

(5) For the purposes of this section, “nominal capacity” means the gross vehicle weight rating certified by a motor vehicle manufacturer less the net mass of the vehicle.”

6. Section 3.24.2 is amended

- (1) by striking out “**Signalmen and**” in the title;
- (2) by replacing “signalman” in the first paragraph by “worker”.

7. Section 10.3.2 is replaced by the following:

“**10.3.2.** Where traffic must be directed by a flag person for road users, the employer must ensure that the flag person

(1) is aware of all the responsibilities inherent in his or her work;

(2) has undergone training relating to his or her responsibilities recognized by the Joint Sector-Based Construction Association on Occupational Health and Safety;

(3) wears high-visibility safety apparel and is equipped with other accessories in compliance with the standards determined by the Minister of Transport and recorded in Volume V of the manual entitled “Traffic Control Devices”, determined and set out by the Minister of Transport under the second paragraph of section 289 of the Highway Safety Code (chapter C-24.2).”

8. Section 10.4.1 is replaced by the following:

“**10.4.1. High-visibility safety apparel:** Subject to paragraph 1 of section 2.8.4 and to paragraph 3 of section 10.3.2, the wearing of fluorescent orange high-visibility safety apparel of Class 2 or 3 and of Level 2 that complies with CSA Standard Z96, High-Visibility Safety Apparel, is mandatory for every worker who performs tasks on or near a road where self-propelled vehicles are likely to hit a worker.”

9. This Regulation comes into force on the fifteenth day following the date of its publication in the *Gazette officielle du Québec*.

Gouvernement du Québec

O.C. 1089-2015, 9 December 2015

Environment Quality Act
(chapter Q-2)

Cap-and-trade system for greenhouse gas emission allowance
—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 the Government made the Regulation respecting a cap-and-trade system for greenhouse gas emission allowances (chapter Q-2, r. 46.1);

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 23 June 2015 with a notice that it could be made by the Government on the expiry of 60 days following that publication;

WHEREAS it is expedient to make the Regulation with amendments;

IT IS ORDERED, therefore, on the recommendation of the Minister of Sustainable Development, the Environment and the Fight Against Climate Change:

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.

JUAN ROBERTO IGLESIAS,
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*, and 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 2
 - (1) by replacing subparagraph 2 of the second paragraph by the following:
 - "(2) distributes 200 litres or more of fuel within the meaning of protocol QC.30 of Schedule A.2 to the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere.";
 - (2) by inserting ", including the emitter itself, as the case may be," after "section 2" in subparagraph 4 of the third paragraph.
2. Section 3 is amended
 - (1) by inserting "and, where applicable, a notice of correction" after "report" in paragraph 7;
 - (2) by replacing "determined in" in paragraph 13 by "or, by assimilation, the quantity of fuel determined in the first and second paragraphs of".
3. Section 4 is amended by replacing "10 or section 12" in the fourth paragraph by "10, 12 or 18.2".
4. Section 6 is amended
 - (1) by adding "and offset credits withdrawn from the environmental integrity account to replace illegitimate offset credits in accordance with the fourth paragraph of section 70.21" at the end of paragraph 6;
 - (2) by adding the following after paragraph 6:
 - "(7) a cancellation account in which cancelled emission allowances are recorded when created by error."
5. Section 7 is amended
 - (1) by replacing "for each of the 5 years" in subparagraph 4 of the first paragraph by "except for the emitter referred to in subparagraph 1 of the second paragraph of section 2, for each of the 3 years";

- (2) by replacing "the names of their directors and officers" in subparagraph 6 of the first paragraph by "the control percentage between each entity, which information may also be provided in the form of a diagram";
- (3) by replacing subparagraph 3 of the second paragraph by the following:
 - "(3) not later than 1 September following the submission of the first emissions report reporting emissions equal to or exceeding the threshold, in the case of an emitter referred to in subparagraph 1 of this paragraph whose verified emissions for an establishment are equal to or exceed the emissions threshold during a year following the year mentioned in that subparagraph;
 - (4) not later than 1 September 2015, in the case of an emitter pursuing fuel distribution activities whose verified emissions for 2014 for those activities are equal to or exceed 25,000 metric tonnes CO₂ equivalent;
 - (5) on or after 1 January 2016 but not later than 1 September 2016, in the case of an emitter pursuing fuel distribution activities who can prove that the verified emissions for 2015 for those activities will be equal to or exceed 25,000 metric tonnes CO₂ equivalent;
 - (6) on or after 1 January of the year concerned, but not later than 1 September following the submission of the first emissions report reporting emissions equal to or exceeding the threshold, in the case of an emitter pursuing fuel distribution activities who can demonstrate that the verified emissions for 2016 or a subsequent year will be equal to or exceed the emissions threshold."

6. Section 8 is amended

- (1) by replacing "register" in the second paragraph by "be registered";
- (2) by adding the following:

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

7. Section 8.1 is amended
 - (1) by replacing "pursuant to this Regulation or as an emitter or participant" by "or clearing house pursuant to this Regulation or as an emitter, participant or clearing house";
 - (2) by inserting "or clearing house" after "as a participant".
8. Section 9 is amended by adding "and the control percentage between each entity, which information may also be provided in the form of a diagram" at the end of subparagraph 2 of the first paragraph.
9. The following is inserted after section 18:

"CHAPTER II.1

REGISTRATION OF CLEARING HOUSES

- 18.1.** A clearing house for derivatives having an establishment in Canada, recognized by a regulatory authority responsible for supervising financial markets in Canada, may register for the system in order to clear transactions involving emission allowances. For that purpose, it must provide the Minister with the following information and documents:
- (1) its name and contact information, and the date and place of its constitution;
 - (2) a list of its directors and officers and their work contact information;
 - (3) a list of its subsidiaries or parent legal persons with a diagram representing the relations between those entities, including the control percentage between each entity;
 - (4) a document issued by the regulatory authority supervising the clearing house confirming that fact and giving the date on which supervision started and the rules to be followed by the clearing house;
 - (5) a declaration signed by the chief officer or a resolution of the board of directors of the clearing house including an undertaking to comply with the conditions of this Regulation and attesting that the information and documents provided are valid and that consent has been given to their communication when necessary for the purposes of this Regulation or the corresponding regulations of a partner entity.

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

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

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

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

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

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

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

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

- 10.** The second paragraph of section 19 is amended

- (1) by inserting the following after subparagraph 2:

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

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

- (2.3) beginning on 1 January 2016, in the case of an emitter who distributed 200 litres or more of fuel in 2015 but whose corresponding declared emissions are lower than 25,000 metric tonnes CO₂ equivalent;"
- (2) by replacing "or 2 are equal to or exceed the emissions threshold during a year following those mentioned in those subparagraphs" in subparagraph 3 by "are equal to or exceed the emissions threshold during a year following the year mentioned in that subparagraph";
- (3) by adding the following after subparagraph 3:
 - "(3.1) beginning on 1 January of the year concerned, in the case where fuel distribution activities of an emitter are equal to or exceed the emissions threshold for 2016 or a subsequent year;"

11. The following is inserted after section 19:

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

Total increased quantity of GHG emissions = total GHG emissions reported x (1+ RUGHG)

Where

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

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

12. Section 21 is amended by inserting "and, where applicable, as the emissions increased in accordance with the first paragraph of section 19.1" in the first paragraph after "verified emissions".

13. The second paragraph of section 23 is amended

(1) by striking out "identified by vintage";

(2) by striking out "and the reserve emission units".

14. Section 24 is amended by replacing the first paragraph by the following:

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

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

15. The following is inserted after section 26:

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

(1) the general account number of the seller;

(2) the account number of the clearing house;

(3) the quantity, type and, where applicable, vintage of the emission allowances to be traded;

(4) the settlement price of each type and, where applicable, each vintage of emission allowances;

(5) the type of emission allowances trading agreement and the transaction date scheduled;

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

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

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

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

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

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

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

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

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

- 16.** Section 34 is amended by replacing "emitter or participant" by "parties concerned".
- 17.** Section 35 is amended by replacing "and participants" by ", participants and clearing houses".
- 18.** Section 41 is amended

- (1) by inserting "; upon a failure to comply, the emission units are taken from the emitter's general account" after "with that section" in the fourth paragraph;
- (2) by inserting "or to have enough emission units in the emitter's general account" after "fourth paragraph" in the fifth paragraph.

19. The following is inserted after section 41.1:

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

Total adjusted quantity of reference units = Total reported reference units x (1- RURU)

Where

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

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

20. Section 46 is amended by replacing the part preceding subparagraph 1 of the fourth paragraph by the following:

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

- 21.** Section 48 is amended
- (1) by replacing subparagraph 1 of the second paragraph by the following:
- "(1) bank transfer;"
- (2) by replacing the third paragraph by the following:
- "Letters of credit and letters of guarantee provided in accordance with subparagraphs 1.1 and 2 of the second paragraph are deposited with the Minister of Finance, pursuant to the Deposit Act (chapter D-5)."
- 22.** Section 59 is amended by replacing the part preceding subparagraph 1 of the third paragraph by the following:
- "In all cases, an emitter must, at least 40 days before the date of each sale by mutual agreement, send the Minister an update of the following information:"
- 23.** Section 70.21 is amended by replacing "retirement account" in the third and fourth paragraphs by "invalidation account".
- 24.** Section 71 is amended by replacing "9 or 12, the second paragraph of section 13, section 14.1, the second paragraph of section 18 or 19, the sixth paragraph of section 26" in paragraph 1 by "8, 9, 11 or 12, the second paragraph of section 13, section 14.1, the second paragraph of section 18, section 18.1, 18.2 or 18.4, the second paragraph of section 19, the sixth paragraph of section 26, the fourth paragraph of section 26.3".
- 25.** Section 73 is amended by replacing "section 20, the first paragraph of section 21, the first or second paragraph of section 23.1, the first paragraph of section 24" in paragraph 1 by "section 19.1 or 20, the first paragraph of section 21, the first or second paragraph of section 23.1 or section 24".
- 26.** Section 74 is amended by replacing "9 or 12, the second paragraph of section 13, section 14.1, the second paragraph of section 18 or 19, the sixth paragraph of section 26" in the part preceding subparagraph 1 of the first paragraph by "8, 9, 11 or 12, the second paragraph of section 13, section 14.1, the second paragraph of section 18, section 18.1, 18.2 or 18.4, the second paragraph of section 19, the sixth paragraph of section 26, the fourth paragraph of section 26.3".
- 27.** Section 75.1 is amended by inserting "or second" in the part preceding paragraph 1 after "17, the first".
- 28.** Section 75.4 is amended by inserting "19.1 or" after "19, section".

29. Appendix A is amended

(1) by replacing the third line of the table by the following:

"

Natural gas distribution	Distribution, through a system of mains, of natural or synthetic gas to consumers, also including the trade of the sale of natural gas by marketers and brokers, that arrange the sale of natural gas over distribution systems operated by others	2212 488990 (natural gas regasification or liquefaction)
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"

(2) by replacing the sixth line of the table by the following:

"

Pipeline transportation	Transportation of crude oil, refined products and natural gas, gas fields, processing plants and local distribution systems	486 488990 (natural gas regasification or liquefaction)
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"

30. Appendix C is amended

(1) in Table B of Part I

(a) by replacing the fifteenth and sixteenth lines corresponding to the sector entitled Other²" and to the types of activities respectively entitled "Soya and canola oil production (year 2013)" and "Oilseed processing (year 2014 and following)" by the following line:

"

Other ²	Oilseed processing	Metric tonne of processed oilseeds
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"

- (b) by replacing the forty-second line corresponding to the sector entitled "Metallurgy" and to the type of activity entitled "Metal powder manufacturing" by the following:

Metallurgy	Metal powder manufacturing	Metric tonne of saleable iron powder and steel powder
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”.

- (c) by inserting the following line after the fifty-second line corresponding to the sector "Pulp and paper" and to the type of activity entitled "Production of pulp and paper and wood-fibre based products":

"

Pulp and paper	Steam production	Metric tonne of saleable various air-dried products of each of the establishments common to a steam network
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”.

- (2) by replacing "of fuels subject to the payment of the annual duty to the Green Fund pursuant to section 85.36 of the Act respecting the Régie de l'énergie (chapter R-6.01), excluding refinery fuel gas, and total GHG combustion emissions attributable to the use of fuel" in the definitions of factors "GFR" and "GFR_s" provided for, as the case may be, in equations 2-4, 2-5, 3-4, 3-5 and 4-6 of Part II by "of natural gas, gasoline, diesel, heating oil, propane, petroleum coke and coal, excluding refinery fuel gas, and total GHG combustion emissions";
- (3) by replacing "of fuels subject to the payment of the annual duty to the Green Fund pursuant to section 85.36 of the Act respecting the Régie de l'énergie" in the definitions of factors "GHG GFR_i" and "GHG GFR_{si k}" respectively provided for in equations 2-5 and 3-5 of Part II by "of natural gas, gasoline, diesel, heating oil, propane, petroleum coke and coal";

- (4) in equation 4-7 of Part II
- (a) by replacing "of fuels subject to the payment of the annual duty to the Green Fund pursuant to section 85.36 of the Act respecting the Régie de l'énergie (chapter R-6.01) in the definition of factor "GFR" by "of natural gas, gasoline, diesel, heating oil, propane, petroleum coke and coal";
- (b) by replacing "of fuels subject to the payment of the annual duty to the Green Fund pursuant to section 85.36 of the Act respecting the Régie de l'énergie" in the definition of factor GHG GFR_i by "of natural gas, gasoline, diesel, heating oil, propane, petroleum coke and coal";
- (5) by replacing equation 6-11 in subdivision 6.7 of Part II by the following:

"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 ;

$P_i^{Non-WCI}$ = Weighted average sale price of emission allowances of year i at an auction held during year i by other Canadian provinces or territories or by US states where a system covering electricity production in particular has been established by an entity that is not a partner entity, in US dollars;

P_i^{WCI} = Weighted average sale price of emission allowances of year i at an auction held during year i by Québec or other Canadian provinces or territories or by US states where a system covering electricity production in particular has been established by a partner entity, in US dollars;

$E_i^{Non-WCI}$ = Annual GHG emissions for year i relating to the production of electricity acquired from another Canadian province or territory or from a US state where producers are subject to a system established by an entity that is not a partner entity, in metric tonnes CO₂ equivalent;

i = Each year of the 2013-2020 period for which the emitter is required to cover its emissions.

For the purposes of this equation, where the sale price of the emission allowances that is used for calculation is only available in Canadian dollars, the price must be converted in US dollars at the official conversion rate of the Bank of Canada at noon on the date of the auction."

31. Appendix D is amended:

(1) in protocol 1

(a) by replacing the heading of subdivision 3 of Part I by the following:

"3. Reduction project SSRs";

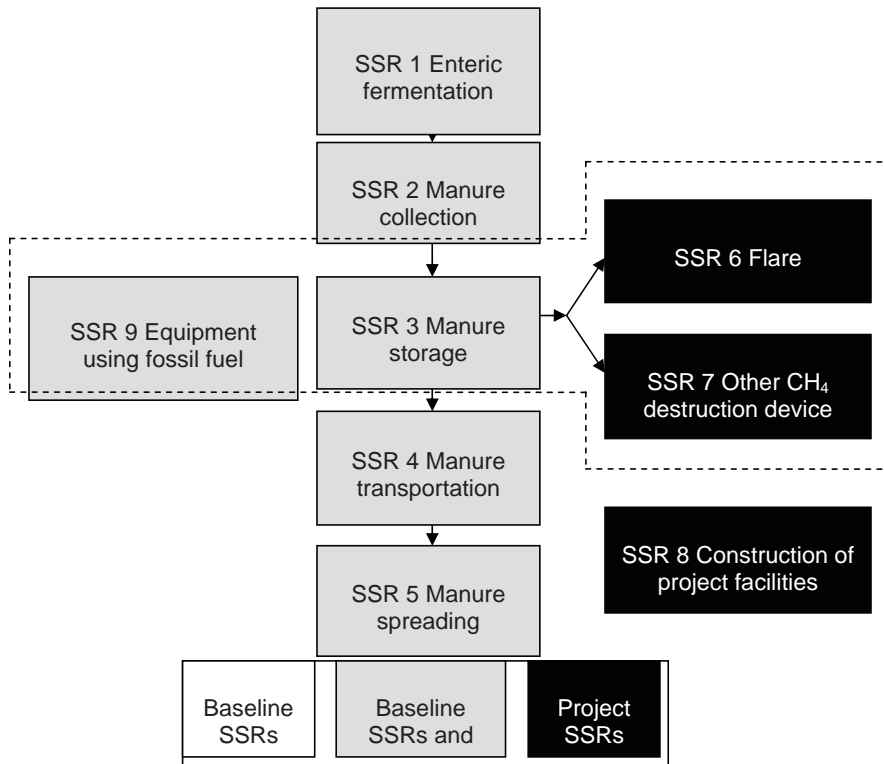
(b) by replacing "des processus" in the part of the French text preceding Figure 3.1 in subdivision 3 of Part I by "du processus";

(c) by inserting the following paragraph before the heading of Figure 3.1 in subdivision 3 of Part I:

"All the SSRs within the dotted line must be counted for the purposes of this protocol.";

(d) by replacing Figure 3.1 in subdivision 3 of Part I by the following:

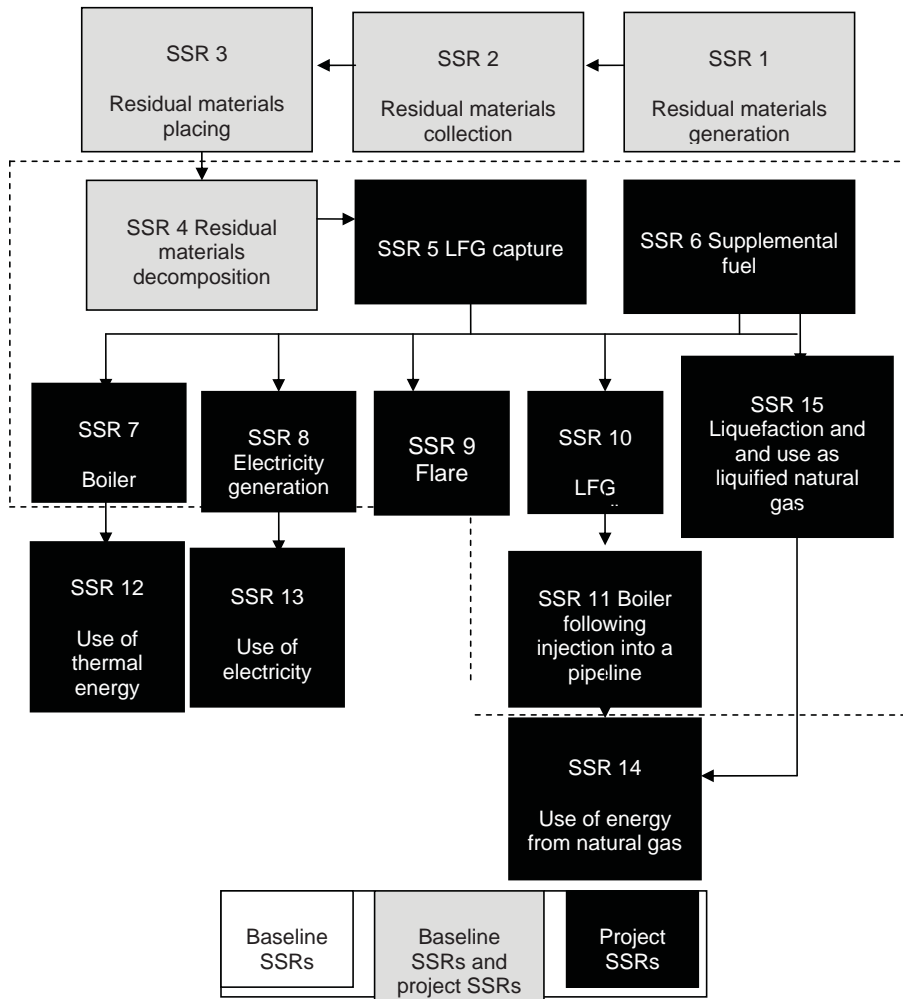
"Figure 3.1. Flowchart for the reduction project process



”;

- (e) by striking out “”, in kilograms of CO₂ equivalent per kilogram of CH₄” in the definition of factor “21” in equations 4 and 5 of subdivision 4.1 of Part I;
- (f) by striking out “”, in grams CO₂ equivalent per gram of CH₄” and “”, in grams CO₂ equivalent per gram of N₂O” in the definitions of factors “21” and “310” in equation 9 of subdivision 4.2 of Part I, respectively;
- (g) by replacing “conservateur” wherever it appears in the French text of the Table in Part VI by “prudent”;
- (2) in protocol 2
- (a) by inserting “**TREATMENT OR**” before “**DESTRUCTION**” in the heading of the protocol;

- (b) by inserting " treating or" in the first paragraph before "destroying" and "treat or" before "destroy" in the part preceding subparagraph 1 of the first paragraph of subdivision 1 of Part I;
- (c) by replacing the third and fourth paragraphs of subdivision 1 of Part I by the following:
- "Eligible treatment or destruction devices are enclosed flares, open flares, combustion engines, boilers, turbines and CH₄ liquefaction units.
- The project must capture and treat or destroy CH₄ that, before the project, was emitted to the atmosphere. The CH₄ may be treated or destroyed on the landfill site or transported and treated or destroyed off-site.";
- (d) by replacing "must receive" in subparagraph 2 of subdivision 1.2 of Part I by "should have received" and by replacing "have" by "should have had";
- (e) by replacing subparagraph 3 of subdivision 1.2 of Part I by the following:
- "(3) if the site was in operation in 2009 or a subsequent year, the site should have received less than 50,000 metric tonnes of residual materials annually and should have had a maximum capacity of less than 1,500,000 cubic metres.";
- (f) by replacing the heading of subdivision 5 of Part I by the following:
- "5. Reduction project SSRs";**
- (g) by replacing Figure 5.1 of subdivision 5 of Part I by the following:

"Figure 5.1. Flowchart for the reduction project process

- (h) by replacing the lines SSR 14 in Figure 5.2 of subdivision 5 of Part I by the following:

"

14	Avoided emissions from use of natural gas energy to replace energy from a fossil fuel	CO ₂	P	Excluded
15	Liquefaction of LFG and use as liquefied natural gas.	CO ₂	P	Excluded
		CH ₄		Included
		N ₂ O		Included

";

- (i) by inserting "treatment or" in the definition of factors "LFG_{i,t}" and "i" before "destruction" in equation 2 of subdivision 6 of Part I;
- (j) in equation 3 of subdivision 6.1 of Part I
- i. by replacing the definition of factor "CH₄Dest_{PR}" by the following:
- "CH₄Dest_{PR}" = Total quantity of CH₄ treated or destroyed by all LFG treatment and destruction devices during the project reporting period, calculated using equation 4, in metric tonnes of CH₄";
- ii. by striking out ", in metric tonnes CO₂ equivalent per metric tonne of CH₄" in the definition of factor "21";
- (k) in equation 4 of subdivision 6.1 of Part I
- i. by replacing the definition of factor "CH₄Dest_{PR}" by the following:
- "CH₄Dest_{PR}" = Total quantity of CH₄ treated or destroyed by all LFG treatment or destruction devices during the project reporting period, in metric tonnes of CH₄";
- ii. by inserting "treatment or" before "destruction" in the definitions of factors "n" and "i";
- iii. by replacing the definition of factor "CH₄Dest_i" by the following:
- "CH₄Dest_i" = Net quantity of CH₄ treated or destroyed by treatment or destruction device *i* during the project reporting period, calculated using equation 5, in cubic metres of CH₄ at standard conditions";

- (l) in equation 5 of subdivision 6.1 of Part I
- i. by replacing the definition of factor "CH₄Dest_i" by the following:

"CH₄Dest_i" = Net quantity of CH₄ treated or destroyed by treatment or destruction device *i* during the project reporting period, in cubic metres of CH₄ at standard conditions;;
 - ii. by inserting "treatment or" before "destruction" in the definitions of factors "Q_i" , "DE_i" and "I";
- (m) by inserting "treatment or" before "destruction" in the definitions of factors "Q_i" and "LFG_{i,t}" in equation 6 of subdivision 6.1 of Part I;
- (n) by replacing "destruction" in the definition of "FF_{CO2}" in equations 7 and 8 of subdivision 6.2 of Part I by "use";
- (o) by inserting "fossil" in the definition of factor "EF_{CF,j}" in equation 8 of subdivision 6.2 of Part I before "fuel";
- (p) by inserting "treatment or" before "destruction" in the definition of factor "EL_{PR}" in equation 9 of subdivision 6.2 of Part I;
- (q) in equation 10 of subdivision 6.2 of Part I
- i. by inserting "treatment or" before "destruction" in the definition of factors "n", "i", "NG_i" and "DE_i";
 - ii. by striking out ", in kilograms CO₂ equivalent per kilogram of CH₄" in the definition of factor "21";
- (r) by inserting "treatment or" before "destruction" wherever it appears in subparagraph 3 of the second paragraph, in the part preceding subparagraph 1 of the third paragraph, in subparagraphs 1 and 2 of the third paragraph and in the sixth paragraph of subdivision 7.2 of Part I;
- (s) by replacing the seventh, eighth and ninth paragraphs of subdivision 7.2 of Part I by the following:
- "The operating status of flares is established by thermocouple readings above 260 °C.

For all other treatment or destruction devices, the promoter must show in the project plan that a monitoring device has been installed to verify the operation of the treatment or destruction device. The promoter must also show in each project report that the monitoring device has operated correctly.

GHG emission reductions will not be taken into account for the issue of offset credits for periods during which the treatment or destruction device or the monitoring device for the operation of the treatment or destruction device is not operating.";

- (f) by replacing the sixth paragraph of subdivision 7.3 of Part I by the following:

"When a verification of the calibration accuracy of a device shows a shift outside the +/-5% accuracy threshold, the device must be calibrated by the manufacturer or by a third person certified for that purpose by the manufacturer. In addition, for the entire period from the last calibration that confirmed accuracy within the $\pm 5\%$ threshold until such time as the piece of equipment is correctly calibrated, all the data from the piece of equipment must be corrected according to the following procedure:

- (1) when the calibration indicates an under-reporting of flow rates or CH₄ content, the promoter must use the measured values without correction;
- (2) when the calibration indicates an over-reporting of flow rates or CH₄ content, the promoter must apply to the measured values the greatest calibration drift recorded at the time of calibration.";

- (u) by replacing "pourra" in the ninth paragraph of subdivision 7.3 of Part I of the French text by "peut";

- (v) in Table 1 of Part II

i. by adding "**Treatment or**" before "**Destruction**" in the heading of the first column;

ii. by adding the following line:

"

CH ₄ liquefaction unit	0.95
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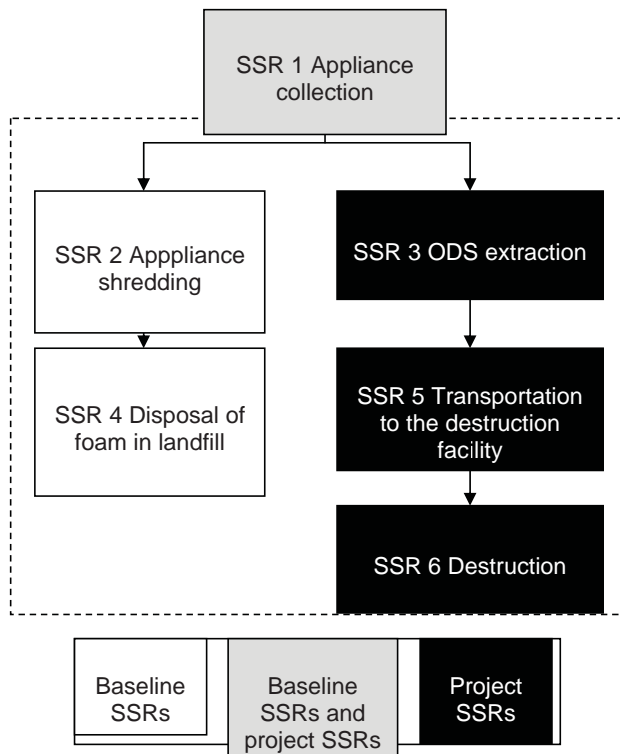
";

- (w) by inserting "treatment or" before "destruction" in subparagraph 3 of the first paragraph of Part III;
 - (x) by replacing "conservateur" wherever it occurs in the French text of the table in Part III by "prudent";
- (3) in protocol 3
- (a) by replacing "22 October 2015" in the third paragraph of section 1.1 of Part 1 by "22 October 2016";
 - (b) by inserting the following paragraph before the heading of Figure 6.1 in subdivision 6 of Part I:

"All the SSRs within the dotted line must be counted for the purposes of this protocol.";

- (c) by replacing Figure 6.1 of subdivision 6 of Part I by the following:

"Figure 6.1. Flowchart for the reduction project process for the ODS contained in the foam"



- ";
- (d) by striking out the first paragraph of subdivision 10 of Part I;
 - (e) by adding the following paragraph at the end of subdivision 10 of Part I:

"Each stage in a project carried out in the United States must be conducted in accordance with the requirements of the most recent version of the protocol entitled "Compliance Offset Protocol Ozone Depleting Substances Projects: Destruction of U.S. Ozone Depleting Substances Banks" and published by the California Air Resources Board and the California Environmental Protection Agency.";

- (4) by adding the following after protocol 3:

"PROTOCOL 4

ACTIVE COAL MINES – DESTRUCTION OF CH₄ FROM A DRAINAGE SYSTEM

Part I

1. Projects covered

This offset credit protocol covers any project designed to reduce GHG emissions by capturing and destroying CH₄ from a CH₄ drainage system at an active underground or surface coal mine, except a mountaintop removal mine.

The project must enable the capture and destruction of CH₄ that, before the project, was emitted to the atmosphere. The CH₄ must be captured within the mine boundaries based on the current mine map and no more than 50 m below the mined seam and, in the case of an underground mine, up to 150 m above that seam. The project must not use CO₂, steam or any other fluid or gas to enhance CH₄ drainage.

The CH₄ must be destroyed on the site of the mine where it was captured using a flare or any other destruction device. Emission reductions following pipeline injection of CH₄ are considered as common practice in the operation of an underground mine and are eligible only for a surface mine.

For the purposes of this protocol,

- (1) "room and pillar" means a method of underground mining in which approximately half of the coal is left in place as "pillars" to support the roof of the active mining area while "rooms" of coal are extracted;

- (2) "coal" means all solid fuels classified as anthracite, bituminous, subbituminous, or lignite under ASTM D388, entitled Standard Classification of Coals by Rank;
- (3) "mine gas" means the untreated gas extracted from within a mine through a CH₄ drainage system that often contains various levels of other components such as nitrogen, oxygen, CO₂ and hydrogen sulfide;
- (4) "mine CH₄" means the CH₄ portion of the mine gas contained in coal seams and surrounding strata that is released as a result of mining operations;
- (5) "drainage system" means a system installed in a mine to drain CH₄ from coal seams.

2. First project report

In addition to the information required under the second paragraph of section 70.5 of this Regulation, the first project report must include the following information:

- (1) in the case of an underground mine, the mining method employed, such as room and pillar or longwall;
- (2) annual coal production, in metric tonnes;
- (3) the year of initial mine operation;
- (4) the scheduled year of mine closure, if known;
- (5) a diagram of the mine site that includes
 - (a) the location of existing and planned wells and boreholes, specifying whether they were used for pre-mining or post-mining drainage, and whether they are part of the project;
 - (b) the location of the equipment that will be used to treat or destroy the mine CH₄.

3. Location

The project must be implemented in Canada.

4. Reduction project SSRs

The reduction project process flowchart in Figure 4.1 and the table in Figure 4.2 show all the SSRs that must be taken into account by the promoter when calculating the GHG emission reductions attributable to the project.

All the SSRs within the dotted line must be counted for the purposes of this protocol.

Figure 4.1. Flowchart for the reduction project process

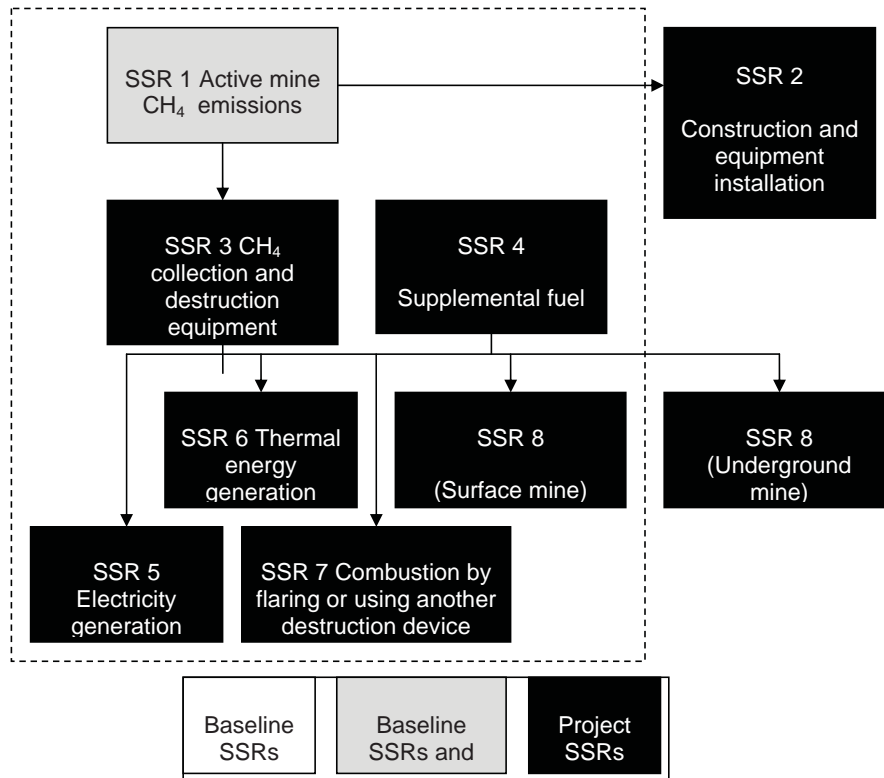


Figure 4.2. Reduction project SSRs

SSR #	Description	GHG	Relevant to Baseline (B) or Project (P)	Included/Excluded
1	CH ₄ emissions from mining activities	CH ₄	B, P	Included
2	Emissions from construction and/or installation of new equipment	CO ₂	P	Excluded
		CH ₄		Excluded
		N ₂ O		Excluded
3	Emissions resulting from fossil fuels consumed to operate the CH ₄ drainage system	CO ₂	P	Included
		CH ₄		Excluded
		N ₂ O		Excluded
4	Emissions from the use of supplemental fossil fuels	CO ₂	P	Included
		CH ₄		Excluded
		N ₂ O		Excluded
5	Emissions from CH ₄ destruction for electricity generation	CO ₂	P	Included
		N ₂ O		Excluded
	Emissions of uncombusted CH ₄	CH ₄	P	Included

6	Emissions from CH ₄ destruction for heat generation	CO ₂	P	Included
		N ₂ O		Excluded
	Emissions of uncombusted CH ₄	CH ₄	P	Included
7	Emissions from CH ₄ destruction using a flare or other device	CO ₂	P	Included
		N ₂ O		Excluded
	Emissions of uncombusted CH ₄	CH ₄	P	Included
8 (Underground mine)	Pipeline injection	CO ₂	P	Excluded
		N ₂ O		Excluded
		CH ₄		Excluded
8 (Surface mine)	Emissions resulting from the combustion of CH ₄ injected into a pipeline	CO ₂	P	Included
		N ₂ O		Excluded
	Emissions of uncombusted CH ₄ injected into a pipeline	CH ₄	P	Included

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

The promoter must calculate the quantity of GHG emission reductions attributable to the project using equation 1:

Equation 1

$$ER = BE - PE$$

Where:

ER = GHG emission reductions attributable to the project during the project reporting period, in metric tonnes CO₂ equivalent;

BE = Emissions under the baseline scenario 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 5, in metric tonnes CO₂ equivalent.

When the flow meter does not correct for the temperature and pressure of the mine gas at standard conditions, the promoter must measure mine pressure and temperature separately and correct the flow values using equation 2. The promoter must use the corrected flow values in all the equations of this protocol.

Equation 2

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

Where:

MG_{i,t} = Volume of mine gas sent to destruction device *i* in time interval *t*, in cubic metres at standard conditions;

i = Destruction device;

t = Time interval shown in the table in Figure 6.1 for which CH₄ flow and content measurements are aggregated;

MG_{uncorrected} = Uncorrected volume of mine gas sent to destruction device *i* in time interval *t*, in cubic metres;

293.15 = Reference temperature, in Kelvin;

T = Measured temperature of mine gas for the given time period, in Kelvin (°C + 273.15);

P = Pressure of the mine gas for the given time period, in kilopascals;

101.325 = Standard pressure, in kilopascals.

5.1. Calculation method for GHG emissions in the baseline scenario

In the baseline scenario, CH₄ sent to a destruction device during the project reporting period, except CH₄ captured by a pre-mining surface well used to extract CH₄, must be taken into account.

In the case of a surface well used to extract CH₄ before a mining operation, CH₄ emissions from past periods are considered only during a project reporting period when the well is mined through, in other words when one of the following situations occurs:

- (1) the well is physically bisected by mining activities;
- (2) the well produces elevated amounts of atmospheric gases so that the concentration of nitrogen in the mine gas increases by 5 compared to baseline concentrations according to a gas analysis using a gas chromatograph completed by an ISO 17025 accredited laboratory. To ensure that the elevated nitrogen concentrations are not solely the result of a leak in the well, the oxygen concentration must not have increased by the same proportion as the nitrogen concentration;
- (3) in the case of an underground mine, the working face passes less than 150 m below the well;
- (4) in the case of an underground mine, the room and pillar method is used and the block of coal that will be left unmined as a pillar is less than 150 m directly below the well.

The promoter must calculate GHG emissions in the baseline scenario using equation 3:

Equation 3

$$BE = \sum_{i=1}^n [Q_i] \times 0.667 \times 0.001 \times 21$$

Where:

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

n = Number of destruction devices;

i = Destruction device;

Q_i = Total quantity of CH₄ sent to destruction device i during the project reporting period, calculated using equation 4, in cubic metres of CH₄ at standard conditions;

0.667 = Density of CH₄, in kilograms of CH₄ per cubic metre of CH₄ at standard conditions;

0.001 = Conversion factor, kilograms to metric tonnes;

21 = Global Warming Potential factor of CH₄;

Equation 4

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

Where:

Q_i = Total quantity of CH₄ sent to destruction device i during the project reporting period, in cubic metres of CH₄ at standard conditions;

n = Number of time intervals during the project reporting period;

t = Time interval shown in the table in Figure 6.1 for which CH₄ flow and content measurements for the mine gas are aggregated;

$MG_{i,t}$ = Volume of mine gas sent to destruction device i in time interval t , in cubic metres at standard conditions, except mine gas from a surface well that is not yet mined through. Despite the foregoing, if the surface well is mined through during the project reporting period, the mine gas sent to a destruction device during the current reporting period and in previous years must be included;

$C_{CH_4,t}$ = Average CH₄ content in the mine gas sent to a destruction device during time interval t , in cubic metres of CH₄ per cubic metre of mine gas.

5.2. Calculation method for GHG project emissions

The promoter must calculate the GHG project emissions using equations 5 to 8. The CO₂ emissions attributable to the destruction of CH₄ from a pre-mining surface well used to extract CH₄ during a current project reporting period, calculated using equation 7, must be included even if the well has not yet been mined through.

Equation 5

$$PE = FF_{CO_2} + DM_{CO_2} + UM_{CH_4}$$

Where:

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

FF_{CO₂} = Total CO₂ emissions attributable to the consumption of fossil fuel to capture and destroy mine CH₄ during the project reporting period, calculated using equation 6, in metric tonnes CO₂ equivalent;

DM_{CO₂} = Total CO₂ attributable to the destruction of CH₄ during the project reporting period, calculated using equation 7, in metric tonnes CO₂ equivalent;

UM_{CH₄} = CH₄ emissions attributable to uncombusted CH₄ during a project reporting period, calculated using equation 8, in metric tonnes CO₂ equivalent;

Equation 6

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

Where:

FF_{CO₂} = Total CO₂ attributable to the consumption of fossil fuel to capture and destroy mine CH₄ 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} = Total quantity of fossil fuel j consumed, expressed

- in kilograms, in the case of fuels whose quantity is expressed as a mass;
- in cubic metres at standard conditions, in the case of fuels whose quantity is expressed as a volume of gas;

- in litres, in the case of fuels whose quantity is expressed as a volume of liquid;

$EF_{CF,j}$ = CO₂ emission factor for fossil fuel *j* specified in tables 1-3 to 1-8 of QC.1.7 in Schedule A.2 to the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere (chapter Q-2, r. 15), expressed

- in kilograms of 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 7

$$DM_{CO_2} = \sum_{i=1}^n [Q_i \times DE_i] \times 1.556 \times 0.001$$

Where:

DM_{CO_2} = Total CO₂ attributable to the destruction of CH₄ during a project reporting period, in metric tonnes CO₂ equivalent;

n = Number of destruction devices;

i = Destruction device;

Q_i = Total quantity of CH₄ sent to destruction device *i* during the project reporting period, calculated using equation 4, in cubic metres of CH₄ at standard conditions;

DE_i = Default CH₄ destruction efficiency of destruction device *i*, determined in accordance with Part II;

1.556 = CO₂ emission factor attributable to the combustion of CH₄, in kilograms of CO₂ per cubic metre of CH₄ combusted;

0.001 = Conversion factor, kilograms to metric tonnes;

Equation 8

$$UM_{CH_4} = \sum_{i=1}^n [Q_i \times (1 - DE_i)] \times 0.667 \times 0.001 \times 21$$

Where:

UM_{CH_4} = CH_4 emissions attributable to uncombusted CH_4 during the project reporting period, in metric tonnes CO_2 equivalent;

n = Number of destruction devices;

i = Destruction device;

Q_i = Total quantity of CH_4 sent to destruction device i during the project reporting period, calculated using equation 4, in cubic metres of CH_4 at standard conditions;

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

0.667 = Density of CH_4 , in kilograms of CH_4 per cubic metre of CH_4 at standard conditions;

0.001 = Conversion factor, kilograms to metric tonnes;

21 = Global Warming Potential factor of CH_4 .

6. Project surveillance**6.1. Data collection**

The promoter is responsible for collecting the information required for project monitoring.

The promoter must show that the data collected are actual and that rigorous supervision and record-keeping procedures are applied at the project site.

6.2. Surveillance plan

The promoter must establish a surveillance plan to measure and monitor project parameters in accordance with Figure 6.1:

Figure 6.1. Project surveillance plan

Parameter	Factor used in equations	Unit of measurement	Method	Frequency of measurement
Operating status of destruction device	N/A	Degree Celsius or other, depending on the device installed	Measured for each destruction device	Hourly
Uncorrected volume of mine gas sent to destruction device i , in time interval t	$MG_{\text{uncorrected}}$	Cubic metre	Measured	Only when flow data are not adjusted at standard conditions
Volume of mine gas sent to destruction device i , in time interval t	$MG_{i,t}$	Cubic metre at standard conditions	Measured and calculated	Continuous and recorded at least every 15 minutes to calculate a daily average, and adjusted for temperature and pressure
Average CH_4 content in the mine gas sent to destruction device during time interval t	$C_{CH_4,t}$	Cubic metre of CH_4 per cubic metre of gas at standard conditions	Measured continuously	Continuous and recorded at least every 15 minutes to calculate a daily average
Total quantity of fossil fuels consumed by the capture and destruction system during the project reporting period, by type of fuel j	$FF_{PR,j}$	Kilogram (solid) Cubic metre at standard conditions (gas) Litre (liquid)	Calculated using fossil fuel purchasing register	At each reporting period
Measured temperature of mine gas	T	°C	Measured	Hourly
Pressure of mine gas	P	kPa	Measured	Hourly

The surveillance plan must

- (1) specify the methods used to collect and record the data required for all the relevant parameters in the table in Figure 6.1;
- (2) specify
 - (a) the frequency of data acquisition;
 - (b) the frequency of instrument cleaning, inspection and calibration activities, and of the verification of instrument calibration accuracy; and
 - (c) the role of the person responsible for each monitoring activity, as well as the quality assurance and quality control measures taken to ensure that data acquisition and instrument calibration are carried out consistently and with precision; and
- (3) contain a detailed diagram of the mine gas capture and destruction system, including the placement of all measurement instruments and equipment that affect included SSRs.

The promoter is responsible for carrying out and monitoring project performance. The promoter must use the mine gas destruction device and the measurement instruments in accordance with the manufacturer's specifications. The promoter must, in particular, use measurement instruments to measure directly

- (1) the flow of mine gas sent to each destruction device, continuously, recorded every 15 minutes and totaled as a daily average, adjusted for temperature and pressure;
- (2) the CH₄ content of the mine gas sent to each destruction device, continuously, recorded every 15 minutes and totaled as a daily average.

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

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

For every destruction device, the promoter must show, in the first project report, that a monitoring device has been installed to verify the operation of each destruction device. The promoter must also show, in each subsequent project report, that the monitoring device has operated correctly.

GHG emission reductions will not be taken into account for the issue of offset credits for periods during which the destruction device or the monitoring device for the operation of the destruction device is not operating.

6.3. Measurement instruments

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

- (1) cleaned and inspected as specified in the project's surveillance plan and at the minimum cleaning and inspection frequency specified by the manufacturer, with all cleaning and inspection activities documented by personnel;
- (2) not more than 2 months before or after the 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 in accordance with the manufacturer's specifications, and ensure that the percentage drift is recorded; or
 - (b) calibrated by the manufacturer or by a third person certified for that purpose by the manufacturer; and
- (3) calibrated by the manufacturer or by a third person certified for that purpose by the manufacturer or every 5 years, whichever is more frequent.

A calibration certificate or a verification report on calibration accuracy must be produced and included in the project report. The verification provided for in section 70.16 of this Regulation must include confirmation that the person is qualified to verify calibration accuracy.

Flow meter calibrations must be documented to show that the meter was calibrated to a range of flow rates corresponding to the flow rates expected for the drainage system.

CH₄ analyzer calibrations must be documented to show that the calibration was carried out to a range of temperature and pressure conditions corresponding to the range of conditions measured for the drainage system.

The verification of flow meter and analyzer calibration accuracy must show that the instruments provide a reading of volumetric flow or CH₄ content that is within a +/-5% accuracy threshold.

When a verification of the calibration accuracy of a device shows a shift outside the +/-5% accuracy threshold, the device must be calibrated by the manufacturer or by a third person certified for that purpose by the manufacturer. In addition, for the entire period from the last calibration that confirmed accuracy within the ± 5% threshold until such time as the piece of equipment is correctly calibrated, the promoter must use the more conservative of

- (1) the measured values without correction;
- (2) the adjusted values based on the greatest calibration drift recorded at the time of calibration.

The last calibration confirming accuracy within the ± 5% threshold must not have taken place more than 2 months before the end date for the project reporting period.

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.

6.4. Data management

Information on data procedures and data monitoring must be managed in a way that guarantees the integrity, exhaustiveness, accuracy and validity of the data.

The promoter must keep the following documents and information:

- (1) the information required under the surveillance plan;
- (2) information on each flow meter, CH₄ analyzer and destruction device used, including type, their model number, serial number and manufacturer's maintenance and calibration procedures;

- (3) the calibration date, time and results for CH₄ analyzers and flow meters, and the corrective measures applied if a piece of equipment fails to meet the requirements of this Regulation;
- (4) the maintenance records for capture, destruction and monitoring systems;
- (5) operating records showing annual coal production.

6.5. Missing data – replacement methods

In situations where data on flow rates or CH₄ content are missing, the promoter must apply the data replacement methods set out in Part III.

Part II

Destruction efficiencies for destruction devices

The promoter must use the destruction efficiency shown in Table 1 for the project destruction device.

Table 1. Default destruction efficiencies for destruction devices

Destruction device	Efficiency
Open flare	0.96
Enclosed flare	0.995
Internal combustion engine	0.936
Boiler	0.98
Microturbine or large gas turbine	0.995
Upgrade and injection into a pipeline (surface mine)	0.96

Part III

Missing data – replacement methods

The replacement methods below may be used only

- (1) for missing mine gas flow rate or CH₄ content parameters;
- (2) for missing data that are discrete, non-chronic and due to unforeseen circumstances;

- (3) when the proper functioning of the destruction device can be shown by thermocouple readings at the flare or at the other devices of the same nature;
- (4) to replace data on mine gas flow rates when it is shown that CH₄ content was consistent with normal operations for the time when the data are missing; and
- (5) to replace data on CH₄ content when it is shown that the mine gas flow rate was consistent with normal operations for the time when the data are missing.

No offset credit may be issued for periods when the replacement methods cannot be used.

Missing data period	Replacement method
Less than 6 hours	Use the average of the 4 hours immediately before and following the missing data period
6 to less than 24 hours	Use the 90% upper or lower confidence limit of the 24 hours prior to and after the missing data period, whichever results in greater conservativeness
1 to 7 days	Use the 95% upper or lower confidence limit of the 72 hours prior to and after the missing data period, whichever results in greater conservativeness
More than 7 days	No data may be replaced and no reduction may be credited

PROTOCOL 5

ACTIVE UNDERGROUND COAL MINES – DESTRUCTION OF CH₄ FROM VENTILATION AIR

Part I

1. Projects covered

This offset credit protocol covers any project designed to reduce GHG emissions by capturing and destroying CH₄ from the ventilation system of an active underground coal mine.

The project must enable the capture and destruction of CH₄ that, before the project, was emitted to the atmosphere. The CH₄ must be captured within the mine boundaries based on the current mine map and must be destroyed on the site of the mine where it was captured using a destruction device.

For the purposes of this protocol,

- (1) "ventilation air" means air from a mine ventilation system;
- (2) "coal" means all solid fuels classified as anthracite, bituminous, subbituminous, or lignite under ASTM D388, entitled Standard Classification of Coals by Rank;
- (3) "ventilation air CH₄" means the CH₄ contained in ventilation air.

2. First project report

In addition to the information required under the second paragraph of section 70.5 of this Regulation, the first project report must include the following information:

- (1) the mining method employed, such as room and pillar or longwall;
- (2) annual coal production;
- (3) the year of initial mine operation;
- (4) the scheduled year of mine closure, if known;
- (5) a diagram of the mine site that includes
 - (a) the location of existing and planned ventilation shafts, specifying whether they are part of the project;
 - (b) the location of the equipment that will be used to treat or destroy ventilation air CH₄.

3. Location

The project must be implemented in Canada.

4. Reduction project SSRs

The reduction project process flowchart in Figure 4.1 and the table in Figure 4.2 show all the SSRs that must be taken into account by the promoter when calculating the GHG emission reductions attributable to the project.

All the SSRs within the dotted line must be counted for the purposes of this protocol.

Figure 4.1. Flowchart for the reduction project process

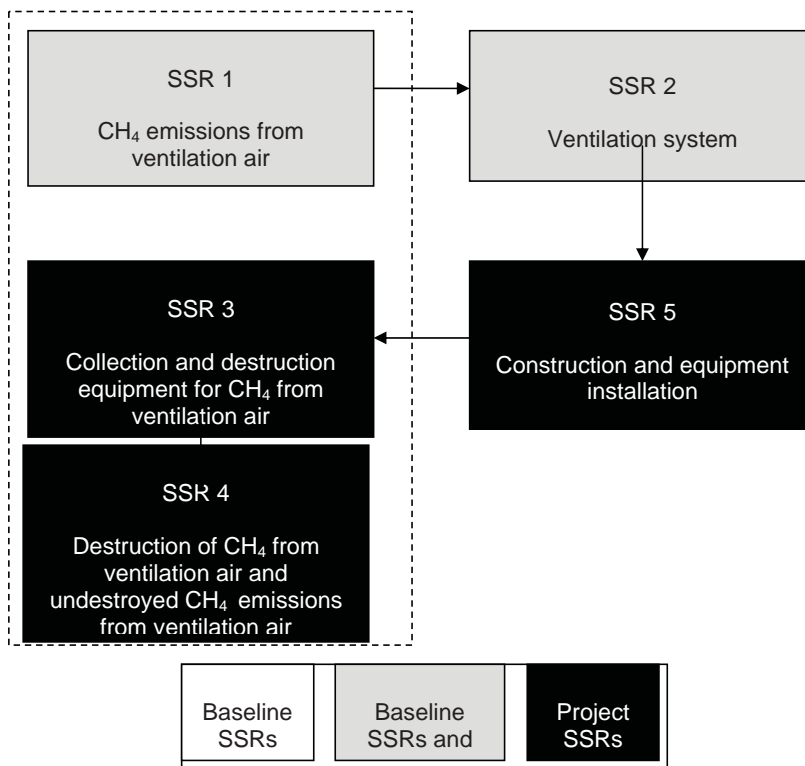


Figure 4.2. Reduction project SSRs

SSR #	Description	GHG	Relevant to Baseline (B) or Project (P)	Included/Excluded
1	Emissions of ventilation air CH ₄	CH ₄	B, P	Included
2	Emissions attributable to energy consumed to operate mine ventilation system	CO ₂	B, P	Excluded
		CH ₄		Excluded
		N ₂ O		Excluded

3	Emissions attributable to energy consumed to operate equipment to capture and destroy ventilation air CH ₄	CO ₂	P	Included
		CH ₄		Excluded
		N ₂ O		Excluded
4	Emissions from the destruction of ventilation air CH ₄	CO ₂	P	Included
		N ₂ O		Excluded
	Emissions of uncombusted ventilation air CH ₄	CH ₄	P	Included
5	Emissions from the construction and/or installation of new equipment	CO ₂	P	Excluded
		CH ₄		Excluded
		N ₂ O		Excluded

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

The promoter must calculate the quantity of GHG emission reductions attributable to the project using equation 1:

Equation 1

$$ER = BE - PE$$

Where:

ER = GHG emission reductions attributable to the project during the 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 3, in metric tonnes CO₂ equivalent.

5.1. Calculation method for GHG emissions in the baseline scenario

The promoter must calculate GHG emissions in the baseline scenario using equation 2:

Equation 2

$$BE = \sum_{t=1}^n [VA_{Et} \times C_{CH_4,t}] \times 0.667 \times 0.001 \times 21$$

Where:

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

n = Number of time intervals during the project reporting period;

t = Time interval shown in the table in Figure 6.1 for which flow and content measurements of ventilation air CH₄ are aggregated;

VA_{Et} = Volume of ventilation air sent to destruction device during time interval t, in cubic metres at standard conditions;

C_{CH₄,t} = Average CH₄ content in ventilation air before entering destruction device during time interval t, in cubic metres of CH₄ per cubic metre of ventilation air;

0.667 = Density of CH₄, in kilograms of CH₄ per cubic metre of CH₄ at standard conditions;

0.001 = Conversion factor, kilograms to metric tonnes;

21 = Global Warming Potential factor of CH₄.

If a mass flow meter is used to monitor gas flow instead of a volumetric flow meter, the volume and density terms must be replaced by the monitored mass value in kilograms. The CH₄ content must be in mass percent.

5.2. Calculation method for GHG project emissions

The promoter must calculate the GHG project emissions using equations 3 to 7:

Equation 3

$$PE = FF_{CO_2} + DM_{CO_2} + UM_{CH_4}$$

Where:

PE = Project emissions during a project reporting period, in metric tonnes CO₂ equivalent;

FF_{CO₂} = Total CO₂ attributable to the consumption of fossil fuel to capture and destroy ventilation air CH₄ during a project reporting period, calculated using equation 4, in metric tonnes CO₂ equivalent;

DM_{CO₂} = Total CO₂ attributable to the destruction of CH₄ during a project reporting period, calculated using equation 6, in metric tonnes CO₂ equivalent;

UM_{CH₄} = CH₄ emissions attributable to uncombusted CH₄ during a project reporting period, calculated using equation 7, in metric tonnes CO₂ equivalent;

Equation 4

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

Where:

FF_{CO₂} = Total CO₂ attributable to the consumption of fossil fuel to capture and destroy ventilation air CH₄ during a 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, expressed

- in kilograms, in the case of fuels whose quantity is expressed as a mass;
- in cubic metres at standard conditions, in the case of fuels whose quantity is expressed as a volume of gas;
- in litres, in the case of fuels whose quantity is expressed as a volume of liquid;

$EF_{FF,j}$ = CO₂ emission factor for fossil fuel j specified in tables 1-3 to 1-8 of QC.1.7 in Schedule A.2 to the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere (chapter Q-2, r. 15), expressed

- in kilograms of 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 5

If the volume of ventilation air leaving the destruction device is not measured as specified in Figure 6.1, it must be calculated using equation 5:

$$VA_S = VA_E + CA$$

Where:

VA_S = Volume of ventilation air leaving the destruction device during the project reporting period, in cubic metres at standard conditions;

VA_E = Volume of ventilation air sent to a destruction device during the project reporting period, in cubic metres at standard conditions;

CA = Volume of cooling air added after the point of metering for the volume of ventilation air sent to the destruction device (VA_E), in cubic metres at standard conditions, or a value of 0 if no cooling air is added;

Equation 6

$$DM_{CO_2} = [(VA_E \times C_{CH_4}) - (VA_S \times C_{dest-CH_4})] \times 1.556 \times 0.001$$

Where:

DM_{CO_2} = Total CO₂ attributable to the destruction of CH₄ during a project reporting period, in metric tonnes CO₂ equivalent;

VA_E = Volume of ventilation air sent to a destruction device during the project reporting period, in cubic metres at standard conditions;

VA_S = Volume of ventilation air leaving the destruction device during the project reporting period, in cubic metres at standard conditions;

C_{CH_4} = Average CH_4 content in ventilation air before entering destruction device during the project reporting period, in cubic metres of CH_4 per cubic metre of gas;

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

1.556 = CO_2 emission factor attributable to the combustion of CH_4 , in kilograms of CO_2 per cubic metre of CH_4 combusted;

0.001 = Conversion factor, kilograms to metric tonnes;

Equation 7

$$UM_{CH_4} = VA_S \times T_{dest-CH_4} \times 0.667 \times 0.001 \times 21$$

Where:

UM_{CH_4} = CH_4 emissions attributable to uncombusted CH_4 during a project reporting period, in metric tonnes CO_2 equivalent;

VA_S = Volume of ventilation air leaving the destruction device during the project reporting period, in cubic metres at standard conditions;

$T_{dest-CH_4}$ = Average CH_4 content in ventilation air leaving the destruction device during the project reporting period, in cubic metres of CH_4 per cubic metre of gas;

0.667 = Density of CH_4 , in kilograms of CH_4 per cubic metre of CH_4 at standard conditions;

0.001 = Conversion factor, kilograms to metric tonnes;

21 = Global Warming Potential factor of CH_4 .

If a mass flow meter is used to monitor gas flow instead of a volumetric flow meter, the volume and density terms must be replaced by the monitored mass value in kilograms. The CH_4 content must be in mass percent.

6. Project surveillance

6.1. Data collection

The promoter is responsible for collecting the information required for project monitoring.

The promoter must show that the data collected are actual and that rigorous supervision and record-keeping procedures are applied at the project site.

6.2. Surveillance plan

The promoter must establish a surveillance plan to measure and monitor project parameters in accordance with Figure 6.1:

Figure 6.1. Project surveillance plan

Parameter	Factor used in equations	Unit of measurement	Method	Frequency of measurement
Operating status of destruction device	N/A	Degree Celsius or other, depending on the device installed	Measured for each destruction device	Hourly
Volume of ventilation air sent to destruction device	VA _E	Cubic metre at standard conditions	Measured and calculated	Continuous and recorded at least every 2 minutes to calculate an hourly average, adjusted for temperature and pressure
Volume of cooling air added	CA	Cubic metre at standard conditions	Measured and calculated	Continuous and recorded at least every 2 minutes to calculate an hourly average, adjusted for temperature and pressure

Volume of ventilation air leaving the destruction device	VA _S	Cubic metre at standard conditions	Measured or calculated	Continuous and recorded at least every 2 minutes to calculate an hourly average, adjusted for temperature and pressure
CH ₄ content in ventilation air sent to destruction device during each project reporting period	C _{CH₄}	Cubic metre of CH ₄ per cubic metre of gas at standard conditions	Measured	Continuous and recorded at least every 2 minutes to calculate an hourly average
CH ₄ content in ventilation air leaving the destruction device during each project reporting period	C _{Dest-CH₄}	Cubic metre of CH ₄ per cubic metre of gas at standard conditions	Measured	Continuous and recorded at least every 2 minutes to calculate an hourly average
Total quantity of fossil fuels consumed by equipment to capture and destroy ventilation air CH ₄ during a 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 reporting period
Temperature of ventilation air	T	°C	Measured	Hourly
Pressure of ventilation air	P	kPa	Measured	Hourly

The surveillance plan must

- (1) specify the methods used to collect and record the data required for all the relevant parameters in the table in Figure 6.1;
- (2) specify
 - (a) the frequency of data acquisition;

- (b) the frequency of instrument cleaning, inspection and calibration activities, and of the verification of instrument calibration accuracy; and
 - (c) the role of the person responsible for each monitoring activity, as well as the quality assurance and quality control measures taken to ensure that data acquisition and instrument calibration are carried out consistently and with precision;
- (3) contain a detailed diagram of the ventilation air capture and destruction system, including the placement of all measurement instruments and equipment that affect included SSRs.

The promoter is responsible for carrying out and monitoring project performance. The promoter must use the destruction device for ventilation air CH₄ and the measurement instruments in accordance with the manufacturer's specifications. The promoter must, in particular, use measurement instruments to measure directly

- (1) the flow of ventilation air sent to each destruction device, continuously, recorded every 2 minutes and totalized as an hourly average adjusted for temperature and pressure;
- (2) the CH₄ content of ventilation air sent to each destruction device, continuously, recorded every 2 minutes and totalized as an hourly average.

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

The operating status of destruction device of ventilation air must be monitored and recorded at least hourly.

For every destruction device, the promoter must show in the first project report that a monitoring device has been installed to verify the operation of each destruction device. The promoter must also show in each project report that the monitoring device has operated correctly.

GHG emission reductions will not be taken into account for the issue of offset credits for periods during which the destruction device or the monitoring device for the operation of the destruction device is not operating.

6.3. Measurement instruments

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

- (1) cleaned and inspected as specified in the project's surveillance plan and at the minimum cleaning and inspection frequency specified by the manufacturer, with all cleaning and inspection activities documented by personnel;
- (2) not more than 2 months before or after the 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 the manufacturer's specifications, and ensure that the percentage drift is recorded. The CH₄ analyzer must be checked using gas with a CH₄ content of less than 2%;
 - (b) calibrated by the manufacturer or by a third person certified for that purpose by the manufacturer; and
- (3) calibrated by the manufacturer or by a third person certified for that purpose by the manufacturer, according to the manufacturer's specifications or every 5 years, whichever is more frequent.

A calibration certificate or a verification report on calibration accuracy must be produced and included in the project report. The verification provided for in section 70.16 of this Regulation must include confirmation that the person is qualified to verify calibration accuracy.

Flow meter calibrations must be documented to show that the meter was calibrated to a range of flow rates corresponding to the flow rates expected for the ventilation system.

CH₄ analyzer calibrations must be documented to show that the calibration was carried out to a range of temperature, pressure and content conditions corresponding to the range of conditions measured for the mine.

The verification of flow meter and analyzer calibration accuracy must show that the instrument provides a reading of volumetric flow or CH₄ content that is within a +/-5% accuracy threshold.

When a verification of the calibration accuracy of a device shows a shift outside the +/-5% accuracy threshold, the device must be calibrated by the manufacturer or by a third person certified for that purpose by the manufacturer. In addition, for the entire period from the last calibration that confirmed accuracy within the $\pm 5\%$ threshold until such time as the piece of equipment is correctly calibrated, the promoter must use the more conservative of

- (1) the measured values without correction;
- (2) the adjusted values based on the greatest calibration drift recorded at the time of calibration.

The last calibration confirming accuracy within the $\pm 5\%$ threshold must not have taken place more than 2 months before the end date for the project reporting period.

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.

6.4. Data management

Information on data procedures and data monitoring must be managed in a way that guarantees the integrity, exhaustiveness, accuracy and validity of the data.

The promoter must keep the following documents and information:

- (1) the information required under the surveillance plan;
- (2) information on each flow meter, CH₄ analyzer and destruction device used, including type, their model number, serial number and manufacturer's maintenance and calibration procedures;
- (3) the calibration date, time and results for CH₄ analyzers and flow meters, and the corrective measures applied if a piece of equipment fails to meet the requirements of this Regulation;

- (4) the maintenance records for capture, destruction and monitoring systems;
- (5) operating records showing annual coal production.

6.5. Missing data – replacement methods

In situations where data on flow rates or CH₄ content are missing, the promoter must apply the data replacement methods set out in Part II.

Part II

Missing data – replacement methods

The replacement methods below may be used only

- (1) for missing ventilation gas flow rate or CH₄ content parameters;
- (2) for missing data that are discrete, non-chronic and due to unforeseen circumstances;
- (3) when the proper functioning of the destruction device can be shown by thermocouple readings or other devices of the same nature;
- (4) to replace data on ventilation gas flow rates when it is shown that CH₄ content was consistent with normal operations for the time when the data are missing; and
- (5) to replace data on CH₄ content when it is shown that the ventilation gas flow rate was consistent with normal operations for the time when the data are missing.

No offset credit may be issued for periods when the replacement methods cannot be used.

Missing data period	Replacement method
Less than 6 hours	Use the average of the 4 hours immediately before and following the missing data period
6 to less than 24 hours	Use the 90% upper or lower confidence limit of the 24 hours prior to and after the missing data period, whichever results in greater conservativeness
1 to 7 days	Use the 95% upper or lower confidence limit of the 72 hours prior to and after the missing data period, whichever results in greater conservativeness
More than 7 days	No data may be replaced and no reduction may be credited

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32. This Regulation comes into force on the fifteenth day following the date of its publication in the *Gazette officielle du Québec*.

102417

Gouvernement du Québec

O.C. 1092-2015, 9 December 2015Mining Act
(chapter M-13.1)**Petroleum, natural gas and underground reservoirs
—Amendment**

Regulation to amend the Regulation respecting petroleum, natural gas and underground reservoirs

WHEREAS, under paragraph 17 of section 306 of the Mining Act (chapter M-13.1), the Government may, by regulation, determine the trial period during which the holder of a licence to explore for petroleum, natural gas and underground reservoirs may extract that substance and the conditions of the extraction;

WHEREAS the Government made the Regulation respecting petroleum, natural gas and underground reservoirs (chapter M-13.1, r. 1);

WHEREAS, in accordance with sections 10 and 11 of the Regulations Act (chapter R-18.1), a draft Regulation to amend the Regulation respecting petroleum, natural gas and underground reservoirs was published in Part 2

of the *Gazette officielle du Québec* of 27 May 2015 with a notice that it could be made by the Government on the expiry of 45 days following that publication;

WHEREAS it is expedient to make the Regulation with amendments;

IT IS ORDERED, therefore, on the recommendation of the Minister of Energy and Natural Resources:

THAT the Regulation to amend the Regulation respecting petroleum, natural gas and underground reservoirs, attached to this Order in Council, be made.

JUAN ROBERTO IGLESIAS,
Clerk of the Conseil exécutif

**Regulation to amend the Regulation
respecting petroleum, natural gas and
underground reservoirs**Mining Act
(chapter M-13.1, s. 306, par. 17)

1. The Regulation respecting petroleum, natural gas and underground reservoirs (chapter M-13.1, r. 1) is amended in section 71