

Gouvernement du Québec

O.C. 1184-2012, 12 December 2012

Environment Quality Act
(chapter Q-2)

**Cap-and-trade system for greenhouse gas emission allowances
—Amendment**

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

WHEREAS, under subparagraphs *b, c, d, e.1, h* and *h.1* of the first paragraph of section 31 and sections 46.1, 46.5, 46.6, 46.8 to 46.16, 115.27 and 115.34 of the Environment Quality Act (chapter Q-2), the Government may make regulations on the matters set forth therein;

WHEREAS, in accordance with sections 10 and 11 of the Regulations Act (chapter R-18.1) and section 124 of the Environment Quality Act, a draft Regulation to amend the Regulation respecting a cap-and-trade system for greenhouse gas emission allowances was published in Part 2 of the *Gazette officielle du Québec* of 8 June 2012 with a notice that it could be made by the Government on the expiry of 60 days following that publication;

WHEREAS, under section 18 of the Regulations Act, a regulation may come into force on the date of its publication in the *Gazette officielle du Québec* where the authority making it is of the opinion that the urgency of the situation requires it, and the reason justifying such coming into force must be published with the regulation;

WHEREAS, in the opinion of the Government, the urgency due to the following circumstance justifies the coming into force of the Regulation on the date of its publication in the *Gazette officielle du Québec*:

—the changes made to the cap-and-trade system for greenhouse gas emission allowances by the Regulation attached to this Order in Council must come into force by the beginning of the first compliance period under the system, namely 1 January 2013;

WHEREAS it is expedient to make the Regulation with amendments;

IT IS ORDERED, therefore, on the recommendation of the Minister of Sustainable Development, Environment, Wildlife and Parks:

THAT the Regulation to amend the Regulation respecting a cap-and-trade system for greenhouse gas emission allowances, attached to this Order in Council, be made.

JEAN ST-GELAIS,
Clerk of the Conseil exécutif

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

Environment Quality Act

(chapter Q-2, s. 31, 1st par., subpars. *b*, *c*, *d*, *e.1*, *h* and *h.1*, ss. 46.1, 46.5, 46.6, 46.8 to 46.16, 115.27 and 115.34)

1. The Regulation respecting a cap-and-trade system for greenhouse gas emission allowances (chapter Q-2, r. 46.1) is amended in section 1 by replacing "participants in" by "persons or municipalities that may register for".
2. Section 2 is amended
 - (1) by replacing ", excluding" in the part preceding subparagraph 1 of the first paragraph and subparagraphs 1 to 6 by "excluding the emissions referred to in the second paragraph of section 6.6 of that Regulation.";
 - (2) by replacing "a territory under the responsibility of a government other than that of Québec with which an agreement has been entered into under section 46.14 of the Environment Quality Act (chapter c. Q-2)" in subparagraph 1 of the second paragraph by "the territory of a partner entity";
 - (3) by replacing subparagraph 2 of the second paragraph by the following:

"(2) distributes fuel and is contemplated by section 85.33 of the Act respecting the Régie de l'énergie (chapter R-6.01), and if the greenhouse gas emissions attributable to the combustion or use of the fuel distributed, calculated in accordance with protocol QC.30 of Schedule A.2 of the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere are equal to or exceed 25,000 metric tonnes CO₂ equivalent.".
3. Section 3 is amended
 - (1) by replacing "section 20" in paragraph 4 by "section 21";
 - (2) by inserting the following after paragraph 4:

- "(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;"
- (3) by replacing "government other than the Government of Québec with which an agreement has been entered into in accordance with section 46.14 of that Act" in paragraph 5 by "partner entity";
- (4) by replacing paragraph 6 by the following:
- "(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;"
- (5) by replacing paragraph 8 by the following:
- "(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;"
- (6) by inserting the following after paragraph 10:
- "(10.1) "business day" means any day other than a Saturday, Sunday or statutory holiday, including statutory holidays in the territory of a partner entity;"

- (7) by replacing "on or after" in paragraph 11 by "and commissioned on or after";
- (8) by inserting the following after paragraph 12:
 - "(12.1) "promoter" means a person who implements an offset credit project;
 - (12.2) "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;"

4. Section 4 is amended

- (1) by inserting the following paragraph after the second paragraph:

"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.";
- (2) by replacing "delegation" wherever it occurs in the third paragraph by "authorization";
- (3) by adding the following paragraph at the end:

"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)."

5. Section 5 is replaced by the following:

- "5. Any information or document required to be provided under this Regulation must be sent to the Minister using the forms 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 c. Q-2), the information and documents indicated in this Regulation must be sent to the delegatee."

6. Section 6 is amended by adding the following after paragraph 4:

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

7. Section 7 is amended

- (1) by replacing the first paragraph by the following:

"7. Every emitter to which this Regulation applies 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 including their home and work addresses;
- (3) 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 the identification number assigned under the National Pollutant Release Inventory of the Government of Canada;

- (4) for each of the 5 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,
 - (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;
 - (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;
 - (d) the total quantity of fuel used, by type of fuel and by reference unit; and
 - (e) the calculation methods used;
- (5) the name and contact information of the person responsible for the GHG emissions report for each covered establishment;
- (6) a list of the subsidiaries or parent legal persons of the emitter, with the names and home addresses of their directors and officers;
- (7) in the case of a business corporation, the names and contact information of the persons controlling over 10% of the voting rights attached to all the outstanding voting securities of the emitter;
- (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;

- (9) a declaration signed by the chief officer or a resolution of the board of directors including an undertaking to comply with the conditions of this Regulation.";
 - (2) by replacing subparagraph 2 of the second paragraph by the following:
 - "(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;"
8. Section 8 is replaced by the following:
- "8. Only a natural person domiciled in Canada and having previously obtained an identifier in accordance with section 10 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;
 - (3) if the application is made by a natural person 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 or, in other cases, a declaration signed by the chief officer or a resolution of the board of directors including an undertaking to comply with the conditions of this Regulation.

- 8.1.** Every person or municipality that is already registered as a participant 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 with the Minister."

9. Section 9 is amended

- (1) by replacing the part preceding subparagraph 1, and subparagraph 1 of the first paragraph, by the following:

"9. Every person submitting an application for registration to the Minister under sections 7 and 8 must also disclose any business relationship with an emitter or participant registered for the system, including those registered with a partner entity, by providing the following information in particular:

- (1) the name and contact information 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;"
- (2) by replacing "related entities" in subparagraph 2 of the first paragraph by "emitters or participants with which it has a business relationship";
- (3) by adding the following after subparagraph 2 of the first paragraph:
- "(2.1) where applicable, the general account number of the emitter or participant with which it has a business relationship, the name and contact information of its primary account representative and, if the emitter or participant is not a natural person, its legal status and the date and place of its constitution;"
- (4) by replacing "third paragraph" in subparagraph 3 of the first paragraph by "fifth paragraph";
- (5) by adding the following after subparagraph 4 of the second paragraph:

"(5) "related entity" means any emitter or participant with which the business relationship as defined in subparagraph 1 involves a percentage of over 50%, a subsidiary, or an emitter or participant belonging to the same group."

10. Sections 10 to 14 are replaced by the following:

"10. To have access to the electronic system, a natural person must obtain an identifier by providing the Minister with the following information and documents:

- (1) the person's name and contact information at the person's home address;
- (2) the person's date of birth;
- (3) copies of at least 2 identity documents, including one with a photograph, issued by a government or one of its departments or agencies, 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 located in Canada that the person has an account with the institution and that an identity check was carried out;
- (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

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

- 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 having previously obtained an identifier in accordance with section 10 to act as account representatives and perform any operation within the system on its behalf. At least 1 of the representatives must be domiciled in Québec.

The emitter or participant must also identify, among the account representatives domiciled in Québec, 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 and of its chief officer or chief financial officer;
- (2) the name and contact information of the designated account representatives;
- (3) a declaration by the chief officer or chief financial 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.

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, at least one of whom is domiciled in Québec.

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 or, when an emitter or participant has only 2 representatives, when a new representative is designated. 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.

- 12.** An emitter or participant that is not a natural person may authorize up to 5 natural persons having previously obtained an identifier in accordance with section 10 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 by the chief officer or chief financial 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.

- 13.** No natural 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 who is a natural person, 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 are paid into the retirement account to be extinguished;
- (3) the offset credits are paid into the environmental integrity account.

This section applies to any conviction in a United States 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.

- 14.** When an application for registration meets the requirements of sections 7 to 13, 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 or retired 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.

14.1. Any change to the information and documents provided pursuant to sections 7 to 12 must be communicated to the Minister within 10 business days.

14.2. A participant whose account no longer contains any emission allowances 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 the participant's chief officer or chief financial officer or a resolution of its board of directors, with the date of the request."

11. Section 18 is amended

- (1) by inserting "permanently" after "that is" in the part of the first paragraph preceding subparagraph 1;
- (2) by replacing "ceased; and" in subparagraph 1 of the first paragraph by "ceased, the surrendered units being of the same vintage as the units allocated, or a previous vintage; and";
- (3) by replacing the second and third paragraphs by the following:

"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."

12. Section 19 is amended

- (1) by replacing "all the GHG emissions from an establishment or, if applicable, an enterprise referred to in section 2 when they" in the first paragraph by "each metric tonne CO₂ equivalent of the verified emissions from an establishment or, if applicable, an enterprise referred to in section 2 when its GHG emissions";
- (2) by replacing "for 2012 or 2013" in subparagraph 2 of the second paragraph by "for 2013";
- (3) by replacing subparagraph 3 of the second paragraph by the following:
 - "(3) beginning on 1 January of the year following the year in which the first report of emissions that are equal to or exceed the threshold is submitted, in the case where the verified emissions of an emitter referred to in subparagraph 1, or the reported emissions of an emitter referred to in subparagraph 2, are equal to or exceed the emissions threshold during a year following those mentioned in those subparagraphs;"

13. Section 20 is amended

- (1) by striking out the first and second paragraphs;
- (2) by replacing "referred to in subparagraph 5 of the second paragraph" in the third paragraph by "used to cover GHG emissions";
- (3) by replacing "emitter's GHG emissions" in the fourth paragraph by "GHG emissions to be covered".

14. Section 21 is amended

- (1) by replacing "On the expiry of the compliance deadline" in the first paragraph by "On 1 November following expiry of a compliance period";
- (2) by striking out the second paragraph;
- (3) by replacing the part preceding subparagraph 1 of the third paragraph by the following:

"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:";

- (4) by replacing "fourth" in subparagraph 1 of the third paragraph by "second".

15. Section 22 is amended

- (1) by inserting ", from the most recent to the least recent," after "compliance period" in subparagraphs 2 and 3 of the third paragraph;
- (2) by replacing "emitter that they must be surrendered" in the fourth paragraph by "emitter, who must surrender them";
- (3) by replacing "the Minister removes an equivalent number of emission units" in the fifth paragraph by "if the emitter is eligible for the allocation without charge of emission units, the Minister removes a quantity equivalent to the emission allowances and emission units referred to in the fourth paragraph".

16. The heading of Chapter IV of Title II is amended by striking out "**AND PUBLIC REGISTER**".

17. Section 24 is amended by replacing "registered emitters or participants" in the first paragraph by "emitters or participants registered with the Minister or a partner entity".

18. Sections 25 to 27 are replaced by the following:

"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 and serial number of the emission allowances to be traded;
- (4) the settlement price of each type and, where applicable, each vintage of emission allowances;
- (5) the date of signing of the agreement concerning the trading of emission allowances.

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.

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 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, with any additional information concerning the transaction.

- 27.** Every emitter or participant who wishes to retire from the system certain emission allowances recorded in the emitter's or participant's general account must, in accordance with the procedure established by section 27.1, send to the Minister a retirement request including the following information:

- (1) the emitter's or participant's general account number;
- (2) the quantity, type and, where applicable, vintage and serial number of the emission allowances to be retired.

- 27.1.** A retirement request for emission allowances must be proposed by an account representative.

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

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 retirement request has been confirmed the emission allowances concerned by the request are transferred 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 retirement request for emission allowances must provide the Minister, on request, with any additional information concerning the retirement.

27.2. When a transaction or retirement 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 business days following the failure to complete the transaction or retirement."

19. Section 32 is amended

(1) by inserting "of the current or prior vintage, of emission units sold by mutual agreement and of early reduction credits" after "units" in the part preceding equation 32-1;

(2) in equation 32-1 in the first paragraph:

(a) by replacing the factor "Baseline" by the following:

"Baseline = 25,000,000";

(b) by replacing the factor " C_i " by the following:

" 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;"

(c) by striking out "and issued in year i " in the definition of the factor "0.025";

(d) by adding the following factor after factor " C_i ":

" i = Current year.";

(3) by inserting the following after equation 32-1 in the first paragraph:

"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.";

(4) in the second paragraph:

(a) by replacing "the emission units recorded" by "the emission units and early reduction credits recorded";

(b) by striking out "verified";

(5) by replacing the fourth paragraph by the following paragraphs:

"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 days after the limit is exceeded, sell the excess emission allowances or pay into its compliance account the emissions units or early reduction credits needed to cover its emissions for the current year or preceding years. Upon a failure to comply, the Minister takes back a quantity of emission units equivalent to the excess emission allowances and pays them into the Minister's auction account for sale at a later date."

20. Section 33 is amended

- (1) by replacing "can" in the first paragraph by "must";
- (2) by replacing "within 60 days prior to" in the second paragraph by "not more than 40 days before".

21. The first paragraph of section 35 is replaced by the following:

"35. In addition to the information referred to in section 46.11 of the Environment Quality Act (chapter Q-2), the public register of emissions allowances lists all emitters and participants registered for the system and summaries of transactions of emission allowances.

The register may be consulted on the website of the Ministère du Développement durable, de l'Environnement, de la Faune et des Parcs and is updated periodically."

22. Section 36 is replaced by the following:

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

Emission units are also identified by vintage."

23. Section 37 is amended

- (1) by replacing subparagraph 3 of the first paragraph by the following:

- "(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";
 - (2) by adding "by the Minister or by a partner entity" at the end of subparagraph 1 of the second paragraph.
- 24.** Section 40 is amended by replacing "12 January each year as of 2013" in the fourth paragraph by "1 May 2013 and on 14 January of every following year,".
- 25.** Section 41 is amended
- (1) by replacing "1 September following the end of each year" in the third paragraph by "14 September of each year beginning in 2014";
 - (2) in the fourth paragraph,
 - (a) by replacing "current or" by "vintage of the units allocated under the fourth paragraph of section 40 or of a";
 - (b) by replacing "section 40" by "that section";
 - (3) by adding the following paragraph at the end:

"Upon a failure by the emitter to place the emission units in its compliance account within the time provided for in the fourth paragraph, the Minister reduces the following allocation free of charge by an equivalent quantity of emission units."
- 26.** Section 42 is amended by replacing the third paragraph by the following:
- "In the latter case, 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."
- 27.** Section 44 is replaced by the following:

"44. In accordance with the second paragraph of section 46.8 of the Environment Quality Act (chapter Q-2), the Minister publishes in the *Gazette officielle du Québec*, not later than 1 December each year, the quantity of emission units to be issued to emitters without charge."

28. Section 45 is amended

- (1) by replacing "including" in the part of the second paragraph preceding subparagraph 1 by "stating the rules set out in this Regulation and including, in particular,";
- (2) by adding "and the composition of each lot" at the end of subparagraph 5 of the second paragraph;
- (3) by replacing subparagraph 6 of the second paragraph by the following:
 - "(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."

29. Section 46 is amended

- (1) by replacing subparagraphs 1 and 2 of the second paragraph by the following:
 - "(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."
- (2) by adding the following paragraphs at the end:

"Every emitter or participant registered as a bidder at an auction in accordance with the second paragraph remains registered for future auctions unless a cancellation of the registration is requested.

In all cases, an emitter or participant registered at an auction must confirm, at least 30 days before the date of each auction, or update, at least 40 days before the date of each auction, the information and documents referred to in the second paragraph and in sections 7 to 12, failing which the emitter's or participant's registration for the auction will be cancelled."

30. Section 48 is amended

- (1) by replacing the first paragraph by the following:

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

- (2) by inserting "be valid for a period of at least 21 days following the date of the auction and must" after "guarantee must" in the part preceding subparagraph 1 of the second paragraph;

- (3) by inserting "transfer," before "bank draft" in subparagraph 1 of the second paragraph;

- (4) by inserting the following after subparagraph 1 of the second paragraph:

"(1.1) an irrevocable letter of credit issued to the Minister of Finance and the Economy by a bank or financial services cooperative;"

- (5) by striking out subparagraphs 3 and 4 of the second paragraph;

- (6) by adding the following paragraph at the end:

"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."

31. Section 49 is amended

- (1) by replacing the second paragraph by the following:

"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.";

- (2) by adding the following paragraph after the third paragraph:

"If the auction is conducted jointly with a partner entity,

- (1) the lots may contain emission units from each of the partner entities, in proportion to the quantities respectively made available;
- (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 official conversion rate of the Bank of Canada at noon on the date of the auction or, when that rate is not available, the most recent rate published in its Daily Memorandum of Exchange Rates."

32. Section 50 is replaced by the following:

"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 quantity of emission units of the vintage of the current or a previous year that may be purchased by the same bidder at each is, however, limited to

- (1) 15% of the emission units to be auctioned in the case of an emitter referred to in the first paragraph of section 2 who is eligible for the allocation of emission units free of charge in accordance with section 39;
- (2) 40% of the emission units to be auctioned in the case of an emitter referred to in the first paragraph of section 2 who is not eligible for the allocation of emission units free of charge in accordance with section 39;
- (3) 40% of the emission units to be auctioned in the case of an emitter referred to in subparagraphs 1 and 2 of the second paragraph of section 2; and
- (4) 4% of the emission units to be auctioned in the case of a participant.

The quantity of emission units of vintages subsequent to the current year that may be purchased by the same bidder at an auction is, however, limited to 25% of the emission units to be auctioned for all bidders.

Bidders that are related entities have an overall purchasing limit that is the highest limit that would have been assigned to any of them singly. However, the purchasing limit for a group of related participants cannot exceed 4% of the emission units to be auctioned at the same auction, even if they are related to an emitter.

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.

If the auction is conducted jointly with a partner entity, the bids may be submitted in Canadian or US dollars."

33. Section 52 is amended

(1) by replacing the first paragraph by the following

"52. At the close of the auction, the Minister first rejects all bids submitted at less than the minimum price determined by the auction.

Next, when the total bids submitted by a bidder exceed that bidder's holding limit determined in accordance with section 32 and 33 or purchase limit determined in accordance with section 50 or exceed that bidder's financial guarantee submitted in accordance with section 48, the Minister removes from the bidder's bids the quantity of excess lots, beginning with the lots awarded at the lowest price.

The Minister then awards emission units, beginning with the bidders that submitted the highest bids, until all available units have been awarded.

If 2 or more bidders are related entities and did not indicate how their purchasing limit was to be allocated when registering, the Minister awards the emission units beginning with the bidders that submitted the highest bids, based on the individual limits that would have been applied had the bidders not been related entities, until their overall purchasing limit determined in accordance with the fifth paragraph of section 50 has been reached.

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.";

- (2) in the second paragraph:

- (a) by replacing "30" by "7";
- (b) by adding "When more than 1 type of guarantee has been provided, the Minister uses the guarantees in the order set out in that section." at the end.

34. Sections 53 and 54 are replaced by the following:

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

54. Emission units of the vintage of the current year or of previous years that remain unsold after an auction are put up for sale at a later date when, for 2 consecutive auctions, the final sale price of the emission units was above the minimum price.

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."

35. Section 56 is replaced by the following:

"56. Only emitters registered in the system in accordance with this Regulation, having a covered establishment in Québec 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."

36. Section 57 is amended by replacing "4 weeks" in the part of the second paragraph preceding subparagraph 1 by "60 days".

37. Section 59 is amended:

(1) by replacing "2 weeks" in the part of the first paragraph preceding subparagraph 1 by "30 days";

(2) by replacing subparagraphs 1 and 2 of the first paragraph by the following:

"(1) the emitter's name, contact information and compliance account number;

(2) the names of the emitter's account representatives;

(3) a financial guarantee valid for a period of at least 21 days following the date of the sale, in one of the forms referred to in the second paragraph of section 48;"

(3) by replacing the second paragraph by the following:

"An emitter registered as a purchaser at a sale by mutual agreement in accordance with the first paragraph remains registered for all following sales, unless the emitter applies for a cancellation of registration.

In all cases, an emitter registered at a sale by mutual agreement must confirm, at least 30 days before the date of each sale, or update, at least 40 days before the date of each sale, the information and documents referred to in the first paragraph and in sections 7 to 12, failing which the emitter's or participant's registration for the sale will be cancelled."

38. The following is inserted after section 60:

"60.1. The sale by mutual agreement takes place in a single round, using sealed offers.

The emission units are put on sale in lots of 1,000 units of the same category.

During a sale by mutual agreement, an emitter's account representative may submit more than 1 offer, 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 lots requested in each category.

When the total offers submitted by a purchaser exceed the quantity of emission units put on sale or the purchaser's holding limit determined in accordance with sections 32 and 33 or exceed the value of the financial guarantee submitted in accordance with subparagraph 3 of the first paragraph of section 59, the Minister removes from the purchaser's offers the quantity of excess lots, beginning with the offers made at the lowest price."

39. Section 61 is amended by adding the following after subparagraph 2 of the third paragraph:

"(3) when 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."

40. Section 62 is amended:

- (1) by replacing "30" in the first paragraph by "7";
- (2) by adding the following at the end of the first paragraph: "When more than 1 form of guarantee has been provided, the Minister uses the guarantees in the order set out in the second paragraph of section 48."

41. Section 63 is replaced by the following:

"63. All or part of a guarantee provided in accordance with subparagraph 3 of the first paragraph of section 59 that has not been used for the purposes of a sale by mutual agreement is returned to the purchaser.".

42. Section 66 is amended by replacing equations 66-1 and 66-2 in subparagraph *b* of subparagraph 10 of the first paragraph by the following:

"Equation 66-1

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

Equation 66-2

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

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 ;"

43. Section 68 is amended:

(1) by replacing "31 December 2012" in the part preceding paragraph 1 by "31 May 2013";

(2) by striking out ", identification number" in paragraph 1.

44. Section 70 is amended by replacing "1 September 2013" in the second paragraph by "14 January 2014".

45. The following is inserted after section 70:

**"CHAPTER IV
OFFSET CREDITS**

70.1. The Minister keeps a register of offset credit projects on the website of the Ministère du Développement durable, de l'Environnement, de la Faune et des Parcs that contains the names and professional contact information of promoters, project plan, project reports, validation and verification reports and information on project status.

70.2. GHG emission reduction projects referred to in a protocol appearing in Appendix D, that began on or after 1 January 2007, are eligible for the issue of offset credits.

Subject to any specific period provided for in a protocol, an offset credit project may be conducted during a continuous period of not more than 10 years.

At the expiry of that period, the promoter may, in accordance with this Chapter, request the renewal of the offset credit project, for the same period as the initial period, when the project still meets the conditions of section 70.3.

For the purposes of this Chapter, an offset credit project is considered to begin on the date of the first reductions in GHG emissions resulting from the project.

70.3. An offset credit project must meet the following conditions:

- (1) it must be carried out by a promoter registered for the system in accordance with section 70.4, and the reductions in GHG emissions must result directly from an action or decision by the promoter;
- (2) it must be carried out in accordance with the applicable protocol appearing in Appendix D and meet the specified conditions;
- (3) the reductions in GHG emissions resulting from the project must belong to the promoter, and the promoter must be able to demonstrate that fact;
- (4) the reductions in GHG emissions must occur only within the boundaries of the project site and with regard to the GHG sources, sinks and reservoirs targeted by the project;
- (5) the reductions in GHG emissions must be permanent and irreversible;
- (6) the reductions in GHG emissions must be additional, that is that they meet the following conditions:
 - (a) they must result from a project that is voluntary, that is that it is not being carried out, at the time or registration of renewal, in response to a legislative or regulatory provision, a permit or other type of authorization, an order made under an Act or regulation, or a court decision;
 - (b) they must result from a project that goes beyond the current practices described in the applicable protocol for the project;
- (7) the reductions in GHG emissions for which offset credits are requested have not already received credit under this Regulation or another GHG emission reduction program;
- (8) the project must take place in a territory and geographic zone covered by the applicable protocol;
- (9) the GHG emission reductions must amount to at least 1 metric tonne CO₂ equivalent;

- (10) the GHG emission reductions must be calculated in accordance with the methods prescribed in the applicable protocol listed in Appendix D, taking into account all adjacent GHG sources, sinks and reservoirs;
 - (11) the GHG reductions resulting from the project must not be wholly or partly compensated by increases in GHG emissions occurring outside the boundaries of the project;
 - (12) the reduced GHG emissions must be verifiable, that is that they can be objectively assessed by a verifier in accordance with this Chapter;
 - (13) the project must meet all other applicable requirements for the type of project and the place where it is carried out.
- 70.4.** Only an emitter or participant person domiciled in Québec, in the case of a natural person, or having an establishment in Québec, in other cases, may act as the promoter of an offset credit project.
- 70.5.** A promoter wishing to be issued offset credits for a project must, before the project begins, apply to the Minister for the project to be registered in the register of offset credit projects by submitting a project plan that includes the following information and documents:
- (1) the promoter's name, contact information and account numbers;
 - (2) the title and a detailed description of the project;
 - (3) the protocol applicable to the project, listed in Appendix D;
 - (4) an estimate of the annual and total GHG emissions that will be reduced in accordance with this Regulation and the applicable protocol, in metric tonnes CO₂ equivalent;
 - (5) a description of the places where the project will be carried out, including the geographic boundaries and the latitude and longitude of each project site;

- (6) for each site, the GHG sources, sinks and reservoirs targeted by the project;
- (7) when the environmental impacts have been assessed, a copy of the assessment and a summary of the findings;
- (8) the duration of the project and the estimated project commencement date;
- (9) a copy of any authorization required for the project or, if authorization has not yet been granted, a copy of the application for authorization;
- (10) a demonstration that the project meets the conditions of section 70.3, including a copy of any relevant document;
- (11) any information required by the protocol applicable to the project;
- (12) a data surveillance and management plan meeting the requirements of the protocol applicable to the project;
- (13) a description of the measures taken to ensure compliance with the requirements of this Regulation;
- (14) where applicable, all credits issued for the project under a regulatory or voluntary program and any financial assistance received under a GHG emission reduction program;
- (15) the signature of the promoter and the date of presentation of the project plan.

Despite the first paragraph, in the case of an offset credit project that commenced before a protocol applicable to that type of project was listed in Appendix D, the promoter must send the application for registration to the Minister not later than 2 year after the date of coming into force of the relevant protocol.

- 70.6.** The application for registration referred to in section 70.5 or 70.7 must include a declaration from the promoter attesting

- (1) that the promoter is the sole owner of the GHG emission reductions resulting from the project; if several parties are involved in the project, a copy of an agreement indicating that the parties have transferred their rights with respect to the reductions to the promoter must be included; and
- (2) that the promoter has not applied for credits for the GHG emission reductions targeted by the project under another GHG emission reduction program, and will not make such an application once the project is registered.

70.7. A promoter may submit to the Minister an application for registration for an aggregation of projects of the same type carried out on several sites for various members of the aggregation when each project meets the conditions of sections 70.2 and 70.3 and of the protocol applicable to the project.

An application for registration for an aggregation of offset credit projects must include

- (1) for each project, the information and documents referred to in section 70.5;
- (2) the name and contact information of each member for which an offset credit project will be carried out; and
- (3) a declaration signed by each member party to the aggregation attesting that the promoter is duly designated to carry out the project and authorizing the issue of the offset credits to the promoter for the aggregation.

The project commencing first is considered to be the reference project for the application, to the aggregation of projects, of the time limits for renewal set out in section 70.10 and for the project report referred to in section 70.14.

The provisions of this Regulation concerning offset credit projects apply, with the necessary modifications, to an aggregation of projects.

- 70.8.** A promoter may add a project to an aggregation of projects after it has been registered if the project meets the conditions set out in the first paragraph of section 70.7. The promoter must, in such as case, submit to the Minister the information and documents referred to in the second paragraph of that section that relate to the additional project, along with the validation report referred to in section 70.9.

Every project added to an aggregation of projects is subject to the same time limits as those determined for the aggregation in accordance with the third paragraph of section 70.7 with respect to renewal and the project report.

- 70.9.** The plan for an offset credit project referred to in section 70.5 must be submitted with a validation report conducted by a validation organization accredited under ISO 14065 by a member of the International Accreditation Forum located in Canada or the United States and according to an ISO 17011 program, with respect to the sector of activity for the project.

In addition, the promoter must entrust the validation of the project plan to a validation organization and a validator designated by that organization that has not acted, in the 3 preceding years, as a consultant for the purpose of developing the project or calculating the reductions in GHG emissions attributable to the project for the promoter or, as applicable, for one of the member parties to the aggregation.

For the validation, the promoter and, as applicable, the member parties to the aggregation must give the validator access to all the information needed for the validation and to the places where the project is carried out.

The project plan must be validated in accordance with ISO 14064-3 using procedures that provide a reasonable assurance level within the meaning of that standard.

In addition to the information prescribed by ISO 14064-3 and ISO 14064-5, the validation report must include the following information and documents:

- (1) the name and contact information of the validation organization and of the validator designated by the organization to conduct the validation and, where applicable, of the members of the validator's team;

- (2) the name and contact information of the member of the International Accreditation Forum that accredited the organization for the validation and the date of the accreditation;
- (3) the dates of the period during which the validation was conducted;
- (4) an assessment of the project plan and of any other relevant related information, and of the compliance of the project with the conditions set out in this Regulation;
- (5) a description of any error or omission noted in the project plan or relating to the data, information or methods used and an assessment of the error or omission;
- (6) where applicable, the corrections made to the project plan following the validation;
- (7) a description of the work completed by the validator during the validation;
- (8) any information required by the protocol applicable to the project;
- (9) the conclusions of the validation concerning the accuracy and reliability of the project plan and its conformity with the conditions of this Regulation;
- (10) a declaration by the validation organization and the validator that the validation was conducted in accordance with this Regulation.

In the case of an aggregation of offset credit projects, a single validation report may be submitted by the promoter, but the report must contain the information and documents referred to in the fifth paragraph for each project, and the validation of each project.

70.10. Every promoter wishing to renew an offset credit project must, not more than 18 months prior to the end date for the current project but not less than 9 months prior to that date, send to the Minister an application for renewal including the information and documents referred to in sections 70.3 to 70.9.

70.11. Subject to the second paragraph, when a project meets the conditions of sections 70.2 to 70.10, the Minister registers the project in the register of offset credit projects under the heading, as the case may be, of "individual project submitted" or "aggregation of projects submitted", in the case of an initial application, and of "individual project for renewal" or "aggregation of projects for renewal" in the case of an application for renewal.

A project for which the promoter submitted, in the application for registration made in accordance with subparagraph 9 of the first paragraph of section 70.5, a copy of the application for authorization for the project, can only be registered once the authorization has been forwarded to the Minister.

70.12. Subject to any specific period prescribed in a protocol appearing in Appendix D, the reductions in GHG emissions resulting from an offset credit project must begin not later than 2 years after the project is registered, on pain of removal from the register.

The promoter must implement the offset credit project in accordance with this Regulation, the applicable protocol listed in Appendix D and the validated project plan.

The promoter must also use any device, system or other equipment required under the protocol applicable to the project, and ensure that they are maintained in good working order, work reliably for the duration of the project, and are calibrated in the manner and at the frequency specified by the equipment manufacturer or, where applicable, by the protocol applicable to the project.

70.13. Every promoter must also, for each project, record the following information annually in a register:

- (1) the information referred to in the second paragraph of section 70.14;
- (2) any information concerning the geographic boundaries of the project and any GHG source, sink or reservoir concerned by the project;

- (3) a calculation of emissions under the baseline scenario for the project, emissions during project implementation and emission reductions, along with the related documentation;
- (4) the quantity and type of fuels used and any data measured, sampled or used to calculate emissions under the baseline scenario for the project, emissions during project implementation and emission reductions, for each emission source, and the type of process and equipment used;
- (5) where applicable, the point of origin and chain of traceability of the documents required by the protocol applicable to the project;
- (6) information concerning any chemical analysis conducted, any results, and any documentation relating to the testing of any equipment and sources used to calculate emissions under the baseline scenario, emissions during project implementation and emission reductions from the project;
- (7) any data or documentation that must be recorded under the protocol applicable to the project.

70.14. Each full year from the start date of a project or, for the projects referred to in the second paragraph of section 70.5, from the date of registration, constitutes a project reporting period.

Every project promoter must, not later than 6 months after the end of each project reporting period, submit a project report to the Minister covering the most recent project reporting period and including the following information and documents:

- (1) the promoter's name and contact information and, where applicable, the names and contact information of the members party to the aggregation;
- (2) the start and end dates for the project reporting period covered by the report;

- (3) the quantity of GHG emission reductions during the period covered by the project report, calculated using the methods set out in the applicable protocol, in metric tonnes CO₂ equivalent, and all the information and documents used for the calculation;
- (4) the calculation, surveillance and monitoring methods for the data used, and the data monitored;
- (5) the quantity of GHG emission reductions eligible for the issue of offset credits according to the conditions of this Regulation and the protocol applicable to the project, in metric tonnes CO₂ equivalent;
- (6) information or document required by the protocol applicable to the project;
- (7) a demonstration that the project has been carried out in accordance with this Regulation;
- (8) a declaration signed by the promoter attesting that
 - (a) the project is still being carried out in conformity with the rules applicable to the type of project and the place where it is carried out;
 - (b) the promoter still owns the GHG emission reductions for which the offset credits are requested; and
 - (c) the GHG emission reductions have not been used to apply for credits under another program;
- (9) a comparison with the previous project report and, where applicable, a description of any changes made;
- (10) the date of the report.

In the case of a project referred to in the second paragraph of section 70.5, the promoter must, not later than 6 months after the date of registration, submit to the Minister a project report including the information and documents listed in the second paragraph of this section, covering the whole period beginning on or after 1 January 2007 and ending on the date of registration.

If a project report is not submitted within the required time, the GHG emission reductions calculated and reported in the project report will not be eligible for the issue of offset credits.

In the case of an aggregation of offset credit projects, a single project report may be submitted by the promoter, but the report must contain the information and documents referred to in the second paragraph for each project.

70.15. The project report referred to in section 70.14 must be accompanied by a verification report conducted by a verification organization accredited under ISO 14065 by a member of the International Accreditation Forum in Canada or the United States and according to an ISO 17011 program, with respect to the sector of activity for the project.

In addition, the promoter must entrust the verification of the project report to a verification organization and a verifier designated by that organization that, in addition,

- (1) has not acted, in the 3 preceding years, as a consultant for the purpose of developing the project or calculating the reductions in GHG emissions attributable to the project for the promoter or, as applicable, for one of the member parties to the aggregation;
- (2) has not validated the project plan for the project for which the project report is to be verified;
- (3) has not verified more than 6 consecutive project reports for the project on behalf of the promoter; and
- (4) when the promoter wishes to have the project report verified by a verification organization or a verifier other than one that verified the report for the preceding year, the organization or verifier must not have verified the report for the project during the 3 previous years.

For the verification, the promoter and, as applicable, the members party to the aggregation must give the verifier access to all the information needed and to the places where the project is carried out.

Despite the first paragraph, when during the period covered by a project report GHG emission reductions of less than 25,000 metric tonnes CO₂ equivalent have been achieved, the promoter may postpone the verification of the period to the following year. A verification report may not, however, cover more than 2 project reporting periods.

70.16. The verification of the project report must

- (1) be conducted in accordance with ISO 14064-3 and according to procedures that allow a reasonable assurance level within the meaning of that standard to be obtained; and
- (2) include at least one project site visit by the verifier designated by the verification organization and accompanied by the promoter and, where applicable, the member party to the aggregation concerned, during each verification for each place concerned by the project.

70.17. In addition to the information prescribed by ISO 14064-3 and ISO 14065, the verification report referred to in section 70.15 must include the following information and documents:

- (1) the name and contact information of the verification organization and of the verifier designated by the organization to conduct the verification and, where applicable, of the members of the verifier's team;
- (2) the name and contact information of the member of the International Accreditation Forum that accredited the verification organization, and the date of the accreditation;
- (3) the dates of the periods during which the verification was conducted, and the date of any project site visits;
- (4) an assessment of the accuracy, completeness and conformity of the project report;
- (5) a description of any error, omission or inaccuracy noted in the project report or relating to the data, information or methods used, and their impact on the project;

- (6) the percentage of error for the project report, calculated in accordance with section 70.18;
- (7) where applicable, the corrections made to the project report following the verification;
- (8) the total quantity of CO₂ equivalent GHG emission reductions over the period of the project report and the quantity of GHG emission reductions eligible for the issue of offset credits under the conditions of this Regulation and the protocol applicable to the project, in metric tonnes CO₂ equivalent;
- (9) the conclusions of the verification concerning the accuracy and reliability of the project report and its conformity with the conditions of this Regulation;
- (10) a declaration by the verification organization and the verifier that the verification was conducted in accordance with this Regulation.

In the case of an aggregation of offset credit projects, a single verification report may be submitted by the promoter, but the report must contain the information and documents referred to in the first paragraph for each project, and the verification of each project.

70.18. The percentage of error of the project report is calculated using the following equation:

Equation 70.18-1

$$PE = \left(\frac{DRV}{RR} \times 100 \right)$$

Where:

PE = Percentage of error;

DRV = Discrepancy between the reductions in GHG emissions reported by the promoter and the verified reductions, in metric tonnes CO₂ equivalent;

RR = Reductions in GHG emissions reported by the promoter, in metric tonnes CO₂ equivalent.

70.19. When the percentage of error calculated in accordance with section 70.18 is above 5%, the promoter must correct the project report and submit it again for verification before sending it to the Minister.

70.20. Subject to any specific proportion set out in a protocol appearing in Appendix D, following the receipt of a project report that has a positive verification result and meets the conditions of this Regulation, the Minister places in the general account of the promoter of the project an offset credit for each metric tonne CO₂ equivalent of 97% of the eligible GHG emission reductions, within the meaning of paragraph 5 of section 70.14, for the period covered by the project report, rounded down to the nearest whole number.

The offset credits corresponding to the remainder of the GHG emission reductions for the period covered by the project report are placed in the Minister's environmental integrity account.

Following the first placement of offset credits for an initial or renewed project, the heading for the project in the register of offset projects is replaced, as the case may be, by the heading "individual active project" or "aggregation of active projects", in the case of an initial application, or "individual renewed active project" or "aggregation of renewed active projects" in the case of a renewed project.

If the verification report is negative or the project is not in conformity with the conditions of this Regulation, no offset credit is issued to the promoter by the Minister for the period covered by the project report.

70.21. The Minister may require the promoter to replace any offset credit issued to the promoter for a project in the following cases:

- (1) where, because of omissions, inaccuracies or false information in the information and documents provided by the promoter, the GHG emission reductions for which the offset credits were issued were not eligible;
- (2) where offset credits were applied for under another program for the same reductions as those covered by the application for credits under this Regulation.

The Minister notifies the promoter who must, within 30 days of receiving the notice, place in the Minister's general account a number of credits equivalent to the number of illegitimate offset credits that must be replaced.

The Minister, after being notified that the credits have been placed in the general account by the promoter, deducts the replacement offset credits and places them in the retirement account to be extinguished.

Without prejudice to the Minister's other recourses against the promoter, if the promoter has failed to replace the offset credits on the expiry of the 30-day period, the Minister replaces the illegitimate offset credits by withdrawing an equivalent number of credits from the environmental integrity account and placing them in the retirement account to be extinguished.

When the promoter fails to replace illegitimate offset credits, the project is removed from the register of offset credit projects.

- 70.22.** Any change to the information and documents provided in accordance with this Chapter must be communicated to the Minister within 10 days."
- 46.** The heading of Title IV is amended by inserting "**ADMINISTRATIVE PROVISIONS,**" before "**OFFENCES**".
- 47.** Chapter I of Title IV is replaced by the following:
- "CHAPTER I**
MONETARY ADMINISTRATIVE SANCTIONS
- 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, 9, 12 or 14.1, the second paragraph of section 19, the sixth paragraph of section 26, the fifth paragraph of section 27.1, the second paragraph of section 33 or 51, section 70.13 or 70.14, the first paragraph of section 70.15 or section 70.22; and

- (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.
- 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, the second or third paragraph of section 50, 70.9 or 70.12, or the second paragraph of section 70.15.
- 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 paragraph of section 19, 20, 21 or 24, section 28, 29, 30 or 31, the second paragraph of section 37, the first paragraph of section 51 or the second paragraph of section 70.21; and
 - (2) fails to place emission allowances or emission units pursuant to the second paragraph of section 18, or the fourth paragraph of section 22 or 41, in cases where no other administrative sanction may be applied.

CHAPTER I.1

OFFENCES

- 74. A person who contravenes section 4, 9 or 14.1, the second paragraph of section 18 or 19, the sixth paragraph of section 26, the fifth paragraph of section 27.1, the second paragraph of section 33 or 51, section 70.13 or 70.14, the first paragraph of section 70.15 or section 70.22 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, 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 fine is otherwise provided for, is guilty of an offence and liable to the same fines.

75. A person who contravenes subparagraph 1 of the first paragraph of section 18, section 32, the second or third paragraph of section 50, 70.9 or 70.12 or the second paragraph of section 70.15 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.

75.1. A person who contravenes section 7, 17 or 24, the second paragraph of section 37, the fourth paragraph of section 41 or the first paragraph of section 51 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.

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.

75.3. A person 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.

75.4. An emitter who fails to cover GHG emissions in accordance with subparagraph 2 of the first paragraph of section 18, the first paragraph of section 19, 20 or 21, or the fourth paragraph of section 22 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."

48. Appendix A is amended by replacing the line starting with "Manufacturing" by the following:

"

Steam and air-conditioning 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, except activities to process waste by dismembering and related activities	31, 32 or 33

".

49. Appendix B is revoked.

50. The following is inserted before Appendix C:

"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 table for each type of emission allowance:

	Québec	California
Type 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

..

51. Appendix C is amended

(1) in Part I:

- (a) by inserting "for industrial purposes" after "Steam and air-conditioning supply" in the column "Activity" of Table A;
- (b) by replacing Table B by the following:

"Table B Reference units¹

Sector of activity of the establishment	Type of activity	Reference unit
Aluminum	Baked cathode production	Metric tonne of baked cathodes
Aluminum	Aluminum production	Metric tonne of liquid aluminum (leaving potroom)
Aluminum	Baked anode production	Metric tonne of baked anodes
Aluminum	Aluminum hydroxide production and secondary activities	Metric tonne of aluminum hydrate expressed as Al_2O_3 equivalent measured at the precipitation stage
Aluminum	Calcinated coke production	Metric tonne of calcinated coke
Other ²	Beer production	Hectolitre of beer
Other ²	Alcohol production	Kilolitre of alcohol
Other ²	Graphite electrode manufacturing	Metric tonne of graphite electrodes
Other ²	Gypsum panel manufacturing	Cubic metre of gypsum panel
Other ²	Sugar production	Metric tonne of sugar
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 associated 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 vapor deposition
Other ²	Carbon dioxide production	Metric tonne of carbon dioxide
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
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	Iron ore concentrate pellet reduction	Metric tonne of iron ore concentrate 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 metal powder
Metallurgy	Titanium dioxide (Ti O ₂) slag manufacturing	Metric tonne of Ti O ₂ slag
Metallurgy	Silicon metal production	Metric tonne of silicon metal
Metallurgy	Zinc production	Metric tonne of iron load Metric tonne of cathodic zinc
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 ton 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
Pulp and paper	Pulp and paper production	Metric tonne of various air-dried saleable products
Pulp and paper	Production of wood-fibre based products	Metric tonne of various air-dried saleable products

Pulp and paper	Production of pulp and paper wood-fibre based products	Metric tonne of various air-dried saleable products
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.";

(2) in Part II:

- (a) by replacing "GHG reported emissions" in paragraph 2 of Division A by "verified emissions";
- (b) by inserting the following after the first paragraph of Division D:

"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 (c. Q-2, r. 15);
- (2) for the years 2012 and following, the verified emissions.";

(c) in the second paragraph of Division D,

- (i) by replacing "third paragraph" in the part preceding subparagraph 1 by "fourth paragraph";
- (ii) by replacing subparagraphs 1 and 2 by the following:

- "(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";
- (d) by replacing "aluminum hydroxide" in subparagraph 2 of the third paragraph of Division D by "alumina";
- (e) by adding the following after subparagraph 7 of the third paragraph of Division D:
 - "(8) in the case of a copper foundry, using equations 6-12 and 6-13. ";
- (f) by replacing the heading of Subdivision 4 of Division D by the following:
 - "4. Covered establishment as of 2013 that does not possess GHG emissions data for 2007-2010 and covered establishment after 2013 that is not considered on a sectoral basis";**
- (g) by inserting **"covered as of 2013 and without data for 2007-2010 or"** after **"establishment"** in the titles of equations 4-1 to 4-8 in Subdivision 4 of Division D;

- (h) by replacing "a covered establishment after 2013" in the definition of the factor " I_{dep_j} " in equation 4-1 and in equation 4-2 in Subdivision 4.1 of Division D by "an establishment";
- (i) by replacing the heading of Subdivision 5 of Division D by the following:

"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";
- (j) by inserting "**covered as of 2013 and without data for 2007-2010 or covered after 2013**" after "**establishment**" in the titles of equations 5-1 and 5-2 in Subdivision 5 of Division D;
- (k) by replacing "a covered establishment after 2013" in the definition of the factor " I_{dep_j} " in equation 5-1 and in equation 5-2 in Subdivision 4.1 of Division D by "an establishment";
- (l) by replacing Subdivision 6.2 of Division D by the following:

"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 (Al₂O₃ x 3 H₂O) expressed as alumina (Al₂O₃) 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 (Al₂O₃) equivalent produced at the establishment in year *i*, in metric tonnes.";

(m) by replacing Subdivision 6.7 of Division D by the following:

"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

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 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

$$A_i = \frac{P_i^{Non-WCI}}{P_i^{WCI}} \times E_i^{Non-WCI}$$

Where:

A_i = Number of emission units allocated free of charge for year i ;

$P_i^{\text{Non-WCI}}$ = Average sale price of emission allowances 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} = Average sale price of emission allowances 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 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 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.

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 and using equation 6-13 for years 2015 to 2020:

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;

$P_{Ri,cu}$ = 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

$$A_i = \left[\left(\frac{(6-x) I2013_{cu} + x I2020_{cu}}{6} \right) \times P_{R_{cu},i} \right] + \left[\left(\frac{(6-x) I2013_{RSM} + x I2020_{RSM}}{6} \right) \times P_{R_{RSM},i} \right] + A_{recycl,i}$$

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."

52. The following is added after Appendix C:

"APPENDIX D

(ss. 70.1 to 70.22)

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 captured from the manure storage facility of an agricultural operation in Québec raising one of the species of livestock listed in the tables in Part II.

The project must involve the installation of a manure storage facility cover and a CH₄ destruction device.

The project must capture and destroy CH₄ that, before the project, was emitted to the atmosphere. The CH₄ must be destroyed on the site of the agricultural operation 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. Flow chart for the reduction project process

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.

Figure 3.1. Flowchart for the reduction project process and baseline scenario and project boundaries

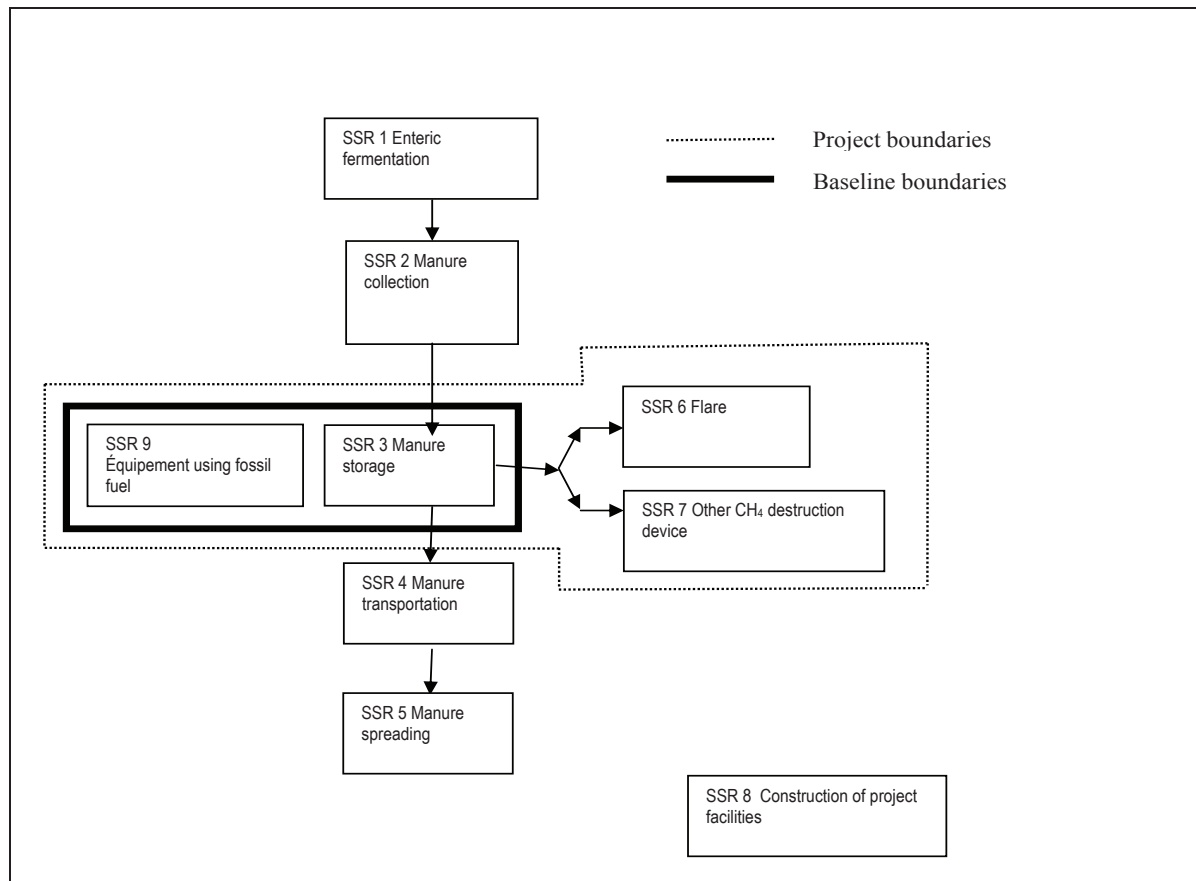


Figure 3.2. Reduction project SSRs

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 reporting period, in metric tonnes CO₂ equivalent;

GHG_{project} = Gross reduction in GHG emissions from the project during the reporting period, calculated using equation 2, in metric tonnes CO₂ equivalent;

$\Delta\text{GHG}_{\text{fossil}}$ = 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 reporting 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

$$\text{GHG}_{\text{project}} = \text{GHG}_{\text{dest flare}} - \text{GHG}_{\text{combustion flare}} + \text{GHG}_{\text{dest other}}$$

Where:

$\text{GHG}_{\text{project}}$ = Gross reduction in GHG attributable to the project during the reporting period, in metric tonnes CO₂ equivalent;

$\text{GHG}_{\text{dest flare}}$ = Lesser of the CH₄ emissions destroyed at flare during the project reporting period and 90% of the emissions from an uncovered manure storage facility, calculated using equation 3, in metric tonnes CO₂ equivalent;

$\text{GHG}_{\text{combustion flare}}$ = CH₄ and N₂O emissions attributable to combustion of captured gas at flare during the project reporting period, calculated using equation 6, in metric tonnes CO₂ equivalent;

$\text{GHG}_{\text{dest other}}$ = Lesser of the CH₄ emissions destroyed by a destruction device other than a flare during the project reporting period and 90% of the emissions from an uncovered manure storage facility, calculated using equation 7, in metric tonnes CO₂ equivalent;

Equation 3

$$GHG_{\text{dest flare}} = \text{Min} [GHG_{\text{flare}} ; GHG_{\text{EF}}]$$

Where:

$GHG_{\text{dest flare}}$ = Lesser of the CH₄ emissions destroyed at flare during the project reporting 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 project reporting 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 CO₂ equivalent;

Equation 4

$$GHG_{\text{flare}} = \sum_{j=1}^n [(Q_{\text{gas cov}} \times EFF_{\text{flare}}) \times C_{\text{CH}_4}]_j \times 0.667 \times 21 \times 0.001$$

Where:

GHG_{flare} = CH₄ emissions destroyed at flare during the project reporting period, in metric tonnes CO₂ equivalent;

n = Number of days on which gas is produced during the project reporting 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;

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 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 , in kilograms of CO_2 equivalent per kilogram 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:

GHG_{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 project reporting 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 , in kilograms of CO_2 equivalent per kilogram of CH_4 ;

0.001 = Conversion factor, kilograms to metric tonnes;

0.9 = 90%;

Equation 6

$$GHG_{combustion\ flare} = \sum_{j=1}^n [Q_{gas\ cov} \times EFF_{flare} \times C_{CH_4}]_j \times [(0.49 \times 21) + (0.049 \times 310)] \times 0.000001$$

Where:

$GHG_{combustion\ flare}$ = CH_4 and N_2O emissions attributable to the flare combustion of captured gas during the project reporting period, in metric tonnes CO_2 equivalent;

n = Number of days on which gas is produced during the project reporting period;

j = Day on which gas is produced at the manure storage facility vent;

$Q_{gas\ cov}$ = 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 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;

0.49 = CH_4 emission factor attributable to flare burning, in grams of CH_4 per cubic metre of gas burned;

21 = Global Warming Potential factor of CH_4 , in kilograms of CO_2 equivalent per kilogram of CH_4 ;

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 , in grams of CO_2 equivalent per gram of N_2O ;

0.000001 = Conversion factor, grams to metric tonnes;

Equation 7

$$GHG_{dest\ other} = Min [GHG_{other} ; GHG_{EF}]$$

Where:

$GHG_{dest\ other}$ = Lesser of CH_4 emissions destroyed by a destruction device other than a flare during the project reporting 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 project reporting 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

$$GHG_{other} = Q_{gas\ cov} \times \{[(C_{CH_4} - C_{dest-CH_4}) \times 0.667 \times 21] - [C_{dest-N_2O} \times 1.84 \times 310]\} \times 0.001$$

Where:

GHG_{other} = CH_4 emissions destroyed by the destruction device other than a flare during the reporting period, in metric tonnes CO_2 equivalent;

$Q_{gas\ cov}$ = Quantity of gas available for destruction during the project reporting 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 reporting 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 project reporting 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 , in kilograms CO_2 equivalent per kilogram of CH_4 ;

C_{dest-N_2O} = Average annual content N_2O in the gas leaving the destruction device during the project reporting 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 , in kilograms CO_2 equivalent per kilogram of CH_4 ;

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 " $\Delta\text{GHG}_{\text{fossil}}$ " for equation 1 is 0.

Equation 9

$$\Delta\text{GHG}_{\text{fossil}} = \sum_{j=1}^m \left[(C_{\text{project}} - C_{\text{SF}})_j \times ((F_{\text{CO}_2} \times 0.001) + (F_{\text{CH}_4} \times 0.000001 \times 21) + (F_{\text{N}_2\text{O}} \times 0.000001 \times 310))_j \right]$$

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 project reporting 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 reporting 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 project reporting 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} = CO_2 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 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;
- 0.001 = Conversion factor, kilograms to metric tonnes;
- F_{CH_4} = CH_4 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 CH_4 per kilogram, in the case of fuels whose quantity is expressed as a mass;

- in grams of CH_4 per cubic metre at standard conditions, in the case of fuels whose quantity is expressed as a volume of gas;
- in grams of CH_4 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 CH_4 , in grams CO_2 equivalent per gram of CH_4 ;

$F_{\text{N}_2\text{O}}$ = 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 , in grams CO_2 equivalent per gram 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 project reporting period
Outdoor temperature	N/A	Degree Kelvin	As measured, or according to Environment Canada	Daily average
Quantity of gas available for destruction during the project reporting period	$Q_{\text{gas cov}}$	Cubic metre	Flow meter	At each project reporting 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	$C_{\text{dest-CH}_4}$	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	$C_{\text{dest-N}_2\text{O}}$	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 during the project reporting period	C_{project}	Kilogram (solid) Cubic metre (gas) Litres (liquid)	Purchase invoices	At each project reporting period
Quantity of fossil fuel used to operate equipment within the project SSRs for the baseline scenario, during the project reporting period	C_{SF}	Kilogram (solid) Cubic metre (gas) Litre (liquid)	Purchase invoices	At each project reporting 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 of the gas, determined in accordance with the applicable method in Part III or V.

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.

When a destruction device other than a flare is used, a gas sample must be taken at the input to the device in accordance with the method in Part III to determine its CH₄ content, and a sample must be taken at the output of the device in accordance with the method in Part V to determine its CH₄ and N₂O content.

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 project reporting 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 by the manufacturer, according to the manufacturer's specifications or every 5 years, 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 project reporting 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	27.6
Dairy heifer	19.1
Bull	3.5
Slaughter cow	3.3
Slaughter heifer	2.6
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	$Q_{\text{gas cov}}$ m^3 measured	Ambient temperature measured in Kelvin	C_{CH_4} in m^3 of CH_4 per m^3 of gas	$\text{GHG}_{\text{flare}}$ CO_2 equivalent Using equation 4	$\text{GHG}_{\text{combustion flare}}$ CO_2 equivalent Using equation 6

Part V

Determination of the CH₄ and N₂O content of gas leaving the destruction device

When the project is not equipped with a continuous CH₄ 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 CH₄ content during the project reporting period using equation 10 and the average N₂O content using equation 11:

Equation 10

$$C_{dest-CH_4} = \frac{\sum_{i=1}^n Cs_{CH_4,i}}{n}$$

Where:

$C_{dest-CH_4}$ = Average CH_4 content of gas leaving the destruction device during the project reporting period, in cubic metres of CH_4 per cubic metre of gas at standard conditions;

n = Number of samples;

i = Sample;

$Cs_{CH_4,i}$ = 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

$$C_{dest-N_2O} = \frac{\sum_{i=1}^n Cs_{N_2O,i}}{n}$$

Where:

C_{dest-N_2O} = Average N_2O content of gas leaving the destruction system during the project reporting period, in cubic metres of N_2O per cubic metre of gas at standard conditions;

n = Number of samples;

i = Sample ;

$Cs_{N_2O,i}$ = 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 CH₄ or N₂O 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 CH₄ content only, are missing;
- (5) to replace data on gas flow rates when a continuous analyzer is used to measure CH₄ and N₂O content and when it is shown that CH₄ and N₂O content was consistent with normal operations for the time when the data are missing; and
- (6) to replace data on CH₄ and N₂O 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 hours	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

LANDFILL SITES - CH₄ DESTRUCTION

Part I

1. Projects covered

This offset credit protocol covers any project designed to reduce GHG emissions by destroying the CH₄ captured in a landfill site in Québec.

The project must involve the use of an eligible device to destroy CH₄ captured at a landfill site that meets the following conditions at the time of registration:

- (1) at the time of registration and for the entire duration of the project, if the site is in operation, it receives less than 50,000 metric tonnes of residual materials annually and has a capacity of less than 1.5 million cubic metres;
- (2) at the time of registration, in every case, the site has less than 450,000 metric tonnes of residual materials in place, or the CH₄ captured from the LFG has a heat capacity of less than 3 GJ/h.

Eligible destruction devices are enclosed flares, open flares, combustion engines, boilers and turbines.

The project must capture and destroy CH₄ that, before the project, was emitted to the atmosphere. The CH₄ may be destroyed on the landfill site or transported and destroyed off-site.

For the purposes of this protocol,

- (1) "landfill gas" (LFG) means any gas resulting from the decomposition of residual materials disposed of at a landfill site;
- (2) "landfill site" means a place where residual materials is permanently disposed of above or below ground.

1.1. Landfill site in operation at the time of registration

When the site has over 100,000 metric tonnes of residual materials in place or receives over 10,000 metric tonnes of residual materials annually, the promoter must include an assessment of the CH₄ emitted by the landfill site in the project plan.

In the case referred to in the first paragraph, when the quantity of CH₄ emitted is equal to or greater than 1,000 metric tonnes of CH₄ per year, the project is eligible for the issue of offset credits for a period of not more than 5 years following registration of the project.

1.2. Landfill site that is closed at the time of registration

In the case of a landfill site that is closed at the time of registration,

- (1) if the site opened or was extended between 1998 and 2005 inclusively, it must have a maximum capacity of less than 3,000,000 cubic metres;
- (2) if the site opened or was extended between 2006 and 2008 inclusively, it must receive less than 50,000 tonnes of residual materials annually and have a maximum capacity of less than 1,500,000 cubic metres; and
- (3) if the site opened in 2009 or a subsequent year, the conditions for landfill sites in operation apply.

2. Location

The project must be carried out within the borders of the province of Québec.

3. Calculation of CH₄ heat capacity and quantity of CH₄ emitted by the landfill site

When a site has over 450,000 tonnes of residual materials in place, the promoter must assess the heat capacity of the CH₄ captured, in gigajoules per hour, using the following method:

- (1) by calculating the quantity of CH₄ emitted each hour;
- (2) by determining the quantity of CH₄ captured each hour by multiplying the quantity of CH₄ emitted each hour by 0.75;
- (3) by determining the heat capacity by multiplying the quantity of CH₄ captured each hour by the high heat value of the LFG of the portion of the CH₄ set out in table 1.1 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).

The promoter must assess the quantity of CH₄ emitted by the landfill site pursuant to Division 3 using the following method:

- (1) by determining the quantity of CH₄ generated using the Landgem software of the U.S. Environmental Protection Agency (USEPA), available at <http://www.epa.gov/ttn/catc1/products.html#software>;
- (2) by determining the quantity of residual materials disposed of annually using the data available since the opening of the landfill site;
- (3) by using, for the parameters "k" and "Lo" of the software referred to in paragraph 1, the most recent parameters from the national inventory report on GHG emissions prepared by Environment Canada;
- (4) by using a percentage of 50% as the percentage of CH₄ in LFG;
- (5) by using a value of 0.667 kg per cubic metre at standard conditions as the density of CH₄.

4. Additionality

For the purposes of subparagraph *b* of paragraph 6 of section 70.3 of this Regulation, the project is considered to go beyond current practice when it meets the conditions in Divisions 1 to 3.

5. Flow chart for the reduction project process

The reduction project process flowchart in Figure 5.1 and the table in Figure 5.2 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.

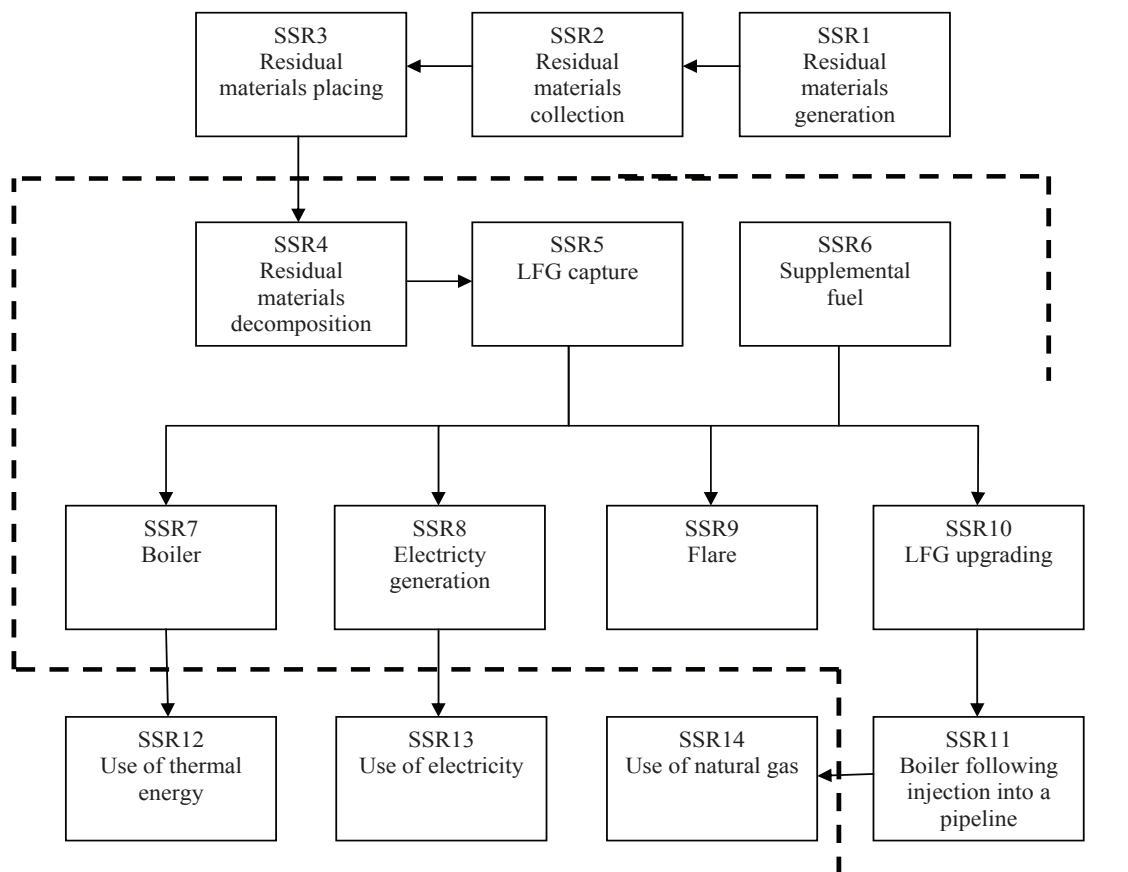
Figure 5.1. Flow chart for the reduction project process

Figure 5.2. Reduction project SSRs

SSR #	Description	GHG	Relevant to project baseline scenario (B) and/or Project (P)	Included or Excluded
1	Residual materials generation	N/A	B, P	Excluded
2	Residual materials collection	CO ₂	B, P	Excluded
		CH ₄		Excluded
		N ₂ O		Excluded
3	Residual materials placing activities	CO ₂	B, P	Excluded
		CH ₄		Excluded
		N ₂ O		Excluded
4	Decomposition of residual materials in landfill	CO ₂	B, P	Excluded
		CH ₄		Included
5	LFG capture system	CO ₂	P	Included
		CH ₄		Excluded
		N ₂ O		Excluded
6	Supplemental fuel	CO ₂	P	Included
		CH ₄		Included
		N ₂ O		Excluded
7	LFG boiler destruction	CO ₂	P	Excluded
		CH ₄		Included
		N ₂ O		Excluded
8	Electricity generation from LFG (combustion engine, turbine, fuel cell)	CO ₂	P	Excluded
		CH ₄		Included
		N ₂ O		Excluded
9	LFG flare destruction	CO ₂	P	Excluded
		CH ₄		Included
		N ₂ O		Excluded
10	LFG upgrading	CO ₂	P	Included
		CH ₄		Excluded
		N ₂ O		Excluded
11	Boiler following injection into a pipeline	CO ₂	P	Excluded
		CH ₄		Included
		N ₂ O		Excluded

12	Avoided emissions from use of landfill gas project-generated thermal energy to replace energy from a fossil fuel	CO ₂	P	Excluded
13	Avoided emissions from use of project-generated electricity to replace energy from a fossil fuel	CO ₂	P	Excluded
14	Avoided emissions from use of natural gas from upgraded LFG to replace energy from a fossil fuel	CO ₂	P	Excluded

6. Calculation method for the GHG emission reductions attributable to the project

The promoter must calculate 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 project reporting period, in metric tonnes CO₂ equivalent;

BE = Baseline scenario emissions during the project reporting period, calculated using equation 3, in metric tonnes CO₂ equivalent;

PE = Project emissions during the project reporting period, calculated using equation 7, in metric tonnes CO₂ equivalent.

When the flow meter does not correct for the temperature and pressure of the LFG at standard conditions, the promoter must measure LFG 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

$$LFG_{i,t} = LFG_{uncorrected} \times \frac{293.15}{T} \times \frac{P}{101.325}$$

Where:

$LFG_{i,t}$ = Corrected volume of LFG 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 7.1 for which CH_4 flow and content measurements are aggregated;

$LFG_{uncorrected}$ = Uncorrected volume of LFG captured for the given time interval, in actual cubic metres;

T = Measured temperature of LFG for the given time period, in Kelvin ($^{\circ}C + 273.15$);

P = Measured pressure of the LFG for the given time interval, in kilopascals.

6.1. Calculation method for GHG emissions in the baseline scenario

The promoter must calculate GHG emissions in the baseline scenario using equations 3 to 6.

For that purpose, the promoter must

- (1) for landfill sites with a geomembrane covering the entire landfill area, use a CH_4 oxidation rate of zero (0%). In this case, the promoter must show in the project plan that the landfill site has a geomembrane that meets the requirements of the Regulation respecting the landfilling and incineration of residual materials (chapter Q-2, r. 19); and
- (2) for all other landfill sites, use a CH_4 oxidation factor of 10%.

Equation 3

$$BE = (CH_4Dest_{PR}) \times 21 \times (1 - OX) \times (1 - DF)$$

Where:

BE = Baseline scenario emissions during the project reporting period, in metric tonnes CO₂ equivalent;

CH₄Dest_{PR} = Total CH₄ destroyed by all LFG destruction devices during the project reporting period, calculated using equation 4, in metric tonnes of CH₄;

21 = Global Warming Potential factor of CH₄, in metric tonnes CO₂ equivalent per metric tonne of CH₄;

OX = Factor for the oxidation of CH₄ by soil bacteria, namely a factor of 0 for landfill sites with a geomembrane covering the entire landfill area, or a factor of 0.10 in other cases;

DF = Discount factor to account for uncertainties associated with the monitoring equipment for CH₄ content in the LFG, namely a factor of 0 when the CH₄ content in the LFG is measured continuously, and 0.1 in other cases, with measurements made at least weekly;

Equation 4

$$CH_4Dest_{PR} = \sum_{i=1}^n (CH_4Dest_i) \times (0.667 \times 0.001)$$

Where:

CH₄Dest_{PR} = Total quantity of CH₄ destroyed by all LFG destruction devices during the project reporting period, in metric tonnes of CH₄;

n = Number of destruction devices;

i = Destruction device;

CH_4Dest_i = Net quantity of CH_4 destroyed by destruction device i during the project reporting period, calculated using equation 5, in cubic metres of CH_4 at standard conditions;

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;

Equation 5

$$CH_4Dest_i = Q_i \times DE_i$$

Where:

CH_4Dest_i = Net quantity of CH_4 destroyed by destruction device i during the project reporting period, in cubic metres of CH_4 at standard conditions;

Q_i = Total quantity de CH_4 sent to destruction device i during the project reporting period, calculated using equation 6, 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;

I = Destruction device;

Equation 6

$$Q_i = \sum_{t=1}^n [LFG_{i,t} \times PR_{CH_4,t}]$$

Where:

Q_i = Total quantity de CH_4 sent to destruction device i during the project reporting period, in cubic metres of CH_4 at standard conditions;

- n = Number of time intervals during the project reporting period;
- t = Time interval shown in the table in Figure 7.1 for which LFG CH_4 flow and content measurements are aggregated;
- $\text{LFG}_{i,t}$ = Corrected volume of LFG sent to destruction device i , in time interval t , in cubic metres at standard conditions;
- $\text{PR}_{\text{CH}_4,t}$ = Average CH_4 fraction of the LFG in time interval t , in cubic metres of CH_4 per cubic metre of LFG.

6.2. Calculation method for GHG project emissions

The promoter must calculate the GHG project emissions using equations 7 to 10:

Equation 7

$$PE = FF_{\text{CO}_2} + EL_{\text{CO}_2} + NG_{\text{emissions}}$$

Where:

- PE = Project emissions during the project reporting period, in metric tonnes CO_2 equivalent;
- FF_{CO_2} = Total CO_2 emissions attributable to the destruction of fossil fuels during the project reporting period, calculated using equation 8, in metric tonnes CO_2 equivalent;
- EL_{CO_2} = Total CO_2 emissions attributable to the consumption of electricity during the project reporting period, calculated using equation 9, in metric tonnes CO_2 equivalent;
- $NG_{\text{emissions}}$ = Total quantity of CH_4 and CO_2 emissions attributable to supplemental natural gas during the project reporting period, calculated using equation 10, in metric tonnes CO_2 equivalent;

Equation 8

$$FF_{CO_2} = \frac{\sum_{j=1}^n (FF_{PR,j} \times EF_{CF,j})}{1,000}$$

Where:

FF_{CO_2} = Total CO₂ emissions attributable to the destruction of fossil fuels during the project reporting period, in metric tonnes CO₂ equivalent;

n = Number of types of fossil fuel;

j = Type of fossil fuel;

$FF_{PR,j}$ = Annual quantity of fossil fuel j consumed in the operation of equipment within the SSRs in the baseline scenario, 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;

$EF_{CF,j}$ = 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;

1,000 = Conversion factor, metric tonnes to kilograms;

Equation 9

$$EL_{CO_2} = \frac{EL_{PR} \times EL_{EL}}{1,000}$$

Where:

EL_{CO₂} = Total CO₂ emissions attributable to the consumption of electricity during the project reporting period, in metric tonnes CO₂ equivalent;

EL_{PR} = Total electricity consumed by the project LFG capture and destruction system during the project reporting period, in megawatt-hours;

EF_{EL} = CO₂ emission factor for the consumption of electricity from Québec, according to the most recent National Inventory Report: Greenhouse Gas Sources and Sinks in Canada, Part 3, published by Environment Canada, in kilograms of CO₂ per megawatt-hour;

1,000 = Conversion factor, metric tonnes to kilograms;

Equation 10

$$NG_{emissions} = \sum_{i=1}^n \left[NG_i \times NG_{CH_4} \times 0.667 \times 0.001 \times \left[((1 - DE_i) \times 21) + \left(DE_i \times \frac{12}{16} \times \frac{44}{12} \right) \right] \right]$$

Where:

$NG_{\text{emissions}}$ = Total CH_4 and CO_2 emissions attributable to supplemental natural gas during the project reporting period, in metric tonnes CO_2 equivalent;

n = Number of destruction devices;

i = Destruction device;

NG_i = Total quantity of supplemental natural gas sent to destruction device i during the project reporting period, in cubic metres at standard conditions;

NG_{CH_4} = Average CH_4 fraction of the supplemental natural gas, according to the supplier's specifications, in cubic metres of CH_4 at standard conditions per cubic metre of natural gas at standard conditions;

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;

DE_i = Default CH_4 destruction efficiency of destruction device i , determined in accordance with Part II;

21 = Global Warming Potential factor of CH_4 , in kilograms CO_2 equivalent per kilogram of CH_4 ;

12/16 = Molecular mass ratio, CO_2 to carbon;

44/12 = Molecular mass ratio, CH_4 to carbon.

7. Project surveillance

7.1. 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.

7.2. Surveillance plan

The promoter must establish a monitoring plan to measure and monitor project parameters in accordance with 7.1:

Figure 7.1. Project surveillance plan

Parameter	Factor used in equations	Unit of measurement	Method	Frequency of measurement
Capacity and annual residual material tonnage	N/A	Metric tonne	Calculated	Annual or at each project reporting period, in accordance with the second paragraph of section 1
Operating status of destruction devices	N/A	Degree Celsius or other, in accordance with this Division 7.2	Measured for each destruction device	Hourly
Corrected volume of LFG sent to destruction device i , in time interval t	$LFG_{i,t}$	Cubic metre at standard conditions	Measured and calculated	Continuous and recorded at least every 15 minutes or totalized and recorded at least daily and adjusted for temperature and pressure
Uncorrected volume of LFG captured for the given interval	$LFG_{uncorrected}$	Cubic metre	Measured	Only when flow data are not adjusted at standard conditions
Discount factor to account for uncertainties associated with the monitoring equipment for CH_4 content in the LFG	DF	0 when the CH_4 content in the LFG is continuously monitored, or 0.1 in other cases		At each project reporting period

Total quantity of CH ₄ sent to destruction device <i>i</i> during the project reporting period	Q _i	Cubic metre of CH ₄ at standard conditions	Calculated	Daily when the CH ₄ is continuously monitored, or weekly if the CH ₄ is monitored weekly
Time interval for which LFG CH ₄ flow and content measurements are aggregated.	t	Week, day, hour or minute	Projects with a continuous CH ₄ concentration monitoring system may use the interval used by their data acquisition system, provided it is not more than 1 day for the continuous monitoring of CH ₄ content and 1 week for the weekly monitoring of CH ₄ content	Continuous, daily or weekly
Average CH ₄ fraction of the LFG in time interval <i>t</i>	PR _{CH₄,t}	Cubic metre of CH ₄ at standard conditions per cubic metre of LFG at standard conditions	Measured continuously or by portable analyzer	Continuous or weekly
Total fossil fuels consumed by the capture and destruction system during the project reporting 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 project reporting period

Total electricity consumed by the LFG capture and destruction system during the project reporting period	EL _{PR}	Megawatt-hour	Measured by on-site meter or based on electricity purchasing register	At each project reporting period
Total quantity of supplemental natural gas sent to the destruction device during the project reporting period	NG _i	Cubic metre at standard conditions	Measured before being sent to the destruction device	Continuous
Average CH ₄ fraction of the supplemental natural gas, according to the supplier's specifications	NG _{CH4}	Cubic metre of CH ₄ at standard conditions per cubic metre of natural gas at standard conditions	Based on purchasing register	At each project reporting period
LFG temperature	T	°C	Measured	Continuous
LFG pressure	P	kPa	Measured	Continuous

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 7.1;
- (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 LFG capture and destruction system, including the placement of all measurement instrument and equipment that affect included SSRs.

The promoter is responsible for carrying out and monitoring project performance. The promoter must use the LFG 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 LFG 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 of the LFG sent to each destruction device, continuously, recorded every 15 minutes and totalized as an average at least daily. The CH₄ content may also be determined by daily to weekly measurements using a calibrated portable analyzer and applying a 10% discount to the total quantity of CH₄ captured and eliminated, calculated using equation 4.

Despite the third paragraph, in the case of projects carried out between 1 January 2007 and 31 December 2012, during that period the flow of LFG referred to in subparagraph 1 this paragraph may have been recorded every 60 minutes and the CH₄ content of the LFG referred to in subparagraph 2 of this paragraph may have been recorded every 60 minutes.

When temperature and pressure must be measured to correct flow values at standard conditions, the parameters must be measured continuously.

The operating status of the LFG destruction device must be monitored and recorded at least hourly.

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.

The operating status of flares is established by thermocouple readings above 260°C.

For all other destruction devices, the promoter must show in the project plan 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.

7.3. Measurement instruments

The promoter must ensure that all LFG flow meters and CH₄ analyzers are

- (1) cleaned and inspected as specified in the project's monitoring plan and at the minimum cleaning and inspection frequency specified by the manufacturer, with all cleaning and inspection activities documented by landfill site personnel;
- (2) not more than 2 months before or after the project reporting 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 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, 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 at the landfill site.

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 at the landfill site.

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,

- (1) the device must be calibrated by the manufacturer, or by a third person certified for that purpose by the manufacturer; and
- (2) 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, all the data from the piece of equipment must be corrected according to the following procedure:
 - (a) when the calibration indicates an under-reporting of flow rates or CH₄ content, the promoter must use the measured values without correction;
 - (b) when the calibration indicates an over-reporting of flow rates or CH₄ content, the promoter must be adjusted 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 project reporting period.

If the promoter uses a portable CH₄ analyzer, it must be maintained and calibrated according to the manufacturer's specifications, and calibrated at least annually by the manufacturer, by a laboratory certified by the manufacturer, or by an ISO 17025 accredited laboratory. The portable analyzer also must be calibrated to a known sample gas prior to each use.

No offset credit may be issued for a project reporting period when the calibration or verification of the calibration accuracy of the required instruments has not been correctly carried out and documented.

7.4. 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 monitoring plan;
- (2) information on each flow meter, CH₄ analyzer and destruction device used, including type, model number, serial number and manufacturer's maintenance and calibration procedures;
- (3) for a portable analyzer, the date, time and place where measurements are taken and, for each measurement, the CH₄ content in the LFG;
- (4) 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;
- (5) the maintenance records for capture, destruction and monitoring systems;
- (6) operating records showing the quantity of residual material disposed of.

7.5. 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
Boiler following upgrade and injection into a pipeline	0.96

Part III

Missing data – replacement methods

The replacement methods below may be used only

- (1) for CH₄ content or LFG flow rate parameters;
- (2) for missing data 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 thermocouple readings at the flare or other device;
- (4) when data on LFG flow rate only, or CH₄ content only, are missing;
- (5) to replace data on LFG flow rates when a continuous analyzer is used to measure CH₄ content and when it is shown that CH₄ content was consistent with normal operations for the time when the data are missing; and

- (6) to replace data on CH₄ content when it is shown that the LFG 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 3 DESTRUCTION OF OZONE DEPLETING SUBSTANCES CONTAINED IN INSULATING FOAM REMOVED FROM REFRIGERATION AND FREEZER APPLIANCES

Part I

For the purposes of this protocol,

- (1) "container" means an air-tight, waterproof unit used for storing or transporting ODS without leakage or escape of ODS into the environment;
- (2) "CFC": chlorofluorocarbons;
- (3) "HCFC": hydrochlorofluorocarbons;
- (4) "ODS": ozone depleting substances of the following types:
- (a) CFC-11;
 - (b) CFC-12;
 - (c) HCFC-22;
 - (d) HCFC-141b.

1. Projects covered

1.1 Eligible ODS

This offset credit protocol covers any project designed to destroy the ODS contained in insulating foam removed from freezing storage and refrigeration appliances in Canada.

The project targets all the activities engaged in by a promoter to destroy the ODS contained in insulating foam removed from freezing storage and refrigeration appliances in an authorized destruction facility.

1.2. Duration

A project may cover a maximum period of 5 years provided that, during each year following registration,

- (1) the extraction and destruction locations and methods are the same;
- (2) the types of appliances from which ODS are extracted are the same; and
- (3) the project is continuous over the entire period, in other words at least one destruction occurs each year and a project report is submitted.

In other cases, the ODS must be destroyed within 12 months from the project start date. A new project registration application must be made for any ODS destruction activity occurring after that period.

2. Project plan

In addition to the information required under section 70.5 of this Regulation, the project plan must include the following information:

- (1) the name and contact information of the facility removing foam or extracting ODS, of the destruction facility and, where applicable, of the enterprise that carries out such activities;
- (2) the name and contact information of any technical consultants;

- (3) a list of all the points of origin of each type of ODS destroyed under the project, namely the first place where the appliances with ODS-containing foam are stored, by Canadian province or territory;
- (4) a description of the methods used to remove foam from the appliances, extract ODS from the foam and destroy the ODS;
- (5) an estimate of the quantity of foam and ODS recovered, by type of ODS, in metric tonnes.

3. Location

The ODS contained in the foam must be destroyed in a facility located in Canada or the United States. Foam, ODS and appliances recovered outside Canada are not eligible for the issue of offset credits under this protocol.

4. Additionality

For the purposes of subparagraph *b* of paragraph 6 of section 70.3 of this Regulation, the project is considered to go beyond current practice if it meets the conditions in Divisions 1 to 3.

5. Extraction and destruction

ODS must be extracted and destroyed as follows:

- (1) the ODS must be extracted in concentrated form using a negative pressure process;
- (2) the ODS must be collected, stored and transported in hermetically sealed containers;
- (3) the ODS must be destroyed in concentrated form in an ODS destruction facility referred to in Division 10 of this protocol.

6. SSRs within the reduction project boundary

Figures 6.1 and 6.2 show the SSRs that must be taken into account by the promoter when calculating the GHG emission reductions attributable to the project.

Figure 6.1. Chart showing SSRs targeted in the calculation of GHG emissions under the baseline scenario and project scenario for the ODS contained in the foam

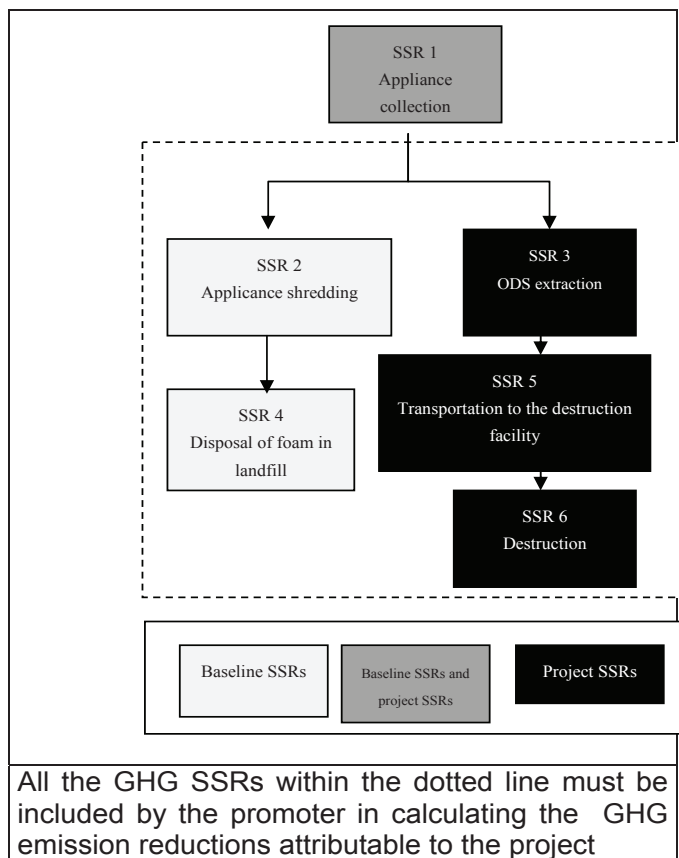


Figure 6.2. Reduction projects SSRs

SSR #		Description	Type of emission	Relevant to project baseline scenario (B) and/or Project (P)	Included or excluded
1	Appliance collection	Fossil fuel emissions attributable to the collection and transportation of end-of-life appliances	CO ₂	B, P	Excluded
			CH ₄	B, P	Excluded
			N ₂ O	B, P	Excluded
2	Appliance shredding	Emissions of ODS attributable to the shredding of appliances for materials recovery	ODS	B	Included
3	ODS Extraction	Emissions of ODS attributable to the removal of foam from appliances	ODS	P	Included
4	Disposal of foam in landfill	Emissions of ODS attributable to the disposal of foam at a landfill site	ODS	B	Included
		Emissions of ODS degradation products attributable to foam disposed of at a landfill site	HFC, HCFC	B	Excluded
		Fossil fuel emissions attributable to the transportation of shredded foam and disposal at a landfill site	CO ₂	B	Excluded
			CH ₄	B	Excluded
			N ₂ O	B	Excluded
5	Transportation to the destruction facility	Emissions of fossil fuels fossil attributable to the transportation of ODS from the point of origin to the destruction facility	CO ₂	P	Included

6	Destruction of ODS	Emissions of ODS attributable to incomplete destruction at destruction facility	ODS	P	Included
		Emissions from the oxidation of carbon contained in the destroyed ODS	CO ₂	P	Included
		Fossil fuel emissions attributable to the destruction of ODS in a destruction facility	CO ₂	P	Included
			CH ₄	P	Excluded
			N ₂ O	P	Excluded
		Indirect emissions attributable to the use of electricity	CO ₂	P	Included
			CH ₄	P	Excluded
			N ₂ O	P	Excluded

7. Calculation method for the GHG emission reductions attributable to the project

The promoter must calculate the 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 project reporting period, in metric tonnes CO₂ equivalent;

BE = Emissions under the baseline scenario during the project reporting period, calculated using equation 2, in metric tonnes CO₂ equivalent;

PE = Project emissions during the project reporting period, calculated using equation 4, in metric tonnes CO₂ equivalent.

7.1. Calculation method for GHG emissions under the baseline scenario

The promoter must calculate GHG emissions under the baseline scenario from ODS-containing foam using equations 2 and 3:

Equation 2

$$BE = \sum_{i=1}^n [BA_{init,i} \times EF_i \times GWP_i]$$

Where:

BE = Baseline emissions attributable to ODS-containing foam, in metric tonnes CO₂ equivalent;

i = Type of ODS;

n = Number of types of ODS;

$BA_{init,i}$ = Initial quantity of ODS of type i contained in foam prior to removal from appliances, calculated using equation 3, in metric tonnes of ODS;

EF_i = GHG emission factor for ODS of type i contained in the foam, as indicated in the table in Figure 7.1;

GWP_i = Global warming potential of ODS of type i as indicated in the table in Figure 7.2, in metric tonnes CO₂ equivalent per metric tonne of ODS of type i ;

Equation 3

$$BA_{init,i} = BA_{final,i} + (BA_{final,i} \times \frac{[1 - RE]}{RE})$$

Where:

$BA_{init,i}$ = Initial quantity of ODS of type i contained in foam prior to removal from appliances, in metric tonnes of ODS;

$BA_{final,i}$ = Total quantity of ODS of type i extracted and sent for destruction, determined in accordance with section 9.1, in metric tonnes of ODS;

RE = Recovery efficiency of the ODS extraction process, calculated in accordance with the method in Part II;

i = Type of ODS.

Figure 7.1. Emission factor for each ODS contained in foam removed from appliances

Type of ODS	Emission factor for each ODS contained in foam removed from appliances (EF _i)
CFC-11	0.44
CFC-12	0.55
HCFC-22	0.75
HCFC-141b	0.50

Figure 7.2. Global warming potential of ODS

Type of ODS	Global warming potential (GWP)
CFC-11	4,750
CFC-12	10,900
HCFC-22	1,810
HCFC-141b	725

7.2. Calculation method for total GHG project emissions

The promoter must calculate total GHG project emissions using equations 4 to 6:

Equation 4

$$PE = BA_{pr} + (TR + DEST)$$

Where:

PE = Total GHG project emissions during the project reporting period, in metric tonnes CO₂ equivalent;

BA_{pr} = Total emissions attributable to the extraction of ODS contained in foam removed from appliances, calculated using equation 5, in metric tonnes CO₂ equivalent;

$(TR + DEST)$ = GHG emissions attributable to ODS transportation and destruction, calculated using equation 6, in metric tonnes CO₂ equivalent;

Equation 5

$$BA_{pr} = \sum_{i=1}^n [BA_{init,i} \times (1 - RE) \times GWP_i]$$

Where:

BA_{pr} = Total emissions attributable to the extraction of ODS from foam removed from appliances, in metric tonnes CO₂ equivalent;

n = Number of types of ODS;

i = Type of ODS;

$BA_{init,i}$ = Initial quantity of ODS of type i contained in foam prior to removal from appliances, calculated using equation 3, in metric tonnes of ODS;

RE = Recovery efficiency associated with the ODS extraction process, determined for the project using the method in Part II;

GWP_i = Global warming potential of ODS of type i as indicated in the table in Figure 7.2, in metric tonnes CO₂ equivalent per metric tonne of SACO of type i ;

Equation 6

$$(TR + DEST) = BA_{final} \times 7.5$$

Where:

$(TR + DEST)$ = Emissions attributable to ODS transportation and destruction, in metric tonnes CO₂ equivalent;

BA_{final} = Total quantity of ODS contained in the foam removed and sent for destruction, calculated using equation 10, in metric tonnes of ODS;

7.5 = Default emission factor for ODS transportation and destruction, in metric tonnes CO_2 equivalent per metric tonne of SACO.

8. Data management and project surveillance

8.1. Data management

The promoter must record the following information in the register referred to in section 70.13, and include it in the project report referred to in the second paragraph of section 70.14:

- (1) information on the chain of traceability, from point of origin to point of destruction of the ODS;
- (2) information on the point of origin, namely the first place of storage for recovered appliances with ODS-containing foam, specifying
 - (a) the address of each place of storage where recovered appliances are transferred or aggregated;
 - (b) the name and contact information of each party involved in each stage of the project, and the quantity of materials, whether appliances, foam or ODS, transferred, sold or handled by each party; and
 - (c) the number of appliances recovered and, for each appliance, the type, size, storage capacity and, if available, serial number;
- (3) the serial number or identification number of the containers used for ODS storage and transportation;
- (4) any document identifying persons in possession of appliances, foam and ODS at each stage in the project, and showing the transfer of possession and ownership of the appliances, foam and ODS;

- (5) information on ODS extraction, specifying
 - (a) the number of appliances containing foam from which ODS has been extracted;
 - (b) the name and contact information of the facility where the ODS are extracted;
 - (c) the name and contact information of the facility where the appliances are recycled, if any; and
 - (d) processes, training, and quality assurance, quality control and extraction process management processes;
- (6) a certificate of destruction for all the ODS destroyed under the project, issued by the facility that destroyed the ODS, by destruction activity, specifying
 - (a) the name of the project promoter;
 - (b) the name and contact information of the destruction facilities;
 - (c) the name and signature of the person responsible for the destruction operations;
 - (d) the identification number on the certificate of destruction;
 - (e) the serial, tracking or identification number of all containers for which ODS destruction occurred;
 - (f) the weight and type of ODS destroyed for each container, including the weigh tickets generated in accordance with Division 9.1;
 - (g) the destruction start date and time; and
 - (h) the destruction end date and time;
- (7) the surveillance plan referred to in Division 8.2;
- (8) the certificate of sampling results issued by the laboratory in accordance with Division 9.1.

All the data referred to in subparagraph 2 of the first paragraph concerning the point of origin must be obtained at the time of recovery from the point of origin.

8.2. Surveillance plan

The promoter must establish a surveillance plan to measure and monitor project parameters in accordance with the table in Figure 8.1.

Figure 8.1. Parameters for the surveillance of an ODS destruction project

Parameter	Factor used in equations	Measurement unit	Method	Measurement frequency
Total quantity of ODS contained in foam prior to removal from appliances	BA_{init}	Metric tonne of ODS	Calculated	Each project reporting period
Initial quantity of ODS of type i contained in foam from appliances prior to removal	$BA_{init,i}$	Metric tonne of ODS of type i	Calculated	Each project reporting period
Recovery efficiency associated with the ODS extraction process	RE	$0 \leq 1$	Calculated	Each project reporting period
Total quantity of foam removed prior to extraction of ODS	$Foam_{rec}$	Metric tonne of foam	Measured and calculated	Each project reporting period
Total emissions attributable to the extraction of ODS from foam removed from appliances	BA_{pr}	Metric tonne, CO ₂ equivalent	Calculated	Each project reporting period

Total quantity of ODS contained in the foam removed and sent for destruction	BA_{final}	Metric tonne of ODS	Calculated	Each project reporting period
Total quantity of ODS of type i extracted and sent for destruction under the project	$BA_{\text{final}, i}$	Metric tonne of ODS of type i	Calculated	Each project reporting period
Mass of each container filled with ODS contained in foam	N/A	Metric tonne	Measured	Each project reporting period
Mass of each empty container for projects to destroy ODS contained in foam	N/A	Metric tonne	Measured	Each project reporting period
Quantity of ODS contained in foam, in each container	N/A	Metric tonne	Calculated	Each project reporting period
Concentration of each type of ODS contained in foam, in each container	N/A	%	Measured	Each project reporting period
Quantity of each type of ODS contained in foam, in each container	N/A	Metric tonnes of ODS of type i	Calculated	Each project reporting period
Emissions attributable to the transportation and destruction of ODS contained in foam	(TR + DEST)	Metric tonne, CO ₂ equivalent	Calculated	Each project reporting period

Concentration of ODS in foam before extraction from appliances	CBA	Metric tonne of ODS per metric tonne of foam	Calculated	Each project reporting period
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9. ODS extraction and analysis

The promoter must use the same procedure during project implementation as the procedure used to calculate extraction efficiency using the method in Part II.

9.1. Analysis of ODS extracted in concentrated form from foam removed from appliances

9.1.1. Determination of the quantity of ODS in each container

The quantity of ODS destroyed must be determined at the destruction facility by an authorized person, by weighing each container when full of ODS prior to destruction and when fully empty after its contents have been destroyed.

The quantity of ODS is equal to the difference between the mass of the container when full and when empty.

Each ODS container must be weighed at the destruction facility

- (1) using a single scale to generate both full and empty weigh tickets;
- (2) ensuring that the scale is calibrated at least quarterly to an accuracy of $\pm 5\%$;
- (3) weighing the full container no more than 2 days prior to the destruction of the ODS; and
- (4) weighing the empty container no more than 2 days after the destruction of the ODS.

9.1.2. Sampling

The quantity and type of ODS must be determined by having a sample from each container analyzed in accordance with AHRI 700-2006 of the Air-Conditioning, Heating and Refrigeration Institute by a laboratory that is independent of the promoter and of the destruction facility and accredited for that purpose by one of the following organizations:

- (1) an accreditation body party to the Mutual Recognition Agreement (MRA) of the International Laboratory Accreditation Cooperation (ILAC) in accordance with ISO/CEI 17025;
- (2) the Air-Conditioning, Heating and Refrigeration Institute;
- (3) the Ministère du Développement durable, de l'Environnement, de la Faune et des Parcs.

The sampling must be conducted in accordance with the following conditions:

- (1) the samples must be taken at the destruction facility;
- (2) the samples must be taken by the laboratory responsible for the analysis;
- (3) the samples must be taken with a clean, fully evacuated sample bottle with a minimum capacity of 0.454 kg;
- (4) each sample must be taken in a liquid state;
- (5) a minimum sample size of 0.454 kg must be drawn for each sample;
- (6) each sample must be individually labeled and tracked according to the container from which it was taken;
- (7) the following information must be recorded for each sampling:
 - (a) the time and date of the sample;
 - (b) the name of the promoter for whom the sampling is conducted;
 - (c) the name and contact information of the technician who took the sample, and of the technician's employer;

- (d) the volume of the container from which the sample was drawn;
- (e) the ambient air temperature at the time of the sampling;
- (f) the chain of traceability of each sample, from the point of sampling to the accredited laboratory.

9.1.3. Analysis of samples

All the samples for the project must be analyzed to confirm the type and concentration of each ODS in the sample. The analysis must determine the following elements:

- (1) the type of each ODS;
- (2) the quantity, in metric tonnes, and concentration, in metric tonnes of ODS of type i per metric tonne of gas, in each type of ODS in the gas, using gas chromatography;
- (3) the moisture level of each sample; if above 75% of the saturation point for the ODS, the promoter must dry the ODS mixture, take the sample again and analyze it in accordance with the method in Division 9.2;
- (4) the high boiling residue from the ODS sample, which must be below 10% of the total mass of the sample.

A certificate of the sampling results must be issued by the laboratory that conducted the analysis, and the certificate must be included with the project report.

9.1.4. Determination of the total quantity of ODS contained in the foam of type i removed and sent for destruction ($BA_{\text{final}, i}$)

Based on the mass of the ODS in each container and the concentration of each sample, the promoter must

- (1) calculate the quantity of each type of ODS in each container; and
- (2) add together the quantities of each type of ODS in each container to obtain the factor " $BA_{\text{final}, i}$ ", namely the total quantity of ODS of type i contained in the foam removed and sent for destruction under the project.

9.2. Analysis of mixed ODS

For each sample that does not contain over 90% of the same type of ODS, the promoter must meet with the conditions concerning mixed ODS in this Division, in addition to the conditions in Division 9.1.

The sampling of the ODS must be carried out in accordance with Division 9.1 and the circulation of the ODS mixture must be conducted at the destruction facility by a person who is independent of the promoter and of the destruction facility and who is properly trained to carry out the tasks.

The promoter must include the procedures used to analyze the ODS mixture in the project report.

Prior to sampling, the ODS mixture must be circulated in a container that meets all of the following conditions:

- (1) the container has no solid interior obstructions other than mesh baffles or other interior structures that do not impede circulation;
- (2) the container was fully evacuated prior to filling;
- (3) the container has sampling ports to sample liquid and gas phase ODS;
- (4) the sampling ports must be located in the middle third of the container, not at one end or the other;
- (5) the container and associated equipment can circulate the mixture through a closed loop system from the bottom to top.

If the original mixed ODS container does not meet these requirements, the mixed ODS must be transferred into a compliant temporary container.

The mass of the ODS mixture placed into the temporary container must be calculated and recorded. In addition, transfers of ODS between containers must be carried out at a pressure that meets the applicable standards for the place where the project is located.

Once the mixed ODS are in a container that meets the above criteria, circulation of mixed ODS must be conducted as follows:

- (1) liquid mixtures must be circulated from the liquid port to the vapour port;

- (2) a volume of the mixture equal to 2 times the volume in the container must be circulated before sampling;
- (3) circulation must occur at a rate of at least 114 litres per minute unless the liquid mixture has been circulating continuously for at least 8 hours;
- (4) the start and end times must be recorded.

During the last 30 minutes of circulation, a minimum of 2 samples must be taken from the bottom liquid port, in accordance with the method in Division 9.1.

The analysis must determine the weighted concentrations of the ODS on the basis of their global warming potential, for both samples.

The promoter must use the results from the sample with the weighted ODS concentration with the least global warming potential.

Despite the foregoing, when the ODS are destroyed prior to 1 January 2014, the circulation of the ODS mixtures may be conducted before they are delivered to the destruction facility.

10. Destruction facilities

In the case of a destruction facility located in the United States and not recognized under the Resource Conservation and Recovery Act, the promoter must show that the facility meets the standards of the Technology & Economic Assessment Panel (TEAP) established under the Montréal Protocol.

In addition, each stage in a project carried out in the United States must be conducted in accordance with the requirements of the Compliance Offset Protocol Ozone Depleting Substances Projects: Destruction of U.S Ozone Depleting Substances Banks published on 20 October 2011 by the California Air Resources Board and the California Environmental Protection Agency.

The operating parameters for the facility during ODS destruction must be monitored and recorded in accordance with the *Code of Good Housekeeping* approved by the Montréal Protocol.

The verifier must use the data to show that, during the ODS destruction process, the facility was operating in conditions that met

the requirements of any authorization necessary to pursue activities at that facility.

The promoter must continuously monitor the following parameters during the entire ODS destruction process:

- (1) the ODS feed rate;
- (2) the operating temperature and pressure of the destruction facility during ODS destruction;
- (3) effluent discharges measured in terms of water and pH levels;
- (4) carbon monoxide emissions.

11. Verification

The verification process must include a visit

- (1) of the place where ODS contained in foam are extracted, at least once during the first project verification; and
- (2) of each destruction facility for the project, during each project verification.

Part II

Calculation of ODS extraction efficiency in foam removed from appliances

To calculate extraction efficiency in accordance with Division 2, the promoter must first calculate the quantity of ODS contained in foam prior to removal from appliances, based on the storage capacity of the appliances, using equation 7 and the table in Figure 1 of Subdivision 1.1 or using foam samples in accordance with Subdivision 1.2.

1. Calculation methods for the initial quantity of ODS contained in foam

1.1. Calculation of the initial quantity of ODS contained in foam based on the storage capacity of the appliances

The promoter may calculate the initial quantity of ODS contained in foam using equation 7 and data from the table in Figure 1:

Equation 7

Equation 7

$$BA_{\text{init}} = (N_1 \times M_1) + (N_2 \times M_2) + (N_3 \times M_3) + (N_4 \times M_4)$$

Where:

BA_{init} = Initial quantity of ODS contained in foam prior to removal from appliances, in metric tonnes;

N_1 = Number of appliances of type 1;

N_2 = Number of appliances of type 2;

N_3 = Number of appliances of type 3;

N_4 = Number of appliances of type 4;

M_1 = Metric tonnes of ODS per appliance of type 1;

M_2 = Metric tonnes of ODS per appliance of type 2;

M_3 = Metric tonnes of ODS per appliance of type 3;

M_4 = Metric tonnes of ODS per appliance of type 4.

Figure 1. Quantity of ODS by type of appliance

Type of appliance	Storage capacity (SC)	Metric tonnes of ODS per appliance
Type 1	SC < 180 litres	0.00024
Type 2	180 litres ≤ SC < 350 litres	0.00032
Type 3	350 litres ≤ SC < 500 litres	0.0004
Type 4	SC ≥ 500 litres	0.00048

1.2. Calculation of the initial quantity of ODS contained in foam based on samples

The initial quantity of ODS contained in foam may be calculated using samples from at least 10 appliances and the following method:

- (1) have the initial concentration of ODS in the foam determined by a laboratory independent of the promoter and of the destruction facility in accordance with Division 9.1 of Part I and in the following manner:

- (a) by cutting 4 foam samples from each appliance (left side, right side, top, bottom) using a reciprocating saw, each sample being at least 10 cm² and the full thickness of the insulation;
 - (b) by sealing the cut edges of each foam sample using aluminum tape or a similar product that prevents off-gassing;
 - (c) by individually labelling each sample to record appliance model and site of sample (left, right, top, bottom);
 - (d) by analyzing the samples using the procedure in paragraph 4; the samples may be analyzed individually (4 analyses per appliance) or a single analysis may be done using equal masses of foam from each sample (1 analysis per appliance);
 - (e) based on the average concentration of ODS in the samples from each appliance, by calculating the 90% upper confidence limit of the ODS concentration in the foam, and using that value as the "CBA" factor in equation 8 to calculate initial quantity of ODS contained in foam from appliances;
- (2) determine the quantity of foam removed from the appliances processed, namely the factor "Foam_{rec}" in equation 8, using a default value of 5.85 kg per appliance and multiplying by the number of appliances processed or using the following method:
- (a) by separating and collecting all foam residual, which may be in a fluff, power or pelletized form, and documenting the processed to demonstrate that no significant quantity of foam residual is lost in the air or other waste streams;
 - (b) by separating non-foam components in the residual (such as metal or plastic);
 - (c) by weighing the recovered foam residual prior to ODS extraction to calculate the total mass of foam recovered;
- (3) calculate the initial quantity of ODS contained in foam prior to removal from appliances using equation 8:

Equation 8

$$BA_{\text{init}} = \text{Foam}_{\text{rec}} \times \text{CBA}$$

Where:

BA_{init} = Initial quantity of ODS contained in foam prior to removal from appliances, in metric tonnes;

Foam_{rec} = Total quantity of foam recovered prior to ODS extraction, in metric tonnes;

CBA = Concentration of ODS in the foam prior to removal from appliances, in metric tonnes de ODS per metric tonne of foam;

- (4) analyze the foam samples from appliance in accordance with the following requirements:
- (a) the analysis of the content and mass ratio of the ODS from foam must be done at an independent laboratory in accordance with Division 9.1 of Part I;
 - (b) the analysis must be done using the heating method to extract ODS from the foam in the insulating foam samples, as described in the article "Release of fluorocarbons from Insulation foam in Home Appliance during Shredding" published by Scheutz, Fredenslund, Kjeldsen and Tant in the *Journal of the Air & Waste Management Association* (December 2007, Vol. 57, pages 1452-1460), and set out below:
 - (i) each sample must be prepared to a thickness no greater than 1 cm, placed in a 1123 ml glass bottle, weighed using a calibrated scale, and sealed with Teflon-coated septa and aluminum caps;
 - (ii) to release the ODS, the sample must be incubated in an oven for 48 hours at 140 °C;
 - (iii) when cooled to room temperature, gas samples must be redrawn from the headspace and analyzed by gas chromatography in accordance with Division 9.1 of Part I;

- (iv) the lids must be removed after analysis, and the headspace must be flushed with atmospheric air for approximately 5 minutes using a compressor; afterwards, the septa and caps must be replaced and the bottles subjected to a second 48-hour heating step to drive out the remaining ODS from the sampled foam;
- (v) when cooled down to room temperature after the second heating step, gas samples must be redrawn from the headspace and analyzed by gas chromatography in accordance with Division 9.1 of Part I;
- (c) the quantity of each type of ODS recovered must then be divided by the total mass of the initial foam samples prior to analysis to determine the mass ratio of ODS present, in metric tonnes of ODS per metric tonne of foam.

2. Calculation methods for extraction efficiency

The promoter must calculate the extraction efficiency using equation 9:

Equation 9

$$EE = \frac{BA_{final}}{BA_{init}}$$

Where:

EE = Extraction efficiency;

BA_{final} = Total quantity of ODS contained in foam removed and sent for destruction, calculated using equation 10, in metric tonnes;

BA_{init} = Initial quantity of ODS contained in foam prior to removal from appliances, calculated using equation 7 or 8, as the case may be, in metric tonnes;

Equation 10

$$BA_{final} = \sum_{i=1}^n BA_{final,i}$$

Where:

BA_{final} = Total quantity of ODS contained in foam removed and sent for destruction, in metric tonnes;

i = Type of ODS;

n = Number of types of ODS;

$BA_{final,i}$ = Total quantity of ODS of type i extracted and sent for destruction, determined in accordance with Division 9.1 of Part I, in metric tonnes.”.

- 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.

54. This Regulation comes into force on the date of its publication in the *Gazette officielle du Québec*, except section 50 which comes into force on the date of publication in the *Gazette officielle du Québec* of an order in council ratifying an agreement entered into with California pursuant to section 46.14 of the Environment Quality Act (chapter Q-2).

2392

Gouvernement du Québec

O.C. 1185-2012, 12 December 2012Environment Quality Act
(chapter Q-2)**Determination of annual caps on greenhouse gas emission units relating to the cap-and-trade system for greenhouse gas emission allowances for the 2013-2020 period**

Determination of annual caps on greenhouse gas emission units relating to the cap-and-trade system for greenhouse gas emission allowances for the 2013-2020 period

WHEREAS the Act to amend the Environment Quality Act and other legislative provisions in relation to climate change (2009, chapter 33) was assented to on 19 June 2009;

WHEREAS Order in Council 1187-2009 dated 18 November 2009 sets Québec's greenhouse gas emission reduction target by 2020 at 20% under the level of 1990;

WHEREAS the Regulation respecting a cap-and-trade system for greenhouse gas emission allowances (chapter Q-2, r. 46.1) was made by Order in Council 1297-2011 dated 14 December 2011;

WHEREAS paragraph 12 of section 3 of the Regulation provides that the cap-and-trade system for greenhouse gas emission allowances includes periods for compliance, including the first three periods from 1 January 2013 to 31 December 2020;

WHEREAS section 46.7 of the Environment Quality Act (chapter Q-2) provides that in light of the targets set, the Government, by order, sets a cap on the emission units that may be granted by the Minister of Sustainable Development, Environment, Wildlife and Parks;

WHEREAS, in accordance with the third paragraph of section 46.7, a notice related to the setting of annual caps for greenhouse gas emission units relating to the cap-and-trade system for greenhouse gas emission allowances for the 2013-2020 period was published in the *Gazette officielle du Québec* of 16 December 2011 with a notice that the Order in Council could be made by the Government on the expiry of 60 days following that publication;

WHEREAS it is expedient to set the caps with amendments;

IT IS ORDERED, therefore, on the recommendation of the Minister of Sustainable Development, Environment, Wildlife and Parks:

THAT the caps on the emission units that may be granted by the Minister of Sustainable Development, Environment, Wildlife and Parks, within the cap-and-trade system for greenhouse gas emission allowances, for each year covering the 2013-2020 period are set at,

- for the year 2013, 23.20 million emission units;
- for the year 2014, 23.20 million emission units;
- for the year 2015, 65.30 million emission units;
- for the year 2016, 63.19 million emission units;
- for the year 2017, 61.08 million emission units;
- for the year 2018, 58.96 million emission units;
- for the year 2019, 56.85 million emission units;
- for the year 2020, 54.74 million emission units.

JEAN ST-GELAIS,
Clerk of the Conseil exécutif

2389