sum_{i=(d+1)}^{d+3} P_{Rij}}$$

Where:

$I_{O\ dep\ j}$ = Average intensity of other emissions attributable to type of activity j at the establishment for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold;

i = Years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational;

GHG $O_{i\ j}$ = Other emissions attributable to type of activity j at the establishment for year i , in metric tonnes CO₂ equivalent;

$P_{Ri\ j}$ = Total quantity of reference units produced or used at the establishment for type of activity j during year i .

Equation 4-21 Calculation of the number of GHG emission units allocated without charge for a covered establishment as of 2018 that is not considered on a sectoral basis for the years 2018 to 2020 and that does not possess all the GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational

$$A_i = (EC_{TOTAL\ i} \times EF \times a_{c,i}) + (GHG_{FP\ i} \times a_{FP,i}) + (GHG_{O\ i} \times a_{O,i})$$

Where:

A_i = Total number of GHG emission units allocated without charge for year i ;

i = Each year in the period 2018-2020 for which the emitter is required to cover GHG emissions;

$EC_{TOTAL\ i}$ = Energy consumption in year i , calculated using equation 4-22, in GJ;

EF = Emission factor for natural gas, in metric tonnes CO₂ equivalent/GJ, calculated using equation 4-21.1;

$a_{c,i}$ = Cap adjustment factor for the allocation of combustion emissions for year i for establishments covered between 2018 and 2020, as defined in Table 4 of this Appendix, where $n=i-(d+2)$;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold;

GHG_{FP i} = Fixed process emissions at the establishment for year i , in metric tonnes CO₂ equivalent;

$a_{FP,i}$ = Cap adjustment factor for the allocation of fixed process emissions for year i for establishments covered between 2018 and 2020, as defined in Table 4 of this Appendix, where $n=i-(d+2)$;

GHG_{O i} = other emissions at the establishment for year i , in metric tonnes CO₂ equivalent;

$a_{O,i}$ = Cap adjustment factor for the allocation of other emissions for year i for establishments covered between 2018 and 2020, as defined in Table 4 of this Appendix, where $n=i-(d+2)$.

Equation 4-21.1 Calculation of the emission factor for natural gas

$$EF = ((EF_{CO2} \times 1,000) + (EF_{CH4} \times GWP_{CH4}) + (EF_{N2O} \times GWP_{N2O})) \times 0.000001$$

Where:

EF_{CO_2} = Emission factor of CO_2 for natural gas taken from Table 1-4 of the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere (chapter Q-2, r. 15), in kilograms of CO_2 per GJ;

1,000 = Conversion factor, kilograms to grams;

EF_{CH_4} = Emission factor of CH_4 for natural gas, for industrial uses, taken from Table 1-7 of the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere (chapter Q-2, r. 15), in grams of CH_4 per GJ;

GWP_{CH_4} = Global warming potential of CH_4 taken from Schedule A.1 to the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere (chapter Q-2, r. 15);

EF_{N_2O} = Global warming potential of N_2O taken from Schedule A.1 to the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere (chapter Q-2, r. 15);

GWP_{N_2O} = Global warming potential of N_2O taken from Schedule A.1 to the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere (chapter Q-2, r. 15);

0.000001 = Conversion factor, grams to metric tonnes;

Equation 4-22 Calculation of energy consumption for year i at a covered establishment as of 2018 that is not considered on a sectoral basis and that does not possess all the GHG emissions data for years d to $d+2$

$$EC_{TOTAL\ i} = \sum_{k=1}^n \left(\frac{GHG_{non\ bio\ k}}{GHG_{total\ k}} \times Fuel_k \times HHV_k \right)$$

Where:

$EC_{TOTAL\ i}$ = Energy consumption in year i , in GJ;

i = Each year of the period 2018-2020 for which the emitter is required to cover GHG emissions;

n = Total number of types of fuel used;

k = Type of fuel;

$GHG_{non\ bio\ k}$ = Greenhouse gas emissions attributable to the use of fuel k , excluding CO₂ emissions attributable to the combustion of biomass or biofuels, in metric tonnes CO₂ equivalent;

$GHG_{total\ k}$ = Greenhouse gas emissions attributable to the use of fuel k , including CO₂ emissions attributable to the combustion of biomass or biofuels, in metric tonnes CO₂ equivalent;

$Fuel_k$ = Mass or volume of fuel burned:

(a) in dry metric tonnes, when the quantity is expressed as a mass;

(b) in thousands of cubic metres at standard conditions, where the quantity is expressed as a volume of gas;

(c) in kilolitres, where the quantity is expressed as a volume of liquid;

HHV_k = High heat value for measurement period i , expressed

(a) in GJ per dry metric ton, in the case of fuels whose quantity is expressed as a mass;

(b) in GJ per thousand cubic metres, in the case of fuels whose quantity is expressed as a volume of gas;

(c) in GJ per kilolitre, in the case of fuels whose quantity is expressed as a volume of liquid.

(4.3.3) Covered establishment as of 2018 that is not considered on a sectoral basis and that does not possess a determined reference unit

The total quantity of GHG emission units allocated without charge to an emitter is calculated in accordance with the following methods:

(1) in the case of an establishment for which the GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, are all available, using equation 4-23;

(2) in the case of an establishment for which the GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, are not all available, using equation 4-21.

Equation 4-23 Calculation of the number of GHG emission units allocated without charge for the years 2018 to 2020 for a covered establishment as of 2018 that does not possess a determined reference unit and that possesses all the GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational

$$A_i = [(EC_{TOTAL,av} \times EF \times a_{c,i}) + (GHG_{FP,av} \times a_{FP,i}) + (GHG_{O,av} \times a_{O,i})]$$

Where:

A_i = Total number of GHG emission units allocated without charge for year i ;

i = Each year in the period 2018-2020 for which the emitter is required to cover GHG emissions;

$EC_{TOTAL,av}$ = Average energy consumption for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, calculated using equation 4-24, in GJ;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold;

EF = Emission factor for natural gas, in metric tonnes CO_2 equivalent/GJ, calculated using equation 4-21.1;

$a_{C,i}$ = Cap adjustment factor for the allocation of combustion emissions for year i for establishments covered between 2018 and 2020, as defined in Table 4 of this Appendix, where $n=i-(d+2)$;

GHG_{FPav} = Average fixed process emissions at the establishment for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, in metric tonnes CO_2 equivalent;

$a_{FP,i}$ = Cap adjustment factor for the allocation of fixed process emissions for year i for establishments covered between 2018 and 2020, as defined in Table 4 of this Appendix, where $n=i-(d+2)$;

$GHG_{O,av}$ = Average other emissions at the establishment for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, in metric tonnes CO_2 equivalent;

$a_{O,i}$ = Cap adjustment factor for the allocation of other emissions for year i for establishments covered between 2018 and 2020, as defined in Table 4 of this Appendix, where $n=i-(d+2)$.

Equation 4-24 Calculation of average energy consumption for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, at a covered establishment as of 2018 that possesses all the GHG emissions data for those years

$$EC_{TOTAL,av} = \sum_d^{d+2} \left(\sum_{k=1}^n \left(\frac{GHG_{non\ bio\ k}}{GHG_{total\ k}} \times Fuel_k \times HHV_k \right) \right) \div 3$$

$$EC_{TOTAL,av} = \sum_{d+1}^{d+3} \left(\sum_{k=1}^n \left(\frac{GHG_{non\ bio\ k}}{GHG_{total\ k}} \times Fuel_k \times HHV_k \right) \right) \div 3$$

Where:

$EC_{TOTAL,av}$ = Average energy consumption for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, in GJ;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold;

n = Total number of types of fuel used;

k = Type of fuel;

$GHG_{non\ bio\ k}$ = Greenhouse gas emissions attributable to the use of fuel k , excluding CO_2 emissions attributable to the combustion of biomass or biofuels, in metric tonnes CO_2 equivalent;

$GHG_{total\ k}$ = Greenhouse gas emissions attributable to the use of fuel k , including CO_2 emissions attributable to the combustion of biomass or biofuels, in metric tonnes CO_2 equivalent;

$Fuel_k$ = Mass or volume of fuel burned:

(a) in dry metric tonnes, when the quantity is expressed as a mass;

(b) in thousands of cubic metres at standard conditions, where the quantity is expressed as a volume of gas;

(c) in kilolitres, where the quantity is expressed as a volume of liquid;

HHV_k = High heat value for measurement period i , expressed

(a) in GJ per dry metric ton, in the case of fuels whose quantity is expressed as a mass;

(b) in GJ per thousand cubic metres, in the case of fuels whose quantity is expressed as a volume of gas;

(c) in GJ per kilolitre, in the case of fuels whose quantity is expressed as a volume of liquid.

(4.4) Calculation method for the years 2018 to 2020 for the covered establishments referred to in section 2.1.

(4.4.1) Covered establishment referred to in section 2.1 that is not considered on a sectoral basis and for which the GHG emissions data for years $e-3$ to $e-1$ are all available

Equation 4-25 Calculation of the number of GHG emission units allocated without charge by type of activity at a covered establishment referred to in section 2.1 that is not considered on a sectoral basis for the years 2018 to 2020 and for which the GHG emissions data for years $e-3$ to $e-1$ are all available

$$A_{ij} = [I_{FPdepj} \times a_{FP,i} + R \times I_{cdepj} \times a_{c,i} + I_{Odepj} \times a_{O,i}] \times P_{Rij}$$

Where:

A_{ij} = Total number of GHG emission units allocated without charge by type of activity j at an establishment for year i ;

i = Each year in the period 2018-2020 for which the emitter is required to cover its GHG emissions;

j = Type of activity;

$I_{FP\ dep\ j}$ = Average intensity of fixed process emissions attributable to type of activity j at the establishment for years $e-3$ to $e-1$, calculated using equation 4-26, in metric tonnes CO₂ equivalent per reference unit;

e = Year of application for registration for the system;

$a_{FP,i}$ = Cap adjustment factor for the allocation of fixed process emissions for year i for establishments covered between 2018 and 2020, as defined in Table 4 of this Appendix, where $n=i-(e+1)$;

R = Intensity multiplication factor for combustion emissions at the establishment calculated using equation 4-27 or, in the case of an establishment producing pulp and paper described by NAICS code 3221, having a value of 1;

$I_{C\ dep\ j}$ = Average intensity of combustion emissions attributable to type of activity j at the establishment for years $e-3$ to $e-1$, calculated using equation 4-29, in metric tonnes CO₂ equivalent per reference unit;

$a_{C,i}$ = Cap adjustment factor for the allocation of combustion emissions for year i for establishments covered between 2018 and 2020, as defined in Table 4 of this Appendix, where $n=i-(e+1)$;

$I_{O\ dep\ j}$ = Average intensity of other emissions attributable to type of activity j at the establishment for years $e-3$ to $e-1$, calculated using equation 4-30, in metric tonnes CO₂ equivalent per reference unit;

$a_{O,i}$ = Cap adjustment factor for the allocation of other emissions for year i for establishments covered between 2018 and 2020, as defined in Table 4 of this Appendix, where $n=i-(e+1)$;

$P_{Ri\ j}$ = Total quantity of reference units produced or used at the establishment for type of activity j during year i .

Equation 4-26 Calculation of the intensity of fixed process emissions by type of activity at a covered establishment referred to in section 2.1 that is not considered on a sectoral basis and for which the GHG emissions data for years $e-3$ to $e-1$ are all available

$$I_{FP\ dep\ j} = \frac{\sum_{i=(e-3)}^{e-1} GHG\ FP_{ij}}{\sum_{i=(e-3)}^{e-1} P_{Rij}}$$

Where:

$I_{FP\ dep\ j}$ = Average intensity of fixed process emissions attributable to type of activity j at the establishment for years $e-3$ to $e-1$, in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

e = Year of application for registration for the system;

i = Years $e-3$, $e-2$ and $e-1$;

$GHG\ FP_{i\ j}$ = Fixed process emissions attributable to type of activity j at the establishment for year i , in metric tonnes CO₂ equivalent;

$P_{Ri\ j}$ = Total quantity of reference units produced or used at the establishment for type of activity j during year i .

Equation 4-27 Calculation of the intensity multiplication factor for combustion emissions for a covered establishment referred to in section 2.1 that is not considered on a sectoral basis and for which the GHG emissions data for years $e-3$ to $e-1$ are all available

$R = 0.80 \times GFR + (1 - GFR)$

Where:

R = Intensity multiplication factor for GHG combustion emissions at the establishment;

0.80 = Proportion corresponding to 80% of the GFR ratio;

GFR = Ratio between the total combustion emissions attributable to the use of natural gas, gasoline, diesel, heating oil, propane, petroleum coke and coal, excluding refinery fuel gas, and total combustion emissions at the establishment, calculated using equation 4-28.

Equation 4-28 Calculation of the GFR ratio for a covered establishment referred to in section 2.1 that is not considered on a sectoral basis and for which the GHG emissions data for years $e-3$ to $e-1$ are all available

$$GFR = \frac{\sum_{i=(e-3)}^{(e-1)} GHG \ GFR_i}{\sum_{i=(e-3)}^{(e-1)} GHG \ C_i}$$

Where:

GFR = Ratio between the total combustion emissions attributable to the use of natural gas, gasoline, diesel, heating oil, propane, petroleum coke and coal, excluding refinery fuel gas, and total combustion emissions at the establishment;

e = Year of registration for the system;

i = Years $e-3$, $e-2$ and $e-1$;

GHG GFR_i = combustion emissions attributable to the use of natural gas, gasoline, diesel, heating oil, propane, petroleum coke and coal, excluding refinery fuel gas, at the establishment during year i , in metric tonnes CO₂ equivalent;

GHG C_i = Total combustion emissions attributable to the use of fuel at the establishment during year i , in metric tonnes CO₂ equivalent.

Equation 4-29 Calculation of the intensity of combustion emissions by type of activity at a covered establishment referred to in section 2.1 that is not considered on a sectoral basis and for which the GHG emissions data for years $e-3$ to $e-1$ are all available

$$I_{C\ dep\ j} = \frac{\sum_{i=(e-3)}^{e-1} GHG\ C_{ij}}{\sum_{i=(e-3)}^{e-1} P_{Rij}}$$

Where:

$I_{C\ dep\ j}$ = Average intensity of combustion emissions attributable to type of activity j at the establishment for years $e-3$ to $e-1$, in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

e = Year of application for registration for the system;

i = Years $e-3$, $e-2$ and $e-1$;

GHG $C_{i\ j}$ = Combustion emissions attributable to type of activity j at the establishment for year i , in metric tonnes CO₂ equivalent;

$P_{Ri\ j}$ = Total quantity of reference units produced or used at the establishment for type of activity j during year i .

Equation 4-30 Calculation of the intensity of other emissions by type of activity at a covered establishment referred to in section 2.1 that is not considered on a sectoral basis and for which the GHG emissions data for years $e-3$ to $e-1$ are all available

$$I_{O\ dep\ j} = \frac{\sum_{i=(e-3)}^{e-1} GHG\ O_{ij}}{\sum_{i=(e-3)}^{e-1} P_{Rij}}$$

Where:

$I_{O\ dep\ j}$ = Average intensity of other emissions attributable to type of activity j at the establishment for years $e-3$ to $e-1$, in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

e = Year of application for registration for the system;

i = Years $e-3$, $e-2$ and $e-1$;

GHG O_{ij} = Other emissions attributable to type of activity j at the establishment for year i , in metric tonnes CO₂ equivalent;

$P_{Ri\ j}$ = Total quantity of reference units produced or used at the establishment for type of activity j during year i .

(4.4.2) Covered establishment referred to in section 2.1 that is not considered on a sectoral basis and for which the GHG emissions data for years $e-3$ to $e-1$ are not all available

The total quantity of GHG emission units allocated without charge to an emitter is calculated in accordance with the following methods:

(1) in the case of an establishment for which the GHG emissions data for years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational, are all available, using equation 4-31;

(2) in the case of an establishment for which the GHG emissions data for years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational, are not all available, using equation 4-37.

Equation 4-31 Calculation of the number of GHG emission units allocated without charge by type of activity at a covered establishment referred to in section 2.1 that is not considered on a sectoral basis for the years 2018 to 2020 and for which the GHG emissions data for years $e-3$ to $e-1$ are not all available

$$A_{ij} = [I_{FP\ dep\ j} \times a_{FP,i} + R \times I_{C\ dep\ j} \times a_{C,i} + I_{O\ dep\ j} \times a_{O,i}] \times P_{Ri\ j}$$

Where:

A_{ij} = Total number of GHG emission units allocated without charge by type of activity j at an establishment for year i ;

i = Each year in the period 2018-2020 for which the emitter is required to cover GHG emissions;

j = Type of activity;

$I_{FP\ dep\ j}$ = Average intensity of fixed process emissions attributable to type of activity j at the establishment for years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational, calculated using equation 4-32, in metric tonnes CO₂ equivalent per reference unit;

e = Year of application for registration for the system;

$a_{FP,i}$ = Cap adjustment factor for the allocation of fixed process emissions for year i for establishments covered between 2018 and 2020, as defined in Table 4 of this Appendix, where $n=i-(e+1)$;

R = Intensity multiplication factor for combustion emissions at the establishment calculated using equation 4-33 or, in the case of an establishment producing pulp and paper described by NAICS code 3221, having a value of 1;

$I_{C\ dep\ j}$ = Average intensity of combustion emissions attributable to type of activity j at the establishment for years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational, calculated using equation 4-35, in metric tonnes CO_2 equivalent per reference unit;

$a_{C,i}$ = Cap adjustment factor for the allocation of combustion emissions for year i for establishments covered between 2018 and 2020, as defined in Table 4 of this Appendix, where $n=i-(e+1)$;

$I_{O\ dep\ j}$ = Average intensity of other emissions attributable to type of activity j at the establishment for years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational, calculated using equation 4-36, in metric tonnes CO_2 equivalent per reference unit;

$a_{O,i}$ = Cap adjustment factor for the allocation of other emissions for year i for establishments covered between 2018 and 2020, as defined in Table 4 of this Appendix, where $n=i-(e+1)$;

$P_{Ri\ j}$ = Total quantity of reference units produced or used at the establishment for type of activity j during year i .

Equation 4-32 Calculation of the intensity of fixed process emissions by type of activity at a covered establishment referred to in section 2.1 that is not considered on a sectoral basis and for which the GHG emissions data for years $e-3$ to $e-1$ are not all available

$$I_{FP\ dep\ j} = \frac{\sum_{i=(e-1)}^{e+1} GHG\ FP_{ij}}{\sum_{i=(e-1)}^{e+1} P_{Rij}}$$

Or

$$I_{FP\ dep\ j} = \frac{\sum_{i=(e)}^{e+2} GHG\ FP_{ij}}{\sum_{i=(e)}^{e+2} P_{Rij}}$$

Where:

$I_{FP\ dep\ j}$ = Average intensity of fixed process emissions attributable to type of activity j at the establishment for years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational, in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

e = Year of application for registration for the system;

i = Years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational;

$GHG\ FP_{ij}$ = Fixed process emissions attributable to type of activity j at the establishment for year i , in metric tonnes CO₂ equivalent;

PR_{ij} = Total quantity of reference units produced or used at the establishment for type of activity j during year i .

Equation 4-33 Calculation of the intensity multiplication factor for combustion emissions for a covered establishment referred to in section 2.1 that is not considered on a sectoral basis and for which the GHG emissions data for years $e-3$ to $e-1$ are not all available

$R = 0.80 \times GFR + (1 - GFR)$

Where:

R = Intensity multiplication factor for combustion emissions at the establishment;

0.80 = Proportion corresponding to 80% of the GFR ratio;

GFR = Ratio between the total GHG combustion emissions attributable to the use of natural gas, gasoline, diesel, heating oil, propane, petroleum coke and coal, excluding refinery fuel gas, and total combustion emissions at the establishment, calculated using equation 4-34.

Equation 4-34 Calculation of the GFR ratio for a covered establishment referred to in section 2.1 that is not considered on a sectoral basis and for which the GHG emissions data for years $e-3$ to $e-1$ are not all available

$$GFR = \frac{\sum_{i=(e-1)}^{(e+1)} GHG \ GFR_i}{\sum_{i=(e-1)}^{(e+1)} GHG \ C_i}$$

Or

$$GFR = \frac{\sum_{i=(e)}^{(e+2)} GHG \ GFR_i}{\sum_{i=(e)}^{(e+2)} GHG \ C_i}$$

Where:

GFR = Ratio between the total combustion emissions attributable to the use of natural gas, gasoline, diesel, heating oil, propane, petroleum coke and coal, excluding refinery fuel gas, and total combustion emissions at the establishment;

e = Year of registration for the system;

i = Years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational;

GHG GFR_i = Combustion emissions attributable to the use of natural gas, gasoline, diesel, heating oil, propane, petroleum coke and coal, excluding refinery fuel gas, at the establishment during year i , in metric tonnes CO₂ equivalent;

GHG C_i = Total combustion emissions attributable to the use of fuel at the establishment during year i , in metric tonnes CO₂ equivalent.

Equation 4-35 Calculation of the intensity of combustion emissions by type of activity at a covered establishment referred to in section 2.1 that is not considered on a sectoral basis and for which the GHG emissions data for years $e-3$ to $e-1$ are not all available

$$I_{C\ dep\ j} = \frac{\sum_{i=(e-1)}^{e+1} GHG\ C_{ij}}{\sum_{i=(e-1)}^{e+1} P_{Rij}}$$

Or

$$I_{C dep j} = \frac{\sum_{i=(e)}^{e+2} GHG C_{ij}}{\sum_{i=(e)}^{e+2} P_{Rij}}$$

Where:

$I_{C\ dep\ j}$ = Average intensity of combustion emissions attributable to type of activity j at the establishment for years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational, in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

e = Year of application for registration for the system;

i = Years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational;

GHG $C_{i\ j}$ = Combustion emissions attributable to type of activity j at the establishment for year i , in metric tonnes CO₂ equivalent;

$P_{Ri\ j}$ = Total quantity of reference units produced or used at the establishment for type of activity j during year i .

Equation 4-36 Calculation of the intensity of other emissions by type of activity at a covered establishment referred to in section 2.1 that is not considered on a sectoral basis and for which the GHG emissions data for years $e-3$ to $e-1$ are not all available

$$I_{o\ dep\ j} = \frac{\sum_{i=(e-1)}^{e+1} GHG\ O_{ij}}{\sum_{i=(e-1)}^{e+1} P_{Rij}}$$

Or

$$I_{O \text{ dep } j} = \frac{\sum_{i=(e)}^{e+2} GHG \ O_{ij}}{\sum_{i=(e)}^{e+2} P_{Rij}}$$

Where:

$I_{O\ dep\ j}$ = Average intensity of other emissions attributable to type of activity j at the establishment for years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational, in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

e = Year of application for registration for the system;

i = Years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational;

GHG $O_{i\ j}$ = Other emissions attributable to type of activity j at the establishment for year i , in metric tonnes CO₂ equivalent;

$P_{Ri\ j}$ = Total quantity of reference units produced or used at the establishment for type of activity j during year i .

Equation 4-37 Calculation of the number of GHG emission units allocated without charge for a covered establishment referred to in section 2.1 that is not considered on a sectoral basis for the years 2018 to 2020 and for which the GHG emissions data for years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational, are not all available

$$A_i = (EC_{TOTAL\ i} \times EF \times a_{c,i}) + (GHG_{FP\ i} \times a_{FP,i}) + (GHG_{O\ i} \times a_{O,i})$$

Where:

A_i = Total number of GHG emission units allocated without charge for year i ;

i = Each year in the period 2018-2020 for which the emitter is required to cover its GHG emissions;

$EC_{TOTAL\ i}$ = Average energy consumption for year i , calculated using equation 4-38, in GJ;

EF = Emission factor for natural gas, in metric tonnes CO₂ equivalent/GJ, calculated using equation 4-21.1;

$a_{c,i}$ = Cap adjustment factor for the allocation of combustion emissions for year i for establishments covered between 2018 and 2020, as defined in Table 4 of this Appendix, where $n=i-(e+1)$;

$GHG_{FP\ i}$ = Fixed process emissions at the establishment for year i , in metric tonnes CO₂ equivalent;

$a_{FP,i}$ = Cap adjustment factor for the allocation of fixed process emissions for year i for establishments covered between 2018 and 2020, as defined in Table 4 of this Appendix, where $n=i-(e+1)$;

$GHG_{O\ i}$ = Average other emissions at the establishment for year i , in metric tonnes CO₂ equivalent;

$a_{O,i}$ = Cap adjustment factor for the allocation of other emissions for year i for establishments covered between 2018 and 2020, as defined in Table 4 of this Appendix, where $n=i-(e+1)$.

Equation 4-38 Calculation of average energy consumption for years e and $e+1$ of an establishment for the years 2018 to 2020 that is not considered on a sectoral basis and for which the GHG emissions data for years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational, are not all available

$$EC_{TOTAL\ i} = \sum_{k=1}^n \left(\frac{GHG_{non\ bio\ k}}{GHG_{total\ k}} \times Fuel_k \times HHV_k \right)$$

Where:

$EC_{TOTAL\ i}$ = Energy consumption for year i , in GJ;

i = Each year of the 2018-2020 period for which the emitter is required to cover GHG emissions;

n = Total number of types of fuel used;

k = Type of fuel;

$GHG_{non\ bio\ k}$ = Greenhouse gas emissions attributable to the use of fuel k , excluding CO_2 emissions attributable to the combustion of biomass or biofuels, in metric tonnes CO_2 equivalent;

$GHG_{total\ k}$ = Greenhouse gas emissions attributable to the use of fuel k , including CO_2 emissions attributable to the combustion of biomass or biofuels, in metric tonnes CO_2 equivalent;

$Fuel_k$ = Mass or volume of fuel burned:

(a) in dry metric tonnes, when the quantity is expressed as a mass;

(b) in thousands of cubic metres at standard conditions, where the quantity is expressed as a volume of gas;

(c) in kilolitres, where the quantity is expressed as a volume of liquid;

HHV_k = High heat value for measurement period i , expressed

(a) in GJ per dry metric ton, in the case of fuels whose quantity is expressed as a mass;

(b) in GJ per thousand cubic metres, in the case of fuels whose quantity is expressed as a volume of gas;

(c) in GJ per kilolitre, in the case of fuels whose quantity is expressed as a volume of liquid.

(4.4.3) Covered establishment referred to in section 2.1 that is not considered on a sectoral basis and that does not possess a determined reference unit

The total quantity of GHG emission units allocated without charge to an emitter is calculated in accordance with the following methods:

(1) in the case of an establishment for which the GHG emissions data for years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational, are all available, using equation 4-39;

(2) in the case of an establishment for which the GHG emissions data for years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational, are not all available, using equation 4-37.

Equation 4-39 Calculation of the number of GHG emission units allocated without charge for a covered establishment referred to in section 2.1 that is not considered on a sectoral basis for the years 2018 to 2020, that does not possess a determined reference unit and for which the GHG emissions data for years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational, are all available

$$A_i = [(EC_{TOTAL,av} \times EF \times a_{c,i}) + (GHG_{FP,av} \times a_{FP,i}) + (GHG_{O,av} \times a_{O,i})]$$

Where:

A_i = Total number of GHG emission units allocated without charge for year i ;

i = Each year in the period 2018-2020 for which the emitter is required to cover its GHG emissions;

$EC_{TOTAL,av}$ = Average energy consumption for years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational, calculated using equation 4-40, in GJ;

e = Year of application for registration for the system;

EF = Emission factor for natural gas, in metric tonnes CO_2 equivalent/GJ, calculated using equation 4-21.1;

$a_{C,i}$ = Cap adjustment factor for the allocation of combustion emissions for year i for establishments covered between 2018 and 2020, as defined in Table 4 of this Appendix, where $n=i-(e+1)$;

$GHG_{FP,av}$ = Average fixed process emissions at the establishment for years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational, in metric tonnes CO_2 equivalent;

$a_{FP,i}$ = Cap adjustment factor for the allocation of fixed process emissions for year i for establishments covered between 2018 and 2020, as defined in Table 4 of this Appendix, where $n=i-(e+1)$;

$GHG_{O,av}$ = Average other emissions at the establishment for years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational, in metric tonnes CO_2 equivalent;

$a_{O,i}$ = Cap adjustment factor for the allocation of other emissions for year i for establishments covered between 2018 and 2020, as defined in Table 4 of this Appendix, where $n=i-(e+1)$.

Equation 4-40 Calculation of average energy consumption for a covered establishment referred to in section 2.1 that is not considered on a sectoral basis, that does not possess a determined reference unit, and for which the GHG emissions data for years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational, are all available

$$EC_{TOTAL,av} = \sum_{e=1}^{e+1} \left(\sum_{k=1}^n \left(\frac{GHG_{non\ bio\ k}}{GHG_{total\ k}} \times Fuel_k \times HHV_k \right) \right) \div 3$$

$$EC_{TOTAL,av} = \sum_e^{e+2} \left(\sum_{k=1}^n \left(\frac{GHG_{non\ bio\ k}}{GHG_{total\ k}} \times Fuel_k \times HHV_k \right) \right) \div 3$$

Where:

$EC_{TOTAL,av}$ = Average energy consumption for years $e-1$ to $e+1$ or for years e to $e+2$ where $e-1$ is the year in which the establishment became operational, in GJ;

e = Year of application for registration for the system;

k = Type of fuel;

$GHG_{non\ bio\ k}$ = Greenhouse gas emissions attributable to the use of fuel k excluding CO_2 emissions attributable to the combustion of biomass or biofuels, in metric tonnes CO_2 equivalent;

$GHG_{total\ k}$ = Greenhouse gas emissions attributable to the use of fuel k including CO_2 emissions attributable to the combustion of biomass or biofuels, in metric tonnes CO_2 equivalent;

n = Total number of types of fuel used;

$Fuel_k$ = Mass or volume of fuel burned:

(a) in dry metric tonnes, when the quantity is expressed as a mass;

(b) in thousands of cubic metres at standard conditions, where the quantity is expressed as a volume of gas;

(c) in kilolitres, where the quantity is expressed as a volume of liquid;

HHV_k = High heat value for measurement period i , expressed

(a) in GJ per dry metric ton, in the case of fuels whose quantity is expressed as a mass;

(b) in GJ per thousand cubic metres, in the case of fuels whose quantity is expressed as a volume of gas;

(c) in GJ per kilolitre, in the case of fuels whose quantity is expressed as a volume of liquid.

5. Covered establishment as of 2013 that does not possess GHG emissions data for 2007-2010 and covered establishment after 2013 that is considered on a sectoral basis

(5.1) Calculation method for the years 2013 and 2014

Equation 5-1 Calculation of the number of GHG emission units allocated without charge by type of activity at an establishment covered as of 2013 and without data for 2007-2010 or covered after 2013 that is considered on a sectoral basis for the years 2013 and 2014

$$A_{ij} = \max(I_{dep\ j}; I_{2020s\ j}) \times P_{Rij}$$

Where:

A_{ij} = Total number of GHG emission units allocated without charge by type of activity j for the establishment for year i ;

i = Each year in the first compliance period, namely 2013 and 2014;

j = Type of activity;

$\max$ = Maximum value, representing the greater of the intensity values $I_{dep\ j}$ and $I_{2020s\ j}$;

$I_{dep\ j}$ = Intensity target of the GHG emissions attributable to type of activity j at an establishment, calculated using equation 4-2, in metric tonnes CO₂ equivalent per reference unit;

$I_{2020s\ j}$ = Intensity target of GHG emissions attributable to type of activity j in the sector for the year 2020, calculated using equation 3-2, in metric tonnes CO₂ equivalent per reference unit;

$P_{Ri\ j}$ = Total quantity of reference units produced or used at the establishment for type of activity j during year i .

(5.2) Calculation method for the years 2015 to 2020

(5.2.1) Establishment considered on a sectoral basis for the years 2015 to 2017 and establishment considered on a sectoral basis that possesses all the GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational for the years 2018 to 2020

Equation 5-2 Calculation of the number of GHG emission units allocated without charge by type of activity for an establishment covered as of 2013 and without data for 2007-2010 or covered after 2013 that is considered on a sectoral basis for the years 2015 to 2020

$$A_{i\ j} = \max \left| \frac{m I_{dep\ j} + (n - m) I_{2020s\ j}}{n} ; I_{2020s\ j} \right| \times P_{Ri\ j}$$

Where:

$A_{i\ j}$ = Total number of GHG emission units allocated without charge by type of activity j for the establishment for year i ;

i = Each year in the period 2015-2020 for which the emitter is required to cover GHG emissions;

j = Type of activity;

max = Maximum value, representing the greater of the intensity values calculated;

$m = 2020 - i$;

n = Minimum, representing the lesser of 6 and $(2020 - (d+1))$;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold.

$I_{dep\ j}$ = Intensity target of the GHG emissions attributable to type of activity j at an establishment, calculated using equation 3-2, in metric tonnes CO₂ equivalent per reference unit;

$I_{2020s\ j}$ = Intensity target of GHG emissions attributable to type of activity j in the sector for the year 2020, calculated using equation 3-2, in metric tonnes CO₂ equivalent per reference unit;

$P_{Ri\ j}$ = Total quantity of reference units produced or used at the establishment for type of activity j during year i .

(5.2.2) Establishment considered on a sectoral basis that does not possess all the GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational for the years 2018 to 2020

Equation 5-3 Calculation of the total quantity of GHG emission units allocated free of charge by type of activity at an establishment covered from 2018 that is considered on a sectoral basis for the years 2018 to 2020 and that does not possess all the GHG emissions data for the years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational

$$A_i = \max \left(\sum_{j=1}^m I_{2020S} \times P_{Rij} ; \frac{p}{q} \right. \\ \left. \times [(EC_{TOTALi} \times EF \times a_{C,i}) + (GHG_{FPi} \times a_{FP,i}) \right. \\ \left. + (GHG_{Oi} \times a_{O,i})] \right)$$

Where:

A_i = Total number of GHG emission units allocated free of charge for an establishment for year i ;

i = Each year of the period 2018-2020 for which the emitter is required to cover GHG emissions;

$\max$ = Maximum value between the 2 calculated values;

j = Type of activity;

m = Total number of type of activities of the establishment;

I_{2020s} = Target intensity for GHG emissions attributable to type of activity j of the sector for the year 2020, calculated using equation 3-2, in metric tonnes CO₂ equivalent per reference unit;

P_{Rij} = Total quantity of reference units produced or used by the establishment for the type of activity j during year i ;

p = 2020- i ;

q = Maximum value between 1 and p ;

$EC_{TOTAL\ i}$ = Energy consumption of year i , calculated using equation 4-22, in GJ;

EF = Emission factor for natural gas, in metric tonnes CO₂/GJ equivalent, calculated using equation 4-21.1;

$a_{C,i}$ = Cap adjustment factor for the allocation of combustion emissions for year i for establishments covered between 2018 and 2020, as defined in Table 4 of this Appendix, with $n=i-(d+2)$;

d = First year for which the establishment's GHG emissions are equal to or exceed the emissions threshold;

$GHG_{FP\ i}$ = Fixed process emissions of the establishment for year i , in metric tonnes equivalent CO₂;

$a_{FP,i}$ = Cap adjustment factor for the allocation of fixed process emissions for year i for establishment covered between 2018 and 2020, as defined in Table 4 of this Appendix, with $n=i-(d+2)$;

$GHG_{O\ i}$ = other emissions of the establishment for year i , in metric tonnes CO₂ equivalent;

$a_{O,i}$ = Cap adjustment factor for the allocation of other emissions for year i for establishments covered between 2018 and 2020, as defined in Table 4 of this Appendix, with $n=i-(d+2)$.

6. Special cases

(6.1) Establishment producing aluminum using Söderberg anode technology after 2014

Equation 6-1 Calculation of the intensity target of GHG emissions for year 2020 at an establishment producing aluminum using Söderberg anode technology after 2014

$$I_{2020\ sod} = I_{2020s\ electrolysis} + (I_{2020s\ baked\ anode} \times 0.55)$$

Where:

$I_{2020\ sod}$ = Intensity target of GHG emissions for year 2020 at an establishment producing aluminum using Söderberg anode technology after 2014, in metric tonnes CO₂ equivalent per metric tonne of liquid aluminum;

$I_{2020s \text{ electrolysis}}$ = Intensity target of GHG emissions for year 2020 in the aluminum sector for the type of activity “aluminum production”, calculated using equation 3-2 based on data from establishments using prebaked anode technology, in metric tonnes CO₂ equivalent per metric tonne of liquid aluminum;

$I_{2020s \text{ baked anode}}$ = Intensity target of GHG emissions for year 2020 in the aluminum sector for the type of activity “baked anode production”, calculated using equation 3-2 based on data from establishments using prebaked anode technology, in metric tonnes CO₂ equivalent per metric tonne of baked anodes;

0.55 = Ratio between consumed baked anode production and aluminum production, in metric tonnes of baked anodes per metric tonne of liquid aluminum.

(6.2) Establishment producing alumina from bauxite

Equation 6-2 Calculation of the total quantity of GHG emission units allocated without charge for an establishment producing alumina from bauxite for 2013 to 2020

$$A_i = 0.40 \times P_{Ri}$$

Where:

A_i = Total quantity of GHG emission units allocated without charge for an establishment producing alumina from bauxite for year i ;

i = Each year included in the period 2013-2020;

0.40 = Intensity target of GHG emissions attributable to the production of alumina from bauxite for 2013 to 2020, in metric tonnes CO₂ equivalent per metric tonne of aluminum hydrate ($Al_2O_3 \times 3 H_2O$) expressed as alumina (Al_2O_3) equivalent, 1 metric tonne of aluminum hydrate in alumina equivalent corresponding to 0.6536 metric tonnes aluminum hydrate;

P_{Ri} = Total quantity of aluminum hydrate expressed as alumina (Al_2O_3) equivalent produced at the establishment in year i , in metric tonnes.

(6.3) Establishment producing rigid foamed insulation

The total quantity of GHG emission units allocated without charge for an establishment producing rigid foamed insulation is calculated, for 2013 and 2014, using equation 2-1, where “I2013” is calculated using equations 6-3 to 6-6 and, for 2015 to 2020, using equation 6-7:

Equation 6-3 Calculation of the intensity target of GHG emissions attributable to an establishment producing rigid foamed insulation for 2013 and 2014

$$I_{2013} = I_{FP} + (R \times I_C) + I_O$$

Where:

I_{2013} = Intensity target of GHG emissions at the establishment for 2013 and 2014, in metric tonnes CO₂ equivalent per board foot of rigid foamed insulation;

I_{FP} = Intensity of GHG fixed process emissions at the establishment for year 2010, calculated using equation 6-4, in metric tonnes CO₂ equivalent per board foot of rigid foamed insulation;

R = Multiplication factor for GHG combustion emissions intensity at the establishment, calculated using equations 4-6 and 4-7;

I_C = Intensity of GHG combustion emissions at the establishment for year 2010, calculated using equation 6-5, in metric tonnes CO₂ equivalent per board foot of rigid foamed insulation;

I_O = Intensity of other GHG emissions at the establishment for year 2010, calculated using equation 6-6, in metric tonnes CO₂ equivalent per board foot of rigid foamed insulation.

Equation 6-4 Intensity of GHG fixed process emissions at an establishment producing rigid foamed insulation for year 2010

$$I_{FP} = \frac{GHG\ FP_{2010}}{P_{R2010}}$$

Where:

I_{FP} = Intensity of GHG fixed process emissions at the establishment for year 2010, in metric tonnes CO₂ equivalent per board foot of rigid foamed insulation;

$GHG\ FP_{2010}$ = GHG fixed process emissions at the establishment for year 2010, in metric tonnes CO₂ equivalent;

P_{R2010} = Total quantity of rigid foamed insulation produced at the establishment in year 2010, in board feet of rigid foamed insulation.

Equation 6-4.1 Average intensity of GHG fixed process emissions at an establishment producing rigid foamed insulation for years 2010 to 2012

$$I_{FP} = \frac{\sum_{i=2010}^{2012} GHG\ FP_i}{\sum_{i=2010}^{2012} P_{R\ i}}$$

Where:

I_{FP} = Average intensity of GHG fixed process emissions at the establishment for years 2010 to 2012, in metric tonnes CO₂ equivalent per board foot of rigid foamed insulation;

i = Each year included in the period 2010-2012;

GHG FP_i = GHG fixed process emissions at the establishment for year i , in metric tonnes CO₂ equivalent;

P_{R_i} = Total quantity of rigid foamed insulation produced at the establishment in year i , in board feet of rigid foamed insulation.

Equation 6-5 Intensity of GHG combustion emissions at an establishment producing rigid foamed insulation for year 2010

$$I_C = \frac{GHG\ C\ 2010}{P_{R\ 2010}}$$

Where:

I_C = Intensity of GHG combustion emissions at the establishment for year 2010, in metric tonnes CO₂ equivalent per board foot of rigid foamed insulation;

GHG $C\ 2010$ = GHG combustion emissions at the establishment for year 2010, in metric tonnes CO₂ equivalent;

$P_{R\ 2010}$ = Total quantity of rigid foamed insulation produced at the establishment in year 2010, in board feet of rigid foamed insulation.

Equation 6-5.1 Average intensity of GHG combustion emissions at an establishment producing rigid foamed insulation for years 2010 to 2012

$$I_c = \frac{\sum_{i=2010}^{2012} GHG C_i}{\sum_{i=2010}^{2012} P_{R i}}$$

Where:

I_C = Average intensity of GHG combustion emissions at the establishment for years 2010 to 2012, in metric tonnes CO₂ equivalent per board foot of rigid foamed insulation;

i = Each year included in the period 2010-2012;

GHG C_i = GHG combustion emissions at the establishment in year i , in metric tonnes CO₂ equivalent;

P_{Ri} = Total quantity of rigid foamed insulation produced at the establishment in year i , in board feet of rigid foamed insulation.

Equation 6-6 Intensity of other GHG emissions at an establishment producing rigid foamed insulation for year 2010

$$I_O = \frac{GHG\ O\ 2010}{P_{R\ 2010}}$$

Where:

I_O = Intensity of other GHG emissions at the establishment for year 2010, in metric tonnes CO₂ equivalent per board foot of rigid foamed insulation;

GHG O_{2010} = Other GHG emissions at the establishment for year 2010, in metric tonnes CO₂ equivalent;

$P_{R\ 2010}$ = Total quantity of rigid foamed insulation produced at the establishment in year 2010, in board feet of rigid foamed insulation.

Equation 6-6.1 Average intensity of other GHG emissions at an establishment producing rigid foamed insulation for years 2010 to 2012

$$I_0 = \frac{\sum_{i=2010}^{2012} GHG\ O_i}{\sum_{i=2010}^{2012} P_{R\ i}}$$

Where:

I_O = Average intensity of other GHG emissions at the establishment for years 2010 to 2012, in metric tonnes CO₂ equivalent per board foot of rigid foamed insulation;

i = Each year included in the period 2010-2012;

GHG O_i = Other GHG emissions at the establishment for year i , in metric tonnes CO₂ equivalent;

P_{Ri} = Total quantity of rigid foamed insulation produced at the establishment in year i , in board feet of rigid foamed insulation.

Equation 6-7 Calculation of the total quantity of GHG emission units allocated without charge for an establishment producing rigid foamed insulation for 2015 to 2020

$$A_i [I_{FP} + R(0.99)^n I_C + (0.99)^n I_O] \times P_{Ri}$$

Where:

A_i = Total quantity of GHG emission units allocated without charge for an establishment producing rigid foamed insulation for year i ;

i = Each year included in the period 2015-2020 for which the emitter is required to cover its GHG emissions;

I_{FP} = Intensity of GHG fixed process emissions at the establishment for year 2010, calculated using equation 6-4, in metric tonnes CO₂ equivalent per board foot of rigid foamed insulation;

R = Multiplication factor for GHG combustion emissions intensity at the establishment, calculated using equations 4-6 and 4-7;

0.99 = Proportion corresponding to an annual improvement of 1% of the intensity factor;

$n = i - 2015 + 1$;

I_C = Intensity of GHG combustion emissions at the establishment for year 2010, calculated using equation 6-5, in metric tonnes CO₂ equivalent per board foot of rigid foamed insulation;

I_O = Intensity of other GHG emissions at the establishment for year 2010, calculated using equation 6-6, in metric tonnes CO₂ equivalent per board foot of rigid foamed insulation;

P_{Ri} = Total quantity of rigid foamed insulation produced at the establishment in year i , in board feet of rigid foamed insulation.

Equation 6-7.1 Calculation of the intensity target of fixed process emissions at an establishment fabricating rigid foamed insulation

$$I_{FP2020j} = I_{FP}$$

Where:

$I_{FP2020j}$ = Intensity of fixed process emissions calculated for year 2020 for type of activity j ;

j = Type of activity, namely the fabrication of rigid foamed insulation;

I_{FP} = Average intensity of GHG fixed process emissions at the establishment for years 2010 to 2012, calculated using equation 6-4.1, in metric tonnes CO₂ equivalent per board foot of rigid foamed insulation.

Equation 6-7.2 Calculation of the intensity target for combustion emissions at an establishment fabricating rigid foamed insulation

$$I_{C2020j} = R \times 0.9415 \times I_C$$

Where:

I_{C2020j} = Intensity of combustion emissions calculated for year 2020 for type of activity j ;

j = Type of activity, namely the fabrication of rigid foamed insulation;

R = Intensity multiplication factor for combustion emissions at the establishment, calculated using equations 4-6 and 4-7;

0.9415 = Proportion corresponding to an annual improvement of 1% in the intensity factor during years 2015 to 2020;

I_C = Average intensity of GHG combustion emissions at the establishment for years 2010 to 2012, calculated using equation 6-5.1, in metric tonnes CO₂ equivalent per board foot of rigid foamed insulation.

Equation 6-7.3 Calculation of the intensity target of other emissions at an establishment fabricating rigid foamed insulation

$$I_{O2020j} = 0.9415 \times I_O$$

Where:

I_{O2020j} = Intensity of other emissions calculated for year 2020 for type of activity j ;

j = Type of activity, namely the fabrication of rigid foamed insulation;

0.9415 = Proportion corresponding to an annual improvement of 1% in the intensity factor during years 2015 to 2020;

I_O = Average intensity of other GHG emissions at the establishment for years 2010 to 2012, calculated using equation 6-6.1 in metric tonnes CO₂ equivalent per board foot of rigid foamed insulation.

(6.4) Establishment producing catalytic zinc and using hydrogen as a fuel to supply its furnaces

The total quantity of GHG emission units allocated without charge for an establishment producing zinc and using hydrogen as a fuel to supply its furnaces is calculated using equation 6-8 for 2013 and 2014, using Equation 6-9 for 2015 to 2020 and using equation 6-10.1 for 2021 to 2023:

Equation 6-8 Calculation of the total quantity of GHG emission units allocated without charge to an establishment producing cathodic zinc and using hydrogen as a fuel to supply its furnaces for 2013 and 2014

$$A_{ij} = (I2013_j + F_{Hj}) \times P_{Rij}$$

Where:

$A_{i,j}$ = Total quantity of GHG emission units allocated without charge for cathodic zinc production at the establishment for year i ;

i = Each year included in the first compliance period, namely 2013 and 2014;

j = Type of activity, namely cathodic zinc production;

$I_{2013,j}$ = Intensity target of GHG emissions attributable to the production of cathodic zinc at the establishment for 2013 and 2014, calculated using equation 2-2, in metric tonnes CO_2 equivalent per metric tonne of cathodic zinc;

$F_{H,i}$ = Adjustment factor for the partial or total loss of hydrogen supply for year i , calculated using equation 6-10;

$P_{Ri,j}$ = Total quantity of cathodic zinc produced at the establishment in year i , in metric tonnes of cathodic zinc.

Equation 6-9 Calculation of the total quantity of GHG emission units allocated without charge to an establishment producing cathodic zinc and using hydrogen as a fuel to supply its furnaces for 2015 to 2020

$$A_{ij} = \left(\frac{(6-x) I2013_j + x I2020_j}{6} + F_{Hi} \right) \times P_{Rij}$$

Where:

A_{ij} = Total quantity of GHG emission units allocated without charge for cathodic zinc production at the establishment for year i ;

i = Each year included in the second and third compliance periods, namely 2015, 2016, 2017, 2018, 2019 and 2020;

j = Type of activity, namely cathodic zinc production;

6 = Six years in the linear regression, namely 2015, 2016, 2017, 2018, 2019 and 2020;

$x = (i - 2015) + 1$;

I_{2013j} = Intensity target of GHG emissions attributable to the production of cathodic zinc at the establishment for 2013 and 2014, calculated using equation 2-2, in metric tonnes CO₂ equivalent per metric tonne of cathodic zinc;

I_{2020j} = Intensity target of GHG emissions attributable to the production of cathodic zinc at the establishment for year 2020, calculated using equation 2-8, in metric tonnes CO₂ equivalent per metric tonne of cathodic zinc;

F_{Hi} = Adjustment factor for the partial or total loss of hydrogen supply for year i calculated using equation 6-10;

P_{Rij} = Total quantity of cathodic zinc produced at the establishment for year i , in metric tonnes of cathodic zinc.

Equation 6-10 Calculation of the adjustment factor for the partial or total loss of hydrogen supply

$$F_{H\ i} = \left[0.060 - \frac{H_{2\ i}}{P_{R\ i\ j}} \right] \times 0.3325 \times 1.889 \times 0.80 \times (0.99)^n \quad \text{when} \quad \left[\frac{H_{2\ i}}{P_{R\ i\ j}} \right] \leq 0.060$$

$$F_{H\ i} = 0 \quad \text{when} \quad \left[\frac{H_{2\ i}}{P_{r\ i\ j}} \right] > 0.060$$

>

Where:

F_{Hi} = Adjustment factor for the partial or total loss of hydrogen supply for year i ;

i = Each year included in the period 2013-2020 for which the emitter is required to cover its GHG emissions;

0.060 = Minimum ratio between the annual consumption of hydrogen and the annual production from 2007 to 2010, in cubic kilometres of hydrogen per metric tonne of cathodic zinc;

$H_{2,i}$ = Hydrogen consumption for year i , in cubic kilometres;

$P_{Ri,j}$ = Total quantity of cathodic zinc produced at the establishment for year i , in metric tonnes of cathodic zinc;

0.3325 = Volume equivalency factor for hydrogen and natural gas, in cubic kilometres of natural gas per cubic kilometre of hydrogen;

1.889 = Emission factor for natural gas, in metric tonnes CO₂ equivalent per cubic kilometre of natural gas;

0.80 = Proportion corresponding to 80% combustion emission intensity;

0.99 = Proportion corresponding to an annual improvement of 1% of the intensity factor;

n = Value of 0 for 2013 and 2014, or $(i-2015+1)$ for 2015 to 2020.

Equation 6-10.1 Calculation of the number of GHG emission units allocated without charge by type of activity at an establishment producing cathodic zinc and using hydrogen as a fuel to supply its furnaces for the years 2021 to 2023

$$A_{i,j} = [(I_{C\text{ stan } j} \times a_{C,i} + I_{O\text{ stan } j} \times a_{O,i} + F_{Hi}) \times P_{Ri,j} + \max(GHG_{FP\ i,j}; I_{FP\text{ stan } j} \times P_{R\ i,j}) \times a_{FP,i}] \times AF_{i,j}$$

Where:

$A_{i,j}$ = Total quantity of GHG emission units allocated without charge for the production of cathodic zinc at the establishment for year i ;

i = Each year included in the period 2021 to 2023;

j = Type of activity, namely the production of cathodic zinc;

$I_{C\text{ stan } j}$ = Standard intensity of combustion emissions attributable to the production of cathodic zinc at the establishment for the years 2021 to 2023, calculated using equation 8-4, in metric tonnes CO₂ equivalent per reference unit;

$a_{C,i}$ = Cap adjustment factor for the allocation of combustion emissions for year i , as defined in Table 5 of this Appendix;

$I_{O\text{ stan } j}$ = Standard intensity of other emissions attributable to the production of cathodic zinc at the establishment for the years 2021 to 2023, calculated using equation 8-6, in metric tonnes CO₂ equivalent per reference unit;

$a_{O,i}$ = Cap adjustment factor for the allocation of other emissions for year i , as defined in Table 5 of this Appendix;

$F_{H\ i}$ = Adjustment factor for the partial or total loss of hydrogen supply for year i , calculated using equation 6-10.2;

$\max$ = Maximum value between $GHG_{FP\ i,j}$ and $I_{FP\ stan\ j} \times P_{Ri,j}$;

$GHG_{FP\ I,j}$ = Fixed process emissions attributable to the type of activity j at the establishment for year i , in metric tonnes CO₂ equivalent;

$I_{FP\ stan\ j}$ = Standard intensity of fixed process emissions attributable to the production of cathodic zinc at the establishment for the years 2021 to 2023, calculated using equation 8-26, in metric tonnes CO₂ equivalent per reference unit;

$P_{R\ i\ j}$ = Total quantity of cathodic zinc produced at the establishment in year i , in metric tonnes of cathodic zinc;

$a_{FP,i}$ = Cap adjustment factor for the allocation of fixed process emissions for year i , as defined in Table 5 of this Appendix;

$AF_{i,j}$ = Assistance factor for the production of cathodic zinc for year i , as defined in Table 7 of this Appendix.

Equation 6-10.2 Calculation of adjustment factor for the partial or total loss of hydrogen supply

$$F_{H\ i} = \left[0.065 - \frac{H_{2,i}}{P_{Ri\ j}} \right] \times 0.3325 \times 1.889 \times 0.95 \times a_{C,i} \text{ where } \left[\frac{H_{2,i}}{P_{Ri\ j}} \right] \leq 0.065$$

and

$$F_{H\ i} = 0 \text{ where } \left[\frac{H_{2,i}}{P_{Ri\ j}} \right] > 0.065$$

Where:

F_{Hi} = Adjustment factor for the partial or total loss of hydrogen supply for year i ;

i = Each year included in the period 2021 to 2023;

0.065 = Ratio between the annual consumption of hydrogen and the annual production during the year used to calculate the minimum annual intensity of combustion emissions, in cubic kilometres of hydrogen per metric tonne of cathodic zinc;

$H_{2,i}$ = Hydrogen consumption for year i , in cubic kilometres;

$P_{Ri,j}$ = Total quantity of cathodic zinc produced at the establishment in year i , in metric tonnes of cathodic zinc;

0.3325 = Volume equivalency factor for hydrogen and natural gas, in cubic kilometres of natural gas per cubic kilometre of hydrogen;

1.889 = Emission factor for natural gas, in metric tonnes CO₂ equivalent per cubic kilometre of natural gas;

0.95 = Proportion corresponding to 95% of the minimum intensity of combustion emissions;

$a_{c,i}$ = Cap adjustment factor for the allocation of combustion emissions for year i , as defined in Table 5 of this Appendix.

6.5 New facility or production of a new reference unit

An emitter must, as soon as possible, notify the Minister of any new facility on the site of one of the emitter's covered establishments or of the production of any new reference unit by submitting the following information:

(1) the name and contact information of the enterprise and of the establishment where the new facility is located or where the new reference unit is produced;

(2) the business number assigned to the emitter pursuant to the Act respecting the legal publicity of enterprises (chapter P-44.1), along with the identification number assigned under the National Pollutant Release Inventory of the Government of Canada, if any;

(3) where production at the new facility replaces all or some production at one of the emitter's establishments or facilities in Québec that closed after 1 January 2008, the name and contact information of the establishment or facility that closed;

(4) the average annual quantity of reference units produced or used, by type of activity, at the closed establishment or facility during the 3 complete years preceding its closure.

(6.5.1) New facility at which production does not replace production at another establishment or facility

(1) Until 31 December 2017, the quantity of GHG emission units allocated without charge to an emitter to take into account a new facility located on the site of one of the emitter's covered establishments at which production does not replace production at another establishment or facility is calculated

(a) in the case of a facility that is not considered on a sectoral basis, using equations 4-1 to 4-8;

(b) in the case of a facility that is considered on a sectoral basis, using equations 5-1 and 5-2.

(2) For the years 2018 to 2020, the quantity of GHG emission units allocated without charge to an emitter for a new facility located on the site of one of the emitter's covered establishments at which production does not

replace production at another establishment or facility must be calculated using Equation 6.10-3 for the period where the GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the new facility became operational, are not all available.

Equation 6-10.3 Calculation of the number of GHG emission units allocated without charge for a new facility at a covered establishment for the period where the GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the new facility became operational, are not all available

$$A_{NF\ i} = ((EC_{NF\ TOTAL\ i} \times EF \times a_{C,i}) + (GHG_{NF\ FP\ i} \times a_{FP,i}) + (GHG_{NF\ O\ i} \times a_{O,i}))$$

Where:

$A_{NF\ i}$ = Total number of GHG emission units allocated without charge for a new facility for year i ;

i = Each year in the period for which the emitter is required to cover GHG emissions;

$EC_{NF\ TOTAL\ i}$ = Energy consumption of the new facility in year i , calculated using equation 6-10.4, in GJ;

EF = Emission factor for natural gas, in metric tonnes CO₂ equivalent/GJ, calculated using equation 4-21.1;

$a_{C,i}$ = Cap adjustment factor for the allocation of combustion emissions for year i , as defined in Table 4 of this Appendix, where $n=i-(d+2)$;

d = First year for which the GHG emissions of the new facility are equal to or exceed the emissions threshold;

$GHG_{NF\ FP\ i}$ = Fixed process emissions of the new facility for year i , in metric tonnes CO₂ equivalent;

$a_{FP,i}$ = Cap adjustment factor for the allocation of fixed process emissions for year i , as defined in Table 4 of this Appendix, where $n=i-(d+2)$;

$GHG_{NF\ O\ i}$ = Other emissions of the new facility for year i , in metric tonnes CO₂ equivalent;

$a_{O,i}$ = Cap adjustment factor for the allocation of other emissions for year i , as defined in Table 4 of this Appendix, where $n=i-(d+2)$.

Equation 6-10.4 Calculation of the energy consumption for year i of a new facility at a covered establishment for the period where the GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the new facility became operational, are not all available

$$EC_{NF\,TOTAL\,i} = \sum_{k=1}^n \left(\frac{GHG_{non\,bio\,k}}{GHG_{total\,k}} \times Fuel_k \times HHV_k \right)$$

Where:

$EC_{NF\ TOTAL\ i}$ = Energy consumption of the new facility in year i , in GJ;

i = Each year of the period for which the emitter is required to cover GHG emissions;

n = Total number of types of fuel used;

k = Type of fuel;

$GHG_{non\ bio\ k}$ = Greenhouse gas emissions attributable to the use of fuel k excluding CO_2 emissions attributable to the combustion of biomass or biofuels, in metric tonnes CO_2 equivalent;

$GHG_{total\ k}$ = Greenhouse gas emissions attributable to the use of fuel k including CO_2 emissions attributable to the combustion of biomass or biofuels, in metric tonnes CO_2 equivalent;

$Fuel_k$ = Mass or volume of fuel burned, expressed

(a) in dry metric tonnes, when the quantity is expressed as a mass;

(b) in thousands of cubic metres at standard conditions, where the quantity is expressed as a volume of gas;

(c) in kilolitres, where the quantity is expressed as a volume of liquid;

HHV_k = High heat value for measurement period i , expressed

(a) in GJ per dry metric ton, in the case of fuels whose quantity is expressed as a mass;

(b) in GJ per thousand cubic metres, in the case of fuels whose quantity is expressed as a volume of gas;

(c) in GJ per kilolitre, in the case of fuels whose quantity is expressed as a volume of liquid.

(3) For the years 2021 to 2023, the quantity of GHG emission units allocated without charge to an emitter for a new facility situated on the site of a covered establishment that is not considered on a sectoral basis must be calculated

(a) for the period where the GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the new facility became operational, are not all available, using equation 6-10.3;

(b) for the period where the GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the new facility became operational, are all available, using equations 6-10.5 and 7-1.

Equation 6-10.5 Calculation of the number of GHG emission units allocated without charge by type of activity at a new facility of a covered establishment that is not considered on a sectoral basis for the years 2021 to 2023 during the period where the GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the new facility became operational, are all available

$$A_{NF\ i\ j} = (I_{FP\ stan\ NF\ j} \times a_{FP,i} + I_{C\ stan\ NF\ j} \times a_{C,i} + I_{O\ stan\ NF\ j} \times a_{O,i}) \times P_{R\ i\ j} \times AF_{i\ j}$$

Where:

$A_{NF\ i\ j}$ = Total number of GHG emission units allocated without charge by type of activity j at a new facility for year i ;

i = Each year included in the period 2021 to 2023 for which the emitter is required to cover its GHG emissions;

j = Type of activity;

$I_{FP\ stan\ NF\ j}$ = Standard intensity of fixed process emissions attributable to type of activity j of the new facility using equation 6-10.7, in metric tonnes CO₂ equivalent per reference unit;

$a_{FP,i}$ = Cap adjustment factor for the allocation of fixed process emissions for year i , as defined in Table 5 of this Appendix for a new facility covered prior to 2021 and in Table 6 of this Appendix for a new facility covered as of 2021, where $n=i-(d+2)$;

$I_{C\ stan\ NF\ j}$ = Standard intensity of GHG combustion emissions attributable to type of activity j at the new facility using equation 6-10.7, in metric tonnes CO₂ equivalent per reference unit;

$a_{c,i}$ = Cap adjustment factor for the allocation of combustion emissions for year i , as defined in Table 5 of this Appendix for a new facility covered prior to 2021 and in Table 6 of this Appendix for a new facility covered as of 2021, where $n=i-(d+2)$;

d = First year for which the GHG emissions of the new facility are equal to or exceed the emissions threshold;

$I_{O\ stan\ NF\ j}$ = Standard intensity of other emissions attributable to type of activity j at the new facility calculated using equation 6-10.8, in metric tonnes CO₂ equivalent per reference unit;

$a_{O,i}$ = Cap adjustment factor for the allocation of other emissions for year i , as defined in Table 5 of this Appendix for a new facility covered prior to 2021 and in Table 6 of this Appendix for a new facility covered as of 2021, where $n=i-(d+2)$;

$P_{R\ ij}$ = Total quantity of reference units produced or used by the establishment for type of activity j during year i ;

$AF_{i,j}$ = Assistance factor for type of activity j for year i , as defined in Table 7 of this Appendix.

Equation 6-10.6 Calculation of the standard intensity of fixed process emissions by type of activity at a new facility of a covered establishment that is not considered on a sectoral basis for the period in which the GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the new facility became operational, are all available

$$I_{FP\ stan\ NF\ j} = \frac{\sum_{i=(d)}^{d+2} GHG_{FP\ NF\ i\ j}}{\sum_{i=(d)}^{d+2} P_{R\ i\ j}}$$

Or

$$I_{FP\ stan\ NF\ j} = \frac{\sum_{i=(d+1)}^{d+3} GHG_{FP\ NF\ i\ j}}{\sum_{i=(d+1)}^{d+3} P_{R\ i\ j}}$$

Where:

$I_{FP\ stan\ NF\ j}$ = Standard intensity of fixed process emissions attributable to the type of activity j of the new facility for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the new facility became operational, in metric tonnes CO₂ equivalent per reference unit;

i = Years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the new facility became operational;

j = Type of activity;

d = First year for which the GHG emissions of the new facility are equal to or exceed the emissions threshold;

$GHG_{FP\ NF\ i\ j}$ = Fixed process emissions attributable to type of activity j at the new facility for year i , in metric tonnes CO₂ equivalent;

$P_{R\ i\ j}$ = Total quantity of reference units produced or used by the establishment for type of activity j during year i .

Equation 6-10.7 Calculation of the standard intensity of combustion emissions by type of activity at a new facility of a covered establishment that is not considered on a sectoral basis for the period where the GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the new facility became operational, are all available

$$I_{C\ stan\ NF\ j} = \frac{\sum_{i=(d)}^{d+2} GHG_{C\ NF\ i\ j}}{\sum_{i=(d)}^{d+2} P_{R\ i\ j}}$$

Or

$$I_{C\ stan\ NF\ j} = \frac{\sum_{i=(d+1)}^{d+3} GHG_{C\ NF\ i\ j}}{\sum_{i=(d+1)}^{d+3} P_{R\ i\ j}}$$

Where:

$I_{C \text{ stan NF } j}$ = Standard intensity of GHG combustion emissions attributable to type of activity j at the new facility for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the new facility became operational, in metric tonnes CO₂ equivalent per reference unit;

i = Years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the new facility became operational;

j = Type of activity;

d = First year for which the GHG emissions of the new facility are equal to or exceed the emissions threshold;

$GHG_{C \text{ NF } i j}$ = Combustion emissions attributable to type of activity j at the new facility for year i , in metric tonnes CO₂ equivalent;

$P_{R \text{ } i j}$ = Total quantity of reference units produced or used by the establishment for type of activity j during year i .

Equation 6-10.8 Calculation of the standard intensity of other emissions by type of activity at a new facility of a covered establishment that is not considered on a sectoral basis for the period where the GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the new facility became operational, are all available

$$I_{O\ stan\ NF\ j} = \frac{\sum_{i=(d)}^{d+2} GHG_{O\ NF\ i\ j}}{\sum_{i=(d)}^{d+2} P_{R\ i\ j}}$$

Or

$$I_{O stan NF j} = \frac{\sum_{i=(d+1)}^{d+3} GHG_{O NF i j}}{\sum_{i=(d+1)}^{d+3} P_{R i j}}$$

Where:

$I_{O\text{ stan NF } j}$ = Standard intensity of other emissions attributable to type of activity j at the new facility for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the new facility became operational, in metric tonnes CO₂ equivalent per reference unit;

i = Years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the new facility became operational;

j = Type of activity;

d = First year for which the GHG emissions of the new facility are equal to or exceed the emissions threshold;

$GHG_{O\text{ NF } i j}$ = Other emissions attributable to type of activity j at the new facility for year i , in metric tonnes CO₂ equivalent;

$P_{R,ij}$ = Total quantity of reference units produced or used at the establishment for type of activity j during year i .

(4) For the years 2021 to 2023, the quantity of GHG emission units allocated without charge to an emitter for a new facility situated on the site of a covered establishment that is considered on a sectoral basis must be calculated

(a) for the period during which GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the new facility became operational, are not all available, using equation 6-10.3;

(b) for the period during which GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the new facility became operational, are all available, using equations 6-10.9 and 7.1.

Equation 6-10.9 Calculation of the number of GHG emission units allocated without charge by type of activity at a new facility at a covered establishment that is considered on a sectoral basis for the years 2021 to 2023

$$A_{NF\ i\ j} = I_{(S\ NF)\ i\ j} \times P_{R\ i\ j} \times AF_{i\ j}$$

Where:

$A_{NF\ i\ j}$ = Total number of GHG emission units allocated without charge by type of activity j at a new facility for year i ;

i = Each year included in the period 2021 to 2023 for which the emitter is required to cover its GHG emissions;

j = Type of activity;

$I_{(S\ NF)\ i\ j}$ = Intensity of GHG emissions attributable to type of activity j at new facilities in the sector for year i , determined in accordance with Tables 1 to 2 of this Appendix, in metric tonnes CO₂ equivalent per reference unit;

$P_{R\ i\ j}$ = Total quantity of reference units produced or used by the establishment for type of activity j during year i ;

$AF_{i\ j}$ = Assistance factor for type of activity j for year i , as defined in Table 7 of this Appendix.

(6.5.2) New facility of an emitter at which production replaces all or some production at another of the emitter's establishments or facilities in Québec that closed after 1 January 2008

The quantity of GHG emission units allocated without charge to an emitter to take into account a new facility located on the site of one of the emitter's covered establishments at which production replaces all or some production at another of the emitter's establishments or facilities in Québec that closed after 1 January 2008 is calculated.

(1) for any annual quantity of reference units produced or used by the new facility not exceeding the average annual quantity of reference units produced or used, by type of activity, at the closed establishment or facility during the 3 complete years preceding its closure:

(a) in the case of a facility that is not considered on a sectoral basis, using equations 1-1 and 2-1 to 2-9 and applying equations 2-2 to 2-8 based on data from the closed establishment or facility;

(b) in the case of a facility considered on a sectoral basis, using equations 1-1 and 3-1 to 3-10 and applying equations 3-2 to 3-9 based on data from the closed establishment or facility;

(2) for any annual quantity of reference units produced or used by the new facility that exceeds the average annual quantity of reference units produced or used, by type of activity, at the closed establishment or facility during the 3 complete years preceding its closure:

(a) in the case of a facility that is not considered on a sectoral basis, using equations 4-1 to 4-8;

(b) in the case of a facility considered on a sectoral basis, using equations 5-1 and 5-2.

(6.5.3) Production of a new reference unit

(1) until 2020, the quantity of GHG emission units allocated without charge to an emitter for the production of a new reference unit by one of its covered establishments must be calculated using equation 4-21 for the period during which the GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the first year of production of the new reference unit, are not all available;

(2) for the years 2021 to 2023, the quantity of GHG emission units allocated without charge to an emitter for the production of a new reference unit by a covered establishment must be calculated

(a) in the case of an establishment that is not considered on a sectoral basis, for the period during which the GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the first year of production of the new reference unit, are not all available, using equation 11-5;

(b) in the case of an establishment that is not considered on a sectoral basis, for the period during which GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the first year of production of the new reference unit, are all available, using equations 11-1 to 11-4, which apply from 2018;

(c) in the case of an establishment that is considered on a sectoral basis, for the period during which GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the first year of production of the new reference unit, are not all available, using equation 11-5;

(d) in the case of an establishment that is considered on a sectoral basis, for the period during which GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the first year of production of the new reference unit, are all available, using equation 9-1.

(6.6) Establishment covered after 2013, but prior to 2021, at which production replaces all or some production at one of the emitter's establishments or facilities in Québec that closed after 1 January 2008

Every emitter, at one of whose establishments covered after 2013 production replaces all or some production at another of the emitter's establishments or facilities in Québec that closed after 1 January 2008, must, as soon as possible, notify the Minister by submitting the following information:

- (1) the name and contact information of the enterprise and the establishment;
- (2) the business number assigned to the emitter pursuant to the Act respecting the legal publicity of enterprises (chapter P-44.1), along with the identification number assigned under the National Pollutant Release Inventory of the Government of Canada, if any;
- (3) the name and contact information of the replaced establishment or facility;
- (4) the quantity, by type of activity, of reference units produced or used at the closed establishment or facility.

The quantity of GHG emission units allocated without charge to the emitter for the establishment is calculated

(1) for any annual quantity of reference units produced or used at the establishment not exceeding the average annual quantity of reference units produced or used, by type of activity, at the closed establishment or facility during the 3 complete years preceding its closure:

(a) in the case of an establishment that is not considered on a sectoral basis, using equations 1-1 and 2-1 to 2-9 and applying equations 2-2 to 2-8 based on data from the closed establishment or facility;

(b) in the case of an establishment that is considered on a sectoral basis, using equations 1-1 and 3-1 to 3-10 and applying equations 3-2 to 3-9 based on data from the closed establishment or facility;

(2) for any annual quantity of reference units produced or used at the establishment that exceeds the average annual quantity of reference units produced or used, by type of activity, at the closed establishment or facility during the 3 complete years preceding its closure:

(a) in the case of an establishment that is not considered on a sectoral basis, using equations 4-1 to 4-8;

(b) in the case of an establishment that is considered on a sectoral basis, using equations 5-1 and 5-2.

(6.7) Enterprise that acquires, for consumption of the enterprise or for sale in Québec, power generated in another Canadian province or territory or in a US state where a system covering electricity production in particular has been established by an entity that is not a partner entity

(1) Until 2020, the quantity of GHG emission units allocated without charge to an emitter for an enterprise that acquires, for consumption of the enterprise or for sale in Québec, power generated in another Canadian province or territory or in a US state where a system covering electricity production in particular has been established by an entity that is not a partner entity must be calculated using equation 6-11.

(2) For the years 2021 to 2023, the quantity of GHG emission units allocated without charge to an emitter for an enterprise that acquires, for consumption of the enterprise or for sale in Québec, power generated in a US state where a system covering electricity production in particular has been established by an entity that is not a partner entity must be calculated using equation 6-11.1.

Equation 6-11 Calculation of the total GHG emission units allocated free of charge to an enterprise that acquires, for consumption of the enterprise or for sale in Québec, power generated in a US state where a system covering electricity production in particular has been established by an entity that is not a partner entity

$$A_i = \frac{P_i^{Non-WCI}}{P_i^{WCI}} \times E_i^{Non-WCI}$$

Where:

A_i = Number of emission units allocated free of charge for year i ;

$P_i^{\text{Non-WCI}}$ = Weighted average sale price of emission allowances of year i at an auction held during year i by other Canadian provinces or territories or by US states where a system covering electricity production in particular has been established by an entity that is not a partner entity, in US dollars;

P_i^{WCI} = Weighted average sale price of emission allowances of year i at an auction held during year i by Québec or other Canadian provinces or territories or by US states where a system covering electricity production in particular has been established by a partner entity, in US dollars;

$E_i^{\text{Non-WCI}}$ = Annual GHG emissions for year i relating to the production of electricity acquired from another Canadian province or territory or from a US state where producers are subject to a system established by an entity that is not a partner entity, in metric tonnes CO₂ equivalent;

i = Each year of the 2013-2020 period for which the emitter is required to cover its emissions.

For the purposes of this equation, where the sale price of the emission allowances that is used for calculation is only available in Canadian dollars, the price must be converted in US dollars at the official conversion rate of the Bank of Canada at noon on the date of the auction.

Equation 6-11.1 Calculation of the total quantity of GHG emission units allocated without charge to an enterprise that acquires, for consumption of the enterprise or for sale in Québec, power generated in a US state where a system covering electricity production in particular has been established by an entity that is not a partner entity

$$A_i = \frac{P_i^{Non-WCI}}{P_i^{WCI}} \times E_i^{Non-WCI}$$

Where:

A_i = Total quantity of GHG emission units allocated without charge for year i ;

$P_i^{\text{Non-WCI}}$ = Weighted average sale price of emission allowances of year i at an auction held during year i by US states where a system covering electricity production has been established by an entity that is not a partner entity, in US dollars;

P_i^{WCI} = Weighted average sale price of emission allowances of year i at an auction held during year i by Québec or US states where a system covering electricity production in particular has been established by a partner entity, in US dollars;

$E_i^{\text{Non-WCI}}$ = Annual GHG emissions for year i relating to the production of electricity acquired from a US state where producers are subject to a system established by an entity that is not a partner entity, taking into account the new GWP values in metric tonnes CO₂ equivalent;

i = Each year in the period 2021-2023 for which the emitter is required to cover its emissions.

(6.8) Copper foundry.

The total quantity of GHG emission units allocated free of charge to a copper foundry is calculated using equation 6-12 for years 2013 and 2014, using equation 6-13 for the years 2015 to 2020, and using equation 6-14 for the years 2021 to 2023:

Equation 6-12 Calculation of the total quantity of GHG emission units allocated free of charge to a copper foundry for years 2013 and 2014

$$A_i = (I2013_{cu} \times P_{R_{cu},i}) + (I2013_{RSM} \times P_{R_{RSM},i}) + A_{recycl,i}$$

Where:

A_i = Total quantity of GHG emission units allocated free of charge for the production of copper anodes at the establishment for year i ;

i = Each year included in the first compliance period, namely 2013 and 2014;

$I2013_{cu}$ = Intensity target of GHG emissions attributable to the production of copper anodes at the establishment for years 2013 and 2014, calculated using equation 2-2, in metric tonnes CO₂ equivalent per metric tonne of copper anodes;

$P_{R_{i,cu}}$ = Total quantity of copper anodes produced by the establishment during year i , in metric tonnes of copper anodes;

$I2013_{RSM}$ = Intensity target for GHG emissions attributable to the treatment of gas from the recycling of secondary materials at the establishment for 2013 and 2014, calculated using equation 2-2, in metric tonnes CO₂ equivalent per metric tonne of recycled secondary materials;

$P_{R_{RSM},i}$ = Total quantity of secondary materials recycled at the establishment in year i , in metric tonnes of recycled secondary materials;

$A_{recycl,i}$ = GHG emissions attributable to the carbon content of recycled secondary materials introduced into the process materials for year i , in metric tonnes CO₂ equivalent;

Equation 6-13 Calculation of the total quantity of GHG emission units allocated free of charge to a copper foundry for years 2015 to 2020

$$A_i = \left[\left(\frac{(6-x) I 2013_{cu} + x I 2020_{cu}}{6} \right) \times P_{R_{cu},i} \right] + \left[\left(\frac{(6-x) I 2013_{RSM} + x I 2020_{RSM}}{6} \right) \times P_{R_{RSM},i} \right] + A_{recycl,i}$$

Where:

A_i = Total quantity of GHG emission units allocated free of charge for the production of copper anodes at the establishment for year i ;

i = Each year included in the second and third compliance periods, namely 2015, 2016, 2017, 2018, 2019 and 2020;

6 = Six years in the linear regression, namely 2015, 2016, 2017, 2018, 2019 and 2020;

$x = (i - 2015) + 1$;

$I_{2013_{cu}}$ = Intensity target of GHG emissions attributable to the production of copper anodes at the establishment for years 2013 and 2014, calculated using equation 2-2, in metric tonnes CO₂ equivalent per metric tonne of copper anodes;

$I_{2020_{cu}}$ = Intensity target of GHG emissions attributable to the production of copper anodes, calculated using equation 2-8, in metric tonnes CO₂ equivalent per metric tonne of copper anodes;

$P_{Ri,cu,i}$ = Total quantity of copper anodes produced by the establishment during year i , in metric tonnes of copper anodes;

$I_{2013_{RSM}}$ = Intensity target for GHG emissions attributable to gas from the recycling of secondary materials at the establishment for 2013 and 2014, calculated using equation 2-2, in metric tonnes CO₂ equivalent per metric tonne of recycled secondary materials;

$I_{2020_{RSM}}$ = Intensity target for GHG emissions attributable to the treatment of gas from the recycling of secondary materials, calculated using equation 2-8, in metric tonnes CO₂ per metric tonne of recycled secondary materials;

$P_{R\ RSM,i}$ = Total quantity of secondary materials recycled at the establishment in year i , in metric tonnes of recycled secondary materials;

$A_{recycl,i}$ = GHG emissions attributable to the carbon content of recycled secondary materials introduced in the process materials for year i , in metric tonnes CO₂ equivalent.

For the application of equations 6-12 and 6-13, recycled secondary materials used in a process at a copper foundry are deemed to be all materials used in the process other than fuel, ore, reducing agents, materials used for slag purification, carbonated reactants and carbon electrodes.

Equation 6-14 Calculation of the total quantity of GHG emission units allocated free of charge for a copper foundry for the years 2021 to 2023

$$A_i = [(I_{C\ stan\ cu} \times a_{C,i} \times P_{cu,i}) + [\max (GHG_{FP\ cu,i}; I_{FP\ stan\ cu} \times P_{R\ cu,i})] \times a_{FP,i}] \times AF_{cu,i} + [(I_{C\ stan\ RSM} \times a_{C,i} \times P_{RSM,i}) + A_{recycl,i}] \times AF_{RSM,i}$$

Where:

A_i = Total quantity of GHG emission units allocated free of charge for the production of copper anodes at the establishment for year i ;

$I_{C\ stan\ cu}$ = Standard intensity of combustion emissions attributable to the production of copper anodes at the establishment for the years 2021 to 2023, calculated using equation 8-4, in metric tonnes CO₂ equivalent per metric tonne of copper anodes;

$a_{c,i}$ = Cap adjustment factor for the allocation of combustion emissions for year i , as defined in Table 5 of this Appendix;

$P_{R\ cu,i}$ = Total quantity of copper anodes produced by the establishment during year i , in metric tonnes of copper anodes;

$\max$ = Maximum value between $GHG_{FP\ cu,i}$ and $I_{FP\ stan\ cu} \times P_{cu,i}$;

$GHG_{FP\ CU,i}$ = Fixed process emissions attributable to the production of copper anodes at the establishment for year i , in metric tonnes CO₂ equivalent;

$I_{FP\ stan\ cu}$ = Standard intensity of fixed process emissions attributable to the production of copper anodes at the establishment for the years 2021 to 2023, calculated using equation 8-2, in metric tonnes CO₂ equivalent per metric tonne of copper anodes;

$a_{FP,i}$ = Cap adjustment factor for the allocation of fixed process emissions for year i , as defined in Table 5 of this Appendix;

$AF_{cu,i}$ = Cap adjustment factor for the allocation of fixed process emissions for year i , as defined in Table 5 of this Appendix;

$I_{C\ stan\ RSM}$ = Standard intensity of combustion emissions attributable to the treatment of gas from the recycling of secondary materials at the establishment for the years 2021 to 2023, calculated using equation 8-4, in metric tonnes CO₂ equivalent per metric tonne of recycled secondary materials;

$P_{R\ RSM,i}$ = Total quantity of secondary materials recycled at the establishment in year i , in metric tonnes of recycled secondary materials;

$A_{recycl,i}$ = GHG emissions attributable to the carbon content of recycled secondary materials introduced into the process for year i , in metric tonnes CO₂ equivalent;

$AF_{RSM,i}$ = Assistance factor for the treatment of gas from the recycling of secondary materials in year i , as defined in Table 7 of this Appendix.

For the application of Equation 6-14, recycled secondary materials used in a process at a copper foundry are deemed to be all materials used in the process other than fuel, ore, reducing agents, materials used for slag purification, carbonated reactants and carbon electrodes.

Equation 6-15 Calculation of the total quantity of GHG emission units allocated free of charge for the production of steel (slabs, billets or ingots), metallic silicon, ferrosilicon, reduced iron pellets or titanium dioxide (TiO₂) for the years 2021 to 2023

$$A_{ij} = [(I_{C\ stan\ j} \times a_{C,i} + I_{O\ stan\ j} \times a_{O,i}) \times P_{R\ ij} + \max(GHG_{FP\ ij}, I_{FP\ stan\ j} \times P_{R\ ij}) \times a_{FP,i}] \times AF_{ij}$$

Where:

A_{ij} = Total quantity of GHG emission units allocated free of charge by type of activity j for year i ;

i = Each year included in the period from 2021 to 2023 for which the emitter is required to cover GHG emissions;

j = Type of activity, namely the production of steel (slabs, billets or ingots) or the production of metallic silicon or the production of ferrosilicon, reduced iron pellets or titanium dioxide (TiO₂);

$I_{C\ stan\ j}$ = Standard intensity of combustion emissions attributable to type of activity j at the establishment for the years 2021 to 2023, calculated using equation 8-4, in metric tonnes CO₂ equivalent per reference unit;

$a_{c,i}$ = Cap adjustment factor for the allocation of combustion emissions for year i , as defined in Table 5 of this Appendix;

$I_{O\ stan\ j}$ = Standard intensity of other emissions attributable to type of activity j at the establishment for the years 2021 to 2023, calculated using equation 8-6, in metric tonnes CO₂ equivalent per reference unit;

$a_{o,i}$ = Cap adjustment factor for the allocation of other emissions for year i , as defined in Table 5 of this Appendix;

$P_{Ri,j}$ = Total quantity of reference units produced or used by the establishment for the type of activity j during year i ;

$\max$ = Maximum value between $GHG_{FPi,j}$ and $I_{FP\ stan\ j} \times P_{Ri,j}$;

$GHG_{FPi,j}$ = Fixed process emissions attributable to the type of activity j at the establishment for year i , in metric tonnes CO₂ equivalent;

$I_{FP\ stan\ j}$ = Standard intensity of fixed process emissions attributable to the type of activity j at the establishment for the years 2021 to 2023, calculated using equation 8-2, in metric tonnes CO₂ equivalent per reference unit;

$a_{FP,i}$ = Cap adjustment factor for the allocation of fixed process emissions for year i , as defined in Table 5 of this Appendix;

AF_{ij} = Assistance factor for the type of activity j for year i , as defined in Table 7 of this Appendix.

Equation 6-16 Calculation of the total quantity of GHG emission units allocated free of charge to a copper refinery for the years 2021 to 2023

$$A_i = [(I_{C\ stan\ cath} \times a_{C,i}) + (I_{FP\ stan\ cath} \times a_{FP,i})] \times P_{R\ cath,i} \times AF_{cath,i} + [(GHG_{C,i\ RSM} \times a_{C,i})] \times AF_{RSM,i}$$

Where:

A_i = Total quantity of GHG emission units allocated free of charge for the production of copper cathodes at the establishment for year i ;

$I_{C\ stan\ cath}$ = Standard intensity of combustion emissions attributable to the production of copper cathodes at the establishment for the years 2021 to 2023, calculated using equation 8-4, in metric tonnes CO₂ equivalent per metric tonne of copper cathodes;

$a_{c,i}$ = Cap adjustment factor for the allocation of combustion emissions for year i , as defined in Table 5 of this Appendix;

$I_{FP\ stan\ cath}$ = Standard intensity of fixed process emissions attributable to the production of copper cathodes at the establishment for the years 2021 to 2023, calculated using equation 8-6, in metric tonnes CO₂ equivalent per metric tonne of copper cathodes;

$a_{FP,i}$ = Cap adjustment factor for the allocation of fixed process emissions for year i , as defined in Table 5 of this Appendix;

$P_{R\ cath,i}$ = Total quantity of copper cathodes produced at the establishment for year i , in metric tonnes of copper cathodes;

$AF_{cath,i}$ = Assistance factor for the production of copper cathodes for year i , as defined in Table 7 of this Appendix;

$GHG_{C,i \text{ RSM}}$ = GHG combustion emissions attributable to the treatment of recycled secondary materials for year i , in metric tonnes CO_2 equivalent;

$AF_{RSM,i}$ = Assistance factor for the treatment of recycled secondary materials for year i , as defined in Table 7 of this Appendix.

(7) Calculation of the total quantity of GHG emission units allocated without charge to an establishment for the years 2021 to 2023

Equation 7-1 Calculation of the total quantity of GHG emission units allocated without charge to an establishment for the years 2021 to 2023

$$A_{establishment \ i} = \sum_{j=1}^m A_{i,j}$$

Where:

$A_{establishment \ i}$ = Total quantity of GHG emission units allocated without charge to an establishment for year i for all types of activity j of the establishment listed in Table B of this Appendix;

i = Each year included in the period 2021 to 2023 for which the emitter is required to cover GHG emissions;

m = Total number of types of activity at the establishment;

j = Each type of activity at the establishment;

$A_{i,j}$ = Number of GHG emission units allocated without charge by type of activity j for year i , calculated using equations 8-1, 8-1.1, 9-1, 10-1, 11-1, 11-5, 12-1, 13-1, 14-1, 14-5, 15-1, 6-10.1, 6-10.5, 6-10.9, 6-11.1, 6-14, 6-15 or 6-16.

(8) Establishment covered prior to 2021 that is not considered on a sectoral basis or establishment producing liquid aluminum using a side-worked prebaked anode technology

Equation 8-1 Calculation of the number of GHG emission units allocated without charge by type of activity for the years 2021 to 2023 at an establishment covered prior to 2021 that is not considered on a sectoral basis or an establishment producing liquid aluminum using a side-worked prebaked anode technology

$$A_{i,j} = (I_{FP \ stan \ j} \times a_{FP,i} + I_{C \ stan \ j} \times a_{C,i} + I_{O \ stan \ j} \times a_{O,i}) \times P_{R \ i,j} \times AF_{i,j}$$

Where:

$A_{i,j}$ = Total number of GHG emission units allocated without charge by type of activity j at an establishment for year i ;

i = Each year included in the period 2021 to 2023 for which the emitter is required to cover GHG emissions;

j = Type of activity;

$I_{FP\ stan\ j}$ = Standard intensity of fixed process emissions attributable to type of activity j at the establishment for the years 2021 to 2023 using equation 8-2, 8-8 or equation 8-11, in metric tonnes CO₂ equivalent per reference unit;

$A_{c,i}$ = Cap adjustment factor for the allocation of combustion emissions for year i , as defined in Table 5 of this Appendix;

$I_{C\ stan\ j}$ = Standard intensity of GHG combustion emissions attributable to type of activity j at the establishment for the years 2021 to 2023, calculated using, as the case may be, equation 8-4, 8-9 or 8-13, or, in the case of an establishment producing alumina from bauxite, having a value of 0.4, in metric tonnes CO₂ equivalent per reference unit;

$A_{FP,i}$ = Cap adjustment factor for the allocation of fixed process emissions for year i , as defined in Table 5 of this Appendix;

$I_{O\ stan\ j}$ = Standard intensity of other emissions attributable to type of activity j at the establishment for the years 2021 to 2023 using equation 8-6, 8-10 or 8-17, in metric tonnes CO₂ equivalent per reference unit;

$a_{O,i}$ = Cap adjustment factor for the allocation of other emissions for year i , as defined in Table 5 of this Appendix;

$P_{Ri,j}$ = Total quantity of reference units produced or used at the establishment for type of activity j during year i ;

$AF_{i,j}$ = Assistance factor for type of activity j for year i , as defined in Table 7 of this Appendix.

Equation 8-1.1 Calculation of the number of GHG emission units allocated free of charge per type of activity for the years 2021 to 2023 at an establishment covered prior to 2021 that is not considered on a sectoral basis and does not possess a determined reference unit

$$A_i = [(EC_{TOTAL,av} \times EF \times a_{C,i}) + (GHG_{FP,av} \times a_{FP,i}) + (GHG_{O,av} \times a_{A,i})] \times AF_{i,j}$$

Where:

A_i = Total number of GHG emission units allocated free of charge for year i ;

i = Each year included in the period 2021 to 2023 for which the emitter is required to cover GHG emissions;

$EC_{TOTAL,av}$ = Average energy consumption for the reference years, calculated, as the case may be, using equation 4-24 or 4-40, in GJ;

EF = Emission factor for natural gas, in metric tonnes CO₂/GJ equivalent, calculated using equation 4-21.1;

$a_{C,i}$ = Cap adjustment factor for the allocation of combustion emissions for year i , as defined in Table 5 of this Appendix;

$GHG_{FP,av}$ = Average fixed process emissions at the establishment for the reference years, in metric tonnes CO₂ equivalent, calculated using the new GWP values;

$a_{FP,i}$ = Cap adjustment factor for the allocation of fixed process emissions for year i , as defined in Table 5 of this Appendix;

$GHG_{O,av}$ = Average other emissions at the establishment for the reference years, in metric tonnes CO₂ equivalent, calculated using the new GWP values;

$a_{o,i}$ = Cap adjustment factor for the allocation of other emissions for year i , as defined in Table 5 of this Appendix;

$AF_{i,j}$ = Assistance factor for type of activity j for year i , as defined in Table 7 of this Appendix;

j = Type of activity.

(8.1) Calculation method for standard intensities for an establishment using GHG emissions data for the years 2007 to 2010

Equation 8-2 Calculation of the standard intensity of fixed process emissions by type of activity at an establishment that is not considered on a sectoral basis or an establishment producing liquid aluminum using a side-worked prebaked anode technology for the years 2021 to 2023 and using GHG emissions data for the years 2007 to 2010

$$I_{FP\ stan\ j} = C_{FP\ j} \times I_{FP2020\ j}$$

Where:

$I_{FP\ stan\ j}$ = Standard intensity of fixed process emissions for the period 2021-2023 for type of activity j ;

j = Type of activity;

$C_{FP\ j}$ = Correction factor for the intensity of fixed process emissions for type of activity j , calculated using equation 8-3;

$I_{FP2020\ j}$ = Intensity of fixed process emissions calculated for year 2020 for type of activity j , using equation 2-8.1, or using equation 6-7.1 in the case of the fabrication of rigid foamed insulation, using the old GWP values.

Equation 8-3 Calculation of correction factor for fixed process emissions to take into account the new GWP values

$$C_{FP\ j} = av \left[\frac{GHG_{FP\ j2013} (new\ GWP)}{GHG_{FP\ j2013} (old\ GWP)} ; \frac{GHG_{FP\ j2014} (new\ GWP)}{GHG_{FP\ j2014} (old\ GWP)} ; \frac{GHG_{FP\ j2015} (new\ GWP)}{GHG_{FP\ j2015} (old\ GWP)} \right]$$

Where:

$C_{FP\ j}$ = Correction factor for the intensity of fixed process emissions for type of activity j ;

j = Type of activity;

av = Average fixed process emissions for the years 2013, 2014 and 2015;

$GHG_{FP\ j}$ = Fixed process emissions for type of activity j at the establishment for the years 2013, 2014 and 2015, calculated using the old GWP values or the new GWP values, in metric tonnes CO₂ equivalent, excluding unusable years;

Equation 8-4 Calculation of the standard intensity of combustion emissions by type of activity at an establishment that is not considered on a sectoral basis or an establishment producing liquid aluminum using a side-worked prebaked anode technology and using GHG emissions data for the years 2007 to 2010

$$I_{C\text{ stan }j} = C_{Cj} \times I_{C2020j} \times C_{cR}$$

Where:

$I_{C\text{ stan }j}$ = Standard intensity of combustion emissions for the period 2021-2023 for type of activity j ;

j = Type of activity;

C_{Cj} = Correction factor for the intensity of combustion emissions for type of activity j , calculated using equation 8-5;

I_{C2020j} = Intensity of combustion emissions calculated for year 2020 for type of activity j , using equation 2-8.2, or using equation 6-7.2 in the case of the fabrication of rigid foamed insulation, using the old GWP values;

C_{cR} = Correction factor of the multiplication factor of the intensity of combustion emissions at the establishment, calculated using equation 8-4.1.

Equation 8-4.1 Calculation of the correction factor of the multiplication factor of combustion emissions at the establishment

$$C_{cR} = \max[1; 0.85/R]$$

Where:

C_{cR} = Correction factor of the multiplication factor of the intensity of combustion emissions at the establishment;

max = Maximum value between 1 and 0.85/R;

R = Intensity multiplication factor for GHG emissions, calculated using equation 2-4, 4-6, 4-11, 4-17, 4-27 or 4-33 or, in the case of an establishment producing pulp and paper described by NAICS code 3221, having a value of 1.

Equation 8-5 Calculation of correction factor for combustion emissions by type of activity to take into account the new GWP values

$$C_{cj} = av \left[\frac{GHG_{cj2013} (new\ GWP)}{GHG_{cj2013} (old\ GWP)} ; \frac{GHG_{cj2014} (new\ GWP)}{GHG_{cj2014} (old\ GWP)} ; \frac{GHG_{cj2015} (new\ GWP)}{GHG_{cj2015} (old\ GWP)} \right]$$

Where:

C_{cj} = Correction factor for the intensity of combustion emissions for type of activity j ;

j = Type of activity;

av = Average combustion emissions for the years 2013, 2014 and 2015;

GHG_{cj} = Combustion emissions for type of activity j at the establishment for the years 2013, 2014 and 2015, calculated using the old GWP values or the new GWP values in metric tonnes CO₂ equivalent, excluding unusable years.

Equation 8-6 Calculation of the standard intensity of other emissions by type of activity at an establishment that is not considered on a sectoral basis or an establishment producing liquid aluminum using a side-worked prebaked anode technology for the years 2021 to 2023 using GHG emissions data for the years 2007 to 2010

$$I_{O\text{ stan } j} = C_{Oj} \times I_{O2020j}$$

Where:

$I_{O\text{ stan } j}$ = Standard intensity of other emissions for the period 2021-2023 for type of activity j ;

j = Type of activity;

C_{Oj} = Correction factor for the intensity of other emissions for type of activity j , calculated using equation 8-7;

I_{O2020j} = Intensity of other emissions calculated for year 2020 for type of activity j , using equation 2-8.3, or using equation 6-7.3 For the fabrication of rigid foamed insulation, using the old GWP values.

Equation 8-7 Calculation of the correction factor for other emissions by type of activity to take into account the new GWP values

$$C_{Oj} = av \left[\frac{GHG_{Oj2013} (new\ GWP)}{GHG_{Oj2013} (old\ GWP)} ; \frac{GHG_{Oj2014} (new\ GWP)}{GHG_{Oj2014} (old\ GWP)} ; \frac{GHG_{Oj2015} (new\ GWP)}{GHG_{Oj2015} (old\ GWP)} \right]$$

Where:

C_{Oj} = Correction factor for the intensity of other emissions for type of activity j ;

j = Type of activity;

av = Average of other emissions for the years 2013, 2014 and 2015;

GHG_{Oj} = Other emissions for type of activity j at the establishment for the years 2013, 2014 and 2015, calculated using the old GWP values or the new GWP values, in metric tonnes CO₂ equivalent, excluding unusable years.

(8.2) Calculation method for standard intensities for an establishment using no GHG emissions data for the years 2007 to 2010

Equation 8-8 Calculation of the standard intensity of fixed process emissions by type of activity at an establishment that is not considered on a sectoral basis for the years 2021 to 2023 and using no emissions data for the years 2007 to 2010

$$I_{FP\text{ stan } j} = I_{FP\text{ dep } j}$$

Where:

$I_{FP\text{ stan } j}$ = Average standard intensity of fixed process emissions attributable to type of activity j at the establishment for the reference years, in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

$I_{FP\ dep\ j}$ = average intensity of fixed process emissions attributable to type of activity j at the establishment for the reference years, calculated using equation 4-3 where the establishment possesses emissions data for at least 3 of years $d-2$ to $d+1$, or using equation 4-10, 4-16, 4-26 or 4-32, in metric tonnes CO₂ per reference unit, using the new GWP values.

Equation 8-9 Calculation of the standard intensity of combustion emissions by type of activity at an establishment that is not considered on a sectoral basis and using no GHG emissions data for the years 2007 to 2010

$$I_{C\ stan\ j} = R \times 0.99^n \times I_{C\ dep\ j} \times C_{cR}$$

Where:

$I_{C\ stan\ j}$ = Average standard intensity of combustion emissions attributable to activity j at the establishment for the reference years, in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

R = Intensity multiplication factor for combustion emissions at the establishment, calculated using equation 4-6, 4-11, 4-17, 4-27 or 4-33 or, in the case of an establishment producing pulp and paper described by NAICS code 3221, having a value of 1;

$n = i - (d+2)$ or $n = i - (e+1)$, as the case may be;

d = First year for which the GHG emissions at the establishment are equal to or exceed the emissions threshold;

e = Year of application for registration for the system;

i = Year 2020;

$I_{c\ dep\ j}$ = Average intensity of combustion emissions attributable to type of activity j at the establishment for the reference years, calculated using equation 4-4 where the establishment possesses emissions data for at least 3 of years $d-2$ to $d+1$, or using equation 4-13, 4-19, 4-29 or 4-35, in metric tonnes CO₂ per reference unit, using the new GWP values.

C_{cR} = Correction factor of the multiplication factor of the intensity of combustion emissions at the establishment, calculated using equation 8-4.1.

Equation 8-10 Calculation of standard intensity of other emissions by type of activity at an establishment that is not considered on a sectoral basis and using no emissions data for the years 2007 to 2010 for the years 2021 to 2023

$$I_{O\ stan\ j} = 0.99^n \times I_{O\ dep\ j}$$

Where:

$I_{o\ stan\ j}$ = Average standard intensity of other emissions attributable to type of activity j at the establishment for the reference years, in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

$n = i - (d+2)$ or $n = i - (e+1)$, as the case may be;

d = First year for which GHG emissions of the establishment are equal to or exceed emissions threshold;

e = Year of application for registration for the system;

i = Year 2020;

$I_{O_{dep j}}$ = Average intensity of other emissions attributable to type of activity j at the establishment for the reference years, calculated using equation 4-5 where the establishment possesses emissions data for at least 3 of years $d-2$ to $d+1$, or using equation 4-14, 4-20, 4-30 or 4-36, in metric tonnes CO₂ per reference unit, using the new GWP values.

(8.3) (Revoked).

(9) Establishment producing cement, lime, prebaked anodes or aluminum by using a prebaked anode technology other than the side-worked technology, covered prior to 2021 that is considered on a sectoral basis for the years 2021 to 2023

Equation 9-1 Calculation of the number of GHG emission units allocated without charge by type of activity at an establishment producing cement, lime, prebaked anodes or aluminum using a prebaked anode technology other than the side-worked technology, covered prior to 2021 that is considered on a sectoral basis for the years 2021 to 2023

$$A_{ij} = I_{(S)ij} \times P_{Rij} \times AF_{ij}$$

Where:

A_{ij} = Total number of GHG emission units allocated without charge by type of activity j at an establishment for year i ;

i = Each year included in the period 2021 to 2023;

j = Type of activity;

$I_{(S)ij}$ = Intensity of GHG emissions attributable to type of activity j in the sector for year i , determined in accordance with Tables 1 and 2 of this Appendix, in metric tonnes CO₂ equivalent per reference unit;

P_{Rij} = Total quantity of reference units produced or used at the establishment for type of activity j during year i ;

AF_{ij} = Assistance factor for type of activity j for year i , as defined in Table 7 of this Appendix.

(9.1) Sectoral intensities in the aluminum sector

Table 1: Sectoral intensities in the aluminum sector

Year	Intensity of GHG emissions for liquid aluminum production using a prebaked anode technology other than the side-worked technology (leaving the potroom) and for the aluminum production referred to in paragraphs 5 to 7 of Division C of this Part	Intensity of GHG emissions for the production of baked anodes removed from furnace
2021	1.813	0.3129
2022	1.796	0.3102

2023	1.779	0.3074
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(9.2) Sectoral intensities in the cement sector**Table 2: Sectoral intensities in the cement sector**

Year	Intensity of GHG emissions for the production of clinker and the mineral additives added to the clinker produced
2021	0.7814
2022	0.7767
2023	0.7721

(9.3) Sectoral intensities in the lime sector**Table 3: Sectoral intensities in the lime sector**

Year	Intensity of GHG emissions for calcic lime production	Intensity of GHG emissions for dolomitic lime production
2021	1.100	1.376
2022	1.091	1.364
2023	1.082	1.352

(10) Covered establishment as of 2021 that is not considered on a sectoral basis and that possesses all the GHG emissions data for years $d-2$ to d

Equation 10-1 Calculation of the number of GHG emission units allocated without charge by type of activity at a covered establishment as of 2021 that is not considered on a sectoral basis for the years 2021 to 2023 and that possesses GHG emissions data for years $d-2$ to d

$$A_{ij} = [I_{FP\ dep\ j} \times a_{FP,i} + I_{C\ dep\ j} \times a_{C,i} + I_{O\ dep\ j} \times a_{O,i}] \times P_{Rij} \times AF_{ij}$$

Where:

A_{ij} = Total number of GHG emission units allocated without charge by type of activity j at an establishment for year i ;

i = Each year in the period 2021-2023 for which the emitter is required to cover its GHG emissions;

j = Type of activity;

$I_{FP\ dep\ j}$ = Average intensity of fixed process emissions attributable to type of activity j at the establishment for years $d-2$ to d , calculated using equation 10-2, in metric tonnes CO₂ equivalent per reference unit;

d = Year in which the coverage requirement begins;

$a_{FP,i}$ = Cap adjustment factor for the allocation of fixed process emissions for year i for establishments covered between 2021 and 2023, as defined in Table 6 of this Appendix, where $n=i-d$;

$I_{C\ dep\ j}$ = Average intensity of GHG combustion emissions attributable to type of activity j at the establishment for years $d-2$ to d , calculated using equation 10-3, in metric tonnes CO₂ equivalent per reference unit;

$a_{C,i}$ = Cap adjustment factor for the allocation of combustion emissions for year i for establishments covered between 2021 and 2023, as defined in Table 6 of this Appendix, where $n=i-d$;

$I_{O\ dep\ j}$ = Average intensity of other emissions attributable to type of activity j at the establishment for years $d-2$ to d , calculated using equation 10-4, in metric tonnes CO₂ equivalent per reference unit;

$a_{O,i}$ = Cap adjustment factor for the allocation of other emissions for year i for establishments covered between 2021 and 2023, as defined in Table 6 of this Appendix, where $n=i-d$;

$P_{Ri\ j}$ = Total quantity of reference units produced or used at the establishment for type of activity j during year i ;

$AF_{i,j}$ = Assistance factor for type of activity j for year i , as defined in Table 7 of this Appendix.

Equation 10-2 Calculation of the intensity of fixed process emissions by type of activity at a covered establishment as of 2021 that is not considered on a sectoral basis

$$I_{FP\ dep\ j} = \frac{\sum_{i=(d-2)}^d GHG\ FP_{ij}}{\sum_{i=(d-2)}^d P_{Rij}}$$

Where:

$I_{FP\ dep\ j}$ = Average intensity of fixed process emissions attributable to type of activity j at the establishment for years $d-2$ to d , in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

d = Year in which the coverage requirement begins;

i = Years $d-2$, $d-1$ and d ;

$GHG\ FP_{ij}$ = Fixed process emissions attributable to type of activity j at the establishment for year i , in metric tonnes CO₂ equivalent;

$P_{Ri\ j}$ = Total quantity of reference units produced or used at the establishment for type of activity j during year i .

Equation 10-3 Calculation of the intensity of combustion emissions by type of activity at a covered establishment as of 2021 that is not considered on a sectoral basis

$$I_{C\ dep\ j} = \frac{\sum_{i=(d-2)}^d GHG\ C_{ij}}{\sum_{i=(d-2)}^d P_{Rij}}$$

Where:

$I_{C\ dep\ j}$ = Average intensity of combustion emissions attributable to type of activity j at the establishment for years $d-2$ to d , in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

d = Year in which the coverage requirement begins;

i = Years $d-2$, $d-1$ and d ;

GHG $C_{i\ j}$ = Combustion emissions attributable to type of activity j at the establishment for year i , in metric tonnes CO₂ equivalent;

$PR_{i\ j}$ = Total quantity of reference units produced or used at the establishment for type of activity j during year i .

Equation 10-4 Calculation of the intensity of other emissions by type of activity at a covered establishment as of 2021 that is not considered on a sectoral basis

$$I_{o\ dep\ j} = \frac{\sum_{i=(d-2)}^d GHG\ O_{ij}}{\sum_{i=(d-2)}^d P_{Rij}}$$

Where:

$I_{O\ dep\ j}$ = Average intensity of other emissions attributable to type of activity j at the establishment for years $d-2$ to d , in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

d = Year in which the coverage requirement begins;

i = Years $d-2$, $d-1$ and d ;

GHG $O_{i\ j}$ = Other emissions attributable to type of activity j at the establishment for year i , in metric tonnes CO₂ equivalent;

$P_{Ri\ j}$ = Total quantity of reference units produced or used at the establishment for type of activity j during year i .

(11) Covered establishment as of 2021 that is not considered on a sectoral basis and that does not possess all the GHG emissions data for years $d-2$ to d

The total quantity of GHG emission units allocated without charge to an emitter is calculated in accordance with the following methods:

(1) in the case of an establishment for which the GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, are all available, using equation 11-1;

(2) in the case of an establishment for which the GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, are not all available, using equation 11-5.

Equation 11-1 Calculation of the number of GHG emission units allocated without charge by type of activity at a covered establishment as of 2021 that is not considered on a sectoral basis for the years 2021 to 2023 and that does not possess all the GHG emissions data for years $d-2$ to d

$$A_{ij} = [I_{FP\ dep\ j} \times a_{FP,i} + I_{C\ dep\ j} \times a_{C,i} + I_{O\ dep\ j} \times a_{O,i}] \times P_{Ri\ j} \times AF_{i,j}$$

Where:

$A_{i\ j}$ = Total number of GHG emission units allocated without charge by type of activity j at an establishment for year i ;

i = Each year in the period 2021-2023 for which the emitter is required to cover its GHG emissions;

j = Type of activity;

$I_{FP\ dep\ j}$ = Average intensity of fixed process emissions attributable to type of activity j at the establishment for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, calculated using equation 11-2, in metric tonnes CO₂ equivalent per reference unit;

d = Year in which the coverage requirement begins;

$a_{FP,i}$ = Cap adjustment factor for the allocation of fixed process emissions for year i for establishments covered between 2021 and 2023, as defined in Table 6 of this Appendix, where $n=i-d$;

$I_{C\ dep\ j}$ = Average intensity of combustion emissions attributable to type of activity j at the establishment for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, calculated using equation 11-3, in metric tonnes CO₂ equivalent per reference unit;

$a_{C,i}$ = Cap adjustment factor for the allocation of combustion emissions for year i for establishments covered between 2021 and 2023, as defined in Table 6 of this Appendix, where $n=i-d$;

$I_{O\ dep\ j}$ = Average intensity of other emissions attributable to type of activity j at the establishment for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, calculated using equation 11-4, in metric tonnes CO₂ equivalent per reference unit;

$a_{O,i}$ = Cap adjustment factor for the allocation of other emissions for year i for establishments covered between 2021 and 2023, as defined in Table 6 of this Appendix, where $n=i-d$;

$P_{Ri\ j}$ = Total quantity of reference units produced or used at the establishment for type of activity j during year i ;

$AF_{i,j}$ Assistance factor for type of activity j for year i , as defined in Table 7 of this Appendix.

Equation 11-2 Calculation of the intensity of fixed process emissions by type of activity at a covered establishment as of 2021 that is not considered on a sectoral basis and that does not possess all the GHG emissions data for years $d-2$ to d

$$I_{FP\ dep\ j} = \frac{\sum_{i=(d)}^{d+2} GHG\ FP_{ij}}{\sum_{i=(d)}^{d+2} P_{Rij}}$$

Or

$$I_{FP\ dep\ j} = \frac{\sum_{i=(d+1)}^{d+3} GHG\ FP_{ij}}{\sum_{i=(d+1)}^{d+3} P_{Rij}}$$

Where:

$I_{FP\ dep\ j}$ = Average intensity of fixed process emissions attributable to type of activity j at the establishment for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

d = Year in which the coverage requirement begins;

i = Years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational;

$GHG\ FP_{ij}$ = Fixed process emissions attributable to type of activity j at the establishment for year i , in metric tonnes CO₂ equivalent;

$P_{Ri\ j}$ = Total quantity of reference units produced or used at the establishment for type of activity j during year i .

Equation 11-3 Calculation of the intensity of combustion emissions by type of activity at a covered establishment as of 2021 that is not considered on a sectoral basis and that does not possess all the GHG emissions data for years $d-2$ to d

$$I_{c\ dep\ j} = \frac{\sum_{i=(d)}^{d+2} GHG\ C_{ij}}{\sum_{i=(d)}^{d+2} P_{Rij}}$$

Or

$$I_{C\ dep\ j} = \frac{\sum_{i=(d+1)}^{d+3} GHG\ C_{ij}}{\sum_{i=(d+1)}^{d+3} P_{Rij}}$$

Where:

$I_{C\ dep\ j}$ = Average intensity of GHG combustion emissions attributable to type of activity j at the establishment for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

d = Year in which the coverage requirement begins;

i = Years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational;

GHG $C_{i\ j}$ = Combustion emissions attributable to type of activity j at the establishment for year i , in metric tonnes CO₂ equivalent;

$P_{Ri\ j}$ = Total quantity of reference units produced or used at the establishment for type of activity j during year i .

Equation 11-4 Calculation of the intensity of other emissions by type of activity at a covered establishment as of 2021 that is not considered on a sectoral basis and that does not possess all the GHG emissions data for years $d-2$ to d

$$I_{O \text{ dep } j} = \frac{\sum_{i=(d)}^{d+2} GHG \ O_{ij}}{\sum_{i=(d)}^{d+2} P_{Rij}}$$

Or

$$I_{o\ dep\ j} = \frac{\sum_{i=(d+1)}^{d+3} GHG\ O_{ij}}{\sum_{i=(d+1)}^{d+3} P_{Rij}}$$

Where:

$I_{O\ dep\ j}$ = Average intensity of other emissions attributable to type of activity j at the establishment for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

d = Year in which the coverage requirement begins;

i = Years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational;

$GHG\ O_{i\ j}$ = Other emissions attributable to type of activity j at the establishment for year i , in metric tonnes CO₂ equivalent;

$P_{Ri\ j}$ = Total quantity of reference units produced or used at the establishment for type of activity j during year i .

Equation 11-5 Calculation of the number of GHG emission units allocated without charge for a covered establishment as of 2021 that is not considered on a sectoral basis for the years 2021 to 2023 and that does not possess all the GHG emissions data for the years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational

$$A_i = ((EC_{TOTAL\ i} \times EF \times a_{C,i}) + (GHG_{FP\ i} \times a_{FP,i}) + (GHG_{O\ i} \times a_{O,i})) \times AF_{i,j}$$

Where:

A_i = Total number of GHG emission units allocated without charge for year i ;

i = Each year in the period 2021-2023 for which the emitter is required to cover its GHG emissions;

$EC_{TOTAL\ i}$ = Energy consumption in year i , calculated using equation 11-6, in GJ;

EF = Emission factor for natural gas, in metric tonnes CO₂ equivalent/GJ, calculated using equation 4-21.1;

$a_{C,i}$ = Cap adjustment factor for the allocation of combustion emissions for year i for establishments covered between 2021 and 2023, as defined in Table 6 of this Appendix, where $n=i-d$;

$GHG_{FP\ i}$ = Fixed process emissions at the establishment for year i , in metric tonnes CO₂ equivalent;

$a_{FP,i}$ = Cap adjustment factor for the allocation of fixed process emissions for year i for establishments covered between 2021 and 2023, as defined in Table 6 of this Appendix, where $n=i-d$;

$GHG_{O\ i}$ = Other emissions at the establishment for year i , in metric tonnes CO₂ equivalent;

$a_{O,i}$ = Cap adjustment factor for the allocation of other emissions for year i for establishments covered between 2021 and 2023, as defined in Table 6 of this Appendix, where $n=i-d$;

d = Year in which the coverage requirement begins;

$AF_{i,j}$ = Assistance factor for type of activity j for year i , as defined in Table 7 of this Appendix.

Equation 11-6 Calculation of energy consumption for a year at a covered establishment as of 2021 that is not considered on a sectoral basis and that does not possess all the GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational

$$EC_{TOTAL\ i} = \sum_{k=1}^n \left(\frac{GHG_{non\ bio\ k}}{GHG_{total\ k}} \times Fuel_k \times HHV_k \right)$$

Where:

$EC_{TOTAL\ i}$ = Energy consumption in year i , in GJ;

i = Each year of the 2021-2023 period for which the emitter is required to cover GHG emissions;

n = Total number of types of fuel used;

k = Type of fuel;

$GHG_{non\ bio\ k}$ = Greenhouse gas emissions attributable to the use of fuel k excluding CO_2 emissions attributable to the combustion of biomass or biofuels, in metric tonnes CO_2 equivalent;

$GHG_{total\ k}$ = Greenhouse gas emissions attributable to the use of fuel k including CO_2 emissions attributable to the combustion of biomass or biofuels, in metric tonnes CO_2 equivalent;

$Fuel_k$ = Mass or volume of fuel burned:

(a) in dry metric tonnes, when the quantity is expressed as a mass;

(b) in thousands of cubic metres at standard conditions, where the quantity is expressed as a volume of gas;

(c) in kilolitres, where the quantity is expressed as a volume of liquid;

HHV_k = High heat value for measurement period i , expressed

(a) in GJ per dry metric ton, in the case of fuels whose quantity is expressed as a mass;

(b) in GJ per thousand cubic metres, in the case of fuels whose quantity is expressed as a volume of gas;

(c) in GJ per kilolitre, in the case of fuels whose quantity is expressed as a volume of liquid.

(12) Covered establishment as of 2021 that is not considered on a sectoral basis and that does not possess a determined reference unit

The total quantity of GHG emission units allocated without charge to an emitter is calculated in accordance with the following methods:

(1) in the case of an establishment for which the GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, are all available, using equation 12-1;

(2) in the case of an establishment for which the GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, are not all available, using equation 11-5.

Equation 12-1 Calculation of the number of GHG emission units allocated without charge for an establishment covered as of 2021 that is not considered on a sectoral basis for the years 2021 to 2023, that does not possess a determined reference unit and that possesses all the GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational

$$A_i = [EC_{TOTAL,av} \times EF \times a_{C,i}] + (GHG_{FP,av} \times a_{FP,i}) + (GHG_{O,av} \times a_{O,i}) \times AF_{ij}$$

Where:

A_i = Total number of GHG emission units allocated without charge for year i ;

i = Each year in the period 2021-2023 for which the emitter is required to cover its GHG emissions;

d = Year in which the coverage requirement begins;

$EC_{TOTAL,av}$ = Average energy consumption for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, calculated using equation 12-2 in GJ;

EF = Emission factor for natural gas, in metric tonnes CO₂ equivalent/GJ, calculated using equation 4-21.1;

$a_{C,i}$ = Cap adjustment factor for the allocation of combustion emissions for year i for establishments covered between 2021 and 2023, as defined in Table 6 of this Appendix, where $n=i-d$;

$GHG_{FP,av}$ = Average fixed process emissions at the establishment for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, in metric tonnes CO₂ equivalent;

$a_{FP,i}$ = Cap adjustment factor for the allocation of fixed process emissions for year i for establishments covered between 2021 and 2023, as defined in Table 6 of this Appendix, where $n=i-d$;

$GHG_{O,av}$ = Average other emissions at the establishment for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, in metric tonnes CO₂ equivalent;

$a_{O,i}$ = Cap adjustment factor for the allocation of other emissions for year i for establishments covered between 2021 and 2023, as defined in Table 6 of this Appendix, where $n=i-d$;

AF_{ij} = Maximum of assistance factors for each type of activity j at the establishment for year i , as defined in Table 7 of this Appendix.

Equation 12-2 Calculation of average energy consumption for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, at a covered establishment as of 2021 that is not considered on a sectoral basis and that possesses all the GHG emissions data for those years

$$EC_{TOTAL,av} = \sum_d^{d+2} \left(\sum_{k=1}^n \left(\frac{GHG_{non\ bio\ k}}{GHG_{total\ k}} \times Fuel_k \times HHV_k \right) \right) \div 3$$

$$EC_{TOTAL,av} = \sum_{d+1}^{d+3} \left(\sum_{k=1}^n \left(\frac{GHG_{non\ bio\ k}}{GHG_{total\ k}} \times Fuel_k \times HHV_k \right) \right) \div 3$$

Where:

$EC_{TOTAL,av}$ = Average energy consumption for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, in GJ;

d = Year in which the coverage requirement begins;

k = Type of fuel;

$GHG_{non\ bio\ k}$ = Greenhouse gas emissions attributable to the use of fuel k excluding CO_2 emissions attributable to the combustion of biomass or biofuels, in metric tonnes CO_2 equivalent;

$GHG_{total\ k}$ = Greenhouse gas emissions attributable to the use of fuel k including CO_2 emissions attributable to the combustion of biomass or biofuels, in metric tonnes CO_2 equivalent;

n = Total number of types of fuel used;

$Fuel_k$ = Mass or volume of fuel burned:

(a) in dry metric tonnes, when the quantity is expressed as a mass;

(b) in thousands of cubic metres at standard conditions, where the quantity is expressed as a volume of gas;

(c) in kilolitres, where the quantity is expressed as a volume of liquid;

HHV_k = High heat value for measurement period i , expressed

(a) in GJ per dry metric ton, in the case of fuels whose quantity is expressed as a mass;

(b) in GJ per thousand cubic metres, in the case of fuels whose quantity is expressed as a volume of gas;

(c) in GJ per kilolitre, in the case of fuels whose quantity is expressed as a volume of liquid.

(13) Covered establishment referred to in section 2.1 that is not considered on a sectoral basis for which the GHG emissions data for years $e-3$ to $e-1$ are all available

Equation 13-1 Calculation of the number of GHG emission units allocated without charge by type of activity for year 2021 to 2023 at an establishment that is not considered on a sectoral basis and for which the GHG emissions data for years $e-3$ to $e-1$ are all available

$$A_{ij} = [I_{FP\ dep\ j} \times a_{FP,i} + I_{C\ dep\ j} \times a_{C,i} + I_{O\ dep\ j} \times a_{O,i}] \times P_{Rij} \times AF_{ij}$$

Where:

A_{ij} = Total number of GHG emission units allocated without charge by type of activity j at an establishment for year i ;

i = Each year in the period 2021-2023 for which the emitter is required to cover its GHG emissions;

j = Type of activity;

$I_{FP\ dep\ j}$ = Average intensity of fixed process emissions attributable to type of activity j at the establishment for years $e-3$ to $e-1$, calculated using equation 13-2, in metric tonnes CO_2 equivalent per reference unit;

e = Year preceding the year in which the coverage requirement begins;

$a_{FP,i}$ = Cap adjustment factor for the allocation of fixed process emissions for year i for establishments covered between 2021 and 2023, as defined in Table 6 of this Appendix, where $n=i-(e+1)$;

$I_{C\ dep\ j}$ = Average intensity of combustion emissions attributable to type of activity j at the establishment for years $e-3$ to $e-1$, calculated using equation 13-3, in metric tonnes CO₂ equivalent per reference unit;

$a_{C,i}$ = Cap adjustment factor for the allocation of combustion emissions for year i for establishments covered between 2021 and 2023, as defined in Table 6 of this Appendix, where $n=i-(e+1)$;

$I_{O\ dep\ j}$ = Average intensity of other emissions attributable to type of activity j at the establishment for years $e-3$ to $e-1$, calculated using equation 13-4, in metric tonnes CO₂ equivalent per reference unit;

$a_{O,i}$ = Cap adjustment factor for the allocation of other emissions for year i for establishments covered between 2021 and 2023, as defined in Table 6 of this Appendix, where $n=i-(e+1)$;

$P_{Ri\ j}$ = Total quantity of reference units produced or used at the establishment for type of activity j during year i ;

$AF_{i,j}$ = Assistance factor for type of activity j for year i , as defined in Table 7 of this Appendix.

Equation 13-2 Calculation of the intensity of fixed process emissions by type of activity at a covered establishment referred to in section 2.1 that is not considered on a sectoral basis and for which the GHG emissions data for years $e-3$ to $e-1$ are all available

$$I_{FP\ dep\ j} = \frac{\sum_{i=(e-3)}^{e-1} GHG\ FP_{ij}}{\sum_{i=(e-3)}^{e-1} P_{Rij}}$$

Where:

$I_{FP\ dep\ j}$ = Average intensity of fixed process emissions attributable to type of activity j at the establishment for years $e-3$ to $e-1$, in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

e = Year preceding the year in which the coverage requirement begins;

i = Years $e-3$, $e-2$ and $e-1$;

$GHG\ FP_{ij}$ = Fixed process emissions attributable to type of activity j at the establishment for year i , in metric tonnes CO₂ equivalent;

$P_{Ri\ j}$ = Total quantity of reference units produced or used at the establishment for type of activity j during year i .

Equation 13-3 Calculation of the intensity of combustion emissions for a covered establishment referred to in section 2.1 that is not considered on a sectoral basis and for which the GHG emissions data for years $e-3$ to $e-1$ are all available

$$I_{C\ dep\ j} = \frac{\sum_{i=(e-3)}^{e-1} GHG\ C_{ij}}{\sum_{i=(e-3)}^{e-1} P_{Rij}}$$

Where:

$I_{C\ dep\ j}$ = Average intensity of combustion emissions attributable to type of activity j at the establishment for years $e-3$ to $e-1$, in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

e = Year preceding the year in which the coverage requirement begins;

i = Years $e-3$, $e-2$ and $e-1$;

GHG $C_{i\ j}$ = Combustion emissions attributable to type of activity j at the establishment for year i , in metric tonnes CO₂ equivalent;

$P_{Ri\ j}$ = Total quantity of reference units produced or used at the establishment for type of activity j during year i .

Equation 13-4 Calculation of the intensity of other emissions for a covered establishment referred to in section 2.1 that is not considered on a sectoral basis and for which the GHG emissions data for years $e-3$ to $e-1$ are all available

$$I_{O\ dep\ j} = \frac{\sum_{i=(e-3)}^{e-1} GHG\ O_{ij}}{\sum_{i=(e-3)}^{e-1} P_{Rij}}$$

Where:

$I_{O\ dep\ j}$ = Average intensity of other emissions attributable to type of activity j at the establishment for years $e-3$ to $e-1$, in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

e = Year preceding the year in which the coverage requirement begins;

i = Years $e-3$, $e-2$ and $e-1$;

GHG $O_{i\ j}$ = Other emissions attributable to type of activity j at the establishment for year i , in metric tonnes CO₂ equivalent;

$P_{Ri\ j}$ = Total quantity of reference units produced or used at the establishment for type of activity j during year i .

(14) Covered establishment referred to in section 2.1 that is not considered on a sectoral basis and for which the GHG emissions data for years $e-3$ to $e-1$ are not all available

The total quantity of GHG emission units allocated without charge to an emitter is calculated in accordance with the following methods:

(1) in the case of an establishment for which the GHG emissions data for years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational, are all available, using equation 14-1;

(2) in the case of an establishment for which the GHG emissions data for years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational, are not all available, using equation 14-5.

Equation 14-1 Calculation of the number of GHG emission units allocated without charge by type of activity at a covered establishment referred to in section 2.1 that is not considered on a sectoral basis for the years 2021 to 2023 and for which the GHG emissions data for years $e-3$ to $e-1$ are not all available

$$A_{ij} = [I_{FP\ dep\ j} \times a_{FP,i} + I_{C\ dep\ j} \times a_{C,i} + I_{O\ dep\ j} \times a_{O,i}] \times P_{Ri\ j} \times AF_{i,j}$$

Where:

$A_{i\ j}$ = Total number of GHG emission units allocated without charge by type of activity j at an establishment for year i ;

i = Each year in the period 2021-2023 for which the emitter is required to cover its GHG emissions;

j = Type of activity;

$I_{FP\ dep\ j}$ = Average intensity of fixed process emissions attributable to type of activity j at the establishment for years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational, calculated using equation 14-2, in metric tonnes CO₂ equivalent per reference unit;

e = Year preceding the year in which the coverage requirement begins;

$a_{FP,i}$ = Cap adjustment factor for the allocation of fixed process emissions for year i for establishments covered between 2021 and 2023, as defined in Table 6 of this Appendix, where $n = i - (e+1)$;

$I_{C\ dep\ j}$ = Average intensity of combustion emissions attributable to type of activity j at the establishment for years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational, calculated using equation 14-3, in metric tonnes CO₂ equivalent per reference unit;

$a_{C,i}$ = Cap adjustment factor for the allocation of combustion emissions for year i for establishments covered between 2021 and 2023, as defined in Table 6 of this Appendix, where $n=i-(e+1)$;

$I_{O\ dep\ j}$ = Average intensity of other emissions attributable to type of activity j at the establishment for years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational, calculated using equation 14-4, in metric tonnes CO₂ equivalent per reference unit;

$a_{O,i}$ = Cap adjustment factor for the allocation of other emissions for year i for establishments covered between 2021 and 2023, as defined in Table 6 of this Appendix, where $n=i-(e+1)$;

$P_{Ri\ j}$ = Total quantity of reference units produced or used at the establishment for type of activity j during year i ;

$AF_{i,j}$ = Assistance factor for type of activity j for year i , as defined in Table 7 of this Appendix.

Equation 14-2 Calculation of the intensity of fixed process emissions by type of activity at a covered establishment referred to in section 2.1 that is not considered on a sectoral basis and for which the GHG emissions data for years $e-3$ to $e-1$ are not all available

$$I_{FP\ dep\ j} = \frac{\sum_{i=(e-1)}^{e+1} GHG\ FP_{ij}}{\sum_{i=(e-1)}^{e+1} P_{Rij}}$$

Or

$$I_{FP\ dep\ j} = \frac{\sum_{i=(e)}^{e+2} GHG\ FP_{ij}}{\sum_{i=(e)}^{e+2} P_{Rij}}$$

Where:

$I_{FP\ dep\ j}$ = Average intensity of fixed process emissions attributable to type of activity j at the establishment for years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational, in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

e = Year preceding the year in which the coverage requirement begins;

i = Years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational;

$GHG\ FP_{ij}$ = Fixed process emissions attributable to type of activity j at the establishment for year i , in metric tonnes CO₂ equivalent;

PR_{ij} = Total quantity of reference units produced or used at the establishment for type of activity j during year i .

Equation 14-3 Calculation of the intensity of combustion emissions by type of activity at a covered establishment referred to in section 2.1 that is not considered on a sectoral basis and for which the GHG emissions data for years $e-3$ to $e-1$ are not all available

$$I_{c\ dep\ j} = \frac{\sum_{i=(e-1)}^{e+1} GHG\ C_{ij}}{\sum_{i=(e-1)}^{e+1} P_{Rij}}$$

Or

$$I_{C\ dep\ j} = \frac{\sum_{i=(e)}^{e+2} GHG\ C_{ij}}{\sum_{i=(e)}^{e+2} P_{Rij}}$$

Where:

$I_{C\ dep\ j}$ = Average intensity of GHG combustion emissions attributable to type of activity j at the establishment for years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational, in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

e = Year preceding the year in which the coverage requirement begins;

i = Years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational;

GHG $C_{i\ j}$ = Combustion emissions attributable to type of activity j at the establishment for year i , in metric tonnes CO₂ equivalent;

$P_{Ri\ j}$ = Total quantity of reference units produced or used at the establishment for type of activity j during year i .

Equation 14-4 Calculation of the intensity of other emissions by type of activity at a covered establishment referred to in section 2.1 that is not considered on a sectoral basis and for which the GHG emissions data for years $e-3$ to $e-1$ are not all available

$$I_{O\ dep\ j} = \frac{\sum_{i=(e-1)}^{e+1} GHG\ O_{ij}}{\sum_{i=(e-1)}^{e+1} P_{Rij}}$$

Or

$$I_{O \text{ dep } j} = \frac{\sum_{i=(e)}^{e+2} GHG \ O_{ij}}{\sum_{i=(e)}^{e+2} P_{Rij}}$$

Where:

$I_{O_dep\ j}$ = Average intensity of other emissions attributable to type of activity j at the establishment for years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational, in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

e = Year preceding the year in which the coverage requirement begins;

i = Years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational;

$GHG\ O_{i\ j}$ = Other emissions attributable to type of activity j at the establishment for year i , in metric tonnes CO₂ equivalent;

$P_{Ri\ j}$ = Total quantity of reference units produced or used at the establishment for type of activity j during year i .

Equation 14-5 Calculation of the number of GHG emission units allocated without charge for a covered establishment referred to in section 2.1 that is not considered on a sectoral basis for the years 2021 to 2023 and for which the GHG emissions data for years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational, are not all available

$$A_i = (EC_{TOTAL\ i} \times EF \times a_{C,i}) + (GHG_{FP\ i} \times a_{FP,i}) + (GHG_{O\ i} \times a_{O,i}) \times AF_{i,j}$$

Where:

A_i = Total number of GHG emission units allocated without charge for year i ;

i = Each year in the period 2021-2023 for which the emitter is required to cover its GHG emissions;

$EC_{TOTAL\ i}$ = Energy consumption in year i , calculated using equation 14-6, in GJ;

EF = Emission factor for natural gas, in metric tonnes CO₂ equivalent/GJ, calculated using equation 4-21.1;

$a_{C,i}$ = Cap adjustment factor for the allocation of combustion emissions for year i for establishments covered between 2021 and 2023, as defined in Table 6 of this Appendix, where $n=i-(e+1)$;

e = Year preceding the year in which the coverage requirement begins;

$GHG_{FP\ i}$ = Fixed process emissions at the establishment for year i , in metric tonnes CO₂ equivalent;

$a_{FP,i}$ = Cap adjustment factor for the allocation of fixed process emissions for year i for establishments covered between 2021 and 2023, as defined in Table 6 of this Appendix, where $n=i-(e+1)$;

$GHG_{O\ i}$ = Other emissions at the establishment for year i , in metric tonnes CO₂ equivalent;

$a_{O,i}$ = Cap adjustment factor for the allocation of other emissions for year i for establishments covered between 2021 and 2023, as defined in Table 6 of this Appendix, where $n=i-(e+1)$;

$AF_{i,j}$ = Assistance factor for type of activity j for year i , as defined in Table 7 of this Appendix.

Equation 14-6 Calculation of the energy consumption for year i at a covered establishment referred to in section 2.1 that is not considered on a sectoral basis and for which the GHG emissions data for years

***e-1* to *e+1*, or *e* to *e+2* where *e-1* is the year in which the establishment became operational, are not all available**

$$EC_{TOTAL\ i} = \sum_{k=1}^n \left(\frac{GHG_{non\ bio\ k}}{GHG_{total\ k}} \times Fuel_k \times HHV_k \right)$$

Where:

$EC_{TOTAL\ i}$ = Energy consumption in year i , in GJ;

i = Each year of the 2021-2023 period for which the emitter is required to cover GHG emissions;

n = Total number of types of fuel used;

k = Type of fuel;

$GHG_{non\ bio\ k}$ = Greenhouse gas emissions attributable to the use of fuel k excluding CO_2 emissions attributable to the combustion of biomass or biofuels, in metric tonnes CO_2 equivalent;

$GHG_{total\ k}$ = Greenhouse gas emissions attributable to the use of fuel k including CO_2 emissions attributable to the combustion of biomass or biofuels, in metric tonnes CO_2 equivalent;

$Fuel_k$ = Mass or volume of fuel burned:

(a) in dry metric tonnes, when the quantity is expressed as a mass;

(b) in thousands of cubic metres at standard conditions, where the quantity is expressed as a volume of gas;

(c) in kilolitres, where the quantity is expressed as a volume of liquid;

HHV_k = High heat value for measurement period i , expressed

(a) in GJ per dry metric ton, in the case of fuels whose quantity is expressed as a mass;

(b) in GJ per thousand cubic metres, in the case of fuels whose quantity is expressed as a volume of gas;

(c) in GJ per kilolitre, in the case of fuels whose quantity is expressed as a volume of liquid.

(15) Covered establishment referred to in section 2.1 that is not considered on a sectoral basis and that does not possess a determined reference unit

The total quantity of GHG emission units allocated without charge to an emitter is calculated in accordance with the following methods:

(1) in the case of an establishment for which the GHG emissions data for years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational, are all available, using equation 15-1;

(2) in the case of an establishment for which the GHG emissions data for years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational, are not all available, using equation 14-5.

Equation 15-1 Calculation of the number of GHG emission units allocated without charge for a covered establishment referred to in section 2.1 that is not considered on a sectoral basis for the years 2021 to 2023, that does not possess a determined reference unit and for which the GHG emissions data for years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational, are all available

$$A_i = [(EC_{TOTAL,av} \times EF \times a_{C,i}) + (GHG_{FP,av} \times a_{FP,i}) + (GHG_{O,av} \times a_{O,i})] \times AF_{i,j}$$

Where:

A_i = Total number of GHG emission units allocated without charge for year i ;

i = Each year in the period 2021-2023 for which the emitter is required to cover its GHG emissions;

$EC_{TOTAL,av}$ = Average energy consumption for years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational, calculated using equation 15-2, in GJ;

e = Year preceding the year in which the coverage requirement begins;

EF = Emission factor for natural gas, in metric tonnes CO_2 equivalent/GJ, calculated using equation 4-21.1;

$a_{C,i}$ = Cap adjustment factor for the allocation of combustion emissions for year i for establishments covered between 2021 and 2023, as defined in Table 6 of this Appendix, where $n=i-(e+1)$;

$GHG_{FP,av}$ = Average fixed process emissions at the establishment for years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational, in metric tonnes CO_2 equivalent;

$a_{FP,i}$ = Cap adjustment factor for the allocation of fixed process emissions for year i for establishments covered between 2021 and 2023, as defined in Table 6 of this Appendix, where $n=i-(e+1)$;

GHG_{Oav} = Average other emissions at the establishment for years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational, in metric tonnes CO_2 equivalent;

$a_{O,i}$ = Cap adjustment factor for the allocation of other emissions for year i for establishments covered between 2021 and 2023, as defined in Table 6 of this Appendix, where $n=i-(e+1)$;

$AF_{i,j}$ = Maximum of assistance factors for each type of activity j at the establishment for year i , as defined in Table 7 of this Appendix.

Equation 15-2 Calculation of average energy consumption for a covered establishment referred to in section 2.1 that is not considered on a sectoral basis, that does not possess a determined reference unit, and for which the GHG emissions data for years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational, are all available

$$EC_{TOTAL,av} = \sum_{e=1}^{e+1} \left(\sum_{k=1}^n \left(\frac{GHG_{non\ bio\ k}}{GHG_{total\ k}} \times Fuel_k \times HHV_k \right) \right) \div 3$$

$$EC_{TOTAL,av} = \sum_e^{e+2} \left(\sum_{k=1}^n \left(\frac{GHG_{non\ bio\ k}}{GHG_{total\ k}} \times Fuel_k \times HHV_k \right) \right) \div 3$$

Where:

$EC_{TOTAL,av}$ = Average energy consumption for years $e-1$ to $e+1$, or e to $e+2$ where $e-1$ is the year in which the establishment became operational, in GJ;

e = Year preceding the year in which the coverage requirement begins;

n = Total number of types of fuel used;

k = Type of fuel;

$GHG_{non\ bio\ k}$ = Greenhouse gas emissions attributable to the use of fuel k excluding CO_2 emissions attributable to the combustion of biomass or biofuels, in metric tonnes CO_2 equivalent;

$GHG_{total\ k}$ = Greenhouse gas emissions attributable to the use of fuel k including CO_2 emissions attributable to the combustion of biomass or biofuels, in metric tonnes CO_2 equivalent;

$Fuel_k$ = Mass or volume of fuel burned:

(a) in dry metric tonnes, when the quantity is expressed as a mass;

(b) in thousands of cubic metres at standard conditions, where the quantity is expressed as a volume of gas;

(c) in kilolitres, where the quantity is expressed as a volume of liquid;

HHV_k = High heat value for measurement period i , expressed

(a) in GJ per dry metric ton, in the case of fuels whose quantity is expressed as a mass;

(b) in GJ per thousand cubic metres, in the case of fuels whose quantity is expressed as a volume of gas;

(c) in GJ per kilolitre, in the case of fuels whose quantity is expressed as a volume of liquid.

(16) Allocation cap adjustment factors

(16.1) Covered establishment as of 2018 for the period 2018-2020

Table 4: Allocation cap adjustment factors for a covered establishment as of 2018 for the period 2018-2020

Year i	$A_{FP,i}$	$A_{C,i}$	$a_{O,i}$
2018	1.00	$(0.99)^n$	$(0.99)^n$
2019	1.00	$(0.99)^n$	$(0.99)^n$
2020	1.00	$(0.99)^n$	$(0.99)^n$

(16.2) Establishment covered prior to 2021 for the period 2021-2023

Table 5: Allocation cap adjustment factors for an establishment covered prior to 2021 for the period 2021-2023

Year i	$a_{PF,i}$	$a_{C,i}$	$a_{O,i}^1$
2021	0.995	0.985	0.970

2022	0.990	0.970	0.940
2023	0.985	0.955	0.910

¹ For the activities “Ferrosilicon production” and “Silicon metal production”, the value of parameter “ $a_{O,i}$ ” is 1.000 for years 2021, 2022 and 2023.

(16.3) Covered establishment as of 2021 for the period 2021-2023

Table 6: Allocation cap adjustment factors for a covered establishment as of 2021 for the period 2021-2023

Year i	$A_{FP,i}$	$A_{C,i}$	$a_{O,i}$
2021	$1-(0.005*n)$	$1-(0.015*n)$	$1-(0.03*n)$
2022	$1-(0.005*n)$	$1-(0.015*n)$	$1-(0.03*n)$
2023	$1-(0.005*n)$	$1-(0.015*n)$	$1-(0.03*n)$

(17) Assistance factors

Table 7: Assistance factor and risk level for a reference unit by compliance period

Sector	Reference unit	Assistance factor 2021-2030	Risk level
Agrifood	Hectolitre of beer	0.90	Level 1
	Kilolitre of alcohol	0.90	Level 1
	Metric tonne of sugar	1.00	Level 1
	Metric tonne of processed oilseed	1.00	Level 1
	Kilolitre of whole unpasteurized milk	0.90	Level 1
	Metric tonne of milk powder with 5% or less moisture content	0.90	Level 1
	Metric tonne of cleaned flour	0.90	Level 1
	Metric tonne of unpasteurized raw milk solids and lactosol received	0.90	Level 1
	Metric tonne of pork products finished at the slaughterhouse after cutting and boning	0.90	Level 1
	Metric tonne of processed poultry products	0.90	Level 1
Aluminum	Metric tonne of baked cathodes removed from furnace	1.00	Level 5
	Metric tonne of liquid aluminum (leaving potroom)	1.00	Level 5

	Metric tonne of baked anodes removed from furnace	1.00	Level 5
	Metric tonne of aluminum hydroxide hydrate expressed as Al_2O_3 equivalent calculated at the precipitation stage	1.00	Level 3
	Metric tonne of calcinated coke	1.00	Level 5
	Metric tonne of remelted aluminum	1.00	Level 1
Other	Metric tonne of treated matter	0.90	Level 1
	Cubic metre of gypsum panel	1.00	Level 3
	Metric tonne of glass	1.00	Level 3
	Square metre of silicon substrate associated with deep reactive ion etching	0.90	Level 1
	Square metre of silicon substrate associated with an etching process other than deep reactive ion etching	0.90	Level 1
	Square metre of silicon substrate associated with plasma enhanced chemical vapour deposition	0.90	Level 1
	Metric tonne of carbon dioxide	1.00	Level 2
	Number of aircraft delivered	0.90	Level 1
	Number of aerospace parts delivered	0.90	Level 1
	Number of aircraft with internal fittings manufactured on site	0.90	Level 1
	Number of aircraft painted at the paint shop on site	0.90	Level 1
	Number of aircraft tested prior to delivery	0.90	Level 1
	Number of laminate sheet equivalents leaving press (typical sheet: minimum surface of 4 feet by 8 feet, 0.67 mm thickness)	0.95	Level 1
	Square metre of asphalt shingles (membrane base)	1.00	Level 2
Lime	Metric tonne of calcic lime and metric tonne of calcic lime kiln dust sold	1.00	Level 7
	Metric tonne of dolomitic lime and metric tonne of dolomitic lime kiln dust sold	1.00	Level 7
Chemical	Kilolitre of ethanol	1.00	Level 2

	Metric tonne of tires	0.90	Level 1
	Board foot of rigid insulation	0.95	Level 1
	Metric tonne of titanium (TiO ₂) pigment equivalent (raw material)	1.00	Level 4
	Metric tonne of LAB	1.00	Level 2
	Metric tonne of catalyzer (including additives)	1.00	Level 1
	Metric tonne of hydrogen	1.00	Level 2
	Metric tonne of PTA	1.00	Level 2
	Metric tonne of xylene and toluene	1.00	Level 7
	Metric tonne of steam sold to a third person	1.00	Level 7
	Metric tonne of sodium silicate	1.00	Level 2
	Metric tonne of sulphur	1.00	Level 2
	Metric tonne of polyethylene terephthalate (PET)	0.95	Level 1
Cement	Metric tonne of clinker produced and metric tonne of mineral additives (gypsum and limestone) added to the clinker produced	1.00	Level 7
Electricity	Megawatt-hour (MWh)	0.60	Level 1
	Metric tonne of steam	0.60	Level 1
Metallurgy	Metric tonne of steel (slabs, pellets or ingots)	1.00	Level 6
	Metric tonne of wrought steel	1.00	Level 3
	Metric tonne of rolled steel	1.00	Level 1
	Metric tonne of copper anodes	1.00	Level 1
	Metric tonne of recycled secondary materials	1.00	Level 1
	Metric tonne of reduced iron pellets	1.00	Level 6
	Metric tonne of copper cathodes	1.00	Level 1
	Metric tonne of ferrosilicon (50% and 75% concentration)	1.00	Level 7
	Metric tonne of lead	1.00	Level 1
	Metric tonne of saleable iron powder and steel powder	1.00	Level 5
	Metric tonne of TiO ₂ slag cast at the reduction furnaces	1.00	Level 5
	Metric tonne of metallic silicon	1.00	Level 7

	Metric tonne of iron load	0.95	Level 1
	Metric tonne of cathodic zinc	0.95	Level 1
	Metric tonne of steel forging stock	0.95	Level 1
	Metric tonne of copper drawing stock	0.95	Level 1
	Metric tonne of primary magnesium entering the foundry	1.00	Level 1
	Metric tonne of magnesium produced	1.00	Level 1
Mining and pelletization	Metric tonne of flux pellets	1.00	Level 7
	Metric tonne of standard pellets	1.00	Level 1
	Metric tonne of low silica flux pellets	1.00	Level 7
	Metric tonne of low silica pellets	1.00	Level 7
	Metric tonne of blast furnace pellets	1.00	Level 7
	Metric tonne of intermediate pellets	1.00	Level 7
	Metric tonne of iron concentrate	1.00	Level 1
	Metric tonne of nickel produced	1.00	Level 1
	Metric tonne of nickel and copper produced	1.00	Level 1
	Metric tonne of kimberlite processed	0.90	Level 1
	Metric tonne of auriferous ore processed	0.90	Level 1
Pulp and paper	Metric tonne of various air-dried saleable products	1.00	Level 1
	Metric tonne of various saleable air-dried products of each of the establishments common to a steam network	1.00	Level 1
	Metric tonne of saleable commercial pulp air-dried to 10% moisture content	1.00	Level 1
	Metric tonne of saleable newsprint air-dried to 10% moisture content	1.00	Level 1
	Metric tonne of saleable fine paper (from kraft pulp or deinked kraft pulp) air-dried to 10% moisture content	1.00	Level 1
	Metric tonne of saleable semi-fine uncoated paper (from mechanical pulp) air-dried to 10% moisture content	1.00	Level 1

	Metric tonne of saleable semi-fine coated paper air-dried to 10% moisture content	1.00	Level 1
	Metric tonne of saleable sanitary tissue air-dried to 10% moisture content	1.00	Level 2
	Metric tonne of saleable uncoated cardboard air-dried to 10% moisture content	1.00	Level 1
	Metric tonne of saleable coated cardboard air-dried to 10% moisture content	1.00	Level 1
	Metric tonne of saleable corrugated board and linerboard air-dried to 10% moisture content	1.00	Level 1
	Metric tonne of saleable cellulosic filament air-dried to 10% moisture content	1.00	Level 1
	Thousand board feet (MFBM) (dry)	0.90	Level 1
Refining	Kilolitre of total crude oil refinery load	1.00	Level 3
All sectors	Reference unit not determined elsewhere in the table	0.90	Level 1

(18) Calculation methods for the total quantity of GHG emission units allocated for an establishment for the years 2024-2030

Equation 18-1 Calculation of the total quantity of GHG emission units allocated without charge for an establishment

$$A_{establishment\ i} = \sum_{j=1}^m A_{i,j}$$

Where:

$A_{\text{establishment } i}$ = Total quantity of GHG emission units allocated without charge for an establishment for year i for all types of activities j in Table B of Part I of this Appendix at that establishment;

i = Each year included in the period 2024 to 2030;

j = Each type of activity at the establishment;

m = Total number of types of activity at the establishment;

A_{ij} = Total number of GHG emission units allocated without charge by type of activity j at an establishment for year i , calculated using equations 19-1, 20-1, 21-1, 22-1, 23-1, 24-1 and 24-7.

Equation 18-2 Calculation of the total quantity of GHG emission units allocated without charge paid to the emitter for an establishment

$$A_{E \text{ establishment } i} = \sum_{j=1}^m A_{E \text{ } i, j}$$

Where:

$A_{E \text{ establishment } i}$ = Total quantity of GHG emission units allocated without charge paid to the emitter for an establishment for year i for all types of activities j in Table B of Part I of this Appendix at that establishment;

i = Each year included in the period 2024 to 2030;

j = Each type of activity at the establishment;

m = Total number of types of activity at the establishment;

$A_{E \text{ } ij}$ = Total number of GHG emission units allocated without charge paid to the emitter by type of activity j at an establishment for year i , calculated using equations 19-5, 20-4, 21-3, 22-3, 23-3, 24-4 and 24-8.

Equation 18-3 Calculation of the total quantity of GHG emission units allocated without charge to be auctioned for an establishment

$$A_{V \text{ establishment } i} = A_{\text{establishment } i} - A_{E \text{ establishment } i}$$

Where:

$A_{V \text{ establishment } i}$ = Total quantity of GHG emission units allocated without charge to be auctioned for an establishment for year i for all types of activities j in Table B of Part I of this Appendix at that establishment;

i = Each year included in the period 2024 to 2030;

j = Each type of activity at the establishment;

$A_{\text{establishment } i}$ = Total quantity of GHG emission units allocated without charge for an establishment for year i for all types of activities j in Table B of Part I of this Appendix at that establishment, calculated using equation 18-1;

$A_{E \text{ establishment } i}$ = Total quantity of GHG emission units allocated without charge and paid to the emitter for an establishment for year i for all types of activities j in Table B of Part I of this Appendix at that establishment, calculated using equation 18-2.

(19) Calculation methods for the number of GHG emission units allocated without charge for an establishment covered prior to 2024 that is not considered on a sectoral basis for the years 2024-2030

(19.1) Calculation methods for the allocation

Equation 19-1 Calculation of the number of GHG emission units allocated without charge by type of activity for an establishment other than a newly operational establishment, that is not considered on a sectoral basis for the years 2024 to 2030

$$A_{ij} = P_{R \text{ } ij} \times I_{ij} \times (AF_{ij} - MEE_i)$$

Where:

A_{ij} = Total number of GHG emission units allocated without charge by type of activity j at an establishment for year i ;

i = Each year of the period 2024-2030 for which the emitter is required to cover GHG emissions;

j = Type of activity;

$P_{R\ i,j}$ = Total quantity of reference units produced or used by the establishment for type of activity j during year i ;

$I_{i,j}$ = Target intensity for GHG emissions attributable to type of activity j at the establishment for year i , calculated using equation 19-2, in metric tonnes CO₂ equivalent per reference unit;

$AF_{i,j}$ = Assistance factor for type of activity j for year i , as defined in Table 7 of this Appendix;

MEE_i = Minimal expected effort for year i , calculated using equation 19-4 or, in the case of a covered establishment as of 2024 that is not a newly operational establishment, a value of 0 for year d or $e+1$;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold;

e = Year preceding the year in which the coverage requirement begins.

Equation 19-2 Target intensity by type of activity for an establishment other than a newly operational establishment that is not considered on a sectoral basis for the years 2024 to 2030

$$I_{i,j} = 0.9 \times I_{i-1,j} + 0.1 \times I_{A,j}$$

Where:

$I_{i,j}$ = Target intensity for GHG emissions attributable to type of activity j at the establishment for year i , in metric tonnes CO₂ equivalent per reference unit;

i = Each year of the period 2024-2030 for which the emitter is required to cover GHG emissions;

j = Type of activity;

0.9 = Proportion corresponding to 90% of the target intensity for the previous year;

$I_{i-1,j}$ = Target intensity for GHG emissions attributable to type of activity j at the establishment for year $i-1$, in metric tonnes CO₂ equivalent per reference unit, calculated using equations 19-8 to 19-18 for year 2023 or using equation 19-2 for subsequent years;

0.1 = Proportion corresponding to 10% of the average actual intensity at the establishment;

$I_{A,j}$ = Average actual intensity of GHG emissions attributable to type of activity j at the establishment calculated using equation 19-3 if the data for the period 2017-2019 are all available and if operations did not start during that period, or using equations 19-3.1 or 19-3.2 in other cases, in metric tonnes CO₂ equivalent per reference unit.

Equation 19-3 Calculation of actual intensity by type of activity at an establishment other than a newly operational establishment that is not considered on a sectoral basis, for which the data for the period 2017-2019 are all available and that did not start operations during that period

$$I_{A,j} = \frac{\sum_{i=2017}^{2019} GHG_{i,j}}{\sum_{i=2017}^{2019} P_{Ri,j}}$$

Where:

$I_{A,j}$ = Average actual intensity of GHG emissions attributable to type of activity j at the establishment for the years 2017 to 2019, in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

i = Each year included in the period 2017 to 2019;

GHG _{ij} = GHG emissions attributable to type of activity j at the establishment for year i , in metric tonnes CO₂ equivalent, using the new GWP values for the calculation;

$P_{R,ij}$ = Total quantity of reference units produced or used by the establishment for type of activity j during year i .

Equation 19-3.1 Calculation of actual intensity by type of activity for an establishment other than a newly operational establishment, that is not considered on a sectoral basis and for which the data for years $d-2$ to d or $e-3$ to $e-1$ are all available

$$I_{A\ dep,j} = \frac{\sum_{i=d-2}^d GHG_{i,j}}{\sum_{i=d-2}^d P_{Ri,j}}$$

Or

$$I_{A\ dep,j} = \frac{\sum_{i=e-3}^{e-1} GHG_{i,j}}{\sum_{i=e-3}^{e-1} P_{Ri,j}}$$

Where:

$I_{A\ dep,j}$ = Initial average actual intensity of GHG emissions attributable to type of activity j at the establishment for the years 2017 to 2019, in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

i = Years $d-2$ to d or $e-3$ to $e-1$;

$GHG_{i,j}$ = GHG emissions attributable to type of activity j at the establishment for year i , in metric tonnes CO₂ equivalent, calculated using the new GWP values;

$P_{R\ i,j}$ = Total quantity of reference units produced or used by the establishment for type of activity j during year i .

Equation 19-3.2 Calculation of actual intensity by type of activity for an establishment other than a newly operational establishment, that is not considered on a sectoral basis and for which the data for years $d-2$ to d or $e-3$ to $e-1$ are not all available

$$I_{A\ dep,j} = \frac{\sum_{i=d}^{d+2} GHG_{i,j}}{\sum_{i=d}^{d+2} P_{Ri,j}}$$

Or

$$I_{A\ dep,j} = \frac{\sum_{i=d+1}^{d+3} GHG_{i,j}}{\sum_{i=d+1}^{d+3} P_{Ri,j}}$$

Or

$$I_{A\ dep,j} = \frac{\sum_{i=e-1}^{e+1} GHG_{i,j}}{\sum_{i=e-1}^{e+1} P_{Ri,j}}$$

Or

$$I_{A\ dep,j} = \frac{\sum_{i=e}^{e+2} GHG_{i,j}}{\sum_{i=e}^{e+2} P_{Ri,j}}$$

Where:

$I_{A\ dep,j}$ = Initial average actual intensity of GHG emissions attributable to type of activity j at the establishment for the years 2017 to 2019, in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

i = Years d to $d+2$ or $d+1$ to $d+3$ where d is the year in which the establishment became operational, or $e-1$ to $e+1$ or e to $e+2$ where $e-1$ is the year in which the establishment became operational;

GHG _{i,j} = GHG emissions attributable to type of activity j at the establishment for year i , in metric tonnes CO₂ equivalent, calculated using the new GWP values;

$P_{R\ i,j}$ = Total quantity of reference units produced or used by the establishment for type of activity j during year i .

Equation 19-4 Calculation of the minimal expected effort for the years 2024 to 2030

$$MEE_i = 0.01 \times (i - n)$$

Where:

MEE_i = Minimal expected effort for year i ;

i = Each year of the period 2024-2030 for which the emitter is required to cover GHG emissions;

0.01 = Minimal expected effort;

n = Year 2023 or, in the case of a covered establishment as of 2024, year d or $e+1$;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold;

e = Year preceding the year in which the coverage requirement begins.

Equation 19-5 Calculation of the number of GHG emission units allocated paid to the emitter by type of activity for an establishment other than a newly operational establishment, that is not considered on a sectoral basis for the years 2024 to 2030

$$A_{E\ i,j} = P_{R\ i,j} \times \min [I_{i,j} \times (AF_{i,j} - CDF_i - EEE_{i,j} - TMF_j); I_{max\ j} \times AF_{i,j}]$$

Where:

$A_{E\ i,j}$ = Total number of GHG emission units paid directly to the emitter by type of activity j at an establishment for year i ;

i = Each year of the period 2024-2030 for which the emitter is required to cover GHG emissions;

j = Type of activity;

$P_{R\ i,j}$ = Total quantity of reference units produced or used by the establishment for type of activity j during year i ;

min = Minimum value, representing the lesser of the 2 elements calculated;

I_{ij} = Target intensity for GHG emissions attributable to type of activity j at the establishment for year i , in metric tonnes CO₂ equivalent per reference unit, calculated using equation 19-2;

A_{Fij} = Assistance factor for type of activity j for year i , as defined in Table 7 of this Appendix;

CDF_i = Cap decline factor for year i , calculated using equation 19-6 or, in the case of a covered establishment as of 2024 that is not a newly operational establishment, a value of 0 for year d or $e+1$;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold;

e = Year preceding the year in which the coverage requirement begins;

EEE_{ij} = Extra effort expected for type of activity j for year i , calculated using equation 19-7 or, in the case of a covered establishment as of 2024 that is not a newly operational establishment, a value of 0 for year d or $e+1$;

TMF_i = Trajectory modulation factor for year i , as defined in Table 9 or, in the case of a covered establishment as of 2024 that is not a newly operational establishment, a value of 0 for year d or $e+1$;

I_{maxj} = Intensity of the maximal allowance for type of activity j at the establishment calculated using equations 19-8 to 19-18.

Equation 19-6 Calculation of the cap decline factor for the years 2024 to 2030

$$CDF_i = 0.0234 \times (i - n)$$

Where:

CDF_{ij} = Cap decline factor for year i ;

i = Each year of the period 2024-2030 for which the emitter is required to cover GHG emissions;

0.0234 = Value corresponding to the annual decrease in emission unit caps during the period 2024-2030;

n = Year 2023 or, in the case of a covered establishment as of 2024, year d or $e+1$;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold;

e = Year preceding the year in which the coverage requirement begins.

Equation 19-7 Calculation of the extra effort expected by type of activity for the years 2024 to 2030

$$EEE_{ij} = EEE_{i-1j} + \text{Additional reduction}_{ij} - FFP_{ij}$$

Where:

EEE_{ij} = Extra effort expected for type of activity j for year i ;

i = Each year of the period 2024-2030 for which the emitter is required to cover GHG emissions;

j = Type of activity;

$EEE_{i-1,j}$ = Extra effort expected for type of activity j for year $i-1$, or, for year 2024 in the case of an establishment covered prior to the year 2024 that is not a newly operational establishment, a value of 0;

$Additional\ reduction_{i,j}$ = Additional reduction for type of activity j for year i , as defined in Table 8 and according to the risk level defined;

$FFP_{i,j}$ = Proportion factor of fixed process emissions for type of activity j for year i , a value of 0.00272 if the fixed process emissions in the emissions report for year i for activity j represent 50% or more of emissions, or 0 in other cases.

(19.2) Calculation methods for the intensity of the maximal allowance

The intensity of the maximal allowance is calculated in accordance with the following methods:

- (1) in the case of an establishment covered prior to the year 2021 that is not considered on a sectoral basis or an establishment that produces liquid aluminum using a side-worked prebaked anode technology, using equation 19-8;
- (2) in the case of a covered establishment as of 2021 that is not considered on a sectoral basis and that possesses all the GHG emissions data for years $d-2$ to d , using equation 19-9;
- (3) in the case of a covered establishment as of 2021 that is not considered on a sectoral basis and that does not possess all the GHG emissions data for years $d-2$ to d , using equation 19-10;
- (4) in the case of an establishment referred to in section 2.1 covered prior to the year 2024 that is not considered on a sectoral basis and for which the GHG emissions data for years $e-3$ to $e-1$ are all available, using equation 19-11;
- (5) in the case of an establishment referred to in section 2.1 covered prior to the year 2024 that is not considered on a sectoral basis and for which the GHG emissions data for years $e-3$ to $e-1$ are not all available, using equation 19-12;
- (6) in the case of an establishment that produces cathodic zinc using hydrogen as a fuel to supply its furnaces, using equation 19-13;
- (7) in the case of an establishment that produces copper anodes, using equation 19-14;
- (8) in the case of an establishment that processes gas from the recycling of secondary materials from a copper foundry, using equation 19-15;
- (9) in the case of an establishment that produces steel (slabs, pellets or ingots), metallic silicon, ferrosilicon, reduced iron pellets or titanium dioxide (TiO_2), using equation 19-16;
- (10) in the case of an establishment that produces copper cathodes, using equation 19-17;
- (11) in the case of an establishment that processes secondary materials from a copper refinery, using equation 19-18.

Equation 19-8 Intensity of the maximal allowance by type of activity for an establishment covered prior to 2021 that is not considered on a sectoral basis or an establishment that produces liquid aluminum using a side-worked prebaked anode technology for the years 2024 to 2030

$$I_{max,j} = I_{FP\ stan,j} \times a_{FP,2023} + I_{c\ stan,j} \times a_{c,2023} + I_{O\ stan,j} \times a_{O,2023}$$

Where:

$I_{\max j}$ = Intensity of the maximal allowance for type of activity j ;

j = Type of activity;

$I_{FP \text{ stan } j}$ = Standard intensity for fixed process emissions attributable to type of activity j at the establishment for the years 2021 to 2023, calculated using equations 8-2, 8-8 and 8-11, in metric tonnes CO₂ equivalent per reference unit;

$a_{FP, 2023}$ = Cap adjustment factor for the allocation of fixed process emissions for year 2023, as defined in Table 5 of this Appendix;

$I_{C \text{ stan } j}$ = Standard intensity for combustion emissions attributable to type of activity j at the establishment for the years 2021 to 2023, calculated using equations 8-4, 8-9 and 8-13 or, in the case of an establishment producing alumina from bauxite, a value of 0.4, in metric tonnes CO₂ equivalent per reference unit;

$a_{C, 2023}$ = Cap adjustment factor for the allocation of combustion emissions for year 2023, as defined in Table 5 of this Appendix;

$I_{O \text{ stan } j}$ = Standard intensity for other emissions attributable to type of activity j at the establishment for the years 2021 to 2023, calculated using equations 8-6, 8-10 and 8-17, in metric tonnes CO₂ equivalent per reference unit;

$a_{O, 2023}$ = Cap adjustment factor for the allocation of other emissions for year 2023, as defined in Table 5 of this Appendix.

Equation 19-9 Intensity of the maximal allowance by type of activity for a covered establishment as of 2021 that is not considered on a sectoral basis and that possesses all the GHG emissions data for years $d-2$ to d for the years 2024 to 2030

$$I_{\max j} = I_{FP \text{ dep } j} \times a_{FP, 2023} + I_{C \text{ dep } j} \times a_{C, 2023} + I_{O \text{ dep } j} \times a_{O, 2023}$$

Where:

$I_{\max j}$ = Intensity of the maximal allowance for type of activity j ;

j = Type of activity;

$I_{FP \text{ dep } j}$ = Average intensity of fixed process emissions attributable to type of activity j at the establishment for years $d-2$ to d , calculated using equation 10-2, in metric tonnes CO₂ equivalent per reference unit;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold;

$a_{FP, 2023}$ = Cap adjustment factor for the allocation of fixed process emissions for year 2023 for establishments covered between 2021 and 2023, as defined in Table 6 of this Appendix, where $n=2023-d$;

$I_{C \text{ dep } j}$ = Average intensity of combustion emissions attributable to type of activity j at the establishment for years $d-2$ to d , calculated using equation 10-3, in metric tonnes CO₂ equivalent per reference unit;

$a_{C, 2023}$ = Cap adjustment factor for the allocation of combustion emissions for year 2023 for establishments covered between 2021 and 2023, as defined in Table 6 of this Appendix, where $n=2023-d$;

$I_{O \text{ dep } j}$ = Average intensity of other emissions attributable to type of activity j at the establishment for years $d-2$ to d , calculated using equation 10-4, in metric tonnes CO₂ equivalent per reference unit;

$a_{O,2023}$ = Cap adjustment factor for the allocation of other emissions for year 2023 for establishments covered between 2021 and 2023, as defined in Table 6 of this Appendix, where $n=2023-d$.

Equation 19-10 Intensity of the maximal allowance by type of activity for a covered establishment as of 2021 that is not considered on a sectoral basis and that does not possess all the GHG emissions data for years $d-2$ to d for the years 2024 to 2030

$$I_{max j} = I_{FP dep j} \times a_{FP,2023} + I_{C dep j} \times a_{C,2023} + I_{O dep j} \times a_{O,2023}$$

Where:

$I_{max j}$ = Intensity of the maximal allowance for type of activity j ;

j = Type of activity;

$I_{FP dep j}$ = Average intensity of fixed process emissions attributable to type of activity j at the establishment for years d to $d+2$ or $d+1$ to $d+3$ where d is the year in which the establishment became operational, calculated using equation 11-2, in metric tonnes CO₂ equivalent per reference unit;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold;

$a_{FP,2023}$ = Cap adjustment factor for the allocation of fixed process emissions for year 2023 for establishments covered between 2021 and 2023, as defined in Table 6 of this Appendix, where $n=2023-d$;

$I_{C dep j}$ = Average intensity of combustion emissions attributable to type of activity j at the establishment for years d to $d+2$ or $d+1$ to $d+3$ where d is the year in which the establishment became operational, calculated using equation 11-3, in metric tonnes CO₂ equivalent per reference unit;

$a_{C,2023}$ = Cap adjustment factor for the allocation of combustion emissions for year 2023 for establishments covered between 2021 and 2023, as defined in Table 6 of this Appendix, where $n=2023-d$;

$I_{O dep j}$ = Average intensity of other emissions attributable to type of activity j at the establishment for years d to $d+2$ or $d+1$ to $d+3$ where d is the year in which the establishment became operational, calculated using equation 11-4, in metric tonnes CO₂ equivalent per reference unit;

$a_{O,2023}$ = Cap adjustment factor for the allocation of other emissions for year 2023 for establishments covered between 2021 and 2023, as defined in Table 6 of this Appendix, where $n=2023-d$.

Equation 19-11 Intensity of the maximal allowance by type of activity for an establishment referred to in section 2.1 covered prior to the year 2024 that is not considered on a sectoral basis and for which the GHG emissions data for years $e-3$ to $e-1$ are all available for the years 2024 to 2030

$$I_{max j} = I_{FP dep j} \times a_{FP,2023} + I_{C dep j} \times a_{C,2023} + I_{O dep j} \times a_{O,2023}$$

Where:

$I_{max j}$ = Intensity of the maximal allowance for type of activity j ;

j = Type of activity;

$I_{FP dep j}$ = Average intensity of fixed process emissions attributable to type of activity j at the establishment for years $e-3$ to $e-1$, calculated using equation 13-2, in metric tonnes CO₂ equivalent per reference unit;

e = Year preceding the year in which the coverage requirement begins;

$a_{FP,2023}$ = Cap adjustment factor for the allocation of fixed process emissions for year 2023 for establishments covered between 2021 and 2023, as defined in Table 6 of this Appendix, where $n=2023-(e+1)$;

$I_{C\ dep\ j}$ = Average intensity of combustion emissions attributable to type of activity j at the establishment for years $e-3$ to $e-1$, calculated using equation 13-3, in metric tonnes CO₂ equivalent per reference unit;

$a_{C,2023}$ = Cap adjustment factor for the allocation of combustion emissions for year 2023 for establishments covered between 2021 and 2023, as defined in Table 6 of this Appendix, where $n=2023-(e+1)$;

$I_{O\ dep\ j}$ = Average intensity of other emissions attributable to type of activity j at the establishment for years $e-3$ to $e+1$, calculated using equation 13-4, in metric tonnes CO₂ equivalent per reference unit;

$a_{O,2023}$ = Cap adjustment factor for the allocation of other emissions for year 2023 for establishments covered between 2021 and 2023, as defined in Table 6 of this Appendix, where $n=2023-(e+1)$.

Equation 19-12 Intensity of the maximal allowance by type of activity for an establishment referred to in section 2.1 covered prior to the year 2024 that is not considered on a sectoral basis and for which the GHG emissions data for years $e-3$ to $e-1$ are not all available for the years 2024 to 2030

$$I_{max\ j} = I_{FP\ dep\ j} \times a_{FP,2023} + I_{C\ dep\ j} \times a_{C,2023} + I_{O\ dep\ j} \times a_{O,2023}$$

Where:

$I_{max\ j}$ = Intensity of the maximal allowance for type of activity j ;

j = Type of activity;

$I_{FP\ dep\ j}$ = Average intensity of fixed process emissions attributable to type of activity j at the establishment for years $e-1$ to $e+1$ or e to $e+2$ where $e-1$ is the year in which the establishment became operational, calculated using equation 11-2, in metric tonnes CO₂ equivalent per reference unit;

e = Year preceding the year in which the coverage requirement begins;

$a_{FP,2023}$ = Cap adjustment factor for the allocation of fixed process emissions for year 2023 for establishments covered between 2021 and 2023, as defined in Table 6 of this Appendix, where $n=2023-(e+1)$;

$I_{C\ dep\ j}$ = Average intensity of combustion emissions attributable to type of activity j at the establishment for years $e-1$ to $e+1$ or e to $e+2$ where $e-1$ is the year in which the establishment became operational, calculated using equation 11-3, in metric tonnes CO₂ equivalent per reference unit;

$a_{C,2023}$ = Cap adjustment factor for the allocation of combustion emissions for year 2023 for establishments covered between 2021 and 2023, as defined in Table 6 of this Appendix, where $n=2023-(e+1)$;

$I_{O\ dep\ j}$ = Average intensity of other emissions attributable to type of activity j at the establishment for years $e-1$ to $e+1$ or e to $e+2$ where $e-1$ is the year in which the establishment became operational, calculated using equation 11-4, in metric tonnes CO₂ equivalent per reference unit;

$a_{O,2023}$ = Cap adjustment factor for the allocation of other emissions for year 2023 for establishments covered between 2021 and 2023, as defined in Table 6 of this Appendix, where $n=2023-(e+1)$.

Equation 19-13 Intensity of the maximal allowance of an establishment that produces cathodic zinc using hydrogen as a fuel to supply its furnaces

$$I_{max\ j} = I_{C\ stan\ j} \times a_{C,2023} + I_{O\ stan\ j} \times a_{O,2023} + F_{H\ 2023} \\ + \max\left(\frac{GHG_{FP\ 2023,j}}{P_{R\ 2023,j}}; I_{FP\ stan,j}\right) \times a_{FP,2023}$$

Where:

$I_{\max j}$ = Intensity of the maximal allowance for type of activity j ;

j = Type of activity;

$I_{C \text{ stan } j}$ = Standard intensity for combustion emissions attributable to cathodic zinc production at the establishment for year 2023, calculated using equation 8-4, in metric tonnes CO₂ equivalent per reference unit;

$a_{C, 2023}$ = Cap adjustment factor for the allocation of combustion emissions for year 2023, as defined in Table 5 of this Appendix;

$I_{O \text{ stan } j}$ = Standard intensity for other emissions attributable to cathodic zinc production at the establishment for year 2023, calculated using equation 8-6, in metric tonnes CO₂ equivalent per reference unit;

$a_{O, 2023}$ = Cap adjustment factor for the allocation of other emissions for year 2023, as defined in Table 5 of this Appendix;

$F_{H, 2023}$ = Adjustment factor for the partial or total loss of hydrogen supply for year 2023, calculated using equation 6-10.2;

$\max$ = Maximum value, representing the greater of $GHG_{FP, 2023, j} / \times P_{R, 2023, j}$ and $I_{FP \text{ stan } j}$;

$GHG_{FP, 2023, j}$ = Fixed process emissions attributable to type of activity j at the establishment for year 2023, in metric tonnes CO₂ equivalent;

$P_{R, 2023, j}$ = Total quantity of cathodic zinc produced by the establishment for year 2023, in metric tonnes of cathodic zinc;

$I_{FP \text{ stan }, j}$ = Standard intensity for fixed process emissions attributable to cathodic zinc production at the establishment for year 2023, calculated using equation 8-26, in metric tonnes CO₂ equivalent per reference unit;

$a_{FP, 2023}$ = Cap adjustment factor for the allocation of fixed process emissions for year 2023, as defined in Table 5 of this Appendix.

Equation 19-14 Intensity of the maximal allowance for producing copper anodes from a copper foundry

$$I_{max} = I_{C\ stan\ cu} \times a_{c,2023} + \max\left(\frac{GHG_{FP\ cu,2023}}{P_{R\ cu,2023}}; I_{FP\ stan\ cu}\right) \times a_{FP,2023}$$

Where:

$I_{\max}$ = Intensity of the maximal allowance for the production of copper anodes at the establishment;

$I_{C \text{ stan cu}}$ = Standard intensity for combustion emissions attributable to copper anode production at the establishment for year 2023, calculated using equation 8-4, in metric tonnes CO₂ equivalent per reference unit;

$a_{C, 2023}$ = Cap adjustment factor for the allocation of combustion emissions for year 2023, as defined in Table 5 of this Appendix;

$\max$ = Maximum value, representing the greater of $\text{GHG}_{\text{FP cu}, 2023} / P_{\text{R cu}, 2023}$ and $I_{\text{FP stan cu}}$;

$\text{GHG}_{\text{FP cu}, 2023}$ = Fixed process emissions attributable to copper anode production at the establishment for year 2023, in metric tonnes CO₂ equivalent;

$P_{\text{R cu}, 2023j}$ = Total quantity of copper anodes produced by the establishment for year 2023, in metric tonnes of copper;

$I_{\text{FP stan cu}}$ = Standard intensity for fixed process emissions attributable to copper anode production at the establishment for year 2023, calculated using equation 8-2, in metric tonnes CO₂ equivalent per metric tonne of copper anodes;

$a_{\text{FP}, 2023}$ = Cap adjustment factor for the allocation of fixed process emissions for year 2023, as defined in Table 5 of this Appendix.

Equation 19-15 Intensity of the maximal allowance attributable to the processing of gas from the recycling of secondary materials from a copper foundry

$$I_{\max} = I_{C \text{ stan RSM}} \times a_{C, 2023} + \frac{A_{\text{recycl}, 2023}}{P_{\text{R RSM}, 2023}}$$

Where:

$I_{\max}$ = Intensity of the maximal allowance attributable to the processing of gas from the recycling of secondary materials at the establishment;

$I_{C \text{ stan RSM}}$ = Standard intensity for combustion emissions attributable to the processing of gas from the recycling of secondary materials at the establishment for year 2023, calculated using equation 8-4, in metric tonnes CO₂ equivalent per metric tonne of recycled secondary materials;

$a_{C, 2023}$ = Cap adjustment factor for the allocation of combustion emissions for year 2023, as defined in Table 5 of this Appendix;

$A_{\text{recycl}, 2023}$ = GHG emissions attributable to the carbon content of recycled secondary materials used in the process for year 2023, in metric tonnes CO₂ equivalent;

$P_{\text{R RSM}, 2023}$ = Total quantity of secondary materials recycled at the establishment for year 2023, in metric tonnes of recycled secondary materials.

For the purposes of equation 19-15, all materials used in the process other than fuel, ore, reducing agents, materials used for slag purification, carbonated reactants and carbon electrodes are considered to be recycled secondary materials used in a process at a copper foundry.

Equation 19-16 Intensity of the maximal allowance for the production of steel (slabs, pellets or ingots), metallic silicon, ferrosilicon, reduced iron pellets or titanium dioxide (TiO₂)

$$I_{max,j} = I_{C\ stan\ j} \times a_{C,2023} + I_{O\ stan\ j} \times a_{O,2023} + \max\left(\frac{GHG_{FP\ 2023,j}}{P_{R\ 2023,j}}; I_{FP\ stan\ j}\right) \times a_{FP,2023}$$

Where:

$I_{\max j}$ = Intensity of the maximal allowance for type of activity j ;

j = Type of activity;

$I_{C \text{ stan } j}$ = Standard intensity for combustion emissions attributable to type of activity j at the establishment for year 2023, calculated using equation 8-4, in metric tonnes CO₂ equivalent per reference unit;

$a_{C,2023}$ = Cap adjustment factor for the allocation of combustion emissions for year 2023, as defined in Table 5 of this Appendix;

$I_{O \text{ stan } j}$ = Standard intensity for other emissions attributable to type of activity j at the establishment for year 2023, calculated using equation 8-6, in metric tonnes CO₂ equivalent per reference unit;

$a_{O,2023}$ = Cap adjustment factor for the allocation of other emissions for year 2023, as defined in Table 5 of this Appendix;

$\max$ = Maximum value, representing the greater of $\text{GHG}_{\text{FP}2023,j} / P_{R \text{ 2023},j}$ and $I_{\text{FP stan } j}$;

$\text{GHG}_{\text{FP 2023},j}$ = Fixed process emissions attributable to type of activity j at the establishment for year 2023, in metric tonnes CO₂ equivalent;

$P_{R \text{ 2023},j}$ = Total quantity of reference units produced or used by the establishment for type of activity j during year 2023;

$I_{\text{FP stan } j}$ = Standard intensity for fixed process emissions attributable to type of activity j at the establishment for year 2023, calculated using equation 8-2, in metric tonnes CO₂ equivalent per reference unit;

$a_{\text{FP},2023}$ = Cap adjustment factor for the allocation of fixed process emissions for year 2023, as defined in Table 5 of this Appendix.

Equation 19-17 Intensity of the maximal allowance for the production of copper cathodes at a copper refinery

$$I_{\max} = I_{C \text{ stan cath}} \times a_{C,2023} + I_{\text{FP stan cath}} \times a_{\text{FP},2023}$$

Where:

$I_{\max}$ = Intensity of the maximal allowance for the production of copper cathodes at the establishment;

$I_{C \text{ stan cath}}$ = Standard intensity for combustion emissions attributable to copper cathode production at the establishment for year 2023, calculated using equation 8-4, in metric tonnes CO₂ equivalent per reference unit;

$a_{C, 2023}$ = Cap adjustment factor for the allocation of combustion emissions for year 2023, as defined in Table 5 of this Appendix;

$I_{\text{FP stan cath}}$ = Standard intensity for fixed process emissions attributable to copper cathode production at the establishment for year 2023, calculated using equation 8-2, in metric tonnes CO₂ equivalent per metric tonne of copper anodes;

$a_{\text{FP},2023}$ = Cap adjustment factor for the allocation of fixed process emissions for year 2023, as defined in Table 5 of this Appendix.

Equation 19-18 Intensity of the maximal allowance attributable to the treatment of recycled secondary materials at a copper refinery

$$I_{max} = \frac{\text{GHG}_{C,2023 \text{ RSM}}}{P_{R \text{ RSM},2023}} \times a_{C,2023}$$

Where:

I_{max} = Intensity of the maximal allowance attributable to the treatment of the recycled secondary materials at the establishment;

$\text{GHG}_{C,2023 \text{ RSM}}$ = GHG combustion emissions attributable to the treatment of recycled secondary materials for year 2023, in metric tonnes CO₂ equivalent;

$P_{R \text{ RSM}, 2023}$ = Total quantity of secondary materials recycled at the establishment for year 2023, in metric tonnes of recycled secondary materials;

$a_{C, 2023}$ = Cap adjustment factor for the allocation of combustion emissions for year 2023, as defined in Table 5 of this Appendix.

(20) Calculation methods for the total quantity of GHG emission units allocated without charge for an establishment that is considered on a sectoral basis for the years 2024-2030

Equation 20-1 Calculation of the number of GHG emission units allocated without charge by type of activity at an establishment that is considered on a sectoral basis for the years 2024 to 2030

$$A_{ij} = P_{R \text{ } ij} \times I_{S \text{ } ij} \times (AF_{ij} - MEE_i)$$

Where:

A_{ij} = Total number of GHG emission units allocated without charge by type of activity j at an establishment for year i ;

i = Each year of the period 2024-2030 for which the emitter is required to cover GHG emissions;

j = Type of activity;

$P_{R \text{ } ij}$ = Total quantity of reference units produced or used by the establishment for type of activity j during year i ;

$I_{S \text{ } ij}$ = Target intensity for GHG emissions attributable to type of activity j in the sector for year i , calculated using equation 20-2, in metric tonnes CO₂ equivalent per reference unit;

AF_{ij} = Assistance factor for type of activity j for year i , as defined in Table 7 of this Appendix;

MEE_i = Minimal expected effort for year i , calculated using equation 19-4 or, for year d or $e+1$, a value of 0.

Equation 20-2 Target intensity by type of activity at an establishment that is considered on a sectoral basis for the years 2024 to 2030

$$I_{Sij} = 0.9 \times I_{Si-1j} + 0.1 \times I_{ASj}$$

Where:

I_{Sij} = Target intensity for GHG emissions attributable to type of activity j in the sector for year i , in metric tonnes CO₂ equivalent per reference unit;

i = Each year of the period 2024-2030 for which the emitter is required to cover GHG emissions;

j = Type of activity;

0.9 = Proportion corresponding to 90% of the target intensity for the previous year;

I_{Si-1j} = Target intensity for GHG emissions attributable to type of activity j at the establishment for year $i-1$, in metric tonnes CO₂ equivalent per reference unit determined using Tables 1, 2 and 3 in subdivisions 9.1, 9.2 and 9.3 of this Part for year 2023;

0.1 = Proportion corresponding to 10% of the average actual intensity in the sector;

I_{ASj} = Average actual intensity of GHG emissions attributable to type of activity j in the sector for the period 2017-2019, in metric tonnes CO₂ equivalent per reference unit, calculated using equation 20-3.

Equation 20-3 Calculation of the average intensity of GHG emissions attributable to type of activity j in the sector

$$I_{AS\ j} = \frac{\sum_{i=2017}^{2019} \sum_{k=1}^l GHG_{i,j,k}}{\sum_{i=2017}^{2019} \sum_{k=1}^l P_{R\ i,j,k}}$$

Where:

I_{ASj} = Average actual intensity of GHG emissions attributable to type of activity j in the sector for the period 2017-2019, in metric tonnes CO₂ equivalent per reference unit;

i = Each year in the period 2017-2019;

j = Type of activity;

k = Establishment in the sector required to cover GHG emissions during year 2021;

l = Number of covered establishments during year i in the sector;

$GHG_{i,j,k}$ = GHG emissions attributable to type of activity j at establishment k for year i , in metric tonnes CO₂ equivalent, calculated using the new GWP values and excluding emissions for the year in which the establishment became operational;

$P_{Ri,j,k}$ = Total quantity of reference units produced or used by establishment k for type of activity j during year i , excluding reference units produced or used by the establishment during the year in which the establishment became operational;

Equation 20-4 Calculation of the number of GHG emission units allocated and paid to the emitter by type of activity at an establishment that is considered on a sectoral basis for the years 2024 to 2030

$$A_{Eij} = P_{Rij} \times \min [I_{Sij} \times (AF_{ij} - CDF_i - EEE_{ij} - TMF_i); I_{S2023,j} \times AF_{ij}]$$

Where:

A_{Eij} = Total number of GHG emission units paid directly to the emitter by type of activity j at an establishment for year i ;

i = Each year of the period 2024-2030 for which the emitter is required to cover GHG emissions;

j = Type of activity;

P_{Rij} = Total quantity of reference units produced or used by the establishment for type of activity j during year i ;

$\min$ = Minimum value, representing the lesser of the 2 elements calculated;

I_{Sij} = Target intensity for GHG emissions attributable to type of activity j in the sector for year i , in metric tonnes CO₂ equivalent per reference unit, calculated using equation 20-2;

AF_{ij} = Assistance factor for type of activity j for year i , as defined in Table 7 of this Appendix;

CDF_i = Cap decline factor for year i , calculated using equation 19-6 or, for year d or $e+1$, a value of 0;

EEE_{ij} = Extra effort expected for type of activity j for year i , calculated using equation 19-7 or, for year d or $e+1$, a value of 0;

TMF_i = Trajectory modulation factor for year i , as defined in Table 9 or, for year d or $e+1$, a value of 0;

$I_{S2023,j}$ = Intensity of GHG emissions attributable to type of activity j in the sector for year 2023, determined using Tables 1, 2 and 3 of this Appendix, in metric tonnes CO₂ equivalent per reference unit.

(21) Calculation methods for the total number of GHG emission units allocated without charge for a newly operational establishment that is not considered on a sectoral basis, for the years 2024 to 2030, and for which the GHG emissions data for years d to $d+2$ or $e+1$ to $e+3$ or $d+1$ to $d+3$ or $e+2$ to $e+4$, where d or $e+1$ is the year in which the establishment became operational, are all available

Equation 21-1 Calculation of the total number of GHG emission units allocated without charge by type of activity at an establishment that is not considered on a sectoral basis for the years 2024 to 2030

$$A_{i,j} = P_{R\ i,j} \times I_{dep,j} \times (AF_{i,j} - MEE_i)$$

Where:

$A_{i,j}$ = Total number of GHG emission units allocated without charge by type of activity j at an establishment for year i ;

i = Each year of the period 2024-2030 for which the emitter is required to cover GHG emissions;

j = Type of activity;

$P_{R\ i,j}$ = Total quantity of reference units produced or used by the establishment for type of activity j during year i ;

$I_{dep,j}$ = Initial average intensity for GHG emissions attributable to type of activity j at the establishment, calculated using equation 21-2, in metric tonnes CO₂ equivalent per reference unit;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold;

e = Year preceding the year in which the coverage requirement begins;

$AF_{i,j}$ = Assistance factor for type of activity j for year i , as defined in Table 7 of this Appendix or, for years d to $d+4$ or $e+1$ to $e+5$, a value of 1;

MEE_i = Minimal expected effort for year i , calculated using equation 19-4 or, for years d to $d+4$ or $e+1$ to $e+5$, a value of 0.

Equation 21-2 Initial average intensity by type of activity at an establishment that is not considered on a sectoral basis for year $d+2$ or $e+3$ or year $d+3$ or $e+4$, where year d or $e+1$ is the year in which the establishment became operational

$$I_{dep,j} = \frac{\sum_{i=d}^{d+2} GHG_{i,j}}{\sum_{i=d}^{d+2} P_{Ri,j}}$$

Or

$$I_{dep,j} = \frac{\sum_{i=d+1}^{d+3} GHG_{i,j}}{\sum_{i=d+1}^{d+3} P_{Ri,j}}$$

Or

$$I_{dep,j} = \frac{\sum_{i=e+1}^{e+3} GHG_{i,j}}{\sum_{i=e+1}^{e+3} P_{Ri,j}}$$

Or

$$I_{dep,j} = \frac{\sum_{i=e+2}^{e+4} GHG_{i,j}}{\sum_{i=e+2}^{e+4} P_{Ri,j}}$$

Where:

$I_{dep,j}$ = Initial average intensity of GHG emissions attributable to type of activity j at the establishment, in metric tonnes CO₂ equivalent per reference unit;

i = Years d to $d+2$, or $e+1$ to $e+3$, or years $d+1$ to $d+3$, or $e+2$ to $e+4$ where year d or $e+1$ is the year in which the establishment became operational;

j = Type of activity;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold;

e = Year preceding the year in which the coverage requirement begins;

$GHG_{i,j}$ = Total emissions attributable to type of activity j at the establishment for year i , in metric tonnes CO₂ equivalent;

$P_{Ri,j}$ = Total quantity of reference units produced or used by the establishment for type of activity j during year i .

Equation 21-3 Calculation of the number of allocated GHG emission units paid to the emitter by type of activity at an establishment that is not considered on a sectoral basis for the years 2024 to 2030

$$A_{E\ i,j} = P_{R\ i,j} \times I_{dep,j} \times (AF_{i,j} - CDF_i - EEE_{i,j} - TMF_i)$$

Where:

$A_{E\ i,j}$ = Total number of GHG emission units paid directly to the emitter by type of activity j at an establishment for year i ;

i = Each year of the period 2024-2030 for which the emitter is required to cover GHG emissions;

j = Type of activity;

$P_{R\ i,j}$ = Total quantity of reference units produced or used by the establishment for type of activity j during year i ;

$I_{dep,j}$ = Initial average intensity for GHG emissions attributable to type of activity j at the establishment, calculated using equation 21-2, in metric tonnes CO₂ equivalent per reference unit;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold;

e = Year preceding the year in which the coverage requirement begins;

$AF_{i,j}$ = Assistance factor for type of activity j for year i , as defined in Table 7 of this Appendix;

CDF_i = Cap decline factor for year i , calculated using equation 19-6 or, for years d to $d+1$ or $e+1$ to $e+2$, a value of 0;

$EEE_{i,j}$ = Extra effort expected for type of activity j for year i , calculated using equation 19-7 or, for years d to $d+1$ or $e+1$ to $e+2$, a value of 0;

TMF_i = Trajectory modulation factor for year i , as defined in Table 9 or, for years d to $d+1$ or $e+1$ to $e+2$, a value of 0.

(22) Calculation methods for the total number of GHG emission units allocated without charge for a newly operational establishment that is not considered on a sectoral basis for the years 2024 to 2030 and for which the GHG emissions data for years d to $d+2$ or $e+1$ to $e+3$ or years $d+1$ to $d+3$ or $e+2$ to $e+4$, where d or e is the year in which the establishment became operational, are not all available

Equation 22-1 Calculation of the number of GHG emission units allocated without charge by type of activity at an establishment that is not considered on a sectoral basis for the years 2024 to 2030

$$A_{ij} = (EC_{TOTAL\ ij} \times EF + GHG_{FP\ ij} + GHG_{O\ ij}) \times (AF_{ij} - MEE_i)$$

Where:

A_{ij} = Total number of GHG emission units allocated without charge by type of activity j at an establishment for year i ;

i = Each year of the period 2024-2030 for which the emitter is required to cover GHG emissions;

j = Type of activity;

$EC_{TOTAL\ ij}$ = Energy consumption for type of activity j for year i , in GJ, calculated using equation 11-6 or equation 14-6;

EF = Emission factor for natural gas, in metric tonnes CO_2 equivalent/GJ, or in the case of an establishment not connected to the electrical grid, the emission factor for diesel, in metric tonnes CO_2 equivalent/GJ, calculated using equation 22-1.1;

$GHG_{FP\ ij}$ = Fixed process emissions at the establishment for type of activity j for year i , in metric tonnes CO_2 equivalent;

$GHG_{O\ i, j}$ = Other emissions at the establishment for type of activity j for year i , in metric tonnes CO_2 equivalent;

AF_{ij} = Assistance factor for type of activity j for year i , as defined in Table 7 of this Appendix or, for years d to $d+4$ or $e+1$ to $e+5$, a value of 1;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold;

e = Year preceding the year in which the coverage requirement begins;

MEE_i = Minimal expected effort for year i , calculated using equation 22-2 or, for years d to $d+4$ or $e+1$ to $e+5$, a value of 0.

Equation 22-1.1 Calculation of the emission factor for natural gas or diesel

$$EF = ((EF_{CO2} \times 1000) + (EF_{CH4} \times GWP_{CH4}) + (EF_{N2O} \times GWP_{N2O})) \times 0.000001$$

Where:

EF = Emission factor for natural gas, in metric tonnes CO_2 equivalent/GJ, or in the case of an establishment not connected to the electrical grid, the emission factor for diesel, in metric tonnes CO_2 equivalent/GJ;

EF_{CO_2} = CO_2 emission factor for natural gas or diesel taken respectively from Table 1-4 or Table 1-3 in QC. 1.7 of protocol QC.1 in Schedule A.2 to the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere (chapter Q-2, r. 15), in kilograms of CO_2 per GJ;

1000 = Conversion factor, kilograms to grams;

EF_{CH_4} = CH_4 emission factor for natural gas, for industrial uses, or for diesel, taken respectively from Table 1-7 or Table 1-3 in QC.1.7 of protocol QC.1 in Schedule A.2 to the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere, in grams of CH_4 per GJ;

GWP_{CH_4} = Global warming potential of CH_4 , taken from Schedule A.1 to the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere;

EF_{N_2O} = N_2O emission factor for natural gas, for industrial uses, or for diesel, taken respectively from Table 1-7 or Table 1-3 in QC.1.7 of protocol QC.1 in Schedule A.2 to the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere, in grams of N_2O per GJ;

GWP_{N_2O} = Global warming potential for N_2O , taken from Schedule A.1 to the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere;

0.000001 = Conversion factor, grams to metric tonnes.

Equation 22-2 Calculation of the minimal expected effort for the years 2024 to 2030

$$MEE_i = 0.01 \times (i - n)$$

Where:

MEE_i = Minimal expected effort for year i ;

i = Each year of the period 2024-2030 for which the emitter is required to cover GHG emissions;

0.01 = Minimal expected effort;

n = Year $d+1$ or $e+2$;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold;

e = Year preceding the year in which the coverage requirement begins.

Equation 22-3 Calculation of the number of allocated GHG emission units paid to the emitter by type of activity at an establishment that is not considered on a sectoral basis for the years 2024 to 2030

$$A_{E\ i\ j} = (EC_{TOTAL\ i\ j} \times EF + GHG_{FP\ i\ j} + GHG_{O\ i\ j}) \times (AF_{i\ j} - CDF_i - EEE_{i\ j} - TMF_i)$$

Where:

$A_{E\ i\ j}$ = Total number of GHG emission units paid directly to the emitter by type of activity j at an establishment for year i ;

i = Each year of the period 2024-2030 for which the emitter is required to cover GHG emissions;

j = Type of activity;

$EC_{TOTAL\ i,j}$ = Energy consumption for type of activity j for year i , in GJ, calculated using equation 11-6 or equation 14-6;

EF = Emission factor for natural gas, in metric tonnes CO₂ equivalent/GJ, or in the case of an establishment not connected to the electrical grid, the emission factor for diesel, in metric tonnes CO₂ equivalent/GJ, calculated using equation 22-1.1;

$GHG_{FP\ i,j}$ = Fixed process emissions at the establishment for type of activity j for year i , in metric tonnes CO₂ equivalent;

$GHG_{O\ i,j}$ = Other emissions at the establishment for type of activity j for year i , in metric tonnes CO₂ equivalent;

$AF_{i,j}$ = Assistance factor for type of activity j for year i , as defined in Table 7 of this Appendix;

CDF_i = Cap decline factor for year i , calculated using equation 22-4 or, for years d to $d+1$ or $e+1$ to $e+2$, a value of 0;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold;

e = Year preceding the year in which the coverage requirement begins;

$EEE_{i,j}$ = Extra effort expected for type of activity j for year i , calculated using equation 22-5 or, for years d to $d+1$ or $e+1$ to $e+2$, a value of 0;

TMF_i = Trajectory modulation factor for year i , as defined in Table 9 or, for years d to $d+1$ or $e+1$ to $e+2$, a value of 0.

Equation 22-4 Calculation of the cap decline factor for the years 2024 to 2030

$$CDF_i = 0.0234 \times (i - n)$$

Where:

$CDF_{i,j}$ = Cap decline factor for year i ;

i = Each year of the period 2024-2030 for which the emitter is required to cover GHG emissions;

0.0234 = Value corresponding to the annual decrease in emission unit caps during the period 2024-2030;

n = Year d or $e+1$;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold;

e = Year preceding the year in which the coverage requirement begins.

Equation 22-5 Calculation of the extra effort expected by type of activity for the years 2024 to 2030

$$EEE_{i,j} = EEE_{i-1,j} + \text{Additional reduction}_{i,j} - FFP_{i,j}$$

Where:

$EEE_{i,j}$ = Extra effort expected for type of activity j for year i ;

i = Each year of the period 2024-2030 for which the emitter is required to cover GHG emissions;

j = Type of activity;

$EEE_{i-1,j}$ = Extra effort expected for type of activity j for year $i-1$;

Additional reduction $_{i,j}$ = Additional reduction for type of activity j for year i , as defined in Table 8 and according to the risk level defined;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold;

e = Year preceding the year in which the coverage requirement begins;

$FFP_{i,j}$ = Proportion factor of fixed process emissions for type of activity j for year i , a value of 0.00272 if the fixed process emissions in the verified emissions report for year i for activity j represent 50% or more of emissions, or a value of 0 in other cases.

(23) Establishment referred to in section 2 or 2.1, covered as of 2024 that is not considered on a sectoral basis and for which the GHG emissions data for years $d-2$ to d or $e-3$ to $e-1$ are all available

Equation 23-1 Calculation of the number of GHG emission units allocated without charge by type of activity at an establishment referred to in section 2 or 2.1, covered as of 2024 that is not considered on a sectoral basis for the years 2024 to 2030

$$A_{i,j} = P_{R\ i,j} \times I_{dep,j} \times (AF_{i,j} - MEE_i)$$

Where:

$A_{i,j}$ = Total number of GHG emission units allocated without charge by type of activity j at an establishment for year i ;

i = Each year of the period 2024-2030 for which the emitter is required to cover GHG emissions;

j = Type of activity;

$PR_{i,j}$ = Total quantity of reference units produced or used by the establishment for type of activity j during year i ;

$I_{dep,j}$ = Initial average intensity for GHG emissions attributable to type of activity j at the establishment, calculated using equation 23-2, in metric tonnes CO₂ equivalent per reference unit;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold;

e = Year preceding the year in which the coverage requirement begins;

$AF_{i,j}$ = Assistance factor for type of activity j for year i , as defined in Table 7 of this Appendix;

MEE_i = Minimal expected effort for year i , calculated using equation 19-4 or, for year d or $e+1$, a value of 0.

Equation 23-2 Initial intensity by type of activity at an establishment referred to in section 2 or 2.1, covered as of 2024 that is not considered on a sectoral basis and for which the GHG emissions data for years $d-2$ to d or $e-3$ to $e-1$ are all available

$$I_{dep,j} = \frac{\sum_{i=d-2}^d GHG_{i,j}}{\sum_{i=d-2}^d P_{R\ i,j}}$$

Or

$$I_{dep,j} = \frac{\sum_{i=e-3}^{e-1} GHG_{i,j}}{\sum_{i=e-3}^{e-1} P_{R\ i,j}}$$

Where:

$I_{dep,j}$ = Initial intensity of GHG emissions attributable to type of activity j at the establishment, in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

i = Years $d-2$ to d , or $e-3$ to $e-1$;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold;

e = Year preceding the year in which the coverage requirement begins;

$GHG_{i,j}$ = Total emissions attributable to type of activity j at the establishment for year i , in metric tonnes CO₂ equivalent;

$PR_{i,j}$ = Total quantity of reference units produced or used by the establishment for type of activity j during year i .

Equation 23-3 Calculation of the number of allocated GHG emission units paid to the emitter by type of activity at an establishment referred to in section 2 or 2.1, covered as of 2024 that is not considered on a sectoral basis for the years 2024 to 2030

$$AE_{i,j} = PR_{i,j} \times I_{dep,i} \times (AF_{i,j} - CDF_i - EEE_{i,j} - TMF_i)$$

Where:

$AE_{i,j}$ = Total number of GHG emission units paid directly to the emitter by type of activity j at an establishment for year i ;

i = Each year of the period 2024-2030 for which the emitter is required to cover GHG emissions;

j = Type of activity;

$PR_{i,j}$ = Total quantity of reference units produced or used by the establishment for type of activity j during year i ;

$I_{dep,j}$ = Initial average intensity for GHG emissions attributable to type of activity j calculated using equation 23-2, in metric tonnes CO₂ equivalent per reference unit;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold;

e = Year preceding the year in which the coverage requirement begins;

$AF_{i,j}$ = Assistance factor for type of activity j for year i , as defined in Table 7 of this Appendix;

CDF_i = Cap decline factor for year i , calculated using equation 19-6 or, for year d or $e+1$, a value of 0;

$EEE_{i,j}$ = Extra effort expected for type of activity j for year i , calculated using equation 19-7 or, for year d or $e+1$, a value of 0;

TMF_i = Trajectory modulation factor for year i , as defined in Table 9 or, for year d or $e+1$, a value of 0.

(24) Establishment referred to in section 2 or 2.1, covered as of 2024 that is not considered on a sectoral basis and for which the GHG emissions data for years $d-2$ to d or $e-3$ to $e-1$ are not all available

The total number of GHG emission units allocated without charge to an emitter is calculated in accordance with the following methods:

(1) in the case of an establishment for which GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, or $e-1$ to $e+1$ or e to $e+2$, where $e-1$ is the year in which the establishment became operational, are all available, using equation 24-1;

(2) in the case of an establishment for which GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, or $e-1$ to $e+1$ or e to $e+2$ where $e-1$ is the year in which the establishment became operational, are not all available, using equation 24-7.

The total number of GHG emission units allocated without charge and paid to an emitter is calculated in accordance with the following methods:

(1) in the case of an establishment for which GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, or $e-1$ to $e+1$ or e to $e+2$ where $e-1$ is the year in which the establishment became operational, are all available, using equation 24-4;

(2) in the case of an establishment for which GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, or $e-1$ to $e+1$ or e to $e+2$ where $e-1$ is the year in which the establishment became operational, are not all available, using equation 24-8.

Equation 24-1 Calculation of the number of GHG emission units allocated without charge by type of activity at an establishment referred to in section 2 or 2.1, covered as of 2024, that is not considered on a sectoral basis and for which the GHG emissions data for years $d-2$ to d or $e-3$ to $e-1$ are not all available

$$A_{ij} = PR_{ij} \times I_{dep,j} \times (AF_{ij} - MEE_i)$$

Where:

A_{ij} = Total number of GHG emission units allocated without charge by type of activity j at an establishment for year i ;

i = Each year of the period 2024-2030 for which the emitter is required to cover GHG emissions;

j = Type of activity;

PR_{ij} = Total quantity of reference units produced or used by the establishment for type of activity j during year i ;

$I_{dep,j}$ = Initial average intensity for GHG emissions attributable to type of activity j at the establishment, calculated using equation 24-2, in metric tonnes CO₂ equivalent per reference unit;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold;

e = Year preceding the year in which the coverage requirement begins;

AF_{ij} = Assistance factor for type of activity j for year i , as defined in Table 7 of this Appendix;

MEE_i = Minimal expected effort for year i , calculated using equation 24-3 or, in the case of a covered establishment as of 2024 that is not a newly operational establishment, a value of 0 for year d or $d+1$ where d

is the year in which the establishment became operational, or $e-1$ or e where $e-1$ is the year in which the establishment became operational.

Equation 24-2 Initial average intensity by type of activity at an establishment referred to in section 2 or 2.1, covered as of 2024 that is not considered on a sectoral basis and for which the GHG emissions data for years $d-2$ to d or $e-3$ to $e-1$ are not all available

$$I_{dep,j} = \frac{\sum_{i=d}^{d+2} GES_{i,j}}{\sum_{i=d}^{d+2} P_{R\ i,j}}$$

Ou

$$I_{dep,j} = \frac{\sum_{i=d+1}^{d+3} GES_{i,j}}{\sum_{i=d+1}^{d+3} P_{R\ i,j}}$$

Ou

$$I_{dep,j} = \frac{\sum_{i=e-1}^{e+1} GES_{i,j}}{\sum_{i=e-1}^{e+1} P_{R\ i,j}}$$

Ou

$$I_{dep,j} = \frac{\sum_{i=e}^{e+2} GES_{i,j}}{\sum_{i=e}^{e+2} P_{R\ i,j}}$$

Where:

$I_{dep,j}$ = Initial average intensity of GHG emissions attributable to type of activity j at the establishment, in metric tonnes CO₂ equivalent per reference unit;

j = Type of activity;

i = Years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, or $e-1$ to $e+1$ or e to $e+2$ where $e-1$ is the year in which the establishment became operational;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold;

e = Year preceding the year in which the coverage requirement begins;

$GHG_{i,j}$ = Total emissions attributable to type of activity j at the establishment for year i , in metric tonnes CO₂ equivalent;

$P_{R\ i,j}$ = Total quantity of reference units produced or used by the establishment for type of activity j during year i .

Equation 24-3 Calculation of the minimal expected effort for the years 2024 to 2030

$$MEE_i = 0.01 \times (i - n)$$

Where:

MEE_i = Minimal expected effort for year i ;

i = Each year of the period 2024-2030 for which the emitter is required to cover GHG emissions;

0.01 = Minimal expected effort;

n = Year d or $d+1$ where d is the year in which the establishment became operational, or $e-1$ or e where $e-1$ is the year in which the establishment became operational;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold;

e = Year preceding the year in which the coverage requirement begins.

Equation 24-4 Calculation of the number of allocated GHG emission units paid to the emitter by type of activity at an establishment referred to in section 2 or section 2.1, covered as of 2024 that is not considered on a sectoral basis and for which the GHG emissions data for years $d-2$ to d or $e-3$ to $e-1$ are not all available

$$A_{E\ i,j} = P_{R\ i,j} \times I_{dep,j} \times (AF_{i,j} - CDF_i - EEE_{i,j} - TMF_i)$$

Where:

$A_{E\ i,j}$ = Total number of GHG emission units paid directly to the emitter by type of activity j at an establishment for year i ;

i = Each year of the period 2024-2030 for which the emitter is required to cover GHG emissions;

j = Type of activity;

PR_{ij} = Total quantity of reference units produced or used by the establishment for type of activity j during year i ;

$I_{dep,j}$ = Target intensity for GHG emissions attributable to type of activity j at the establishment, calculated using equation 24-2, in metric tonnes CO₂ equivalent per reference unit;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold;

e = Year preceding the year in which the coverage requirement begins;

AF_{ij} = Assistance factor for type of activity j for year i , as defined in Table 7 of this Appendix;

CDF_i = Cap decline factor for year i , calculated using equation 24-5 or, for year d or $d+1$ where d is the year in which the establishment became operational, or $e-1$ or e where $e-1$ is the year in which the establishment became operational, a value of 0;

EEE_{ij} = Extra effort expected for type of activity j for year i , calculated using equation 24-6 or, for year d or $e-1$, a value of 0;

TMF_i = Trajectory modulation factor for year i , as defined in Table 9 or, for year d or $d+1$ where d is the year in which the establishment became operational, or $e-1$ or e where $e-1$ is the year in which the establishment became operational, a value of 0.

Equation 24-5 Calculation of the cap decline factor for the years 2024 to 2030

$$CDF_i = 0.0234 \times (i - n)$$

Where:

CDF_i = Cap decline factor for year i ;

i = Each year of the period 2024-2030 for which the emitter is required to cover GHG emissions;

0.0234 = Value corresponding to the annual decrease in emission unit caps during the period 2024-2030;

n = Year d or $d+1$ where d is the year in which the establishment became operational, or $e-1$ or e where $e-1$ is the year in which the establishment became operational;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold;

e = Year preceding the year in which the coverage requirement begins.

Equation 24-6 Calculation of the extra effort expected by type of activity for the years 2024 to 2030

$$EEE_{ij} = EEE_{i-1,j} + \text{Additional reduction}_{ij} - FFP_{ij}$$

Where:

EEE_{ij} = Extra effort expected for type of activity j for year i ;

i = Each year of the period 2024-2030 for which the emitter is required to cover GHG emissions;

j = Type of activity;

$EEE_{i-1,j}$ = Extra effort expected for type of activity j for year $i-1$;

Additional reduction $_{i,j}$ = Additional reduction for type of activity j for year i , as defined in Table 8 and according to the risk level defined;

$FFP_{i,j}$ = Proportion factor of fixed process emissions for type of activity j for year i , a value of 0.00272 if the fixed process emissions in the emissions report for year i for activity j represent 50% or more of emissions, or a value of 0 in other cases.

Equation 24-7 Calculation of the number of GHG emission units allocated without charge by type of activity at an establishment referred to in section 2 or 2.1, covered as of 2024 that is not considered on a sectoral basis and for which the GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is the year in which the establishment became operational, or $e-1$ to $e+1$ or e to $e+2$ where $e-1$ is the year in which the establishment became operational are not all available

$$A_{i,j} = (EC_{TOTAL\ i,j} \times EF + GHG_{FP\ i,j} + GHG_{O\ i,j}) \times (AF_{i,j} - MEE_i)$$

Where:

$A_{i,j}$ = Total number of GHG emission units allocated without charge by type of activity j at an establishment for year i ;

i = Each year of the period 2024-2030 for which the emitter is required to cover GHG emissions;

j = Type of activity;

$EC_{TOTAL\ i,j}$ = Energy consumption for type of activity j for year i , in GJ, calculated using equation 11-6 or equation 14-6;

EF = Emission factor for natural gas, in metric tonnes CO₂ equivalent/GJ, or in the case of an establishment not connected to the electrical grid, the emission factor for diesel, in metric tonnes CO₂ equivalent/GJ, calculated using equation 22-1.1;

$GHG_{FP\ i,j}$ = Fixed process emissions at the establishment for type of activity j for year i , in metric tonnes CO₂ equivalent;

$GHG_{O\ i,j}$ = Other emissions at the establishment for type of activity j for year i , in metric tonnes CO₂ equivalent;

$AF_{i,j}$ = Assistance factor for type of activity j for year i , as defined in Table 7 of this Appendix;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold;

e = Year preceding the year in which the coverage requirement begins;

MEE_i = Minimal expected effort for year i , calculated using equation 24-3 or, for year d or $d+1$ where d is the year in which the establishment became operational, or $e-1$ or e where $e-1$ is the year in which the establishment became operational, a value of 0.

Equation 24-8 Calculation of the number of allocated GHG emission units paid to the emitter by type of activity at an establishment referred to in section 2 or 2.1, covered as of 2024 that is not considered on a sectoral basis and for which the GHG emissions data for years d to $d+2$, or $d+1$ to $d+3$ where d is

the year in which the establishment became operational, or $e-1$ to $e+1$ or e to $e+2$ where $e-1$ is the year in which the establishment became operational are not all available

$$A_{E\ i,j} = (EC_{TOTAL\ i,j} \times EF + GHG_{FP\ i,j} + GHG_{O\ i,j}) \times (AF_{i,j} - CDF_i - EEE_{i,j} - TMF_i)$$

Where:

$A_{E\ i,j}$ = Total number of GHG emission units paid directly to the emitter by type of activity j at an establishment for year i ;

i = Each year of the period 2024-2030 for which the emitter is required to cover GHG emissions;

j = Type of activity;

$EC_{TOTAL\ i,j}$ = Energy consumption for type of activity j for year i , in GJ, calculated using equation 11-6 or equation 14-6;

EF = Emission factor for natural gas, in metric tonnes CO_2 equivalent/GJ, or in the case of an establishment not connected to the electrical grid, the emission factor for diesel, in metric tonnes CO_2 equivalent/GJ, calculated using equation 22-1.1;

$GHG_{FP\ i,j}$ = Fixed process emissions at the establishment for type of activity j for year i , in metric tonnes CO_2 equivalent;

$GHG_{O\ i,j}$ = Other emissions at the establishment for type of activity j for year i , in metric tonnes CO_2 equivalent;

$AF_{i,j}$ = Assistance factor for type of activity j for year i , as defined in Table 7 of this Appendix;

CDF_i = Cap decline factor for year i , calculated using equation 24-5 or, for year d or $d+1$ where d is the year in which the establishment became operational, or $e-1$ or e where $e-1$ is the year in which the establishment became operational, a value of 0;

d = First year for which the GHG emissions of the establishment are equal to or exceed the emissions threshold;

e = Year preceding the year in which the coverage requirement begins;

$EEE_{i,j}$ = Extra effort expected for type of activity j for year i , calculated using equation 24-6 or, for year d or $d+1$ where d is the year in which the establishment became operational, or $e-1$ or e where $e-1$ is the year in which the establishment became operational, a value of 0;

TMF_i = Trajectory modulation factor for year i , as defined in Table 9 or, for year d or $d+1$ where d is the year in which the establishment became operational, or $e-1$ or e where $e-1$ is the year in which the establishment became operational, a value of 0.

(25) Calculation methods for GHG emissions attributable to the production of electricity by cogeneration in the pulp and paper sector beginning in the year 2023

Equation 25-1 Calculation of GHG emissions attributable to the production of electricity by cogeneration

$$GHG_{PEC\ i} = GHG_{QC,16\ i} - GHG_{PPP\ i}$$

Where:

$GHG_{PEC\ i}$ = GHG emissions attributable to the production of electricity by cogeneration, in metric tonnes CO₂ equivalent;

i = Each year, beginning in 2023, for which the emitter is required to cover GHG emissions;

$GHG_{QC.16\ i}$ = GHG emissions reported in accordance with protocol QC.16 in Schedule A.2 to the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere (chapter Q-2, r. 15), in metric tonnes CO₂ equivalent;

$GHG_{PPP\ i}$ = GHG emissions attributable to the pulp and paper manufacturing process, in metric tonnes CO₂ equivalent, calculated using equation 25-2.

If the total quantity of reference units attributable to the pulp and paper manufacturing process at the establishment is zero, all the GHG emissions reported in accordance with protocol QC.16 in Schedule A.2 to the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere must be considered, for the purposes of equation 25-1, to be attributable to the production of electricity by cogeneration.

Equation 25-2 Calculation of GHG emissions attributable to the pulp and paper manufacturing process

$$GHG_{PPP\ i} = \left\{ \frac{Q_{PPP\ i}}{(Q_{PPP\ i} + Q_{PEC\ i})} \right\} \times GHG_{QC.16\ i}$$

Where:

$GHG_{PPP\ i}$ = GHG emissions attributable to the pulp and paper manufacturing process, in metric tonnes CO₂ equivalent;

i = Each year, beginning in 2023, for which the emitter is required to cover GHG emissions;

$Q_{PPP\ i}$ = Energy attributable to the pulp and paper manufacturing process, in GJ, calculated using equation 25-5;

$Q_{PEC\ i}$ = Energy attributable to the production of electricity by cogeneration, in GJ, calculated using equation 25-3;

$GHG_{QC.16\ i}$ = GHG emissions reported in accordance with protocol QC.16 in Schedule A.2 to the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere, in metric tonnes CO₂ equivalent.

Equation 25-3 Calculation of the energy attributable to the production of electricity by cogeneration

$$Q_{PEC\ i} = P_{electricity\ i} \times R_{eff} \times 3.6$$

Where:

$Q_{PEC\ i}$ = Energy attributable to the production of electricity by cogeneration, in GJ;

i = Each year, beginning in 2023, for which the emitter is required to cover GHG emissions;

$P_{electricity\ i}$ = Annual electricity production reported in accordance with subparagraph 6 of the first paragraph of QC 16.2 of protocol QC.16 in Schedule A.2 to the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere, in MWh;

R_{eff} = Ratio between the efficiency of heat production and the efficiency of electricity production, calculated using equation 25-4;

3.6 = Conversion factor, MWh to GJ.

Equation 25-4 Calculation of the ratio between the efficiency of heat production and the efficiency of electricity production

$$R_{eff} = \frac{e_C}{e_P}$$

Where:

R_{eff} = Ratio between the efficiency of heat production and the efficiency of electricity production;

e_C = Efficiency of heat production of 0.8;

e_P = Efficiency of electricity production of 0.35.

Equation 25-5 Calculation of the energy attributable to the pulp and paper manufacturing process

$$Q_{PPP\ i} = Q_{QC.16\ (produced)i} - Q_{PEC\ i}$$

Where:

$Q_{PPP\ i}$ = Energy attributable to the pulp and paper manufacturing process, in GJ;

i = Each year, beginning in 2023, for which the emitter is required to cover GHG emissions;

$Q_{QC.16\ (produced)\ i}$ = Energy produced on the basis of energy consumed as reported in accordance with QC 16.2 of protocol QC.16 in Schedule A.2 to the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere, in GJ, calculated using equation 25-6;

$Q_{PEC\ i}$ = Energy attributable to the production of electricity by cogeneration, in GJ, calculated using equation 25-3.

Equation 25-6 Calculation of energy produced on the basis of energy consumed as reported in QC 16.2 of protocol QC.16 in Schedule A.2 to the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere

$$Q_{QC.16\ (produced)i} = Q_{QC.16\ (consumed)i} \times e_C$$

Where:

$Q_{QC.16\ (produced)\ i}$ = Energy produced on the basis of energy consumed as reported in accordance with QC 16.2 of protocol QC.16 in Schedule A.2 to the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere, in GJ;

i = Each year, beginning in 2023, for which the emitter is required to cover GHG emissions;

$Q_{QC.16\ (consumed)\ i}$ = Total energy consumed as reported in accordance with QC 16.2 of protocol QC.16 in Schedule A.2 to the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere, in GJ;

e_C = Efficiency of heat production of 0.8.

(26) Additional reduction

Table 8: Additional reduction

Risk level	Additional reduction
Level 7	-0.00272
Level 6	0
Level 5	0.00272
Level 4	0.00544
Level 3	0.00816
Level 2	0.01088
Level 1	0.0136

(27) Trajectory modulation

Table 9: Trajectory modulation.

Year	Trajectory modulation
2024	-0.005
2025	-0.01
2026	-0.0125
2027	-0.0125
2028	-0.01
2029	-0.005
2030	0

Part III

Greenhouse gas reduction projects and greenhouse gas research and development projects

(1) Object

This Part sets out the terms and conditions applicable to eligible projects, specifically the greenhouse gas reduction projects and greenhouse gas research and development projects referred to in subdivisions 3.1, 4.1 and 5.1 of this Part, for which an emitter may use the sums determined and reserved in the emitter's name pursuant to section 54.1. It also sets out the terms and conditions governing the payment of such sums, which must be recorded in an agreement entered into by the emitter and the Minister in accordance with section 46.8.1 of the Environment Quality Act (chapter Q-2).

This Part also sets out the eligible expenses for which the sums may be used and the terms and condition for reporting on eligible projects.

(2) Definitions

In this Part, unless otherwise indicated by context,

“administration costs” means costs for the administrative support of project implementation, including office and accounting costs, payroll management costs, office rental costs, stationery purchase costs, postal costs and telephone costs; (*frais d'administration*)

“bioenergy from residual biomass” means one of the following fuels produced by pyrolysis from residual biomass:

(1) pyrolitic oil;

(2) biochar;

(3) biogas or renewable natural gas, if produced in conjunction with a fuel in paragraph 1 or 2; (*bioénergies à partir de biomasse résiduelle*)

“classic equipment” means equipment whose efficiency is equivalent to that prescribed by industry or generally recognized standards. The GHG emission levels are equivalent to current best practices and to the efficiency of the types of new equipment available in the marketplace; (*équipement classique*)

“external consultant” means a person or group of persons, not employed by the emitter and not forming part of the same group within the meaning of section 9; (*consultant externe*)

“first-generation renewable natural gas” means natural gas from an engineered landfill or agricultural and urban biomethanization site; (*gaz naturel renouvelable de première génération*)

“generally accepted accounting principles” means all the general principles and conventions of general application as well as the rules and procedures that determine recognized accounting practices at a given point in time. The principles define the rules for accounting and information presentation that apply to financial statements, as well as explanations and indications about most of the operations and events that occur in an entity. Financial statements must convey relevant, reliable, comparable, understandable and clearly presented information in a way that facilitates its use; (*principes comptables généralement reconnus*)

“GHG emissions verification” means an evaluation of the impact of a project implementation on the GHG emissions reduction reported by an emitter, performed after the project is implemented and based on ISO Standard 14064-3; (*vérification des émissions de GES*)

“green hydrogen” means hydrogen produced by the electrolysis of water using renewable electricity; (*hydrogène vert*)

“renewable electricity” means electricity produced from a wind, solar, geothermal, wave, tidal or hydro-electric source; (*électricité renouvelable*)

“residual biomass” means organic material of plant or animal origin mainly sourced from the forest, agricultural, industrial or urban sector in Québec that belongs to one of the following categories:

(1) forest-sourced biomass from harvesting or primary or secondary processing activities as well as sludge, pulp and paper liquor, granules and compressed wood logs. Forest-sourced biomass includes uncontaminated additive-free wood from the construction sector, when the wood is not covered by a measure targeting reduction at source, reuse, recycling or reclamation, and excludes standing timber;

(2) agriculture-sourced biomass resulting from livestock-raising activities and the harvesting of various crops, comprising residue from the processing of plants and energy crops harvested on land that is not suitable for the production of food crops for human or animal use;

(3) residual biomass from industrial or urban sources that can be reclaimed using the hierarchy of reclamation models defined in the residual materials management policy; (*biomasse résiduelle*)

“site” means a physical or geographic location where the emitter’s activities take place. A site includes all buildings and accessory immovable equipment; (*site*)

“technology testing” means the use of an existing product or process in an actual application for a period sufficiently long and representative of various operating conditions to objectively establish the performance of the technology; (*mise à l’essai d’une technologie*)

“third person” means a person or group of persons that are not participants in, are not employed by and are not part of the same controlling group as those who helped prepare the elements to be validated or verified; (*tierce partie*)

“third person qualified to quantify GHG emissions” means a third person that can show that it has qualifications for quantifying GHG emissions, that is impartial within the meaning of ISO Standard 14064:2019 and that, at minimum,

(1) has completed training on one of the 3 parts of ISO Standard 14064 on GHG emissions, has performed quantifications as part of its duties and can provide evidence of that fact; or

(2) holds accreditation under ISO Standard 14065, a requirement for organizations that provide GHG emission validations and verifications for accreditation or other forms of recognition, has performed quantifications as part of its duties and can provide evidence of that fact; (*tierce partie compétente en quantification*)

“validation of GHG emissions reduction” means an evaluation of the probability that the implementation of a project will generate the GHG emissions reduction reported by an emitter, based on ISO Standard 14064-3. (*validation des réductions d’émissions de GES*)

(3) Production or updating of a study of the technical and economic potential for GHG emissions reduction

(3.1) Description

An eligible project within the meaning of this Part is a study of the technical and economic potential for GHG emissions reduction that

(1) involves the production or updating of a study of the technical and economic potential for GHG emissions reduction at each establishment operated by an emitter referred to in the first paragraph of section 2, subparagraph 3 of the second paragraph of section 2 or section 2.1;

(2) identifies and estimates all potential emissions reduction projects in each such establishment using current technologies, along with their implementation costs;

(3) evaluates the potential for GHG emissions reduction in each of the following categories:

(a) improved energy efficiency;

(b) energy conversion;

(c) a reduction in fixed process emissions and other emissions within the meaning of Division B of Part II of Appendix C;

(4) is drafted by the emitter or an external consultant; and

(5) is revised by an external consultant who is a member of the Ordre des ingénieurs du Québec who must certify, with a reasonable level of assurance, that

(a) the elements presented in the study are credible;

(b) a process has been undertaken to identify projects for GHG emissions reduction that are technically viable;

(c) all categories of GHG emissions reduction projects have been evaluated; and

(d) the GHG emissions reductions were estimated using the principles of ISO Standard 14064-2.

The GHG emissions reduction projects referred to in subparagraph 2 of the first paragraph must target a reduction in GHG emissions compared to the baseline scenarios in a manner consistent with the principles of ISO Standard 14064-2.

If the emitter uses the sums to finance technological innovation projects referred to in Division 5 of this Part, the study must also evaluate the possibilities for GHG emissions reductions using emerging technologies within a 10-year timeframe.

(3.2) Submission of a project

Before the Minister pays the sums in accordance with the terms and conditions of Division 11 of this Part to allow the emitter to complete a study of the technical and economic potential for GHG emissions reduction, the emitter must send the Minister a project submission form signed and dated by a duly authorized person. All applications must be submitted before 31 December 2030.

After receiving the project submission form, the Minister confirms in writing that the emitter may begin the production or updating of its study of the technical and economic potential for GHG emissions reduction and that expenses may be incurred.

(3.3) Reporting requirements

The payment of the sums in accordance with the terms and conditions of Division 11 is conditional on the receipt of the documents and information referred to in subdivisions 3.3.1 and 3.3.2, depending on whether the project is being implemented or has been completed.

(3.3.1) Annual report

If the production or updating of the study of the technical and economic potential for GHG emissions reduction has not been completed by the end of a year, the emitter must submit to the Minister between 31 January and 1 March each year, for expenses paid up to the preceding 31 December, an annual report including the following documents and information:

- (1) a financial report compliant with Division 6 of this Part;
- (2) the budget forecasts for the project for the period from 1 January to 31 March of the current year;
- (3) the annual budget forecasts for the subsequent years;
- (4) an updated timeline for the project;
- (5) a progress report for the study, including in particular a description of the project, the progress made and the estimated completion date of the study.

The Minister may ask the emitter for an update of the financial plan for the project in November and June each year. The update must be sent to the Minister not later than 1 month after the Minister asks the emitter for the update.

(3.3.2) Final report

Once the production or updating of the study of the technical and economic potential for GHG emissions reduction has been completed, the emitter must file with the Minister, within 60 days of the end of the project and not later than 5 years after the date of filing of the project submission form referred to in subdivision 3.2, a final report including the following documents and information:

- (1) a financial report compliant with Division 6 of this Part;
- (2) a completed study of the technical and economic potential including, for each establishment,
 - (a) a description of the enterprise;
 - (b) a diagram of the general process and main equipment;
 - (c) the inputs and outputs;
 - (d) the identification and quantification of sources of GHG emissions and types of emissions within the meaning of Division B of Part II, in the form of representative averages;
 - (e) the identification, quantification and costs of fuel consumption points, by type, quantity used and emission factor, in the form of representative averages;
 - (f) optionally, electricity consumption and associated costs;

(g) the potential GHG emissions reduction projects and, where applicable, the technological innovation projects identified in the study; and

(h) the certification of the external consultant;

(3) for each potential project identified in the study of the technical and economic potential,

(a) the baseline scenario used;

(b) a description of the planned project;

(c) an annual estimate of the GHG emissions reductions planned compared to the baseline scenarios;

(d) energy consumption before and after the project;

(e) the technology readiness level and duration of the technological innovation project, if applicable;

(f) the supply source for alternative fuel in the case of an energy conversion; and

(g) the estimated economic parameters for the project identified, showing separately

i. the cost of the investment needed to implement the project;

ii. annual operating costs before and after the project, including the carbon cost;

iii. if known, existing subsidy programs for the type of project concerned;

iv. the return on investment period; and

v. the pricing hypotheses used for the carbon cost estimate.

(4) Implementation of a GHG emissions reduction project

(4.1) Description

An eligible project within the meaning of this Part is a GHG emissions reduction project that

(1) was identified in a study of the technical and economic potential for GHG emissions reduction in compliance with the requirements of subdivision 3.3.2 of this Part that was completed or updated not later than 5 years before the submission of the project;

(2) targets a GHG emissions reduction compared to the baseline scenario;

(3) is completed in an establishment belonging to the emitter, or off site if the project allows GHG emissions to be reduced at a covered establishment in accordance with section 19 or 19.0.1;

(4) has a return on investment period of more than 1 year; and

(5) targets, if it includes an energy conversion project, a replacement energy source from the following list:

(a) a fossil fuel producing fewer GHG emissions than the baseline scenario;

(b) renewable electricity;

(c) green hydrogen, excluding projects where direct electrification is possible;

(d) first-generation renewable natural gas;

- (e) residual biomass, from supplies in Québec only;
- (f) bioenergy produced by pyrolysis from residual forest biomass.

Despite subparagraph 1 of the first paragraph, a project implemented by an emitter in a newly operational establishment within the meaning of section 2 is also eligible within the meaning of this Part if it begins not later than 5 years after the start of operations.

(4.2) Submission of a project

Before the Minister pays the sums in accordance with the terms and conditions of Division 11 to allow the emitter to complete a GHG emissions reduction project, the emitter must send the Minister a project submission form signed and dated by a duly authorized person. All applications must be submitted before 31 December 2030.

The following information and documents must be submitted with the form referred to in the first paragraph:

- (1) a project plan and surveillance plan drawn up by the emitter or an external consultant, including a quantification of the reductions in GHG emissions resulting from the project on the site at the establishment, validated by a third person qualified to quantify GHG emissions who is a member of the Ordre des ingénieurs du Québec and who certifies that the reduction in GHG emissions and the baseline scenario were quantified in accordance with ISO Standard 14064-2. A document showing the validation must be included;
- (2) a financial plan for the project;
- (3) in the case of an energy conversion project, a demonstration of the emitter's intention to maintain the emissions reduction for 10 years, in the form of a supply contract, agreement with a supplier, proof of investment by the emitter or supplier, or another equivalent document;
- (4) in the case of a renewable electricity conversion project, all the measures taken to optimize its energy efficiency;
- (5) a project timeline;
- (6) any other information considered necessary by the emitter.

After receiving the project submission form, the Minister confirms in writing that the emitter may begin the implementation of its GHG emissions reduction project and that expenses may be incurred.

(4.3) Reporting requirements for a project with capital investment

The payment of the sums in accordance with the terms and conditions of Division 11 is conditional on the receipt of the documents and information referred to in subdivisions 4.3.1 and 4.3.2, depending on whether the project is being implemented or has been completed.

(4.3.1) Annual report

If the project has not been completed by the end of a year, the emitter must file with the Minister between 31 January and 1 March each year, for expenses paid up to the preceding 31 December, an annual report including the following information and documents:

- (1) a financial report compliant with Division 6 of this Part;
- (2) the forecasts for project expenses for the period from 1 January to 31 March of the current year;
- (3) the annual budget forecasts for the subsequent years;

- (4) an updated timeline for the project;
- (5) a progress report, including in particular a description of the project, the progress made and the activities scheduled up to the end of the project;
- (6) an updated surveillance plan, if changes have been made since the filing of the last annual report;
- (7) any other information considered necessary by the emitter.

The Minister may ask the emitter for an update of the financial plan for the project in November and June each year. The update must be sent to the Minister not later than 1 month after the Minister asks the emitter for the update.

(4.3.2) Final report and continuation of reduction measures

Once the project has been completed, the emitter must file with the Minister, within 12 months of the end of the project and not later than 5 years after the date of filing of the project submission form referred to in subdivision 4.2, a final report including the following documents and information:

- (1) a financial report compliant with Division 6 of this Part;
- (2) the following information:
 - (a) a description of the project;
 - (b) a description of the baseline scenario;
 - (c) the method used to quantify GHG emissions and implement the surveillance plan;
 - (d) a quantification of the representative GHG emissions reductions for the year following the implementation of the project, presented in the form of a GHG emissions report consistent with ISO Standard 14064-2 verified by a third person qualified to quantify GHG emissions.

Once the project has been completed, the emitter must undertake to maintain the GHG emissions reduction measures for a period of 10 years. During that period, the emitter must file with the Minister, on 1 March each year, a written attestation signed by one of its representatives confirming that the project equipment is functioning adequately.

(4.4) Reporting requirements for an energy conversion project involving supplementary operating costs

Before the Minister pays the sums in accordance with the terms and conditions of Division 11 for the implementation by the emitter of a project, involving supplementary operating costs, to convert to renewable electricity, green hydrogen, first-generation renewable natural gas, residual biomass or bioenergy from pyrolysis using residual forest biomass, the emitter must file with the Minister between 31 January and 1 March each year, for expenses paid up to the preceding 31 December, an annual report including the following information and document:

- (1) a financial report compliant with Division 6 of this Part;
- (2) a forecast of expenses for the period from 1 January to 31 March of the year during which the annual report is sent;
- (3) a forecast of annual expenses for the following years;
- (4) a GHG emissions reduction report, including in particular

(a) a quantification of GHG emissions reductions during the year, presented in the form of a GHG emissions report consistent with ISO Standard 14064-2 with respect to the conversion;

(b) the supplementary operating costs, detailing

i. the rate for the replaced energy and for the replacement energy;

ii. the carbon cost for the replaced energy and for the replacement energy;

iii. the quantity of replaced energy and replacement energy; and

iv. the calculation method for the replacement energy rate; and

(c) any other information considered necessary by the emitter.

The Minister may request that the emitter provide an update of the financial plan for the project in November and June each year. The update must be sent to the Minister not later than 1 month after the Minister's request.

(5) Implementation of a technological innovation project for the reduction of GHG emissions

(5.1) Description

An eligible project within the meaning of this Part is a technological innovation project for GHG emissions reduction that

(1) was identified in a study of the technical and economic potential for GHG emissions reduction in compliance with the requirements of subdivision 3.3.2 of this Part that was completed or updated not later than 5 years before the submission of the project;

(2) targets

(a) a technological innovation in the field of GHG emissions reduction whose technology readiness level is 4 to 8 within the meaning of Table 1 of this Part; or

(b) the field testing of technology for GHG emissions reduction which, to the emitter's best knowledge, has not been used in establishments subject to this Regulation or is used only marginally;

(3) has potential for GHG emissions reduction on the site of an establishment operated by an emitter referred to in the first paragraph of section 2, subparagraph 3 of the second paragraph of section 2 or section 2.1; and

(4) is implemented in Québec.

(5.2) Submission of a project

Before the Minister pays the sums in accordance with the terms and conditions of Division 11 for the implementation by the emitter of a technological innovation project in the field of GHG emissions reduction, the emitter must send the Minister a project submission form signed and dated by a duly authorized person. All applications must be submitted before 31 December 2030.

The following information and documents must be submitted with the form referred to in the first paragraph:

(1) a financial plan for the project;

(2) a project plan and surveillance plan drawn up by the emitter or an external consultant, including a quantification of the reductions in GHG emissions resulting from the project on the site at the establishment, validated by a third person qualified to quantify GHG emissions who is a member of the Ordre des ingénieurs

du Québec and who certifies that the reduction in GHG emissions and the baseline scenario were quantified in accordance with ISO Standard 14064-2. The project plan and surveillance plan must include, in particular,

- (a) a project description;
 - (b) a testing protocol;
 - (c) the methods to be used to collect data to quantify GHG emissions reductions;
 - (d) the place in Québec where the technological innovation will be implemented;
 - (e) the address of the covered establishment that could benefit from the GHG emissions reductions from the project;
 - (f) the commercial or technical advantages that the implementation of the project could create compared to existing solutions available in the marketplace for the sector of activity; and
 - (g) the technology readiness level, from 4 to 8, in the area of GHG emissions reductions, within the meaning of Table 1 of this Part;
- (3) a document showing the validation of the quantification of the reductions in GHG emissions attributable to the project on the site at the establishment referred to in subparagraph 2;
- (4) any other information considered necessary by the emitter.

After receiving the project submission form, the Minister confirms in writing that the emitter may begin the implementation of the project and that expenses may be incurred.

(5.3) Reporting requirements

The payment of the sums in accordance with the terms and conditions of Division 11 is conditional on the receipt of the documents and information referred to in subdivisions 5.3.1 and 5.3.2, depending on whether the project is being implemented or has been completed.

(5.3.1) Annual report

If the project has not been completed by the end of a year, the emitter must file with the Minister between 31 January and 1 March each year, for expenses paid up to the preceding 31 December, an annual report including the following information and documents:

- (1) a financial report compliant with Division 6;
- (2) the forecasts for project expenses for the period from 1 January to 31 March of the current year;
- (3) the annual budget forecasts for the subsequent years;
- (4) an updated timeline for the project;
- (5) a progress report, including in particular a description of the project and the progress made;
- (6) any other information considered necessary by the emitter.

The Minister may ask the emitter for an update of the financial plan for the project in November and June each year. The update must be sent to the Minister not later than 1 month after the Minister asks the emitter for the update.

(5.3.2) Final report

Once the project has been completed, the emitter must file with the Minister, within 60 days from the end of the project and not later than 5 years after the date of filing of the project submission form referred to in subdivision 5.2, a final report including the following information and documents:

- (1) a financial report compliant with Division 6;
- (2) the following information:
 - (a) a description of the project;
 - (b) a description of the results obtained and the prospects for implementation;
 - (c) a validation by a third person qualified to quantify GHG emissions who is a member of the Ordre des ingénieurs du Québec and who certifies that the reduction in GHG emissions and the baseline scenario were quantified in accordance with ISO Standard 14064-2;
 - (d) any other information considered necessary by the emitter.

(6) Financial report

Every financial report submitted pursuant to this Part must contain the following information:

- (1) an indication of all financial assistance obtained directly or indirectly from public bodies within the meaning of the Act respecting Access to documents held by public bodies and the Protection of personal information (chapter A-2.1) or mandataries of the state;
- (2) the expenses paid since the last annual report or, in the case of the first financial report submitted for the project, since the filing of the project submission form. The expenses must be broken down in accordance with the specifications of the template available on the website of the Ministère du Développement durable, de l'Environnement et des Parcs, and in particular into eligible expenses and non-eligible expenses;
- (3) all the expenses for the project, including those that are not eligible, pursuant to Division 9 of this Part;
- (4) a justification for variation between the information in the financial plan filed with the project submission form and the project as implemented;
- (5) any other element of a financial nature;
- (6) an audit report, in the cases provided for in Division 7 of this Part.

(7) Audit

As part of the reporting requirement specified in subdivision 3.3, 4.3, 4.4 or 5.3, as the case may be, every financial report must be submitted with an audit report in compliance with this Division when the eligible expenses for the project amount to \$100,000 or more.

In addition, the Minister may request that the emitter provide an audit report for a financial report showing eligible expenses of less than \$100,000. The report must be submitted to the Minister within 90 days.

The emitter is responsible for making the necessary requests to the auditor and managing the audit for the project. All audits must be conducted by external, independent auditors in accordance with the audit standards in force in Canada.

The audit report must certify that

- (1) the project under way or completed complies with this Part and the template for the financial forecasts filed with the project submission form;

(2) the project has been implemented. If applicable, the auditor must certify the cost and nature of the work completed for the project that began and was completed after confirmation was received from the Minister pursuant to subdivision 3.2, 4.2 or 5.2, as the case may be;

(3) the work carried out for the project was not completed in conjunction with other work for which financial assistance was received. In such a case, the auditor must ensure that no financial assistance was received for eligible expenses for which a request for reimbursement has been made pursuant to Division 11 of this Part.

(8) Verification

Payments of the sums to which this Part applies may be verified by the Minister or by any other person or body as part of their duties or under a mandate from the Minister.

(9) Eligible expenses and non-eligible expenses

(9.1) Eligible expenses

To be eligible, an expense must

(1) have been incurred after written confirmation was received from the Minister pursuant to subdivision 3.2, 4.2 or 5.2, as the case may be;

(2) have been incurred for the implementation of a project to which this Part applies; and

(3) be necessary, justifiable and directly attributable to the implementation of the project. An eligible expense does not necessarily need to be incurred on the site of one of the emitter's industrial establishments provided it is directly and reasonably connected with the project.

The following expenses, in particular, are eligible expenses:

(1) supplementary costs for the purchase of electrified, off-road rolling stock for use on site, compared to the cost of the same equipment powered by fossil fuels;

(2) fees for professional services provided for the implementation of the project, calculated in accordance with the methods set out in the Tarif d'honoraires pour services professionnels fournis au gouvernement par des ingénieurs (chapter C-65.1, r. 12);

(3) wages and benefits, with no surcharge, for employees of the emitter working directly on the eligible project. Proof of such expenses may be requested by the Minister, including copies of pay stubs;

(4) fees for specialized services;

(5) services performed as subcontracts;

(6) equipment rental costs for a time period not exceeding the duration of the project;

(7) expenses for the purchase and installation of equipment;

(8) project management costs;

(9) travel and accommodation costs connected with the implementation of the project, based on the standards in force as set out in the Directive concernant les frais de déplacement des personnes engagées à honoraires par des organismes publics (C.T. 212379, 2013-03-26);

(10) expenses incurred to prepare a strategy for the protection of intellectual property, to obtain protection for intellectual property, and to acquire rights or licences for intellectual property, including the costs relating to applications for patents such as patent agent's fees;

- (11) the cost of quantifying, validating and verifying GHG emissions reductions;
- (12) transportation costs for equipment and materials;
- (13) the expenses associated with the accounting audits requested by the Minister pursuant to Division 7 of this Part;
- (14) supplementary costs, for operating expenses, for an energy conversion to bioenergy produced from residual forest biomass, residual biomass, renewable electricity, first-generation renewable natural gas or green hydrogen, calculated using the following equation:

Equation 1

$$\text{Supplementary cost}_i = [R2_i + CC2_i - (R1_i + CC1_i \times CF)] \times Q2_i$$

Where:

Supplementary cost_i = Supplementary operating cost for year *i*;

i = Each year in the period 2024-2030 for which the emitter has a supplementary cost;

R2_i = Replacement energy rate for year *i*;

CC2_i = Carbon cost of replacement energy for year *i*;

R1_i = Replaced energy rate for year *i*, using either the actual invoiced cost, the last invoiced cost, indexed, or a representative published cost;

CC1_i = Carbon cost of replaced energy for year *i*;

CF = Conversion factor for energy, calculated using equation 2;

Q2_i = Quantity of replacement energy consumed for the project in year *i*;

Equation 2

$$CF = \frac{Q1}{Q2}$$

Where:

CF = Conversion factor for energy;

Q1 = Quantity of replaced energy using the baseline scenario;

Q2 = Quantity of replacement energy under the project scenario, adjusted to match actual efficiency once the project is implemented;

- (15) administration costs incurred in Québec that are directly connected to the implementation of the project, up to a maximum of 10% of the sums paid.

Where a project includes the replacement of obsolete equipment or the addition of space for a new construction, a new factory section, a new operating site, a new establishment or an enlargement, only the supplementary costs compared to the baseline scenario may be considered as eligible expenses.

For the purposes of the third paragraph, equipment is considered to be obsolete if it cannot function without repairs for the entire 10-year period for which a commitment is made to maintain GHG emissions reductions pursuant to this Part, or if the cost of the major repairs required to allow the equipment to function optimally for that period exceeds the cost of classic equipment for that period.

Eligible expenses must be booked by the emitter in accordance with generally accepted accounting principles.

(9.2) Non-eligible expenses

The following expenses are non-eligible expenses:

- (1) expenses incurred before the emitter receives written confirmation from the Minister pursuant to subdivision 3.2, 4.2 or 5.2, as the case may be, including an expense for which the organization has made a contractual commitment, debt service, the reimbursement of future borrowing, a capital loss or replacement of capital, a payment or an outlay of capital;
- (2) expenses relating to production losses, waste or other losses caused by the activities required to implement the project;
- (3) operating expenses for routine activities such as the wages paid to officers or managers;
- (4) the cost of acquiring or laying out land;
- (5) sales tax applicable in Québec;
- (6) marketing expenses;
- (7) the expenses for maintaining intellectual property;
- (8) upgrading to comply with standards, laws or regulations;
- (9) supplementary costs for operating expenses in connection with the use of fossil energy.

(9.3) Cumulative financial assistance

Sums paid pursuant to this Part may be used to finance up to 100% of the eligible expenses of an eligible project.

The sums paid may be used to finance the project even if it receives other governmental financial assistance, provided that the cumulative total of the sums paid and the other governmental financial assistance does not exceed 100% of eligible expenses. If the total exceeds 100% of eligible expenses, the total of the sums paid pursuant to this Part must be reduced to comply with that limit.

The total of the sums paid pursuant to this Part must not be considered in calculating the cumulative total of financial assistance from public bodies within the meaning of the Act respecting Access to documents held by public bodies and the Protection of personal information (chapter A-2.1) or from mandataries of the state, obtained under an agreement between the emitter and, as the case may be, the public body or mandatory, when the cumulative total is limited by the agreement.

The second and third paragraphs apply despite any other clause in an agreement, signed before or after the coming into force of those paragraphs, between the emitter and the government or one of its ministers or a public body or state mandatory.

(10) Obligations of the emitter

Every emitter implementing an eligible project must

- (1) report to the Minister all financial assistance applied for or received for the project, in writing and as soon as possible;
- (2) reimburse any sum paid for the implementation of a GHG emissions reduction project referred to in Division 4 of this Part for which the GHG emissions reduction measures are not maintained for a 10-year period in proportion to the number of years for which the emitter fails to maintain the measures;
- (3) ensure that all the information and documents provided pursuant to this Part are complete and accurate and that all the estimates and forecasts they contain are prepared to the best of the emitter's abilities and judgment and in good faith;
- (4) allow the Minister, with a 48-hour prior notice sent by the Minister, to examine, verify, make copies of and have access to any document or information and the site where the project is implemented allowing the Minister to verify that the project complies with the terms and conditions of this Part, for a period extending to 24 months after the end date of the project or, in the case of a GHG emissions reduction project referred to in Division 4 of this Part, for the entire 10-year period during which the emitter has undertaken to maintain the GHG emissions reduction measures;
- (5) preserve all documents and information relating to financial assistance during a 10-year period following the end of the eligible project and providing the Minister, on request, with a copy of such documents and information within the time specified by the Minister;
- (6) inform the Minister of any substantial change to the project and provide the Minister with all available information concerning the effects of the change on the implementation costs and concerning any other major impact on the project and its financing.

(11) Terms and conditions for the payment of the sums

When an emitter meets the requirements of this Part, the sums determined pursuant to section 54.1 are paid in accordance with the agreement between the Minister and the emitter and the following terms and conditions:

- (1) the sums are paid as an annual reimbursement to the emitter once the Minister has received the annual report referred to in subdivision 3.3, 4.3, 4.4 or 5.3, as the case may be;
- (2) the reimbursement referred to in subparagraph 1 is an amount equal to, at minimum, 85% of the eligible project expenses detailed in the financial report contained in the annual report or 85% of the sums determined for the emitter pursuant to section 54.1 and reserved, in the emitter's name, pursuant to that section;
- (3) an amount equal to the remainder of the eligible project expenses detailed in the financial reports contained in the annual reports filed by the emitter since the start of the project is paid to the emitter after the Minister receives the final report referred to in subdivision 3.3, 4.3 or 5.3, as the case may be, up to the sums determined for the emitter pursuant to section 54.1 and reserved, in the emitter's name, pursuant to that section.

Despite subparagraphs 2 and 3 of the first paragraph, the reimbursement referred to in subparagraph 1 of that paragraph is equal to 100% of the eligible project expenses when they are expenses resulting from eligible supplementary operating costs relating to an energy conversion, up to the sums determined pursuant to section 54.1 and reserved, in the emitter's name, pursuant to that section.

The agreement referred to in the first paragraph may, despite subparagraph 1 of that paragraph, provide for the reimbursement of any eligible expense, except an eligible expense connected to a supplementary operating cost, detailed in a financial report filed up to 10 years before the reimbursement, up to the sums determined pursuant to section 54.1 and reserved, in the emitter's name, pursuant to that section.

(12) Use of sums

An emitter may use the sums paid under this Part to implement several eligible projects, up to the sums determined for that emitter and reserved in the emitter's name pursuant to section 54.1.

The emitter may transfer some or all of the sums paid to it pursuant to Division 11 of this Part and pursuant to an agreement entered into with the Minister in accordance with section 46.8.1 of the Environment Quality Act (chapter Q-2) to a partner emitter that is part of the same group within the meaning of subparagraph 3 of the second paragraph of section 9 ("partner emitter") and that implements an eligible project at one of its covered industrial establishment, on the following conditions:

- (1) the emitter and the partner emitter have disclosed their corporate structure and business relationship in accordance with sections 7, 9 and 14.1 and the disclosure has been certified by one of their respective account representatives;
- (2) before each transfer of some or all of the sums paid pursuant to Division 11 of this Part, the emitter's account representative and the partner emitter's account representative have certified that the updated information concerning their corporate structure and business relationship has been communicated to the Minister in accordance with section 14.1 and is up to date;
- (3) the emitter and the partner emitter are part of the same group within the meaning of subparagraph 3 of the second paragraph of section 9;
- (4) an emitter that transfers, to a partner emitter, some or all of the sums paid pursuant to Division 11 of this Part must, before each request for payment made to the Minister, certify that it agrees to transfer some of all of the sums;
- (5) an agreement has been signed by the partner emitter and the Minister in accordance with section 46.8.1 of the Environment Quality Act;
- (6) the emitter has entered into and submitted to the Minister an agreement with the partner emitter containing the following information at minimum:
 - (a) the names of the parties to the agreement;
 - (b) the amount of the sums transferred;
 - (c) the title and an outline description of the eligible project that the partner emitter intends to implement;
 - (d) the obligations of the emitter pursuant to this Part, including the reporting requirement, which are transferred to the partner emitter with respect to the sums transferred.

If the partner emitter fails to perform its obligations in accordance with the agreement filed with the Minister pursuant to subparagraph 6 of the second paragraph of this Division, the Minister may require the transferring emitter to perform an obligation under the agreement with respect to the amount of the sums transferred.

(13) Quantification and verification of GHG emissions

All data filed by the emitter pursuant to this Part must be expressed in units of the International System of Units, in which the unit for quantifying GHG emissions is the metric tonne CO₂ equivalent (tCO₂e).

The GHG emissions reduction for each project included in a study of the technical and economic potential must be estimated in accordance with ISO Standard 14064.

The GHG emissions reductions for GHG emissions reduction projects must be estimated in accordance with ISO Standard 14064.

For the purposes of this Part, the baseline scenario is the scenario presenting the fewest constraints at implementation, whether the constraints are functional, environmental, economic, social, legal or other. The

baseline is a situation in which problems of upgrading to meet standards, compliance with established rules, and action to correct obsolescence or deficient maintenance have been dealt with. In addition, the baseline scenario may result from a detailed energy use simulation or a representative history.

Where data on a GHG emissions reduction have been filed with Minister pursuant to this Part, the data must meet the following requirements:

- (1) the GHG emissions reduction for each measure in a project must exceed an emissions baseline based on a market standard or established trade practice or a rule that is mandatory pursuant to a law, regulation or standard. The measure must also have an impact beyond a natural seasonal variation, a standard process variation or a historical variation compared to the baseline scenario;
- (2) the GHG emissions reduction must be evident and identifiable and result directly from the implementation of the project;
- (3) the GHG emissions reduction must be measurable and quantifiable compared to the emissions baseline and must go beyond the normal variation in the baseline scenario. The emissions must be quantified in accordance with ISO Standard 14064-2;
- (4) the GHG emissions reduction must have been verified using a precise, transparent and reproducible methodology, and the raw data needed to verify the calculation must be available.

A reduction in the GHG emissions attributable to a project must be quantified in accordance with the requirements of the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere (chapter Q-2, r. 15).

GHG emissions reductions must target verified GHG emissions, with the exception of electrified off-road rolling stock for use on the site, compared to emissions from the same equipment operated using fossil energy.

GHG emissions reductions must be evaluated compared to an emissions baseline using one of the 2 following methods:

- (1) the use of a procedure specific to the project, when there is a lack of comparable data in the sector concerned or when the data is difficult to obtain. The baseline scenario must be identified through a structured analysis of project activities and possible options;
- (2) in all other cases, the use of standardized performance when comparable data in the sector concerned are available, either in the form of statistical data from the sector, standardized performance data for equipment, established trade practice or standards imposed by a law or regulation.

(14) Public nature of documents and information

The Minister may publish, on the website of the Minister's department,

- (1) a list of the emitters that have signed an agreement pursuant to section 46.8.1 of the Environment Quality Act (chapter Q-2); and
- (2) a list of the emitters that are implementing or have implemented projects under this Part and the cost of such projects, the sums determined pursuant to section 54.1 for the implementation of such projects, and an outline description of the projects, including
 - (a) the dates of completion;
 - (b) the type of project, a quantification of the GHG emissions reductions that are attributable to the projects or their GHG emission reduction potential; and

(c) in the case of a project that is completed, the information on the compliance with the emitter's obligation to maintain the GHG emissions reduction measures.

Table 1 - Technology readiness levels

Technology readiness levels (TRL)	Description
TRL 1 – Basic principles of concept are observed and reported (conceptual articulation)	Lowest level of technology readiness. Scientific research begins to be translated into applied research and development (R&D).
TRL 2 – Technology concept and/or application formulated (technology and applications described)	Invention begins. Once basic principles are observed, practical applications can be invented. Applications are speculative, and there may be no proof or detailed analysis to support the assumptions.
TRL 3 – Analytical and experimental critical function and/or characteristic proof of concept (laboratory studies and analytical studies)	Active R&D is initiated. This includes analytical studies and laboratory studies to physically validate the analytical predictions of separate elements of the technology.
TRL 4 – Component and/or breadboard validation in laboratory environment (validation of a limited-capacity prototype in the laboratory [pre-alpha version])	Basic technological components are integrated to establish that they will work together. This is relatively “low fidelity” compared with the eventual system.
TRL 5 – Component and/or breadboard validation in relevant environment (validation of the prototype to maximum capacity in the laboratory [alpha version])	Fidelity of breadboard technology increases significantly. The basic technological components are integrated with reasonably realistic supporting elements so they can be tested in a simulated environment.
TRL 6 – System/subsystem model or prototype demonstration in a relevant environment (validation of the prototype in a relevant environment [pre-beta version])	Representative model or prototype system, which is well beyond that of TRL 5, is tested in a relevant environment. Represents a major step up in a technology's demonstrated readiness.
TRL 7 – System prototype demonstration in an operational environment (validation of system in an operational environment [beta version])	Prototype near or at planned operational system. Represents a major step up from TRL 6 by requiring demonstration of an actual system prototype in an operational environment.
TRL 8 – Actual system completed and qualified through test and demonstration (initial production and deployment)	Technology has been proven to work in its final form and under expected conditions. In almost all cases, this TRL represents the end of true system development.
TRL 9 – Actual system proven through successful mission operations (full production mode)	Actual application of the technology in its final form and under mission conditions, such as those encountered in operational test and evaluation (OT&E).

O.C. 1297-2011, Sch. C; O.C. 1184-2012, s. 51; O.C. 1138-2013, s. 28; O.C. 902-2014, s. 65; O.C. 1089-2015, s. 30; O.C. 1125-2017, s. 60 to 63; O.C. 1288-2020, ss. 18 to 20; O.C. 1462-2022, ss. 50 to 52.

APPENDIX D

(ss. 70.1 to 70.22)



This Appendix is deemed to be a regulation of the Minister made under the second paragraph of section 46.8 of the Environment Quality Act. (S.Q. 2017, c. 4, s. 285)

Offset credit protocols

For the purposes of these protocols,

- (1) “standard conditions” means a temperature of 20 °C and pressure of 101.325 kPa;
- (2) “SSR” means GHG sources, sinks and reservoirs on the project site.

PROTOCOL 1

COVERED MANURE STORAGE FACILITIES – CH₄ DESTRUCTION

Part I

(1) Projects covered

This offset credit protocol covers any project designed to reduce GHG emissions by destroying the CH₄ attributable to the manure of an agricultural operation in Québec raising one of the species of livestock listed in the tables in Part II.

The project involves the installation of a manure storage facility cover and a fixed CH₄ destruction device.

The project must enable to capture and destroy CH₄ that, before the project, was emitted to the atmosphere. The CH₄ must be destroyed on the site of the manure storage facility where the CH₄ was captured, using a flare or any other device.

For the purposes of this protocol, “manure” means livestock waste with liquid manure management within the meaning of the Agricultural Operations Regulation (chapter Q-2, r. 26).

(2) Location

The project must be carried out within the borders of the province of Québec.

(3) Reduction project SSRs

The process flow chart in Figure 3.1 and the table in Figure 3.2 show all the SSRs that must be taken into account by the promoter when calculating the GHG emission reductions attributable to the project.

All the SSRs within the dotted line must be counted for the purposes of this protocol.

Figure 3.1. Flowchart for the reduction project process

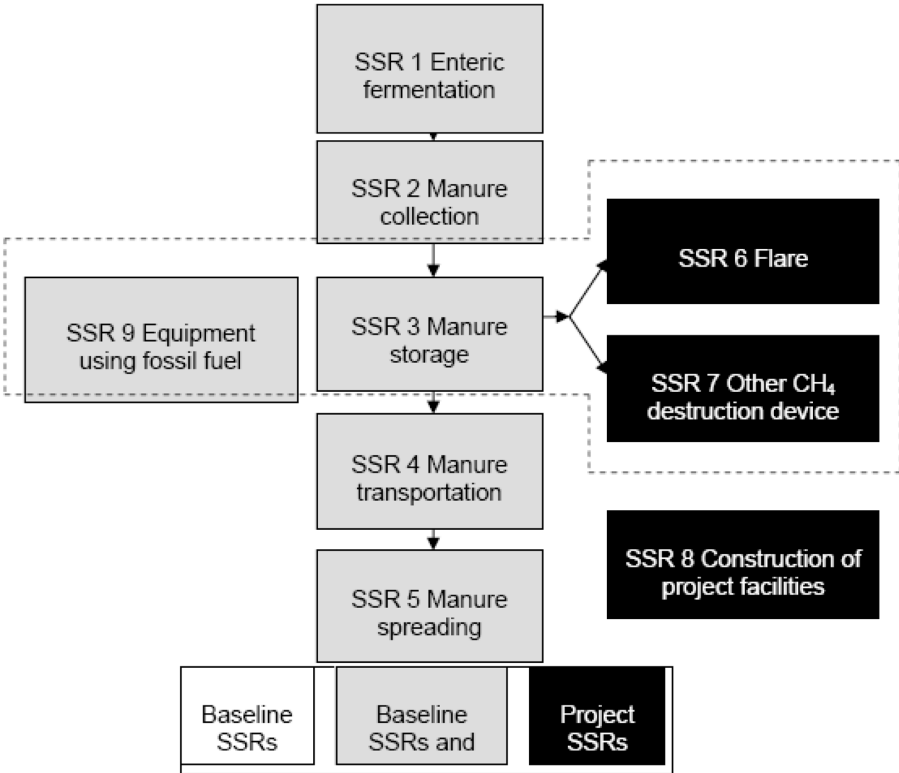


Figure 3.2. Reduction project SSRs

SSR #	Description	GHG	Relevant to project baseline scenario (B) and/or Project (P)	Included or Excluded
1	Enteric fermentation	CH ₄	B, P	Excluded
2	Manure collection	CH ₄ CO ₂ N ₂ O	B, P	Excluded Excluded Excluded
3	Manure storage	CH ₄ CO ₂	B, P	Included Excluded
4	Manure transportation	CH ₄ CO ₂ N ₂ O	B, P	Excluded Excluded Excluded
5	Manure spreading	CH ₄ CO ₂ N ₂ O	B, P	Excluded Excluded Excluded
6	Flare	CH ₄ CO ₂ N ₂ O	P	Included Excluded Included
7	Other CH ₄ destruction device	CH ₄ CO ₂ N ₂ O	P	Included Excluded Included
8	Construction of project facilities	CH ₄ CO ₂ N ₂ O	P	Excluded Excluded Excluded
9	Equipment using fossil fuel	CH ₄ CO ₂ N ₂ O	B, P	Included Included Included

(4) Calculation method for the GHG emission reductions attributable to the project

The promoter must calculate the quantity of GHG emission reductions attributable to the project using equation 1:

Equation 1

$$ER = GHG_{project} - \Delta GHG_{fossil}$$

Where:

ER = Reductions in GHG emissions attributable to the project during the issuance period, in metric tonnes CO₂ equivalent;

GHG_{project} = Gross reduction in GHG emissions from the project during the issuance period, calculated using equation 2, in metric tonnes CO₂ equivalent;

Δ GHG_{fossil} = Differential between GHG emissions in the baseline scenario and GHG emissions for the project attributable to the fossil fuels consumed in the operation of equipment within the project SSRs, during the issuance period, calculated using equation 9, in metric tonnes CO₂ equivalent.

(4.1) Calculation method for gross GHG emission reductions

The promoter must calculate the quantity of gross GHG emission reductions attributable to the project using equations 2 to 8:

Equation 2

$$GHG_{project} = GHG_{dest\ flare} - GHG_{combustion\ flare} + GHG_{dest\ other} - GHG_{combustion\ other}$$

Where:

GHG_{project} = Gross reduction in GHG emissions attributable to the project during the issuance period, in metric tonnes CO₂ equivalent;

GHG_{dest flare} = Lesser of the CH₄ emissions destroyed at flare during the issuance period and 90% of the emissions from an uncovered manure storage facility, calculated using equation 3, in metric tonnes CO₂ equivalent;

GHG_{combustion flare} = N₂O emissions attributable to combustion of captured gas at flare during the issuance period, calculated using equation 6, in metric tonnes CO₂ equivalent;

GHG_{dest other} = Lesser of the CH₄ emissions destroyed by a destruction device other than a flare during the issuance period and 90% of the emissions from an uncovered manure storage facility, calculated using equation 7, in metric tonnes CO₂ equivalent;

GHG_{combustion other} = N₂O emissions attributable to combustion of captured gas by a destruction device other than a flare during the issuance period, calculated using equation 8.1, in metric tonnes CO₂ equivalent;

Equation 3

$$GHG_{dest\ flare} = \text{Min} [GHG_{flare}, GHG_{EF}]$$

Where:

GHG_{dest flare} = Lesser of the CH₄ emissions destroyed at flare during the issuance period and 90% of the emissions from an uncovered manure storage facility, in metric tonnes CO₂ equivalent;

Min = Lesser of the 2 elements calculated;

GHG_{flare} = CH₄ emissions destroyed at flare during the issuance period, calculated using equation 4, in metric tonnes CO₂ equivalent;

$GHG_{EF} = 90\%$ of emissions from an uncovered manure storage facility, calculated using equation 5, in metric tonnes CO_2 equivalent;

Equation 4

$$GHG_{flare} = \sum_{j=1}^n \left[(Q_{gas\ cov} \times EFF_{flare}) \times C_{CH_4} \right]_j \times 0.667 \times 21 \times 0.001$$

Where:

$\text{GHG}_{\text{flare}} = \text{CH}_4$ emissions destroyed at flare during the issuance period, in metric tonnes CO_2 equivalent;

n = Number of days on which gas is produced during the issuance period;

j = Day on which gas is produced at the manure storage facility;

$Q_{\text{gas cov}}$ = Quantity of gas available for burning on day j measured at the capture system before delivery to the flare, in cubic metres at standard conditions;

$\text{EFF}_{\text{flare}}$ = Flare burning efficiency rate, namely:

— for an open flare, a rate of 0.96 when the flare is operated in accordance with the method General control device and work practice requirements in Part 60.18 of Title 40 of the Code of Federal Regulation published by the U.S. Environmental Protection Agency (USEPA), or a rate of 0.5 in other cases;

— for an enclosed flare, a rate of 0.98 when the gas retention time in the stack is at least 0.3 seconds, or a rate of 0.9 in other cases;

C_{CH_4} = Average CH_4 content in the gas burned on day j , determined in accordance with Part III, in cubic metres of CH_4 per cubic metre of gas;

0.667 = Density of CH_4 , in kilograms per cubic metre at standard conditions;

21 = Global Warming Potential factor of CH_4 ;

0.001 = Conversion factor, kilograms to metric tonnes;

Equation 5

$$GHG_{EF} = \sum_{i=1}^n (Nb_i \times EF_i) \times 21 \times 0.001 \times 0.9$$

Where:

$\text{GHG}_{\text{EF}} = 90\%$ of the emissions from a non-covered manure storage facility, in metric tonnes CO_2 equivalent;

n = Number of categories of livestock;

i = Category of livestock listed in the tables in Part II;

Nb_i = Population of category of livestock i during the issuance period, in head of livestock;

EF_i = CH_4 emission factor for category of livestock i , specified in the tables in Part II, in kilograms of CH_4 per head per year;

21 = Global Warming Potential factor of CH_4 ;

0.001 = Conversion factor, kilograms to metric tonnes;

$0.9 = 90\%$;

Equation 6

$$GHG_{combustion\ flare} = \sum_{j=1}^n \left[Q_{gas\ cov} \times EFF_{flare} \times C_{CH4} \right]_j \times (0.049 \times 310) \times 0.000001$$

Where:

$GHG_{\text{combustion flare}}$ = N_2O emissions attributable to combustion of captured gas at flare during the issuance period, in metric tonnes CO_2 equivalent;

n = Number of days on which gas is produced during the issuance period;

j = Day on which gas is produced at the manure storage facility vent;

$Q_{\text{gas cov}}$ = Quantity of gas available for burning on day j measured at the capture system before delivery to the flare, in cubic metres at standard conditions;

EFF_{flare} = Flare burning efficiency rate, namely:

— for an open flare, a rate of 0.96 when the flare is operated in accordance with the method “General control device and work practice requirements” in Part 60.18 of Title 40 of the Code of Federal Regulations published by the U.S. Environmental Protection Agency (USEPA), or a rate of 0.5 in other cases;

— for an enclosed flare, a rate of 0.98 when the gas retention time in the stack is at least 0.3 seconds, or a rate of 0.9 in other cases;

C_{CH_4} = Average CH_4 content in the gas burned on day j , determined in accordance with Part III, in cubic metres of CH_4 per cubic metre of gas;

0.049 = N_2O emission factor attributable to flare burning, in grams of N_2O per cubic metre of gas burned;

310 = Global Warming Potential factor of N_2O ;

0.000001 = Conversion factor, grams to metric tonnes;

Equation 7

$$GHG_{\text{dest other}} = \text{Min} [GHG_{\text{other}} ; GHG_{\text{EF}}]$$

Where:

$GHG_{\text{dest other}}$ = Lesser of CH_4 emissions destroyed by a destruction device other than a flare during the issuance period and 90% of emissions from an uncovered manure storage facility, in metric tonnes CO_2 equivalent;

Min = Lesser of the 2 elements calculated;

GHG_{other} = CH_4 emissions destroyed by the destruction device other than a flare during the issuance period, calculated using equation 8, in metric tonnes CO_2 equivalent;

GHG_{EF} = 90% of the emissions from a non-covered manure storage facility, calculated using equation 5, in metric tonnes CO_2 equivalent;

Equation 8

$$GHG_{other} = Q_{gas\ cov} \times \left[(C_{CH_4} - C_{dest-CH_4}) \times 0.667 \times 21 \right] \times 0.001$$

Where:

GHG_{other} = CH_4 emissions destroyed by a destruction device other than a flare during the issuance period, in metric tonnes CO_2 equivalent;

$Q_{gas\ cov}$ = Quantity of gas available for destruction during the issuance period, measured at the capture system prior to destruction, in cubic metres at standard conditions;

C_{CH_4} = Average CH_4 content in the gas before entering the destruction device during the issuance period, determined in accordance with Part III, in cubic metres of CH_4 per cubic metre of gas;

$C_{dest-CH_4}$ = Average CH_4 content in the gas leaving the destruction device during the issuance period, determined in accordance with the method in Part V, in cubic metres of CH_4 per cubic metre of gas;

0.667 = Density of CH_4 , in kilograms per cubic metre at standard conditions;

21 = Global Warming Potential factor of CH_4 ;

0.001 = Conversion factor, kilograms to metric tonnes.

Equation 8.1

$$GHG_{combustion\ other} = Q_{gas\ cov} \times (C_{dest-N_2O} \times 1.84 \times 310) \times 0.001$$

Where:

$GHG_{combustion\ other}$ = N_2O emissions attributable to combustion of captured gas by a destruction device other than a flare during the issuance period, in metric tonnes CO_2 equivalent;

$Q_{gas\ cov}$ = Quantity of gas available for destruction during the issuance period, measured at the capture system prior to destruction, in cubic metres at standard conditions;

C_{dest-N_2O} = Average N_2O content in the gas leaving the destruction device during the issuance period, determined in accordance with the method in Part V, in cubic metres of N_2O per cubic metre of gas;

1.84 = Density of N_2O , in kilograms per cubic metre at standard conditions;

310 = Global Warming Potential factor of N_2O ;

0.001 = Conversion factor, kilograms to metric tonnes.

(4.2) Calculation method for GHG emissions attributable to fossil fuels

The promoter must calculate, using equation 9, the differential between the GHG emissions for the baseline scenario and the GHG emissions for the project attributable to fossil fuels using equation 9.

If the GHG emissions for the project are above the GHG emissions for the baseline scenario, the latter are subtracted from the reductions in accordance with equation 1. In other cases, the factor “ ΔGHG_{fossil} ” for equation 1 is 0.

Equation 9

$$\Delta GHG_{fossil} = \sum_{j=1}^m \left[(C_{project} - C_{SF})_j \times ((F_{CO_2} \times 0.001) + (F_{CH_4} \times 0.000001 \times 21) + (F_{N_2O} \times 0.000001 \times 310))_j \right]$$

Where:

$\Delta\text{GHG}_{\text{fossil}}$ = Differential between the GHG emissions for the baseline scenario and the GHG emissions for the project attributable to fossil fuels during the issuance period, in metric tonnes CO₂ equivalent;

m = Number of fossil fuels;

j = Fossil fuel;

C_{project} = Quantity of fossil fuel j consumed in the operation of equipment within the project SSRs during the issuance period, expressed

— in kilograms, in the case of fuels whose quantity is expressed as a mass;

— in cubic metres at standard conditions, in the case of fuels whose quantity is expressed as a volume of gas;

— in litres, in the case of fuels whose quantity is expressed as a volume of liquid;

C_{SF} = Quantity of fossil fuel j consumed in the operation of equipment within the SSRs included in the baseline scenario during the issuance period, expressed

— in kilograms, in the case of fuels whose quantity is expressed as a mass;

— in cubic metres at standard conditions, in the case of fuels whose quantity is expressed as a volume of gas;

— in litres, in the case of fuels whose quantity is expressed as a volume of liquid;

F_{CO_2} = CO₂ emission factor for fuel j specified in tables 1-3 to 1-8 of QC.1.7 in Schedule A.2 to the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere (chapter Q-2, r. 15), expressed

— in kilograms of CO₂ per kilogram, in the case of fuels whose quantity is expressed as a mass;

— in kilograms of CO₂ per cubic metre at standard conditions, in the case of fuels whose quantity is expressed as a volume of gas;

— in kilograms of CO₂ per litre, in the case of fuels whose quantity is expressed as a volume of liquid;

0.001 = Conversion factor, kilograms to metric tonnes;

F_{CH_4} = CH₄ emission factor for fuel j specified in tables 1-3 to 1-8 of QC.1.7 in Schedule A.2 to the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere, expressed

— in grams of CH₄ per kilogram, in the case of fuels whose quantity is expressed as a mass;

— in grams of CH₄ per cubic metre at standard conditions, in the case of fuels whose quantity is expressed as a volume of gas;

— in grams of CH₄ per litre, in the case of fuels whose quantity is expressed as a volume of liquid;

0.000001 = Conversion factor, grams to metric tonnes;

21 = Global Warming Potential factor of CH₄;

F_{N_2O} = N_2O emission factor for fuel j specified in tables 1-3 to 1-8 of QC.1.7 in Schedule A.2 to the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere, expressed

- in grams of N_2O per kilogram, in the case of fuels whose quantity is expressed as a mass;
- in grams of N_2O per cubic metre at standard conditions, in the case of fuels whose quantity is expressed as a volume of gas;
- in grams of N_2O per litre, in the case of fuels whose quantity is expressed as a volume of liquid;

310 = Global Warming Potential factor of N_2O .

(5) Data management and project surveillance

(5.1) Data collection

The project promoter is responsible for collecting the information required for project monitoring.

The promoter must show that the data collected at the agricultural operation are actual and properly represent production during the period covered by each project report. The promoter must also keep a livestock raising register for the agricultural operation.

(5.2) Surveillance plan

The promoter must establish a surveillance plan to measure and monitor project parameters in accordance with Figure 5.1:

Figure 5.1. Project surveillance plan

Parameter	Factor used in the equations	Unit of measurement	Method	Frequency of measurement
Average annual population of each category of livestock	Nb	Head	Livestock raising register	At each issuance period
Outdoor temperature	N/A	Degree Kelvin	As measured, or according to Environment Canada	Daily average
Quantity of gas available for destruction during the issuance period	$Q_{\text{gas cov}}$	Cubic metre	Flow meter	At each issuance period (sum of daily readings)
CH ₄ content between the manure storage facility and the destruction device	C_{CH_4}	Cubic metre of CH ₄ per cubic metre of gas at standard conditions	Sample and analysis	Quarterly, in accordance with Part III
CH ₄ content leaving the destruction device (other than a flare)	$C_{\text{dest-CH}_4}$	Cubic metre of CH ₄ per cubic metre of gas at standard conditions	Sample and analysis	Quarterly, in accordance with Part V
N ₂ O content leaving the destruction device (other than a flare)	$C_{\text{dest-N}_2\text{O}}$	Cubic metre of N ₂ O per cubic metre of gas at standard conditions	Sample and analysis	Quarterly, in accordance with Part V
Quantity of fossil fuel used to operate equipment within the project SSRs	C_{project}	Kilogram (solid) Cubic metre (gas)	Purchase invoices	At each issuance period

during the issuance period		Litres (liquid)			
Quantity of fossil fuel used to operate equipment within the project SSRs for the baseline scenario, during the issuance period	C _{sf}	Kilogram (solid) Cubic metre (gas) Litres (liquid)	Purchase invoices	At each issuance period	

The promoter is responsible for operating the project and monitoring project performance. The promoter must use the CH₄ destruction device and the measurement instruments in accordance with the manufacturer's specifications. The promoter must, in particular, use measurement instruments to measure directly

- (1) the flow of gas before being delivered to the destruction device, continuously, recorded every 15 minutes or totalized and recorded at least daily, adjusted for temperature and pressure; and
- (2) the CH₄ content in the gas entering the destruction device, determined in accordance with the applicable method in Part III;
- (3) the CH₄ and N₂O content in the gas leaving the destruction device, determined in accordance with the applicable method in Part V, when a destruction device other than a flare is used.

The promoter must monitor and document the use of the destruction device at least once per day to ensure the destruction of the CH₄. A flare must be equipped with a monitoring device, such as a thermocouple, at its output that certifies correct operation. GHG emission reductions will not be taken into account for the issue of offset credits for periods during which the destruction device is not operating.

When a destruction device or an operation monitoring device, such as a thermocouple on a flare, is not operating, all the CH₄ measured as being delivered to the destruction device must be considered as being emitted to the atmosphere during the period of non-operation. The destruction efficiency of the device must be considered to be zero.

(5.3) CH₄ and N₂O measurement instruments

The promoter must ensure that all gas flow meters and analyzers are

- (1) cleaned and inspected on a quarterly basis, except from December to March;
- (2) not more than 2 months before the issuance period end date, checked for calibration accuracy by a qualified and independent person, using a portable instrument or manufacturer's specifications, and ensure that the percentage drift is recorded; and
- (3) calibrated by the manufacturer or by a third person certified for that purpose, every 5 years or according to the manufacturer's specifications, whichever is more frequent.

When a check on a piece of equipment reveals accuracy outside a $\pm 5\%$ threshold,

(1) the piece of equipment must be calibrated by the manufacturer, or by a third person certified for that purpose by the manufacturer; and

(2) all the data from the meters and analyzers must be scaled according to the following procedure:

(a) the data must be adjusted for the entire period from the last calibration that confirmed accuracy within the $\pm 5\%$ threshold until such time as the flow meter and analyzer is correctly calibrated; and

(b) the project promoter must estimate the GHG emission reductions using the lesser of the measured flow values without correction and the measured flow values adjusted based on the greatest calibration drift recorded.

The last calibration confirming accuracy within the $\pm 5\%$ threshold must not have taken place more than 2 months before the end date for the issuance period.

If a portable instrument is used, such as a handheld CH₄ analyzer, it must be calibrated at least annually by the manufacturer or by an ISO 17025 accredited laboratory.

(5.4) Data management

The data must be of sufficient quality to meet the calculation requirements and be confirmed by the livestock raising registers of the agricultural operation during the verification.

The project promoter must establish written procedures for each task involving measurements, indicating the person responsible, the frequency and time of the measurements, and the place where the registers are kept.

In addition, the registers must be

(1) legible, dated and revised if needed;

(2) kept in good condition; and

(3) kept in a place that is easily accessible for the duration of the project.

(5.5) Missing data – replacement methods

In situations where data on gas flow rates or CH₄ or N₂O content are missing, the promoter must apply the data replacement methods set out in Part VI. Missing data on gas flow rates may be replaced only when a continuous analyzer is used to measure CH₄ and N₂O content. When CH₄ and N₂O content is measured by sampling, no missing data is permissible.

Part II

Emission factors for the management of manure from livestock

Table 1. CH₄ emission factors for the management of manure from dairy and non-dairy cattle

Category	CH ₄ emission factor Kilograms of CH ₄ / head / year
Dairy cow	27.8
Dairy heifer	19.1
Bull	3.3
Slaughter cow	3.2
Slaughter heifer	2.4
Steer	1.6
Backgrounding cattle	1.8
Dairy calf or dairy heifer calf	1.5

Table 2. CH₄ emission factors for the management of manure from other categories of livestock

Category	CH ₄ emission factor Kilograms of CH ₄ / head / year
Piglet	1.66
Hog	6.48
Sow	7.71
Boar	6.40

Part III

Determination of the CH₄ content of gas available for burning measured at the capture system before delivery to the flare or other destruction device

When the project is not equipped with a continuous CH₄ analyzer, the promoter must sample the gas sent to the destruction device when the device is in operation during the 4 following periods each year:

Sample 1: April – May

Sample 2: June – July

Sample 3: August – September

Sample 4: October – November

To be representative, each sampling must measure concentration, gas flow rate and air temperature during 8 hours, continuously or over several shorter periods. Enough data must be collected to establish a graph of CH₄ content as a function of temperature.

The graph will be used to determine CH₄ content on days when the gas is not sampled, when the average temperature is known.

The promoter must

- (1) sample the gases, measure the gas flow rate and measure the ambient temperature;
- (2) produce a graph showing CH₄ content as a function of temperature;
- (3) determine the average ambient temperature for a given day;
- (4) using the graph, determine CH₄ content as a function of temperature for each operating period of the destruction device; and
- (5) complete the monitoring grid in Part IV.

Part IV

Monitoring grid

Date	$Q_{\text{gaz cov}}$	Ambient	C_{CH_4}	GHG flare	GHG combustion flare
	m^3	temperature	in m^3 of	or	or
	measured	measured in	CH_4 per	GHG other	GHG combustion other
		Kelvin	m^3 of gas	in CO_2	in CO_2 equivalent,
				equivalent,	using equation 6 or
				using	8.1
				equation 4	
				or 8	

Part V

Determination of the CH_4 and N_2O content of gas leaving a destruction device other than a flare

When the project is not equipped with a continuous CH_4 or N_2O analyzer, the promoter must sample the available gas leaving the destruction device during the 4 following periods each year:

Sample 1: April – May

Sample 2: June – July

Sample 3: August – September

Sample 4: October – November

The promoter must determine the average CH_4 content during the issuance period using equation 10 and the average N_2O content using equation 11:

Equation 10

$$C_{dest-CH4} = \frac{\sum_{i=1}^n C_{S_{CH4,i}}}{n}$$

Where:

$C_{\text{dest-CH}_4}$ = Average CH_4 content of gas leaving the destruction device during the issuance period, in cubic metres of CH_4 per cubic metre of gas at standard conditions;

n = Number of samples;

i = Sample;

$C_{s_{\text{CH}_4,i}}$ = CH_4 content of sample i , measured in the gas leaving the destruction device, in cubic metres of CH_4 per cubic metre of gas at standard conditions;

Equation 11

$$C_{dest-N_2O} = \frac{\sum_{i=1}^n C_{S_{N_2O},i}}{n}$$

Where:

$C_{\text{dest-N}_2\text{O}}$ = Average N_2O content of gas leaving the destruction system during the issuance period, in cubic metres of N_2O per cubic metre of gas at standard conditions;

n = Number of samples;

i = Sample;

$C_{s_{\text{N}_2\text{O},i}}$ = N_2O content of sample i , measured in the gas leaving the destruction system, in cubic metres of N_2O per cubic metre of gas at standard conditions.

Part VI

Missing data – replacement methods

The replacement methods below may be used only

- (1) for CH_4 or N_2O content or gas flow rate parameters;
- (2) for data gaps on gas flow rates that are discrete, non-chronic and due to unforeseen circumstances;
- (3) when the proper functioning of the destruction device can be shown by reading the thermocouple at the flare or other device;
- (4) when data on gas flow rate only, or CH_4 or N_2O content only, are missing;
- (5) to replace data on gas flow rates when a continuous analyzer is used to measure CH_4 and N_2O content and when it is shown that CH_4 and N_2O content was consistent with normal operations for the time when the data are missing; and
- (6) to replace data on CH_4 and N_2O content when it is shown that the gas flow rate was consistent with normal operations for the time when the data are missing.

No offset credit may be issued for periods when the replacement methods cannot be used.

Missing data period	Replacement method
Less than 6 hours	Use the average of the 4 hours immediately before and following the missing data period
6 to less than 24 hour	Use the 90% lower or upper confidence limit of the 24 hours prior to and after the missing data period, whichever results in greater conservativeness
1 to 7 days	Use the 95% lower or upper confidence limit of the 72 hours prior to and after the missing data period, whichever results in greater conservativeness
More than 7 days	No data may be replaced and no reduction may be credited

PROTOCOL 2

(Replaced, M.O. 2021-06-11, s. 63).

PROTOCOL 3

(Replaced, M.O. 2021-06-11, s. 62).

PROTOCOL 4

ACTIVE COAL MINES – DESTRUCTION OF CH₄ FROM A DRAINAGE SYSTEM

Part I

(1) Projects covered

This offset credit protocol covers any project designed to reduce GHG emissions by capturing and destroying CH₄ from a CH₄ drainage system at an active underground or surface coal mine, except a mountaintop removal mine.

The project must enable the capture and destruction of CH₄ that, before the project, was emitted to the atmosphere. The CH₄ must be captured within the mine boundaries based on the current mine map and no more than 50 m below the mined seam and, in the case of an underground mine, up to 150 m above that seam. The project must not use CO₂, steam or any other fluid or gas to enhance CH₄ drainage.

The CH₄ must be destroyed on the site of the mine where it was captured using a flare or any other destruction device. Emission reductions following pipeline injection of CH₄ are considered as common practice in the operation of an underground mine and are eligible only for a surface mine.

For the purposes of this protocol,

- (1) “room and pillar” means a method of underground mining in which approximately half of the coal is left in place as “pillars” to support the roof of the active mining area while “rooms” of coal are extracted;
- (2) “coal” means all solid fuels classified as anthracite, bituminous, subbituminous, or lignite under ASTM D388, entitled Standard Classification of Coals by Rank;
- (3) “mine gas” means the untreated gas extracted from within a mine through a CH₄ drainage system that often contains various levels of other components such as nitrogen, oxygen, CO₂ and hydrogen sulfide;
- (4) “mine CH₄” means the CH₄ portion of the mine gas contained in coal seams and surrounding strata that is released as a result of mining operations;
- (5) “drainage system” means a system installed in a mine to drain CH₄ from coal seams.

(2) First project report

In addition to the information required under the third paragraph of section 70.5 of this Regulation, the first project report must include the following information:

- (1) in the case of an underground mine, the mining method employed, such as room and pillar or longwall;
- (2) annual coal production, in metric tonnes;
- (3) the year of initial mine operation;
- (4) the scheduled year of mine closure, if known;
- (5) a diagram of the mine site that includes
 - (a) the location of existing and planned wells and boreholes, specifying whether they were used for premining or post-mining drainage, and whether they are part of the project;
 - (b) the location of the equipment that will be used to treat or destroy the mine CH₄.

(3) Location

The project must be implemented in Canada.

(4) Reduction project SSRs

The reduction project process flowchart in Figure 4.1 and the table in Figure 4.2 show all the SSRs that must be taken into account by the promoter when calculating the GHG emission reductions attributable to the project.

All the SSRs within the dotted line must be counted for the purposes of this protocol.

Figure 4.1. Flowchart for the reduction project process

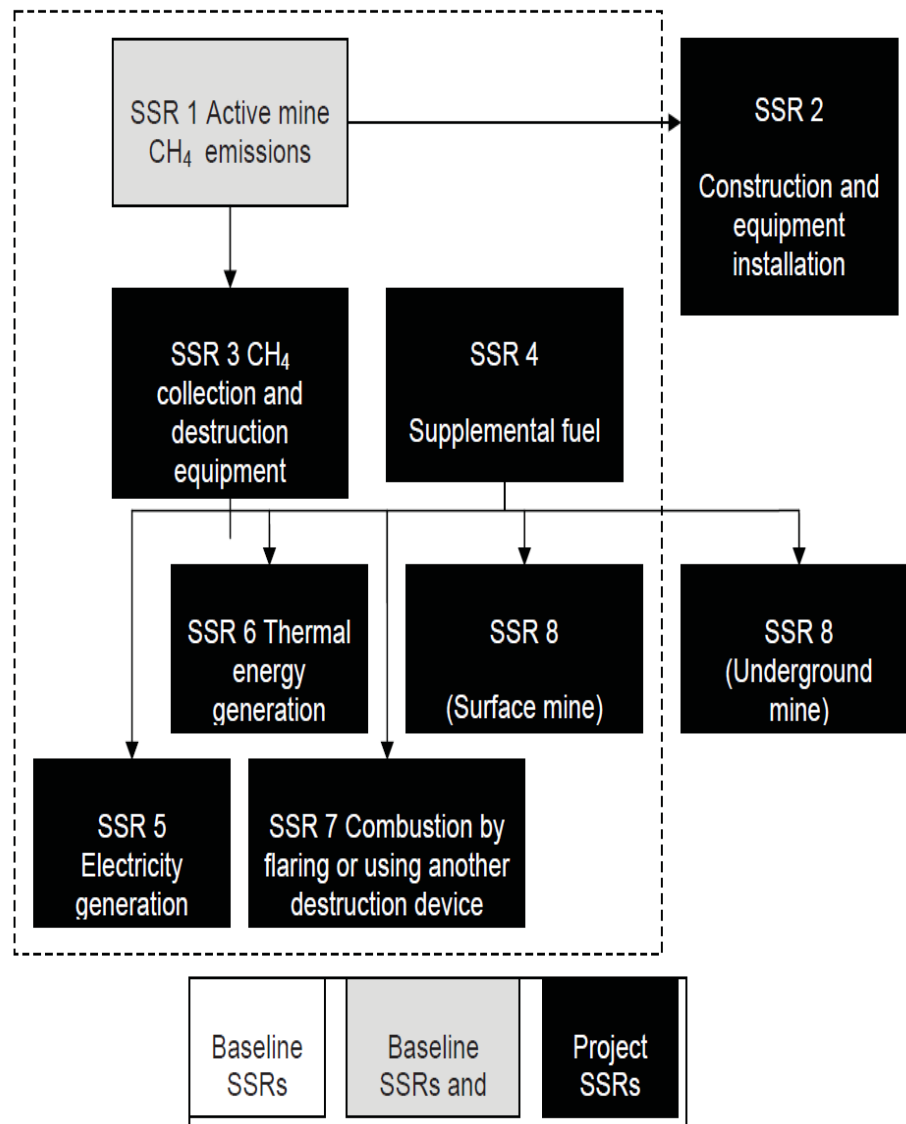


Figure 4.2. Reduction project SSRs

SSR #	Description	GHG	Relevant to Baseline (B) or Project (P)	Included/ Excluded
1	CH ₄ emissions from mining activities	CH ₄	B, P	Included
2	Emissions from construction and/or installation of new equipment	CO ₂	P	Excluded
		CH ₄		Excluded
		N ₂ O		Excluded
3	Emissions resulting from fossil fuels consumed to operate the CH ₄ drainage system	CO ₂	P	Included
		CH ₄		Excluded
		N ₂ O		Excluded
4	Emissions from the use of supplemental fossil fuels	CO ₂	P	Included
		CH ₄		Excluded
		N ₂ O		Excluded
5	Emissions from CH ₄ destruction for electricity generation	CO ₂	P	Included
		N ₂ O		Excluded
	Emissions of uncombusted CH ₄	CH ₄	P	Included
6	Emissions from CH ₄ destruction	CO ₂	P	Included

	for heat generation	N ₂ O		Excluded
	Emissions of uncombusted CH ₄	CH ₄	P	Included
7	Emissions from CH ₄ destruction using a flare or other device	CO ₂	P	Included
		N ₂ O		Excluded
	Emissions of uncombusted CH ₄	CH ₄	P	Included
8 (Underground mine)	Pipeline injection	CO ₂	P	Excluded
		N ₂ O		Excluded
		CH ₄		Excluded
8 (Surface mine)	Emissions resulting from the combustion of CH ₄ injected into a pipeline	CO ₂	P	Included
		N ₂ O		Excluded
	Emissions of uncombusted CH ₄ injected into a pipeline	CH ₄	P	Included

(5) Calculation method for the GHG emission reductions attributable to the project

The promoter must calculate the quantity of GHG emission reductions attributable to the project using equation 1:

Equation 1

$$ER = BE - PE$$

Where:

ER = GHG emission reductions attributable to the project during the issuance period, in metric tonnes CO₂ equivalent;

BE = Emissions under the baseline scenario during the issuance period, calculated using equation 3, in metric tonnes CO₂ equivalent;

PE = Project emissions during the issuance period, calculated using equation 5, in metric tonnes CO₂ equivalent.

When the flow meter does not correct for the temperature and pressure of the mine gas at standard conditions, the promoter must measure mine pressure and temperature separately and correct the flow values using equation 2. The promoter must use the corrected flow values in all the equations of this protocol.

Equation 2

$$MG_{i,t} = MG_{uncorrected} \times \frac{293.15}{T} \times \frac{P}{101.325}$$

Where:

$MG_{i,t}$ = Volume of mine gas sent to destruction device i in time interval t , in cubic metres at standard conditions;

i = Destruction device;

t = Time interval shown in the table in Figure 6.1 for which CH₄ flow and content measurements are aggregated;

$MG_{uncorrected}$ = Uncorrected volume of mine gas sent to destruction device i in time interval t , in cubic metres;

293.15 = Reference temperature, in Kelvin;

T = Measured temperature of mine gas for the given time period, in Kelvin (°C + 273.15);

P = Pressure of the mine gas for the given time period, in kilopascals;

101.325 = Standard pressure, in kilopascals.

(5.1) Calculation method for GHG emissions in the baseline scenario

In the baseline scenario, CH₄ sent to a destruction device during the issuance period, except CH₄ captured by a pre-mining surface well used to extract CH₄, must be taken into account.

In the case of a surface well used to extract CH₄ before a mining operation, CH₄ emissions from past periods are considered only during a issuance period when the well is mined through, in other words when one of the following situations occurs:

(1) the well is physically bisected by mining activities;

(2) the well produces elevated amounts of atmospheric gases so that the concentration of nitrogen in the mine gas increases by 5 compared to baseline concentrations according to a gas analysis using a gas chromatograph completed by an ISO 17025 accredited laboratory. To ensure that the elevated nitrogen concentrations are not solely the result of a leak in the well, the oxygen concentration must not have increased by the same proportion as the nitrogen concentration;

(3) in the case of an underground mine, the working face passes less than 150 m below the well;

(4) in the case of an underground mine, the room and pillar method is used and the block of coal that will be left unmined as a pillar is less than 150 m directly below the well.

The promoter must calculate GHG emissions in the baseline scenario using equation 3:

Equation 3

$$BE = \sum_{i=1}^n [Q_i] \times 0.667 \times 0.001 \times 21$$

Where:

BE = Baseline scenario emissions during the issuance period, in metric tonnes CO₂ equivalent;

n = Number of destruction devices;

i = Destruction device;

Q_i = Total quantity of CH₄ sent to destruction device *i* during the issuance period, calculated using equation 4, in cubic metres of CH₄ at standard conditions;

0.667 = Density of CH₄, in kilograms of CH₄ per cubic metre of CH₄ at standard conditions;

0.001 = Conversion factor, kilograms to metric tonnes;

21 = Global Warming Potential factor of CH₄;

Equation 4

$$Q_i = \sum_{t=1}^n [MG_{i,t} \times C_{CH4,t}]$$

Where:

Q_i = Total quantity of CH_4 sent to destruction device i during the issuance period, in cubic metres of CH_4 at standard conditions;

n = Number of time intervals during the issuance period;

t = Time interval shown in the table in Figure 6.1 for which CH_4 flow and content measurements for the mine gas are aggregated;

$\text{MG}_{i,t}$ = Volume of mine gas sent to destruction device i in time interval t , in cubic metres at standard conditions, except mine gas from a surface well that is not yet mined through. Despite the foregoing, if the surface well is mined through during the issuance period, the mine gas sent to a destruction device during the current reporting period and in previous years must be included;

$C_{\text{CH}_4,t}$ = Average CH_4 content in the mine gas sent to a destruction device during time interval t , in cubic metres of CH_4 per cubic metre of mine gas.

(5.2) Calculation method for GHG project emissions

The promoter must calculate the GHG project emissions using equations 5 to 8. The CO_2 emissions attributable to the destruction of CH_4 from a pre-mining surface well used to extract CH_4 during a current issuance period, calculated using equation 7, must be included even if the well has not yet been mined through.

Equation 5

$$PE = FF_{\text{CO}_2} + DM_{\text{CO}_2} + UM_{\text{CH}_4}$$

Where:

PE = Project emissions during the issuance period, in metric tonnes CO_2 equivalent;

FF_{CO_2} = Total CO_2 emissions attributable to the consumption of fossil fuel to capture and destroy mine CH_4 during the issuance period, calculated using equation 6, in metric tonnes CO_2 equivalent;

DM_{CO_2} = Total CO_2 attributable to the destruction of CH_4 during the issuance period, calculated using equation 7, in metric tonnes CO_2 equivalent;

UM_{CH_4} = CH_4 emissions attributable to uncombusted CH_4 during a issuance period, calculated using equation 8, in metric tonnes CO_2 equivalent;

Equation 6

$$FF_{CO_2} = \frac{\sum_{j=1}^n (FF_{PR,j} \times EF_{CF,j})}{1,000}$$

Where:

FF_{CO_2} = Total CO_2 attributable to the consumption of fossil fuel to capture and destroy mine CH_4 during the issuance period, in metric tonnes CO_2 equivalent;

n = Number of types of fossil fuel;

j = Type of fossil fuel;

$FF_{PR,j}$ = Total quantity of fossil fuel j consumed, expressed

— in kilograms, in the case of fuels whose quantity is expressed as a mass;

— in cubic metres at standard conditions, in the case of fuels whose quantity is expressed as a volume of gas;

— in litres, in the case of fuels whose quantity is expressed as a volume of liquid;

$EF_{CF,j}$ = CO_2 emission factor for fossil fuel j specified in tables 1-3 to 1-8 of QC.1.7 in Schedule A.2 to the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere (chapter Q-2, r. 15), expressed

— in kilograms of CO_2 per kilogram, in the case of fuels whose quantity is expressed as a mass;

— in kilograms of CO_2 per cubic metre at standard conditions, in the case of fuels whose quantity is expressed as a volume of gas;

— in kilograms of CO_2 per litre, in the case of fuels whose quantity is expressed as a volume of liquid;

1,000 = Conversion factor, metric tonnes to kilograms;

Equation 7

$$DM_{CO_2} = \sum_{i=1}^n [Q_i \times DE_i] \times 1.556 \times 0.001$$

Where:

DM_{CO_2} = Total CO_2 attributable to the destruction of CH_4 during a issuance period, in metric tonnes CO_2 equivalent;

n = Number of destruction devices;

i = Destruction device;

Q_i = Total quantity of CH_4 sent to destruction device i during the issuance period, calculated using equation 4, in cubic metres of CH_4 at standard conditions;

DE_i = Default CH_4 destruction efficiency of destruction device i , determined in accordance with Part II;

1.556 = CO_2 emission factor attributable to the combustion of CH_4 , in kilograms of CO_2 per cubic metre of CH_4 combusted;

0.001 = Conversion factor, kilograms to metric tonnes;

Equation 8

$$UM_{CH_4} = \sum_{i=1}^n [Q_i \times (1 - DE_i)] \times 0.667 \times 0.001 \times 21$$

Where:

UM_{CH_4} = CH_4 emissions attributable to uncombusted CH_4 during the issuance period, in metric tonnes CO_2 equivalent;

n = Number of destruction devices;

i = Destruction device;

Q_i = Total quantity of CH_4 sent to destruction device i during the issuance period, calculated using equation 4, in cubic metres of CH_4 at standard conditions;

DE_i = Default CH_4 destruction efficiency of destruction device i , determined in accordance with Part II;

0.667 = Density of CH_4 , in kilograms of CH_4 per cubic metre of CH_4 at standard conditions;

0.001 = Conversion factor, kilograms to metric tonnes;

21 = Global Warming Potential factor of CH_4 .

(6) Project surveillance

(6.1) Data collection

The promoter is responsible for collecting the information required for project monitoring.

The promoter must show that the data collected are actual and that rigorous supervision and record-keeping procedures are applied at the project site.

(6.2) Surveillance plan

The promoter must establish a surveillance plan to measure and monitor project parameters in accordance with Figure 6.1:

Figure 6.1. Project surveillance plan

Parameter	Factor used in equations	Unit of measurement	Method	Frequency of measurement
Operating status of destruction device	N/A	Degree Celsius or other, depending on the device installed	Measured for each destruction device	Hourly
Uncorrected volume of mine gas sent to destruction device i , in time interval t	$MG_{\text{uncorrected}}$	Cubic metre	Measured	Only when flow data are not adjusted at standard conditions
Volume of mine gas sent to destruction device i , in time interval t	$MG_{i, t}$	Cubic metre at standard conditions	Measured and calculated	Continuous and recorded at least every 15 minutes to calculate a daily average, and adjusted for temperature and pressure
Average CH_4 content in the mine gas sent to destruction device during time interval t	$C_{CH_4, t}$	Cubic metre of CH_4 per cubic metre of gas at standard conditions	Measured continuously	Continuous and recorded at least every 15 minutes to calculate a daily average
Total quantity of fossil fuels combustibles consumed by the capture and destruction system during the issuance period, by type of fuel j	$FF_{PR, j}$	Kilogram (solid) Cubic metre at standard conditions (gas) Litre (liquid)	Calculated using fossil fuel purchasing register	At each issuance period

Measured temperature of mine gas	T	°C	Measured	Hourly
Pressure of mine gas	P	kPa	Measured	Hourly

The surveillance plan must

(1) specify the methods used to collect and record the data required for all the relevant parameters in the table in Figure 6.1;

(2) specify

(a) the frequency of data acquisition;

(b) the frequency of instrument cleaning, inspection and calibration activities, and of the verification of instrument calibration accuracy; and

(c) the role of the person responsible for each monitoring activity, as well as the quality assurance and quality control measures taken to ensure that data acquisition and instrument calibration are carried out consistently and with precision; and

(3) contain a detailed diagram of the mine gas capture and destruction system, including the placement of all measurement instruments and equipment that affect included SSRs.

The promoter is responsible for carrying out and monitoring project performance. The promoter must use the mine gas destruction device and the measurement instruments in accordance with the manufacturer's specifications. The promoter must, in particular, use measurement instruments to measure directly

(1) the flow of mine gas sent to each destruction device, continuously, recorded every 15 minutes and totaled as a daily average, adjusted for temperature and pressure;

(2) the CH₄ content of the mine gas sent to each destruction device, continuously, recorded every 15 minutes and totaled as a daily average.

When temperature and pressure must be measured to correct flow values at standard conditions, the parameters must be measured at least hourly.

The operating status of the mine gas destruction device must be monitored and recorded at least hourly.

For every destruction device, the promoter must show, in the first project report, that a monitoring device has been installed to verify the operation of each destruction device. The promoter must also show, in each subsequent project report, that the monitoring device has operated correctly.

GHG emission reductions will not be taken into account for the issue of offset credits for periods during which the destruction device or the monitoring device for the operation of the destruction device is not operating.

(6.3) Measurement instruments

The promoter must ensure that all mine gas flow meters and CH₄ analyzers are

(1) cleaned and inspected as specified in the project's surveillance plan and at the minimum cleaning and inspection frequency specified by the manufacturer, with all cleaning and inspection activities documented by personnel;

(2) not more than 2 months before or after the issuance period end date, either

(a) checked for calibration accuracy by a qualified and independent person, using a portable instrument, such as a pitot tube, or in accordance with the manufacturer's specifications, and ensure that the percentage drift is recorded; or

(b) calibrated by the manufacturer or by a third person certified for that purpose by the manufacturer; and

(3) calibrated by the manufacturer or by a third person certified for that purpose by the manufacturer or every 5 years, whichever is more frequent.

A calibration certificate or a verification report on calibration accuracy must be produced and included in the project report. The verification provided for in section 70.16 of this Regulation must include confirmation that the person is qualified to verify calibration accuracy.

Flow meter calibrations must be documented to show that the meter was calibrated to a range of flow rates corresponding to the flow rates expected for the drainage system.

CH₄ analyzer calibrations must be documented to show that the calibration was carried out to a range of temperature and pressure conditions corresponding to the range of conditions measured for the drainage system.

The verification of flow meter and analyzer calibration accuracy must show that the instruments provide a reading of volumetric flow or CH₄ content that is within a +/-5% accuracy threshold.

When a verification of the calibration accuracy of a device shows a shift outside the +/-5% accuracy threshold, the device must be calibrated by the manufacturer or by a third person certified for that purpose by the manufacturer. In addition, for the entire period from the last calibration that confirmed accuracy within the $\pm 5\%$ threshold until such time as the piece of equipment is correctly calibrated, the promoter must use the more conservative of

(1) the measured values without correction;

(2) the adjusted values based on the greatest calibration drift recorded at the time of calibration.

The last calibration confirming accuracy within the $\pm 5\%$ threshold must not have taken place more than 2 months before the end date for the issuance period.

No offset credit may be issued for a issuance period when the calibration or verification of the calibration accuracy of the required instruments has not been correctly carried out and documented.

(6.4) Data management

Information on data procedures and data monitoring must be managed in a way that guarantees the integrity, exhaustiveness, accuracy and validity of the data.

The promoter must keep the following documents and information:

(1) the information required under the surveillance plan;

(2) information on each flow meter, CH₄ analyzer and destruction device used, including type, their model number, serial number and manufacturer's maintenance and calibration procedures;

(3) the calibration date, time and results for CH₄ analyzers and flow meters, and the corrective measures applied if a piece of equipment fails to meet the requirements of this Regulation;

(4) the maintenance records for capture, destruction and monitoring systems;

(5) operating records showing annual coal production.

(6.5) Missing data – replacement methods

In situations where data on flow rates or CH₄ content are missing, the promoter must apply the data replacement methods set out in Part III.

Part II

Destruction efficiencies for destruction devices

The promoter must use the destruction efficiency shown in Table 1 for the project destruction device.

Table 1. Default destruction efficiencies for destruction devices

Destruction device	Efficiency
Open flare	0.96
Enclosed flare	0.995
Internal combustion engine	0.936
Boiler	0.98
Microturbine or large gas turbine	0.995
Upgrade and injection into a pipeline (surface mine)	0.96

Part III

Missing data – replacement methods

The replacement methods below may be used only

(1) for missing mine gas flow rate or CH₄ content parameters;

(2) for missing data that are discrete, non-chronic and due to unforeseen circumstances;

(3) when the proper functioning of the destruction device can be shown by thermocouple readings at the flare or at the other devices of the same nature;

(4) to replace data on mine gas flow rates when it is shown that CH₄ content was consistent with normal operations for the time when the data are missing; and

(5) to replace data on CH₄ content when it is shown that the mine gas flow rate was consistent with normal operations for the time when the data are missing.

No offset credit may be issued for periods when the replacement methods cannot be used.

Missing data period	Replacement method
Less than 6 hours	Use the average of the 4 hours immediately before and following the missing data period
6 to less than 24 hours	Use the 90% upper or lower confidence limit of the 24 hours prior to and after the missing data period, whichever results in greater conservativeness
1 to 7 days	Use the 95% upper or lower confidence limit of the 72 hours prior to and after the missing data period, whichever results in greater conservativeness
More than 7 days	No data may be replaced and no reduction may be credited

PROTOCOL 5

ACTIVE UNDERGROUND COAL MINES – DESTRUCTION OF CH₄ FROM VENTILATION AIR

Part I

(1) Projects covered

This offset credit protocol covers any project designed to reduce GHG emissions by capturing and destroying CH₄ from the ventilation system of an active underground coal mine.

The project must enable the capture and destruction of CH₄ that, before the project, was emitted to the atmosphere. The CH₄ must be captured within the mine boundaries based on the current mine map and must be destroyed on the site of the mine where it was captured using a destruction device.

For the purposes of this protocol,

- (1) “ventilation air” means air from a mine ventilation system;
- (2) “coal” means all solid fuels classified as anthracite, bituminous, subbituminous, or lignite under ASTM D388, entitled Standard Classification of Coals by Rank;
- (3) “ventilation air CH₄” means the CH₄ contained in ventilation air.

(2) First project report

In addition to the information required under the third paragraph of section 70.5 of this Regulation, the first project report must include the following information:

- (1) the mining method employed, such as room and pillar or longwall;
- (2) annual coal production;
- (3) the year of initial mine operation;
- (4) the scheduled year of mine closure, if known;
- (5) a diagram of the mine site that includes
 - (a) the location of existing and planned ventilation shafts, specifying whether they are part of the project;
 - (b) the location of the equipment that will be used to treat or destroy ventilation air CH₄.

(3) Location

The project must be implemented in Canada.

(4) Reduction project SSRs

The reduction project process flowchart in Figure 4.1 and the table in Figure 4.2 show all the SSRs that must be taken into account by the promoter when calculating the GHG emission reductions attributable to the project.

All the SSRs within the dotted line must be counted for the purposes of this protocol.

Figure 4.1. Flowchart for the reduction project process

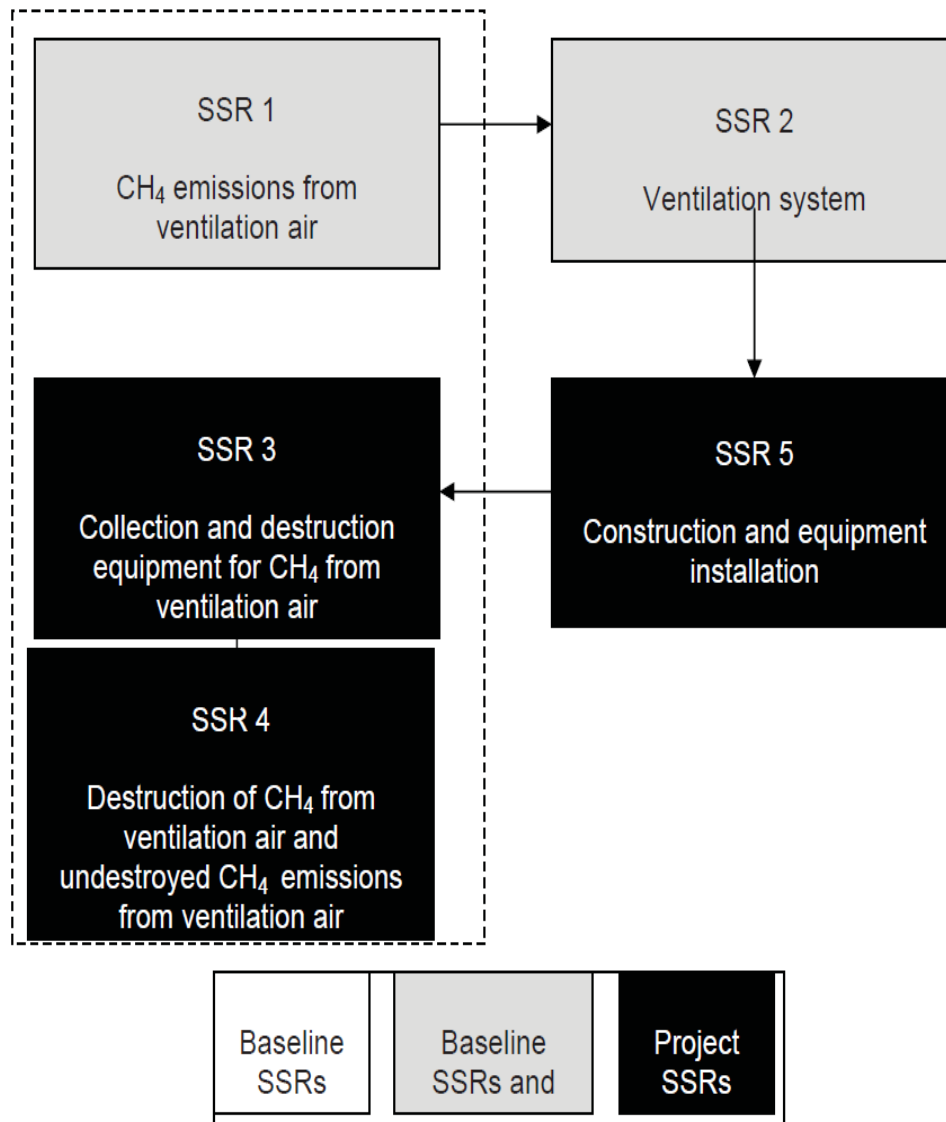


Figure 4.2. Reduction project SSRs

SSR #	Description	GHG	Relevant to Baseline (B) or Project (P)	Included/ Excluded
1	Emissions of ventilation air CH ₄	CH ₄	B, P	Included
2	Emissions attributable to energy consumed to operate mine ventilation system	CO ₂	B, P	Excluded
		CH ₄		Excluded
		N ₂ O		Excluded
3	Emissions attributable to energy consumed to operate equipment to capture and destroy ventilation air CH ₄	CO ₂	P	Included
		CH ₄		Excluded
		N ₂ O		Excluded
4	Emissions from the destruction of ventilation air CH ₄	CO ₂	P	Included
		N ₂ O		Excluded
	Emissions of uncombusted ventilation air CH ₄	CH ₄	P	Included
5	Emissions from the construction and/or installation of new equipment	CO ₂	P	Excluded
		CH ₄		Excluded
		N ₂ O		Excluded

(5) Calculation method for the GHG emission reductions attributable to the project

The promoter must calculate the quantity of GHG emission reductions attributable to the project using equation 1:

Equation 1

$$ER = BE - PE$$

Where:

ER = GHG emission reductions attributable to the project during the issuance period, in metric tonnes CO₂ equivalent;

BE = Emissions under the baseline scenario during the issuance period, calculated using equation 2, in metric tonnes CO₂ equivalent;

PE = Project emissions during the issuance period, calculated using equation 3, in metric tonnes CO₂ equivalent.

(5.1) Calculation method for GHG emissions in the baseline scenario

The promoter must calculate GHG emissions in the baseline scenario using equation 2:

Equation 2

$$BE = \sum_{t=1}^n [VA_{Et} \times C_{CH4,t}] \times 0.667 \times 0.001 \times 21$$

Where:

BE = Baseline scenario emissions during the issuance period, in metric tonnes CO₂ equivalent;

n = Number of time intervals during the issuance period;

t = Time interval shown in the table in Figure 6.1 for which flow and content measurements of ventilation air CH₄ are aggregated;

VA_{Et} = Volume of ventilation air sent to destruction device during time interval *t*, in cubic metres at standard conditions;

C_{CH₄,t} = Average CH₄ content in ventilation air before entering destruction device during time interval *t*, in cubic metres of CH₄ per cubic metre of ventilation air;

0.667 = Density of CH₄, in kilograms of CH₄ per cubic metre of CH₄ at standard conditions;

0.001 = Conversion factor, kilograms to metric tonnes;

21 = Global Warming Potential factor of CH₄.

If a mass flow meter is used to monitor gas flow instead of a volumetric flow meter, the volume and density terms must be replaced by the monitored mass value in kilograms. The CH₄ content must be in mass percent.

(5.2) Calculation method for GHG project emissions

The promoter must calculate the GHG project emissions using equations 3 to 7:

Equation 3

$$PE = FF_{CO_2} + DM_{CO_2} + UM_{CH_4}$$

Where:

PE = Project emissions during a issuance period, in metric tonnes CO₂ equivalent;

FF_{CO₂} = Total CO₂ attributable to the consumption of fossil fuel to capture and destroy ventilation air CH₄ during a issuance period, calculated using equation 4, in metric tonnes CO₂ equivalent;

DM_{CO₂} = Total CO₂ attributable to the destruction of CH₄ during a issuance period, calculated using equation 6, in metric tonnes CO₂ equivalent;

UM_{CH₄} = CH₄ emissions attributable to uncombusted CH₄ during a issuance period, calculated using equation 7, in metric tonnes CO₂ equivalent;

Equation 4

$$FF_{co2} = \frac{\sum_{j=1}^n (FF_{PR,j} \times EF_{FF,j})}{1,000}$$

Where:

FF_{CO_2} = Total CO_2 attributable to the consumption of fossil fuel to capture and destroy ventilation air CH_4 during a issuance period, in metric tonnes CO_2 equivalent;

n = Number of types of fossil fuel;

j = Type of fossil fuel;

$FF_{PR,j}$ = Annual quantity of fossil fuel j consumed, expressed

— in kilograms, in the case of fuels whose quantity is expressed as a mass;

— in cubic metres at standard conditions, in the case of fuels whose quantity is expressed as a volume of gas;

— in litres, in the case of fuels whose quantity is expressed as a volume of liquid;

$EF_{FF,j}$ = CO_2 emission factor for fossil fuel j specified in tables 1-3 to 1-8 of QC.1.7 in Schedule A.2 to the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere (chapter Q-2, r. 15), expressed

— in kilograms of CO_2 per kilogram, in the case of fuels whose quantity is expressed as a mass;

— in kilograms of CO_2 per cubic metre at standard conditions, in the case of fuels whose quantity is expressed as a volume of gas;

— in kilograms of CO_2 per litre, in the case of fuels whose quantity is expressed as a volume of liquid;

1,000 = Conversion factor, metric tonnes to kilograms;

If the volume of ventilation air leaving the destruction device is not measured as specified in Figure 6.1, it must be calculated using equation 5:

Equation 5

$$VA_S = VA_E + CA$$

Where:

VA_S = Volume of ventilation air leaving the destruction device during the issuance period, in cubic metres at standard conditions;

VA_E = Volume of ventilation air sent to a destruction device during the issuance period, in cubic metres at standard conditions;

CA = Volume of cooling air added after the point of metering for the volume of ventilation air sent to the destruction device (VA_E), in cubic metres at standard conditions, or a value of 0 if no cooling air is added;

Equation 6

$$DM_{CO_2} = [(VA_E \times C_{CH_4}) - (VA_S \times C_{dest-CH_4})] \times 1.556 \times 0.001$$

Where:

DM_{CO_2} = Total CO_2 attributable to the destruction of CH_4 during a issuance period, in metric tonnes CO_2 equivalent;

VA_E = Volume of ventilation air sent to a destruction device during the issuance period, in cubic metres at standard conditions;

VA_S = Volume of ventilation air leaving the destruction device during the issuance period, in cubic metres at standard conditions;

C_{CH_4} = Average CH_4 content in ventilation air before entering destruction device during the issuance period, in cubic metres of CH_4 per cubic metre of gas;

$C_{dest-CH_4}$ = Average CH_4 content in ventilation air leaving the destruction device during the issuance period, in cubic metres of CH_4 per cubic metre of gas;

1.556 = CO_2 emission factor attributable to the combustion of CH_4 , in kilograms of CO_2 per cubic metre of CH_4 combusted;

0.001 = Conversion factor, kilograms to metric tonnes;

Equation 7

$$UM_{CH_4} = VA_S \times T_{dest-CH_4} \times 0.667 \times 0.001 \times 21$$

Where:

UM_{CH_4} = CH_4 emissions attributable to uncombusted CH_4 during a issuance period, in metric tonnes CO_2 equivalent;

VA_S = Volume of ventilation air leaving the destruction device during the issuance period, in cubic metres at standard conditions;

$T_{dest-CH_4}$ = Average CH_4 content in ventilation air leaving the destruction device during the issuance period, in cubic metres of CH_4 per cubic metre of gas;

0.667 = Density of CH_4 , in kilograms of CH_4 per cubic metre of CH_4 at standard conditions;

0.001 = Conversion factor, kilograms to metric tonnes;

21 = Global Warming Potential factor of CH_4 .

If a mass flow meter is used to monitor gas flow instead of a volumetric flow meter, the volume and density terms must be replaced by the monitored mass value in kilograms. The CH_4 content must be in mass percent.

(6) Project surveillance

(6.1) Data collection

The promoter is responsible for collecting the information required for project monitoring.

The promoter must show that the data collected are actual and that rigorous supervision and record-keeping procedures are applied at the project site.

(6.2) Surveillance plan

The promoter must establish a surveillance plan to measure and monitor project parameters in accordance with Figure 6.1:

Figure 6.1. Project surveillance plan

Parameter	Factor used in equations	Unit of measurement	Method	Frequency of measurement
Operating status of destruction device	N/A	Degree Celsius or other, depending on the device installed	Measured for each destruction device	Hourly
Volume of ventilation air sent to destruction device	VA_E	Cubic metre at standard conditions	Measured and calculated	Continuous and recorded at least every 2 minutes to calculate an hourly average, adjusted for temperature and pressure
Volume of cooling air added	CA	Cubic metre at standard conditions	Measured and calculated	Continuous and recorded at least every 2 minutes to calculate an hourly average, adjusted for temperature and pressure
Volume of ventilation air leaving the destruction device	VA_S	Cubic metre at standard conditions	Measured or calculated	Continuous and recorded at least every 2 minutes to calculate an hourly average, adjusted for temperature and pressure

CH ₄ content in ventilation air sent to destruction device during each issuance period	C _{CH₄}	Cubic metre of CH ₄ per cubic metre of gas at standard conditions	Measured	Continuous and recorded at least every 2 minutes to calculate an hourly average
CH ₄ content in ventilation air leaving the destruction device during each issuance period	C _{Dest-CH₄}	Cubic metre of CH ₄ per cubic metre of gas at standard conditions	Measured	Continuous and recorded at least every 2 minutes to calculate an hourly average
Total quantity of fossil fuels consumed by equipment to capture and destroy ventilation air CH ₄ during a issuance period, by type of fuel <i>j</i>	FF _{PR, j}	Kilogram (solid) Cubic metre at standard conditions (gas) Litre (liquid)	Calculated using fossil fuel purchasing register	At each issuance period
Temperature of ventilation air	T	°C	Measured	Hourly
Pressure of ventilation air	P	kPa	Measured	Hourly

The surveillance plan must

(1) specify the methods used to collect and record the data required for all the relevant parameters in the table in Figure 6.1;

(2) specify

(a) the frequency of data acquisition;

(b) the frequency of instrument cleaning, inspection and calibration activities, and of the verification of instrument calibration accuracy; and

(c) the role of the person responsible for each monitoring activity, as well as the quality assurance and quality control measures taken to ensure that data acquisition and instrument calibration are carried out consistently and with precision;

(3) contain a detailed diagram of the ventilation air capture and destruction system, including the placement of all measurement instruments and equipment that affect included SSRs.

The promoter is responsible for carrying out and monitoring project performance. The promoter must use the destruction device for ventilation air CH₄ and the measurement instruments in accordance with the manufacturer's specifications. The promoter must, in particular, use measurement instruments to measure directly

(1) the flow of ventilation air sent to each destruction device, continuously, recorded every 2 minutes and totalized as an hourly average adjusted for temperature and pressure;

(2) the CH₄ content of ventilation air sent to each destruction device, continuously, recorded every 2 minutes and totalized as an hourly average.

When temperature and pressure must be measured to correct flow values at standard conditions, the parameters must be measured at least hourly.

The operating status of destruction device of ventilation air must be monitored and recorded at least hourly.

For every destruction device, the promoter must show in the first project report that a monitoring device has been installed to verify the operation of each destruction device. The promoter must also show in each project report that the monitoring device has operated correctly.

GHG emission reductions will not be taken into account for the issue of offset credits for periods during which the destruction device or the monitoring device for the operation of the destruction device is not operating.

(6.3) Measurement instruments

The promoter must ensure that all ventilation gas flow meters and CH₄ analyzers are

(1) cleaned and inspected as specified in the project's surveillance plan and at the minimum cleaning and inspection frequency specified by the manufacturer, with all cleaning and inspection activities documented by personnel;

(2) not more than 2 months before or after the issuance period end date, either

(a) checked for calibration accuracy by a qualified and independent person, using a portable instrument, such as a pitot tube, or the manufacturer's specifications, and ensure that the percentage drift is recorded. The CH₄ analyzer must be checked using gas with a CH₄ content of less than 2%;

(b) calibrated by the manufacturer or by a third person certified for that purpose by the manufacturer; and

(3) calibrated by the manufacturer or by a third person certified for that purpose by the manufacturer, according to the manufacturer's specifications or every 5 years, whichever is more frequent.

A calibration certificate or a verification report on calibration accuracy must be produced and included in the project report. The verification provided for in section 70.16 of this Regulation must include confirmation that the person is qualified to verify calibration accuracy.

Flow meter calibrations must be documented to show that the meter was calibrated to a range of flow rates corresponding to the flow rates expected for the ventilation system.

CH₄ analyzer calibrations must be documented to show that the calibration was carried out to a range of temperature, pressure and content conditions corresponding to the range of conditions measured for the mine.

The verification of flow meter and analyzer calibration accuracy must show that the instrument provides a reading of volumetric flow or CH₄ content that is within a +/-5% accuracy threshold.

When a verification of the calibration accuracy of a device shows a shift outside the +/-5% accuracy threshold, the device must be calibrated by the manufacturer or by a third person certified for that purpose by the manufacturer. In addition, for the entire period from the last calibration that confirmed accuracy within the $\pm 5\%$ threshold until such time as the piece of equipment is correctly calibrated, the promoter must use the more conservative of

- (1) the measured values without correction;
- (2) the adjusted values based on the greatest calibration drift recorded at the time of calibration.

The last calibration confirming accuracy within the $\pm 5\%$ threshold must not have taken place more than 2 months before the end date for the issuance period.

No offset credit may be issued for a issuance period when the calibration or verification of the calibration accuracy of the required instruments has not been correctly carried out and documented.

(6.4) Data management

Information on data procedures and data monitoring must be managed in a way that guarantees the integrity, exhaustiveness, accuracy and validity of the data.

The promoter must keep the following documents and information:

- (1) the information required under the surveillance plan;
- (2) information on each flow meter, CH₄ analyzer and destruction device used, including type, their model number, serial number and manufacturer's maintenance and calibration procedures;
- (3) the calibration date, time and results for CH₄ analyzers and flow meters, and the corrective measures applied if a piece of equipment fails to meet the requirements of this Regulation;
- (4) the maintenance records for capture, destruction and monitoring systems;
- (5) operating records showing annual coal production.

(6.5) Missing data – replacement methods

In situations where data on flow rates or CH₄ content are missing, the promoter must apply the data replacement methods set out in Part II.

Part II

Missing data – replacement methods

The replacement methods below may be used only

- (1) for missing ventilation gas flow rate or CH₄ content parameters;
- (2) for missing data that are discrete, non-chronic and due to unforeseen circumstances;
- (3) when the proper functioning of the destruction device can be shown by thermocouple readings or other devices of the same nature;

(4) to replace data on ventilation gas flow rates when it is shown that CH₄ content was consistent with normal operations for the time when the data are missing; and

(5) to replace data on CH₄ content when it is shown that the ventilation gas flow rate was consistent with normal operations for the time when the data are missing.

No offset credit may be issued for periods when the replacement methods cannot be used.

Missing data period	Replacement method
Less than 6 hours	Use the average of the 4 hours immediately before and following the missing data period
6 to less than 24 hours	Use the 90% upper or lower confidence limit of the 24 hours prior to and after the missing data period, whichever results in greater conservativeness
1 to 7 days	Use the 95% upper or lower confidence limit of the 72 hours prior to and after the missing data period, whichever results in greater conservativeness
More than 7 days	No data may be replaced and no reduction may be credited

O.C. 1184-2012, s. 52; O.C. 1138-2013, s. 29; O.C. 902-2014, ss. 66, 67 and 68; O.C. 1089-2015, s. 31; O.C. 1125-2017, ss. 64 and 65; M.O. 2021-06-11, s. 62; M.O. 2021-06-11, s. 63.

TRANSITIONAL

2022

(O.C. 1462-2022) SECTION 53. Every emitter or participant registered for the cap-and-trade system for greenhouse gas emission allowances on the day before 1 September 2022 must send the Minister, within 30 days of a request by the Minister to that effect,

(1) when it has no domicile or establishment in Québec, the name and contact information of its attorney designated pursuant to section 26 of the Act respecting the legal publicity of enterprises (chapter P-44.1) and proof of the designation;

(2) when it is a person that has retained the services of an advisor for the purposes of the Regulation respecting a cap-and-trade system for greenhouse gas emission allowances (chapter Q-2, r. 46.1), the nature of the services provided by the advisor;

(3) when it is a person that advises another person for the purposes of the Regulation respecting a cap-and-trade system for greenhouse gas emission allowances, the nature of its advisory services;

(4) when it has withdrawn emission allowances from its general account from the cap-and-trade system for greenhouse gas emission allowances, pursuant to section 27 of the Regulation respecting a cap-and-trade system for greenhouse gas emission allowances, the reason for that withdrawal of emission allowances;

(5) in the case of a participant, the principal reason for which it registered for the system.

SECTION 54. Every emitter or participant registered for the cap-and-trade system for greenhouse gas emission allowances on the day before 1 September 2022 must disclose to the Minister, within 30 days of that date, any business relationship it has with an emitter or participant registered for or targeted by the system, including those registered with a partner entity, by submitting the information listed in section 9 of the Regulation respecting a cap-and-trade system for greenhouse gas emission allowances (chapter Q-2, r. 46.1) or by updating such information if it was disclosed at the time of registration.

SECTION 55. No application made under section 10 of the Regulation respecting a cap-and-trade system for greenhouse gas emission allowances (chapter Q-2, r. 46.1) since 1 June 2021 is receivable if the information and documents referred to in that section have not been sent to the Minister within 3 months from 1 September 2022.

SECTION 56. The Minister may suspend access to the electronic system obtained pursuant to section 10 of the Regulation respecting a cap-and-trade system for greenhouse gas emission allowances (chapter Q-2, r. 46.1) with respect to any emitter or participant that, on 1 September 2022, fails to communicate a change to the Minister in accordance with section 14.1 of that Regulation and that fails to communicate the change within 3 months following that date.

SECTION 57. Despite the third paragraph of section 19.0.1 of the Regulation respecting a cap-and-trade system for greenhouse gas emission allowances (chapter Q-2, r. 46.1), as amended by section 20, an emitter referred to in section 2.1 of that Regulation that ceases to be subject to the coverage requirement provided for in the first paragraph of section 19.0.1 of that Regulation and that wishes to continue covering the emissions from its establishment or enterprise must, if the emitter filed in 2022 the third consecutive emissions report for which the emissions from the establishment or enterprise are below the reporting threshold referred to in section 6.1 of the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere (chapter Q-2, r. 15), send to the Minister a notice of the emitter's intention not later than 1 November 2022.

2021

(O.C. 824-2021) SECTION 12. A person or municipality that distributes 200 litres or more of fuel within the meaning of protocol QC.30 of Schedule A.2 to the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere (chapter Q-2, r. 15) must take into account the biomass and biomass fuel component of the fuel for the purposes of subparagraph 2 of the second paragraph of section 2 of the Regulation respecting a cap-and-trade system for greenhouse gas emission allowances (chapter Q-2, r. 46.1) as amended by section 1 of this Regulation, starting from the compliance period beginning on 1 January 2021.

SECTION 13. Despite the provisions of this Regulation, for the purposes of protocols 1, 4 and 5 of Schedule D of the Regulation respecting a cap-and-trade system for greenhouse gas emission allowances (chapter Q-2, r. 46.1), the provisions of section 70.13.1, section 70.14 insofar as it provides that an issuance

request for offset credits must be submitted with a project report covering the most recent issuance period, and sections 70.20, 70.21, 70.22, 71, 73, 74, 75.1, 75.2 and 75.4 of the said Regulation, as they read on 14 July 2021, continue to apply to the projects to which those protocols apply until they are replaced. The provisions of sections 70.6 and 70.7, as they read 15 July 2021, also apply to projects to which those protocols apply, replacing “70.5” in section 70.7 by “70.21”.

2020

(O.C. 1288-2020) SECTION 21. Despite subparagraph 2 of section 17 of this Regulation, the emission allowances issued by the province of Ontario that are in circulation on the date this Regulation comes into force (2021-01-01) may continue to be used in transactions under the system and may be used for compliance purposes.

2014

(O.C. 902-2014) SECTION 69. Every natural person who, on 22 October 2014, obtained, in accordance with section 10 of the Regulation respecting a cap-and-trade system for greenhouse gas emission allowances (chapter Q-2, r. 46.1), an identifier to have access to the electronic system must send the Minister, not later than 21 November 2014, the declaration provided for in subparagraph *a.1* of subparagraph 7 of that section, as inserted by subparagraph 2 of section 8 of this Regulation.

SECTION 70. The first paragraph of section 19 of the Regulation respecting a cap-and-trade system for greenhouse gas emission allowances, as amended by paragraphs 1 and 2 of section 14 of this Regulation, also applies to any emitter operating an establishment that permanently ceases the production of a reference unit prior to 1 January 2014 and for which the emissions attributable to its other activities were below the emissions threshold for the 3 preceding years. The emitter is required to cover its emissions only until 31 December 2013.

SECTION 71. The provisions of Chapter IV of Title III and the protocols in Appendix D concerning the project plan and its validation, as they read on 21 October 2014, continue to apply to any offset credit project for which an application for registration was submitted not later than that date, up to the date on which the project ends.

2012

(O.C. 1184-2012) SECTION 53. Every person or municipality that, before 19 December 2012, registered with the Minister as an emitter or participant or was designated as an account representative, alternate account representative or electronic submission agent must, not later than 17 February 2013, send the Minister an update of the information and documents submitted with the registration or designation, in order to comply with the requirements in sections 7 to 13 of the Regulation respecting a cap-and-trade system for greenhouse gas emission allowance (chapter Q-2, r. 46.1), as amended by sections 7 to 10 of this Regulation.

Once the information and documents have been updated in accordance with the first paragraph, every person who, on 19 December 2012, was designated an alternate account representative is deemed to be an account representative, and every person who, prior to that date, was designated as an electronic submission agent is deemed to be an account viewing agent.

A person who fails to send the Minister the information and documents required under the first paragraph within the time indicated will be refused access to the electronic system.

UPDATES

O.C. 1297-2011, 2011 G.O. 2, 3655B

O.C. 1184-2012, 2012 G.O. 2, 3485
O.C. 1137-2013, 2013 G.O. 2, 3200
O.C. 1138-2013, 2013 G.O. 2, 3200
O.C. 1181-2013, 2013 G.O. 2, 3389
O.C. 902-2014, 2014 G.O. 2, 2387
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O.C. 488-2017, 2017 G.O. 2, 1429
O.C. 1125-2017, 2017 G.O. 2, 3463
O.C. 764-2020, 2020 G.O. 2, 1990
S.Q. 2020, c. 19, s. 30
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O.C. 824-2021, 2021 G.O. 2, 2110
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