

Specified Gas Reporting Standard

Version 6.0

March 2011

Government
of Alberta ■

Alberta ■

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ISBN: 978-0-7785-8819-1 (Printed)

ISBN: 978-0-7785-8820-7 (Online)

Web Site: <http://www.environment.alberta.ca/2881.html>

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Summary of Changes from Previous Version

- Mandatory reporting threshold lowered to 50,000 tonnes CO₂e per year.
- All facilities emitting 50,000+ tonnes CO₂e must report their emissions to the federal one-window electronic data reporting system (EDR).
- CO₂ emissions from the combustion and decomposition of biomass must be reported and included in the threshold determination calculation.
- CO₂ that is sent off site, CO₂ that is received on site, and CO₂ that is geologically injected on site must be reported, but these values are not included in the emissions total or the threshold determination calculation.
- Total electricity produced on site and total electricity consumed on site must be reported, but are not included in the emissions total or the threshold determination calculation.

1 Definitions

1(1) In this Standard,

- (a) “Act” means the Climate Change and Emissions Management Act;
- (b) “biomass” means plant materials, animal waste or any product made of either of these and includes without limitation wood and wood products, charcoal, agricultural residues and wastes including organic material above and below ground, both living and dead, such as trees, crops, grasses, tree litter, roots, municipal and industrial wastes where the organic material is biological in origin, landfill gas, bio-alcohols, black liquor, sludge gas, animal or plant-derived oils;
- (c) “biomass emissions” means direct emissions from the decomposition or combustion of biomass;
- (d) “CH₄” means methane;
- (e) “CO₂” means carbon dioxide;
- (f) “CO₂ geologically injected on site” means carbon dioxide that has been injected into a geological formation from an injection point within the facility boundaries including without limitation CO₂ injected for enhanced oil or gas recovery, acid gas disposal, or CO₂ storage;
- (g) “CO₂ received on site” means carbon dioxide that has been received at the facility from an off-site location;
- (h) “CO₂ sent off site” means carbon dioxide that has not been emitted to the atmosphere and has been sent from the facility to an off-site location;
- (i) “CO₂e” means the 100 year global warming potential of an individual specified gas expressed in terms of equivalency to CO₂ set out in the 1995 Summary for Policy Makers - A report of Working Group I of the Intergovernmental Panel on Climate Change as published by the Intergovernmental Panel on Climate Change;
- (j) “direct emissions” means the release of specified gases into the atmosphere from sources located at a facility and does not include geologically injected CO₂, or CO₂ sent off site;
- (k) “EDR” means the federal one-window secure online electronic data reporting system accessible at <http://www.ghgreporting.gc.ca/>;

- (l) “emission factor estimation” means a type of emissions estimation method that involves the use of an emission factor (EF), which is a representative value relating the rate or quantity at which a specified gas is released into the atmosphere (or captured) to an associated activity; The EFs used may be average, general, or technology-specific.
- (m) “engineering estimate” means a type of emissions estimation method involving engineering principles and judgment that uses knowledge of the chemical and physical processes involved, the design features of the source, and an understanding of the applicable physical and chemical laws;
- (n) “first year of commercial operations” means the first full calendar year following commencement of operation at the facility in which saleable products were produced;
- (o) “flaring emissions” means direct emissions from the controlled combustion of a gas or liquid stream produced on site not for the purpose of producing energy and includes without limitation emissions arising from waste petroleum incineration and hazardous emissions prevention systems (whether in pilot or active mode). Activities that commonly use flaring include well testing, natural gas gathering systems, processing plant operations, crude oil production, pipeline operations, petroleum refining, chemical fertilizer production, and steel production;
- (p) “formation CO₂” means direct emissions of carbon dioxide from an underground reservoir that are recovered or are recoverable, including without limitation vented CO₂ emissions from natural gas processing.
- (q) “fugitive emissions” means direct emissions that do not fall under stationary fuel combustion emissions, industrial process emissions, venting emissions, flaring emissions, on-site transportation emissions, waste and wastewater emissions, formation CO₂ emissions or biomass emissions, and includes without limitation intentional or unintentional releases of gases arising from the production, processing, transmission, storage and use of solid, liquid or gaseous fuels. Examples include leakage from natural gas transmission lines and processing plants, accidental release from oil and gas wells, and releases from the mining and handling of coal;
- (r) “global warming potential” or GWP is the relative measure of the warming effect that the emission of a specified gas has on the Earth’s atmosphere calculated as the ratio of the 100-year time-integrated radiative forcing that would result from the emission of one kilogram of a given specified gas relative to that from the emission of one kilogram of carbon dioxide;
- (s) “HFC” means hydrofluorocarbon;
- (t) “HFC Species” means CHF₃, CH₂F₂, CH₃F, C₅H₂F₁₀ (structure: CF₃CHFCHF₂CF₃), C₂HF₅, C₂H₂F₄ (structure: CHF₂CHF₂), C₂H₂F₄

(structure: CH_2FCF_3), $\text{C}_2\text{H}_3\text{F}_3$ (structure: $\text{CHF}_2\text{CH}_2\text{F}$), $\text{C}_2\text{H}_3\text{F}_3$ (structure: CF_3CH_3), $\text{C}_2\text{H}_4\text{F}_2$ (structure: CH_3CHF_2), C_3HF_7 (structure: $\text{CF}_3\text{CHFCF}_3$), $\text{C}_3\text{H}_2\text{F}_6$ (structure: $\text{CF}_3\text{CH}_2\text{CF}_3$) and $\text{C}_3\text{H}_3\text{F}_5$ (structure: $\text{CH}_2\text{FCF}_2\text{CHF}_2$);

- (u) “industrial process emissions” means direct emissions from an industrial process involving chemical or physical reactions other than combustion, where the primary purpose of the industrial process is not energy production. Examples of industrial processes that produce emissions of this type include mineral production (e.g. cement, lime), metal production (e.g. iron & steel, aluminum) and chemical production (e.g. adipic acid, nitric acid).
- (v) “industrial product use emissions” means direct emissions from the use of a product that does not react in the process and includes without limitation SF_6 and HFCs use as a cover gas and use of SF_6 in electrical equipment;
- (w) “mass balance” means a type of emissions estimation method that involves the application of the law of conservation of mass to a facility, process or piece of equipment. Emissions are determined from the difference in the input and output of a unit operation where the accumulation and depletion of a substance are included in the calculations;
- (x) “monitoring or direct measurement” means a type of emissions estimation method using continuous emission monitoring systems (CEMS), predictive emission monitoring (correlations developed between measured emission rates and process parameters), or source testing (e.g. stack sampling);
- (y) “negligible emission source” means a group of one or more emission sources where the total direct emissions from all sources at the facility to be considered negligible are less than 100 tonnes CO_2e .
- (z) “ N_2O ” means nitrous oxide;
- (aa) “not applicable”, or (N/A), means that either the emission source or emission type does not occur at the facility, or can be conservatively estimated to be a negligible emission source.
- (bb) “on-site transportation emissions” means direct emissions from machinery used for the on-site transportation of substances, materials or products that are integral to the production process, including without limitation raw, intermediate and end products, wastes, overburden, and materials moved for land clearing;
- (cc) “PFC” means perfluorocarbon;
- (dd) “PFC species” means CF_4 , C_2F_6 , C_3F_8 , C_4F_{10} , *c*- C_4F_8 , C_5F_{12} , and C_6F_{14} ;
- (ee) “Regulation” means the Specified Gas Reporting Regulation;

- (ff) “SF₆” means sulphur hexafluoride;
- (gg) “stationary fuel combustion emissions” means direct emissions from non-vehicular combustion of fuel (e.g. fossil fuel, biomass, etc.) for the purpose of producing energy, but does not include CO₂ emissions from combustion of biomass;
- (hh) “venting emissions” means direct emissions from intentional releases to the atmosphere of a waste gas or liquid stream and includes without limitation emissions of casing gas, associated (or solution) gas, treater, stabilizer, dehydrator off-gas, blanket gas, and emissions from compressor start-up, pipeline and other blowdowns, metering, regulation station control loops, and pneumatic devices which use natural gas as a driver;
- (ii) “waste emissions” means direct emissions from waste disposal sources, including without limitation on-site waste disposal, landfilling of solid waste, flaring of landfill gas, and waste incineration, but does not include CO₂ emissions from combustion or decomposition of biomass;
- (jj) “wastewater emissions” means direct emissions from wastewater and wastewater treatment at a facility, but does not include CO₂ emissions from combustion or decomposition of biomass;
- (kk) “year” means a calendar year unless otherwise specified.

(2) Where this Standard uses a term defined in the Act or the Regulation, the term has the meaning set out in the Act or Regulation.

(3) Where this Standard uses a term defined in the EDR that has a meaning that is different, the term is deemed to have the meaning set out in this Standard.

2 Specified Gas Reporting Threshold

2(1) The threshold level for submission of a specified gas report is the release of 50,000 tonnes of greenhouse gases in the calendar year, measured in CO₂e, based on the sum of direct emissions of CO₂, CH₄, N₂O, HFCs, PFCs, and SF₆.

(2) The determination of direct emissions required by subsection 1 shall be made using the following equation:

$$\begin{aligned}
 \text{Total Emissions} = & \sum_{i=1}^n (E_{CO_2i} \times GWP_{CO_2}) + \sum_{i=1}^n (E_{CH_4i} \times GWP_{CH_4}) + \sum_{i=1}^n (E_{N_2O_i} \times GWP_{N_2O}) + \\
 & \sum_{v=1}^m (E_{PFC_v} \times GWP_{PFC_v}) + \sum_{v=1}^m (E_{HFC_v} \times GWP_{HFC_v}) + (E_{SF_6} \times GWP_{SF_6})
 \end{aligned}$$

Where,

E_{CO_2} is the direct emissions of CO_2 , in the calendar year, measured in tonnes for each source category;

GWP_{CO_2} is the global warming potential of CO_2 : 1;

E_{CH_4} is the direct emissions of CH_4 in the calendar year, measured in tonnes for each source category;

GWP_{CH_4} is the global warming potential of CH_4 : 21;

E_{N_2O} is the direct emissions of N_2O in the calendar year, measured in tonnes for each source category;

GWP_{N_2O} is the global warming potential of N_2O : 310;

E_{PFC} is the total of industrial process emissions and industrial product use emissions restricted to PFC species, in the calendar year, measured in tonnes;

GWP_{PFC} is the global warming potential of a PFC species as set out in Table 1 below:

Table 1: Global warming potential for PFC species.

Specified Gas	Formula	GWP
Perfluoromethane	CF_4	6,500
Perfluoroethane	C_2F_6	9,200
Perfluoropropane	C_3F_8	7,000
Perfluorobutane	C_4F_{10}	7,000
Perfluorocyclobutane	c- C_4F_8	8,700
Perfluoropentane	C_5F_{12}	7,500
Perfluorohexane	C_6F_{14}	7,400

E_{HFC} is the total of industrial process emissions and industrial product use emissions restricted to HFC species, in the calendar year, measured in tonnes;

GWP_{HFC} is the global warming potential of a HFC species as set out in Table 2 below:

Table 2: Global warming potential for HFC species.

Specified Gas	Formula	GWP
HFC-23	CHF ₃	11,700
HFC-32	CH ₂ F ₂	650
HFC-41	CH ₃ F	150
HFC-43-10mee	C ₅ H ₂ F ₁₀ (structure: CF ₃ CHFCHF ₂ CF ₃)	1,300
HFC-125	C ₂ HF ₅	2,800
HFC-134	C ₂ H ₂ F ₄ (structure: CHF ₂ CHF ₂)	1,000
HFC-134a	C ₂ H ₂ F ₄ (structure: CH ₂ FCF ₃)	1,300
HFC-143	C ₂ H ₃ F ₃ (structure: CHF ₂ CH ₂ F)	300
HFC-143a	C ₂ H ₃ F ₃ (structure: CF ₃ CH ₃)	3,800
HFC-152a	C ₂ H ₄ F ₂ (structure: CH ₃ CHF ₂)	140
HFC-227ea	C ₃ HF ₇ (structure: CF ₃ CHF ₂ CF ₃)	2,900
HFC-236fa	C ₃ H ₂ F ₆ (structure: CF ₃ CH ₂ CF ₃)	6,300
HFC-245ca	C ₃ H ₃ F ₅ (structure: CH ₂ FCF ₂ CHF ₂)	560

E_{SF_6} is the total of industrial process emissions and industrial product use emissions restricted to SF₆, in the calendar year, measured in tonnes;

GWP_{SF_6} is the global warming potential of SF₆: 23,900;

Where “i” is a particular source category;

Where “v” is a particular PFC or HFC species;

Where “n” is the number of source categories; and,

Where “m” is the number of species.

3 Specified Gas Report Submission

3(1) A specified gas reporter shall submit the specified gas report required by the Regulation to the Director by means of the EDR.

(2) A specified gas reporter shall submit the specified gas report and all required accompanying documents so that they are received no later than June 1 in the year that follows the year to which the report relates.

4 Specified Gas Reporter and Facility Information

4(1) The specified gas report shall include the following information about the specified gas reporter and the specified gas reporter's facility:

- (a) the specified gas reporter's legal name, business number, telephone number and address;
- (b) the six digit North American Industry Classification (NAICS) 2007 code for the facility;
- (c) the National Pollutant Release Inventory (NPRI) identification number for the facility, if applicable;
- (d) the facility name and, if applicable, the facility location;
- (e) the name, address, city of all parent companies, and the percentage ownership of this subsidiary by each parent company, if the specified gas reporter is a subsidiary;
- (f) the name, position, address and telephone number of the technical contact, certifying official, and, if applicable, public contact for the facility's specified gas report submission;
- (g) the facility's Environmental Protection and Enhancement Act (EPEA) approval or registration number, if applicable;
- (h) The facility's first year of commercial operations

5 Mandatory Specified Gas Emissions Information

5(1) The specified gas report shall contain the following information in respect of emissions of specified gases at the specified gas reporter's facility for the previous calendar year:

- (a) the amount, in tonnes, of each of the specified gases listed in Column 2 of Table 3 for each direct emissions type applicable to the facility listed in Column 1 of Table 3;

- (b) the amount of HFCs by HFC species and PFCs by PFC species, released at the facility from industrial processes and industrial product use expressed as tonnes of CO₂e;
- (c) the amount of SF₆ released at the facility from industrial processes and industrial product use expressed as tonnes of CO₂e;
- (d) the total of the direct emissions, based on the information required by subsections (a), (b) and (c), expressed as tonnes of CO₂e;
- (e) the amount of CO₂:
 - (i) geologically injected on site;
 - (ii) sent off site; and
 - (iii) received onsite from off site locations;
- (f) the total electricity generated on site and the total electricity consumed on site, expressed in megawatt-hours (MWh); and
- (g) indication of which methodology type was used in calculating or determining the amounts required by subsections (a), (b), (c) and (e) from the following:
 - (i) monitoring or direct measurement;
 - (ii) mass balance;
 - (iii) emission factor estimation; or
 - (iv) engineering estimate.

Table 3: Specified gases and direct emissions.

Column 1: Direct Emissions Type	Column 2: Specified Gas Type
Stationary Fuel Combustion Emissions	CO ₂ , CH ₄ , N ₂ O
Industrial Process Emissions	CO ₂ , CH ₄ , N ₂ O
Venting	CO ₂ , CH ₄ , N ₂ O
Flaring	CO ₂ , CH ₄ , N ₂ O
Fugitive Emissions	CO ₂ , CH ₄ , N ₂ O
On-Site Transportation Emissions	CO ₂ , CH ₄ , N ₂ O
Waste Emissions	CO ₂ , CH ₄ , N ₂ O
Wastewater Emissions	CO ₂ , CH ₄ , N ₂ O
Biomass Emissions	CO ₂

6 Additional Specified Gas Emissions Information

6(1) The specified gas report may contain the following additional information in respect of emissions of specified gases at the specified gas reporter’s facility for the previous calendar year:

- (a) the amount, in tonnes, of indirect emissions of CO₂, CH₄ and N₂O associated with the generation of imported/purchased steam or heat for the facility;
- (b) a calculation of net specified gas emissions, in tonnes, based on the direct emissions total reported pursuant to section 5(1)(d) less offsets or emission reduction equivalencies;
- (c) a determination of specified gas emission intensity expressed in tonnes per unit product, and associated calculation; and
- (d) the amount, in tonnes, of biological sequestration of CO₂, which the specified gas reporter has assigned to the benefit of a facility’s operations.
- (e) A list of emissions sources considered to be negligible and excluded

7 Methodology

7(1) A specified gas reporter shall calculate or determine the amount of formation CO₂ emissions, stationary fuel combustion emissions, industrial process emissions, venting emissions, flaring emissions, other fugitive emissions, on-site transportation emissions, waste emissions, wastewater emissions, biomass emissions, CO₂ geologically injected on

site, CO2 sent off site, and CO2 received onsite from off site locations where required by Sections 2 and 5 by using one or more of the applicable methodologies, emission factors, equations and calculations that are:

- (a) widely accepted by the industry to which the facility belongs; or
- (b) consistent with the guidelines approved for use by the United Nations Framework Convention on Climate Change (UNFCCC) for the Preparation of National Greenhouse Gas Emission Inventories by Annex 1 Parties (Decision 18/CP.8), and the annex to that decision contained in FCCC/CP/2002/8.