



Clean Fuel Regulations: Generic Quantification Method

Version 1.0

July 2022



Cat. No.: En4-476/2022E-PDF
ISBN: 978-0-660-44594-6
ECCC 22092

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Foreword

The *Clean Fuel Regulations* require fossil fuel primary suppliers (i.e., producers and importers of gasoline and diesel) to reduce the carbon intensity of the gasoline and diesel they produce in and import into Canada for use in Canada. These Regulations also establish a credit market whereby the annual CI reduction requirement may be met via three main categories of credit-creating actions, including carrying out a Carbon Dioxide Equivalent (CO₂e) emissions reduction project in respect of liquid fossil fuels. Environment and Climate Change Canada (ECCC) provides the *Generic Quantification Method (QM)* to determine the reductions from eligible projects of a type for which there is no applicable QM.

The full text of the Regulations and associated documents are available on ECCC's website:

www.canada.ca/clean-fuel-regulations.

If you have questions about the *Clean Fuel Regulations*, please contact the following email address:

cfsncp@ec.gc.ca

Disclaimer

This document does not in any way supersede or modify the *Canadian Environmental Protection Act, 1999* or the *Clean Fuel Regulations*, or offer any legal interpretation of those Regulations. Where there are any inconsistencies between this document and the Act or the Regulations, the Act and the Regulations take precedent.

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1.0 Introduction

This quantification method (QM) is intended for use by registered creators applying to have a Carbon Dioxide Equivalent (CO₂e) Emissions Reduction Project recognized to create credits under the *Clean Fuel Regulations* (Regulations).

A primary supplier may use credits created under this QM to satisfy up to 10% of its annual reduction requirement.

The generic QM is for projects of a type for which there is no applicable QM.

As per paragraph 31(2)(c) in the Regulations, this QM is applicable to projects carried out in Canada. Provided they meet the eligibility criteria, projects under this generic QM may include, but are not limited to:

- energy efficiency projects, such as:
 - flue gas, waste heat or vapor recovery;
 - the use of more efficient equipment;
 - heat pumps;
- electrification;
- fuel switching (for fuels that are not already eligible for credit creation under other sections the Regulations, except for the supply of gaseous fuels under section 95, or under specific QMs);
- methane reductions that are additional to regulatory requirements; and
- combined heat and power projects.

Registered creators may apply to have their project recognized for projects other than those outlined in the categories above provided they are in accordance with the general eligibility and ineligibility criteria in the Regulations and this QM. Emission reductions under this QM are quantified based on the difference in emissions between the baseline scenario and the project and based on a life cycle approach.

2.0 Terms and Definitions

The definitions in the Regulations apply. Refer to subsection 1(1) of the Regulations for other definitions not included in this document. This section includes only those additional definitions not found in the Regulations.

Electrical network: a network for the distribution of electricity that is subject to the standards of the North American Electric Reliability Corporation.

Existing combined heat and power system: a combined heat and power system other than a new combined and heat system.

Fossil fuel facility: a facility that produces, processes, stores, transports or distributes fossil fuels that are in the liquid state at standard conditions or petroleum feedstock upstream of refining. It does not include a facility that primarily engages in the production, process, storage, transport or distribution of fossil fuels or petroleum feedstocks in the gaseous state at standard conditions.

Hydrocarbon means methane, which has the molecular formula CH₄, or a volatile organic compound referred to in item 65 of the List of Toxic Substances in Schedule 1 to the *Canadian Environmental Protection Act, 1999*.

Hydrocarbon gas conservation equipment means equipment used to recover hydrocarbon gas for use as fuel, for delivery or for injection for a purpose other than to dispose of the gas as waste into an underground geological deposit.

New combined heat and power system (new CHP): a combined heat and power system that begins to produce electricity or thermal energy on or after the date on which the *Clean Fuel Regulations* were registered (June 21, 2022).

3.0 Eligibility

3.1 General Eligibility and Ineligibility Criteria

All projects must be in accordance with the general eligibility and ineligibility criteria in the Regulations and this QM, as well as the streamlined additionality criteria described under section 4.0 Streamlined Additionality Criteria of this QM.

Please refer to paragraphs 30(a) to (c), section 33 and subsection 35(1) of the Regulations for general eligibility and ineligibility criteria. A CO₂-emission-reduction project referred to in 30(d) that results in the production of liquid co-processed low-CI fuel is also eligible for credit creation in the liquid class under this QM, unless the project is eligible to create credits under a specific QM.

A project must be carried out at:

- a fossil fuel facility in Canada;
- a facility that produces thermal energy and/or electricity which is then directly supplied to and consumed at a fossil fuel facility in Canada; reductions are prorated based on the proportion of produced thermal energy and/or electricity supplied to the fossil fuel facility; or
- a hydrogen production facility that supplies its hydrogen to a fossil fuel facility in Canada; reductions are prorated based on the proportion of produced hydrogen supplied to the fossil fuel facility.

In addition, the following project types are not eligible for credit creation under this QM:

- A project of a type that is already eligible to create credits under a specific QM;
- Virtual power purchase agreements for low-CI electricity;
- Electricity or thermal energy not consumed at a fossil fuel facility (See Appendix A);
- Book and claim accounting for renewable natural gas (RNG);
- Carbon, capture, utilization and storage technologies;
- Best practices in equipment operation (ex. Tuning an engine, debottlenecking);
- Solely an increase of production;
- A project that reduces methane emissions that is not in accordance with the specific eligibility and ineligibility criteria under section 3.2.3 Methane Reductions Beyond Regulatory Requirements of this QM;

- A fuel switching or combined heat and power project that is not in accordance with the specific eligibility and ineligibility criteria under the respective sections of this QM;
- A project involving co-processing that is eligible under the QM for co-processing in refineries or that includes the reductions for lowering the CI of a fuel in the gaseous class. In other words, emission reductions associated with the production of co-processed low-CI gaseous fuel must not be included in the calculation of credits for the project.

3.2 Specific Eligibility and Ineligibility Criteria

For projects of the following types, in addition to the general eligibility and ineligibility criteria, the project must be in accordance with the specific eligibility and ineligibility criteria.

3.2.1 Energy Efficiency and Electrification Projects Related to Equipment or a System Control Device

An energy efficiency or electrification emission reduction project may be eligible provided:

- the project involves a physical piece of equipment which was assembled and consumes energy or a system control device or equipment having an effect on energy consumption. In addition, one of the following:
 - Evidence that the end of life of the equipment or device in the baseline occurs after the end of the 10-year crediting period or the 5-year extension, as the case may be, through documentation (ex. Purchase record, manufacturer specification);
 - Evidence that the end of life of the equipment or device in the baseline occurs during the 10-year crediting period or the 5-year extension, as the case may be, through documentation (ex. Purchase record, manufacturer specification). Note in this case, the project is eligible for credit creation up to the end of life of the equipment or device being replaced or retrofitted;
 - Evidence that there are multiple equipment options for the project, and the equipment or device to be installed is more efficient than standard industry practice (may be informed by knowledge of existing facilities and/or by experts such as a professional engineer or an expert with experience in engineering, procurement and construction of similar facilities).

Emission reductions from the following actions are ineligible:

- Best practices in equipment operation (ex. Tuning an engine, debottlenecking);
- A change in equipment as a result of maintenance;
- Solely an increase of production.

3.2.2 Fuel Switching

A fuel switching emission reduction project may be eligible provided:

- The project involves switching from a higher CI fuel to a lower CI fuel, other than a combined heat and power project;
- It is ineligible to create credits under another QM or other sections of the Regulations (except for gaseous fuels under section 95 of the Regulations);
- In the case of a fuel switch to a low-CI gaseous fuel that is eligible for credit creation under section 95 of the Regulations, the registered creator has an attestation from the producer or importer of the low-CI gaseous fuel that this producer or importer is not creating credits for the quantity of the low-CI gaseous fuel used in the project.

3.2.3 Methane Reductions Beyond Regulatory Requirements

A methane reduction project may be eligible provided:

- The project involves:
 - the installation of hydrocarbon gas conservation equipment; or
 - the installation of equipment that routes a source of hydrocarbon gas that was vented, flared or destroyed before the project to an existing or new hydrocarbon gas conservation equipment;
- The following criteria are followed at a minimum. In situations in which a facility is located in a province or territory with more stringent criteria, those criteria must be followed:
 - The hydrocarbon gas conservation equipment is operated in accordance with Section 5 of the Federal [Regulations Respecting Reduction in the Release of Methane and Certain Volatile Organic Compounds \(Upstream Oil and Gas Sector\)](#);
 - The hydrocarbon gas that has been captured and conserved in hydrocarbon gas conservation equipment is conserved until a point that is in accordance with section 7 of the Federal [Regulations Respecting Reduction in the Release of Methane and Certain Volatile Organic Compounds \(Upstream Oil and Gas Sector\)](#);
- In the case of a fossil fuel facility that consists of condensate producing sites or crude oil or crude bitumen batteries, the gas:oil ratio (GOR) is less than or equal to 3000 m³/m³.
- The provincial or territorial jurisdiction has not directed the licensee, operator or approval holder to conserve gas that would have been flared, vented or destroyed;
- In the case of a fossil fuel facility that is subject to an aggregate limit, that in absence of the project, the company would still be in compliance with the aggregate limit; and
- In the case where hydrocarbon gas was vented before the project, at least one of the following:
 - That in absence of the project, the fossil fuel facility would still be in compliance with the overall objectives and the limits of the regulations and directives listed below that are in force at the time of the application or that will come into force in 2023 for an application submitted before January 2023:
 - The [Drilling and Production Regulation](#) for facilities located in British Columbia
 - The [Methane Emission Reduction Regulation, Directive 060: Upstream Petroleum Industry Flaring, Incinerating, and Venting](#) and [Directive 017: Measurement Requirements for Oil and Gas Operations](#) for fossil fuel facilities located in Alberta; or
 - [The Oil and Gas Emissions Management Regulations](#) and [Directive PNG036: Venting and Flaring Requirements](#) and [Directive PNG0017: Measurement Requirements for Oil and Gas Operations](#) for fossil fuel facilities located in Saskatchewan;
 - The federal [Regulations Respecting Reduction in the Release of Methane and Certain Volatile Organic Compounds \(Upstream Oil and Gas Sector\)](#) for fossil fuel facilities located in other provinces and territories.
 - Combined flaring and venting volumes at the fossil fuel facility do not exceed 900 m³/day, calculated based on a three-month rolling average; or
 - The fossil fuel facility must demonstrate that conservation was not determined to be economic using the economic decision tree process under Directive 060.

Furthermore, emission reductions from the following are ineligible:

- Pneumatic devices, including pneumatic controllers and pneumatic pumps;
- Leak Detection And Repair (LDAR);
- Compressors;

- Orphan wells;
- Flaring or destroying hydrocarbon emissions that were vented before the project.

3.2.4 Combined Heat and Power Projects

A combined heat and power (CHP) project may be eligible provided:

- The project involves the modification of an existing CHP system or a fuel switch in an existing CHP system in order to reduce the CI of the thermal energy or electricity consumed at the fossil fuel facility; or
- The project involves the installation of a new CHP system and the CI of the electricity produced by the CHP system is less than 40 gCO₂e/MJ as determined in accordance with Appendix B.

To demonstrate that a CHP project meets the requirements under this QM, the registered creator must supply sufficient evidence that:

- The thermal energy and electricity produced by the CHP system is consumed at a fossil fuel facility in Canada;
 - The electricity included in the quantification is not supplied to the electrical network;
 - If low-CI electricity is also supplied to the electrical network, there must be separate metering systems in place to measure both the low-CI electricity that is consumed by the fossil fuel facility and the low-CI electricity supplied to the electrical network;
- In the case of thermal energy and electricity not generated at the fossil fuel facility, the electricity is provided directly to the fossil fuel facility and not provided through the electrical network;
 - The low-CI electricity is supplied “behind the meter”;
- The low-CI electricity is not consumed as an energy source for electric vehicles; and
- The low CI electricity consumption at the Fossil Fuel Facility is metered.

If the project involves the installation of a new CHP system, the CI of the electricity produced from the CHP system should be determined in accordance with the method for assessing the CI eligibility threshold described in Appendix B of this QM. However, if the project applicant finds that this method is not suitable for the quantification, for reasons such as the integration of innovative technologies or fuels, they may request the use of an alternate method for assessing the CI eligibility threshold as part of their project application with a justification. If the justification is not valid or the proposed alternate method would result in an underestimation of the CI of electricity, it will not be approved and the applicant will be notified.

4.0 Streamlined Additionality Criteria

4.1 Regulatory Overlap

For the purpose of section 43 of the Regulations, an activity that is carried out as part of a project must be additional to what is required by the laws of Canada or of the province or territory where the project

is carried out — other than any laws relating to greenhouse gas emission pricing mechanisms, the reduction of the CI of fuel or the use of low-CI fuel.

If federal or provincial legislation is implemented which creates a legal obligation in scope of the project, no credits for existing recognized projects may be created and no new applications or extensions will be accepted for the legislated actions as of the date the requirements in the legislation come into force. It is important to note that if there were credits being created under this QM that are not covered by the legislation, existing recognized projects would continue to earn credits annually for that portion. In addition, new applications or extensions would continue to be accepted for that portion not covered by legislation.

The following project types are not considered to be legally required:

- A project type that overlaps with the compliance requirements or enables the creation of credits under federal, provincial or territorial carbon pollution pricing systems;
- A project type that overlaps with BC's Low Carbon Fuel Standard.

The Regulations allow for credit creation opportunities, even if a given project generate credits in another program (e.g., voluntary, federal or provincial offset programs). However, it is important to note that different programs may decide not to provide credits for the same actions. For example, projects creating credits as of registration of Regulations will not be able to seek credits under the *Federal Greenhouse Gas Offset System* for the emission reduction achieved by the sources or sinks included in the scope of the project. Stakeholders seeking clarity should contact the programs they are interested in to determine if credit creation under the Regulations would make a project ineligible for that particular program.

Further precisions on regulatory overlap include:

- If an action were required by legislation, co-benefits would not be additional and therefore not credited. For example, if a regulation came into place requiring an action to reduce SO₂ and this action also had the co-benefit of reducing GHGs, this action would be not be eligible or credited under the proposed Regulations.
- If not mandated by legislation, but the action were necessary in order to comply with the legislation, it is not additional and not credited.
 - If the action is not necessary in order to comply with the legislation, it is additional and may be credited. In other words, in absence of the project, compliance with the legislation in question is still demonstrated.
- In the case where legislation is implemented in one province or territory (P/T), but not another, regulatory overlap is based on the legislation in the province/territory where the project is located.
- Note for methane projects: Due to the complexities of the regulatory and legislative framework for methane across Canada, specific eligibility criteria for these projects is indicated in section 3.2.3 Methane Reductions Beyond Regulatory Requirements of this QM.

5.0 Crediting

5.1 Crediting Period

CO₂e-emission-reduction projects using this QM are eligible to create credits under the Regulations for a period of 10 years, beginning on the later of the day on which the project is recognized by the Minister or, any preferred day referred to in paragraph 34(2)(b) of the Regulations indicated in the application. A single five year extension of the crediting period may be permitted as per subsections 42(1) and (2) of the Regulations.

5.2 Credit Creator

The owner or operator of a fossil fuel facility in Canada at which the project is carried out or that is receiving hydrogen, electricity or thermal energy from another facility at which the project is carried out is the credit creator by default. The registered creator may differ from the default, if the owner or operator of the fossil fuel facility enters into an agreement with another party to create credits for the CO₂e-emission-reduction project in accordance with section 21 of the Regulations.

The owner or operator of this fossil fuel facility or the party with whom they have entered into an agreement with in accordance with section 21 of the Regulations must register as a registered creator in accordance with section 25 of the Regulations and have the project recognized after submitting an Application for Recognition of CO₂e-Emission-Reduction Project prior to creating credits under the Regulations.

If more than one person applies for recognition for the same project, no credits will be granted for that project until an agreement is reached by the parties to designate the registered creator.

5.3 Class of Credits Created

Credits are created in the liquid class.

6.0 Project and Baseline Scenario

The project is the specific actions or interventions targeted at changing greenhouse gas emission sources and/or sinks. The baseline scenario represents the activities and associated greenhouse gas emissions that would have occurred had the project not been implemented.

6.1 Sources and Sinks

Sources and sinks for both the baseline and the project should be selected such that they encompass the project's effect on GHG emissions in order to reduce the likelihood of leakage. In this case, leakage refers to the implementation of an activity or project, which could impact emissions outside of the project's selected sources and sinks. There may exist situations in which the selected sources and

sinks cover multiple facilities; for example, if the emissions shift from one facility to another or if the project affects sources and sinks in other facilities.

The sources quantified for the project and baseline include, but not limited to, emissions from:

- fuel consumption, including combustion, flaring, venting or other fugitive emissions as a result of this consumption;
- chemical processes; and
- electricity or thermal energy generation and distribution not covered by the above emission sources.

The carbon intensities applied to each of these should incorporate the entire lifecycle of the fuel, chemical or electricity, which would therefore include upstream emissions from extraction, processing, production, distribution and transportation.

Relevant sources and sinks include those that are:

- controlled by the project applicant;
- related to the project by material or energy flows; and
- affected by the project.

Please refer to Figure A.3 – Identifying and selecting GHG SSRs (Sources Sinks and Reservoirs) in ISO 14064-2, as amended from time to time, for further guidance on the selection of sources and sinks.

Sources and sinks not expected to change between the baseline scenario and the project may be excluded from quantification if it is assessed that these excluded activities will occur at the same magnitude and emission rate during the baseline and project, and will therefore not be impacted by the project.

6.2 Data normalization

It is possible that the operating conditions (ex. production, weather) differ between the baseline and the project such that they impact the emissions between the two scenarios. If this is the case, measures must be taken to normalize the data (e.g. Taking into account production or other outputs in the form of carbon intensities, the use of heating degree days for changes in weather or using activity data in the project which is discussed in the next section) in order to ensure the baseline and project are on the same level playing field.

6.3 Selection of the Baseline Scenario

A description of activities, along with specific activity data, that would have occurred had the project not been implemented must be determined. The baseline scenario should be selected in accordance with Section 6.4 of ISO 14064-2, as amended from time to time.

In order to calculate emissions, activity data and emission factors are often used. Activity data is the level of a specific action that produces emissions. Examples include energy consumed, fuel produced or waste generated. In order to establish the baseline scenario, this activity data may be obtained through:

- historical activity data (based on a subset of existing components, process configurations and operating procedures within the fossil fuel facility prior to the implementation of the project);
- functionally equivalent alternatives (technologies or practices that provide products and/or services of a type and quality that are functionally equivalent to a project);
- standard industry practice (the most common practice in Canada with respect to operational practices and/or fossil fuel facility components), which must be functionally equivalent to the project. The standard practice must be in compliance with any federal or provincial legislation that applies to the project and must meet any minimum standards or codes; or
- activity data in the project (ex. Electricity consumption in the project is the same as the baseline). Note that for combined heat and power projects, using activity data in the project is a requirement. Please refer to the section [6.4 Baseline Scenario for Combined Heat and Power](#) of this QM for more information on specific requirements for the selection of the baseline for cogeneration projects.

Note in the case in which activity data in the project is used to establish the baseline scenario, any emission factors that are used should still reflect the activities that would have occurred had the project not been implemented for the baseline scenario. For example, if a fossil fuel facility was using a high CI fuel to produce energy and switched to a lower CI fuel, although the megajoules of energy in the project may be used as activity data in the baseline scenario, the emission factor for the higher CI fuel must be used to calculate the emissions in the baseline scenario.

6.4 Baseline Scenario for Combined Heat and Power

For the purposes of this section, the following definition applies:

Project start date means the date on which the fossil fuel facility starts consuming the electricity and thermal energy that is from the modified or new CHP system or the date on which the existing CHP system starts burning a lower CI fuel resulting from a fuel switch.

For an eligible CHP project, the emissions from the baseline are based on the following formula:

$$Emissions_{Baseline} = E_{BP} \times CI_{EBP} + (E_P - E_{BP}) \times CI_{EB} + T_{BP} \times CI_{TBP} + (T_P - T_{BP}) \times CI_{TB}$$

where

E_P = measured quantity of electricity produced by the CHP system and consumed at the fossil fuel facility in the project during the compliance period, expressed in MJ

E_{BP} = the electricity produced by the CHP system in the project that displaces a quantity of electricity consumed at the fossil fuel facility before the project, expressed in MJ.

- E_{BP} is lower than or equal to E_P .
 - $E_{BP} = E_P$ if the following conditions are met:
 - the annual average quantity of electricity consumed at the fossil fuel facility before the project is greater than or equal to the electricity produced from the CHP system in the project and consumed at the fossil fuel facility in a compliance period, with proof of electricity consumption for the 24-month period prior to the project start date; and

- the electricity produced from the CHP system in the project in a compliance period displaces the same quantity of electricity consumed at the fossil fuel facility before the project, and is not used to meet its increased demand of electricity, if any.
- E_{BP} is 0 MJ in the case where no electricity was consumed before the project (e.g. a greenfield facility) or for a fossil fuel facility that uses the electricity produced from the CHP system in the project solely to meet its increased demand of electricity.
- E_{BP} is up to a maximum of the smaller of:
 - the annual average of the electricity consumed at the fossil fuel facility before the project, with proof of electricity consumption for the 24-month period prior to the project start date; and
 - the quantity of electricity consumed at the fossil fuel facility, supplied by the CHP system, in the project during a compliance period.

CI_{EBP} = the carbon intensity of the source of electricity consumed at the fossil fuel facility before the project that is being displaced by the electricity produced by the CHP system in the project, with proof of electricity consumption from that source for the 24-month period prior to the project start date.

- If the source of electricity being displaced is the provincial or territorial electrical network, the CI of that electricity is the one set out in Table 16 of the *Specifications for Fuel LCA Model CI Calculations*.
- If the source of electricity being displaced is the existing CHP system involved in the project, the CI of that electricity is determined in accordance with Appendix B of this QM and using the allocation method Fuel Chargeable to Power (FCP), explained in Appendix 4 of the *Specifications for Fuel LCA Model CI Calculations*.
- If the source of electricity being displaced is from fossil fuels, other than the existing CHP system involved in the project or the provincial or territorial electrical network, the CI of that electricity is the applicable CI set out in Table 13 of the *Specifications for Fuel LCA Model CI Calculations*.
- If the electricity being displaced is from more than one source, CI_{EBP} is a weighted average of all electricity sources consumed at the fossil fuel facility before the project and is calculated by the following equation.

$$CI_{EBP} = \frac{\sum (Q_B \times CI_B)}{Q_T}$$

Where:

Q_T = Measured quantity of electricity consumed at the fossil fuel facility in the 24 month period prior to the project start date (kWh)

Q_B = Measured quantity of electricity from each electricity source consumed before the project in the 24 month prior to the project start date (kWh)

CI_B = Carbon intensity of each individual electricity source consumed before the project in the 24 month prior to the project start date (gCO₂e/MJ)

- If a source of electricity is the provincial or territorial electrical network, the CI of that electricity is the one set out in Table 16 of the *Specifications for Fuel LCA Model CI Calculations*.

- If a source of electricity is the existing CHP system involved in the project, the CI of that electricity is determined in accordance with Appendix B of this QM and using the allocation method Fuel Chargeable to Power (FCP), explained in Appendix 4 of the Specifications for Fuel LCA Model CI Calculations.
- If a source of electricity is from fossil fuels, other than the CHP system involved in the project or the provincial or territorial electrical network, the CI of that electricity is the applicable CI set out in Table 13 of the *Specifications for Fuel LCA Model CI Calculations*.

CI_{EB} = the carbon intensity assigned to the increased quantity of electricity ($E_P - E_{BP}$) that would have been consumed at the fossil fuel facility in the baseline scenario, if any. Three options exist for the baseline scenario:

1. If the fossil fuel facility is connected to the electrical network, the provincial or territorial electrical network is considered to be the electricity source in the baseline scenario, with a CI set out in Table 16 of the *Specifications for Fuel LCA Model CI Calculations*.
2. If the fossil fuel facility is not connected to the electrical network, diesel is considered to be the electricity source in the baseline scenario, with a CI set out in Table 13 of the *Specifications for Fuel LCA Model CI Calculations*, in the case where supporting documentation is provided to demonstrate that the facility:
 - is in a geographic area that is served by neither an electrical network that is subject to the standards of the North American Electric Reliability Corporation nor a natural gas distribution system;
 - would not have been connected to a micro grid with a CI lower than diesel; and
 - does not produce gaseous fuel that could be used in a generator to produce the quantity of electricity.
3. If the fossil fuel facility is not connected to the electrical network, and the above conditions in item 2 are not met, natural gas simple cycle is considered to be the electricity source in the baseline scenario, with a CI set out in the table 13 of the *Specifications for Fuel LCA Model CI Calculations*.

T_P = quantity of thermal energy produced by the CHP system and consumed at the fossil fuel facility in the project during the compliance period, expressed in MJ

T_{BP} = the thermal energy produced by the CHP system in the project that displaces a quantity of thermal energy consumed at the fossil fuel facility before the project, expressed in MJ.

- T_{BP} is lower or equal to T_P
 - $T_{BP} = T_P$ if the following conditions are met:
 - the annual average quantity of thermal energy consumed at the fossil fuel facility before the project is greater than or equal to the thermal energy produced from the CHP system and consumed at the fossil fuel facility in the project in a compliance period, with proof of thermal energy consumption in the 24-month period prior to the project start date; and
 - the thermal energy produced from the CHP system during the project in a compliance period displaces the same quantity of thermal energy consumed at the fossil fuel facility before the project, and is not used to meet its increased demand of thermal energy, if any.
- T_{BP} is 0 MJ in the case where no thermal energy was consumed before the project (e.g. a greenfield facility) or for an existing fossil fuel facility that uses the thermal energy produced

from the CHP system in the project solely to meet its increased demand of thermal energy, if any.

- T_{BP} is up to a maximum of the smaller of:
 - the annual average of the thermal energy consumed at the fossil fuel facility before the project, with proof of thermal energy consumption in the 24-month period prior to the project start date; and
 - the quantity of thermal energy consumed at the fossil fuel facility, supplied by the CHP system in the project, during a compliance period.

CI_{TBP} = the carbon intensity of the source of thermal energy consumed at the fossil fuel facility before the project that is being displaced by the thermal energy produced by the CHP system in the project, with proof of thermal energy consumption from that source for the 24-month period prior to the project start date.

- If the source of thermal energy being displaced is the existing CHP system involved in the project, the CI of that thermal energy is determined in accordance with Appendix B of this QM and using the allocation method Fuel Chargeable to Power (FCP), explained in Appendix 4 of the *Specifications for Fuel LCA Model CI Calculations*.
- If the thermal energy being displaced is from another source, the CI of that thermal energy is calculated. The pre-defined CI of fossil fuels set out in Table 15 of the *Specifications for Fuel LCA Model CI Calculations* must be used to determine the emissions from combusting fossil fuels.
- If the thermal energy being displaced is from more than one source, CI_{TBP} is a weighted average of all thermal energy sources consumed before the project and is calculated by the following equation.

$$CI_{TBP} = \frac{\sum (T_B \times CI_{TS})}{T_T}$$

Where:

T_T = Measured quantity of thermal energy consumed at the fossil fuel facility in the 24 month period prior to the project start date (MJ)

T_B = Measured quantity of thermal energy from each thermal energy source consumed before the project in the 24 month prior to the project start date (MJ)

CI_{TS} = Carbon intensity of each individual thermal energy source consumed before the project in the 24 month prior to the project start date (gCO₂e/MJ)

- If a source of thermal energy is the existing CHP system involved in the project, the CI of that thermal energy is determined in accordance with Appendix B if this QM and using the allocation method Fuel Chargeable to Power (FCP), explained in Appendix 4 of the *Specifications for Fuel LCA Model CI Calculations*.
- If a portion of the thermal energy is from other sources, the CI of the thermal energy from each source is calculated. The pre-defined CI of fossil fuels set out in Table 15 of the *Specifications for Fuel LCA Model CI Calculations* must be used to determine the emissions from combusting fossil fuels.

CI_{TB} = the carbon intensity assigned to the increased quantity of thermal energy ($T_P - T_{BP}$) that would have been consumed at the fossil fuel facility in the baseline scenario:

- The CI for Purchased or transferred Steam/Heat is set out in Table 15 of the *Specifications for Fuel LCA Model CI Calculations*.

The CI values set out in Table 13, 15 and 16 of the *Specifications for Fuel LCA Model CI Calculations* may be updated periodically. The CI values published in the most recent version of the *Specifications for Fuel LCA Model CI Calculations* for the compliance period in which credits are created must be used.

If the project applicant finds that the method described in Appendix B using the allocation method Fuel Chargeable to Power is not suitable for the quantification of the CI of the electricity and thermal energy produced by the CHP system, for reasons such as the integration of innovative technologies or fuels, they may request the use of an alternate method for that determination as part of their project application with a justification. If the justification is not valid or the proposed alternate method would result in an overestimation of the CI of electricity or the CI of thermal energy used in the baseline scenario, it will not be approved and the applicant will be notified.

6.5 Baseline Scenario Reporting Requirement

In order to establish and quantify the baseline scenario the following must be provided:

- in the case where historical activity data is used to determine the baseline scenario,
 - a minimum of two years of historical activity data. However, if two years of historical activity is not available, the project applicant may apply to use a shorter period as part of their project application with a justification. If the minister finds that the justification is valid (that the data accurately reflects the baseline scenario), then the request will be approved to use the shorter period.
- in the case where historical activity data is not used to determine the baseline scenario, and activity data in the project is not used to calculate the baseline scenario emissions,
 - information and activity data (2 years minimum, unless justification approved) on the activities that would have occurred had the project not been implemented from functionally equivalent alternatives or standard industry practice.
- in the case where historical activity data is not used to determine the baseline scenario, and activity data in the project is used to calculate the baseline scenario emissions,
 - information on the activities that would have occurred had the project not been implemented from functionally equivalent alternatives or standard industry practice.

The above cases are illustrated in Figure 1.

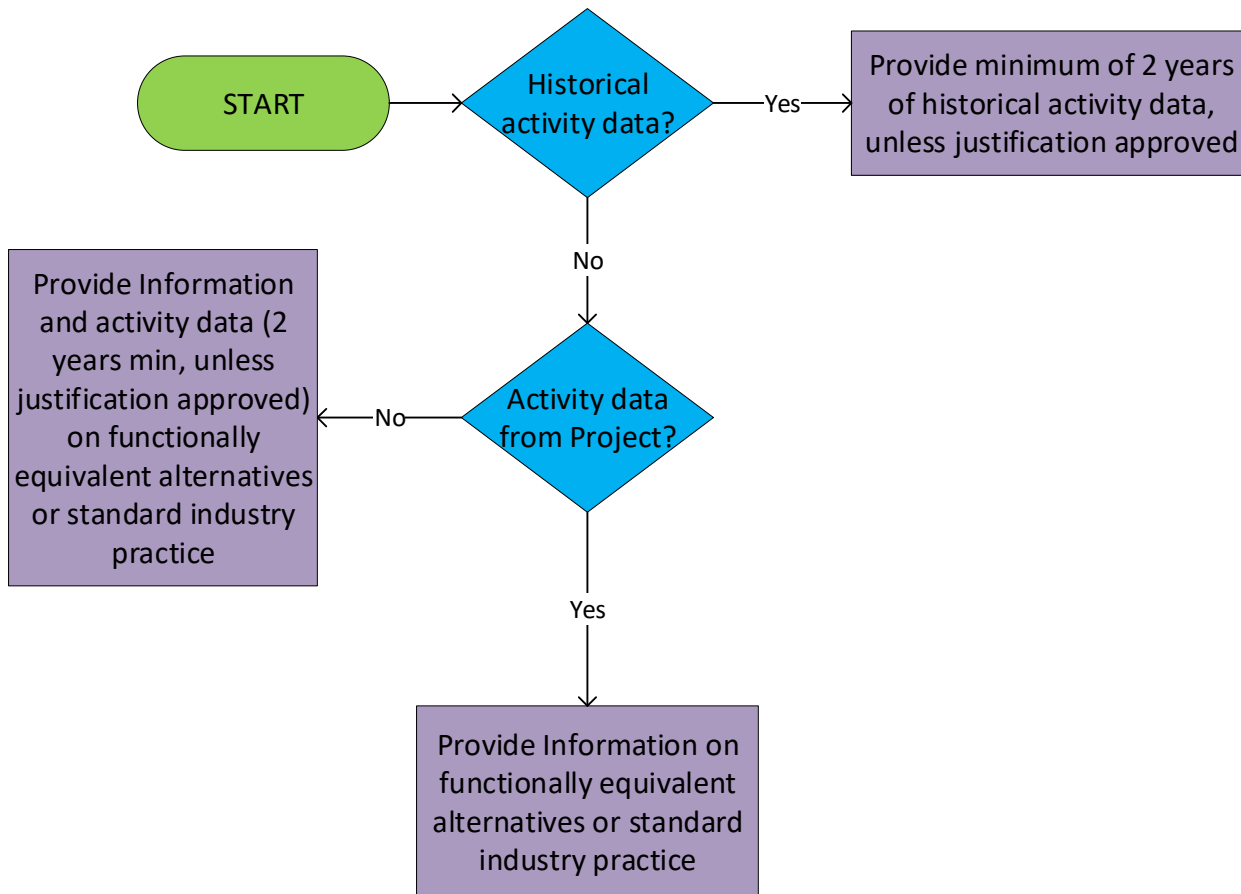


Figure 1: Options for establishing and quantifying the baseline scenario

6.6 Project Locations

The general eligibility and ineligibility criteria indicate where a project must be carried out. The project location must consist of at least one fossil fuel facility as well as any other facilities related to the project (ex. A hydrogen production facility supplying the hydrogen to the fossil fuel facility, or a facility that is directly supplying electricity and/or thermal energy to a fossil fuel facility). As indicated in section [6.1 Sources and Sinks](#) of this QM, there may exist situations in which the selected sources and sinks cover multiple fossil fuel facilities, resulting in multiple project locations. Multiple fossil fuel facilities can be aggregated into a single project. Each project location must be uniquely identified using the global positioning system (GPS) coordinates (5 decimals). Supporting documentation demonstrating the project location(s) must also be provided that includes aerial photographs, maps or satellite imagery.

7.0 Quantification Methods

7.1 Emission reduction quantification

To determine the total emission reductions for the compliance period, the following equation must be used:

$$\text{Emissions Reductions (tCO}_2\text{e)} = (\text{Emissions}_{\text{Baseline}} - \text{Emissions}_{\text{Project}}) \times \frac{V_{\text{Canada}}}{V_{\text{Total}}}$$

Credits must be pro-rated where the units within the project were non-operational. This pro-rating will consider the calendar days of operation relative to non-operation.

For the purpose of subsection 36(3) of the Regulations, the number of provisional credits that are created for each compliance period is determined based on the proportion of the quantity of crude oil or liquid fossil fuels that is not exported from Canada and that has a reduced carbon intensity as a result of the activities carried out for the project ($V_{\text{Canada}}/V_{\text{Total}}$).

Where

V_{Canada} is the volume used in Canada and is one of the following, depending on the type of project:

1. In the case of a CO₂e-emission-reduction project that reduces the CI of fossil fuels at a refinery in Canada, the volume of gasoline and diesel, expressed in m³, produced at that refinery and that is used as a fuel in Canada or sold for use as a fuel in Canada during the compliance period.
2. In the case of a CO₂e-emission-reduction project that reduces the CI of fossil fuels, crude oil or bitumen processed or produced at an upgrader in Canada, the volume, expressed in m³, of:
 - a. diesel produced at that upgrader that has a reduced carbon intensity as a result of the activities carried out for the project and that is used as a fuel in Canada or sold for use as a fuel in Canada during the compliance period; and
 - b. crude oil produced at that upgrader that has a reduced carbon intensity as a result of the activities carried out for the project and that is delivered to refineries in Canada for processing during the compliance period.
 - i. If the crude oil, produced at the upgrader that has a reduced carbon intensity as a result of the activities carried out for the project and delivered to refineries in Canada, is part of a blend, then V_{Canada} is the volume of the blend, expressed in m³, delivered to refineries in Canada for processing multiplied by the volume fraction of the crude oil within the blend that was produced at the upgrader and that has a reduced carbon intensity as a result of the activities carried out for the project.
3. In all other cases of a CO₂e-emission-reduction project that reduces the CI of fossil fuels at a facility in Canada, the volume of gasoline and diesel, expressed in m³, that has a reduced carbon intensity as a result of the activities carried out for the project and that is produced, processed, transported, stored or distributed for use in Canada during the compliance period.
4. In all other cases of a CO₂e-emission-reduction project that reduces the CI of crude oil or bitumen at a facility in Canada, the volume of crude oil or bitumen, expressed in m³, that has a

reduced carbon intensity as a result of the activities carried out for the project and that is delivered to refineries in Canada for processing during the compliance period.

- a. If the crude oil, that has a reduced carbon intensity as a result of the activities carried out for the project and that is delivered to refineries in Canada, is part of a blend, then V_{Canada} is the volume of the blend, expressed in m^3 , delivered to refineries in Canada for processing multiplied by the volume fraction of the crude oil within the blend that has a reduced carbon intensity as a result of the activities carried out for the project.

V_{Total} is the total volume and is one of the following depending on the type of project:

1. In the case of a CO_2e -emission-reduction project that reduces the CI of fossil fuels at a refinery in Canada, the total volume of gasoline and diesel, expressed in m^3 , produced by that refinery during the compliance period.
2. In the case of a CO_2e -emission-reduction project that reduces the CI of fossil fuels, crude oil or bitumen processed or produced at an upgrader in Canada, the total volume, expressed in m^3 , of:
 - a. diesel produced at that upgrader that has a reduced carbon intensity as a result of the activities carried out for the project during the compliance period;
 - b. crude oil produced at that upgrader that has a reduced carbon intensity as a result of the activities carried out for the project during the compliance period.
3. In all other cases of a CO_2e -emission-reduction project that reduces the CI of fossil fuels at a facility in Canada, the total volume of gasoline and diesel, expressed in m^3 , that has a reduced carbon intensity as a result of the activities carried out for the project and that is produced, processed, transported, stored or distributed during the compliance period.
4. In all other cases of a CO_2e -emission-reduction project that reduces the CI of crude oil or bitumen at a facility in Canada, the total volume of crude oil or bitumen, expressed in m^3 , produced, transported or stored during the compliance period that has a reduced carbon intensity as a result of the activities carried out for the project.

7.2 Combined Heat and Power Project

In the case where only a portion of the electricity and thermal energy produced by the CHP system in the project is consumed at the fossil fuel facility, the CI of the produced electricity and thermal energy must be determined in order to either subtract emissions or not include emissions from electricity or thermal energy not consumed at the fossil fuel facility. Appendix A provides information on options to subtract or not include emissions from electricity or thermal energy not consumed at the fossil fuel facility.

Appendix B of this QM that uses the allocation method Fuel Chargeable to Power (FCP), explained in Annex 4 of *Specifications for Fuel LCA Model CI Calculations*, should be used to determine the CI of heat and electricity produced from the CHP system in the project. However, if the project applicant finds that the method described in Appendix B using the allocation method FCP is not suitable for the quantification, for reasons such as the integration of innovative technologies or fuels, they may request the use of an alternate method as part of their project application, with a justification. If the justification is not valid or the proposed alternate method would result in an underestimation of the CI of electricity or thermal energy used in the project, it will not be approved and the applicant will be notified.

7.3 Quantification Rules and Data Sources

The GHG emissions affected by the activities described in this QM primarily include carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O). The quantitative materiality threshold should be considered when determining if other greenhouse gases, affected by a project, should be included in the quantification of the emission reductions. A complete list of GHGs and the applicable Global Warming Potential (GWP) to use for each gas is available in Appendix A of the *Fuel LCA Model Methodology*.

The pre-defined CI values and high heating values (energy densities) included in section 9 of the *Specifications for Fuel LCA Model CI Calculations (Specifications)* should be used when suitable for the determination of the emissions in the baseline scenario and in the project. ECCC may periodically update these values. The values published in the most recent version of the *Specifications for Fuel LCA Model CI Calculations* for the compliance period in which credits are created must be used. These pre-defined values were extracted from the data library in the Fuel LCA model and include:

- Energy density of fuels and energy sources (Table 8 of the Specifications);
- Provincial grid mix CI values for electricity from the electrical network (Table 12 of the Specifications);
- Electricity generation CI value by technology for onsite generation (Table 13 of the Specifications);
- Electricity generation CI value by technology for offsite generation (Table 14 of the Specifications);
- Pre-defined CI of fossil fuels (Table 15 of the Specifications);
- Pre-defined CI for other energy sources (fuel gas, non-biogenic waste, purchased or transferred steam/heat (Table 15 of the Specifications);
- Pre-defined CI of hydrogen and biomass (Table 15 of the Specifications);
- CI of excess electricity transferred or supplied to another facility or to the electrical network (Table 15 of the Specifications); and
- CI values of the provincial or territorial electrical network for electricity used in the baseline scenario that is being displaced in the project (Table 16 of the Specifications).

The *Fuel LCA Model Methodology* provides the methodology and data sources used to determine the pre-defined CI values.

If the source of low-CI electricity is not included in Table 13 of the *Specifications for Fuel LCA Model CI Calculations*, and is not the provincial or territorial electrical network, a registered creator or carbon-intensity contributor may determine a CI of electricity under section 79 of the Regulations using the Fuel LCA Model and apply for approval under subsection 80(1). A registered creator or carbon-intensity contributor may determine a CI of a material input or low-CI fuel that is a renewable natural gas, biogas, renewable propane or hydrogen under section 76 of the Regulations using the Fuel LCA Model and apply for approval under subsection 80(1). The CI of electricity must be approved by the Minister under section 85(1) of the Regulations in order to be used to create credits.

In the case where the use of a pre-defined carbon intensity or higher heating value is not feasible and applying for the approval of a CI is not feasible, carbon intensities or other emission factors may be sought out from other reputable sources. This may include:

- [CA - GREET 3.0](#) under the Low Carbon Fuel Standard in California;
- [Canada’s Greenhouse Gas Quantification Requirements](#), under the Greenhouse Gas Reporting Program (GHGRP) – in particular for fugitive emissions from flaring (2.C) or fugitive emissions in Petroleum Refining (Chapter 11);
- The quantification methods indicated in [Schedule 3](#) of the Output-Based Pricing System (OBPS) Regulations – in particular for flaring, venting and other fugitive emissions;
- Official government data;
- Official data from renowned international agencies;
- Data from relevant industry associations;
- Data from a peer reviewed paper published in a journal;
- Data contained in a Life Cycle Inventory database;
- Data from other literature sources;
- Engineering Estimates.

As mentioned in section [3.0 Eligibility](#) of this QM, a project of a type that is already eligible to create credits under a specific QM is ineligible to create credits under the Generic QM. It is important to note that there may be cases in which multiple activities are occurring in a project, where only some of the activities in the project are eligible under a specific QM. In this situation, it may be possible that reductions not credited under the specific QM may be realized for activities that fall under the Generic QM, including but not limited to energy efficiency or combined heat and power, provided that credits are not being created for the same activity under a specific QM and the Generic QM. Some examples as well as rules to follow in order to prevent the creation of credits for the same activity are outlined in the table below:

Case	Activity may be eligible for credit creation under the following specific QM(s)	Quantification Rules to follow under the Generic QM if credits are also being created under the specific QM
The use of hydrogen as a fuel at a fossil fuel facility, where the hydrogen is produced from RNG and credits are created for a RNG project under the QM for Low-CI Hydrogen Integration, but not for a Low-CI Hydrogen Project	<ul style="list-style-type: none"> • Low-CI Hydrogen Integration <p>If the production pathway involves CCS or EOR:</p> <ul style="list-style-type: none"> • CO₂ Capture and Permanent Storage (CCS) • Enhanced Oil Recovery with CO₂ Capture and Permanent Storage (EOR) 	The CI for hydrogen in Table 16 of the <i>Specification for Fuel LCA Model CI Calculations</i> or a carbon intensity may be calculated using the Fuel LCA Model where the CI pathway does not include any emissions reductions attributed to capturing and injecting CO ₂ e into a geological formation, if any, and RNG is deemed to be natural gas
The use of hydrogen as a fuel at a fossil fuel facility, where the hydrogen production pathway did not involve RNG as a feedstock and did not demonstrate meeting the definition of low-CI fuel*.	<p>If the production pathway involves CCS or EOR:</p> <ul style="list-style-type: none"> • CO₂ Capture and Permanent Storage 	The CI for hydrogen in Table 16 of the <i>Specification for Fuel LCA Model CI Calculations</i> or a carbon intensity may be calculated using the Fuel LCA Model where the CI pathway does not include any

	<ul style="list-style-type: none"> Enhanced Oil Recovery with CO₂ Capture and Permanent Storage 	emissions reductions attributed to capturing and injecting CO ₂ e into a geological formation, if any
The use of a low-CI fuel* that is hydrogen at a fossil fuel facility,	<ul style="list-style-type: none"> Low-CI Hydrogen Integration <p>If the production pathway involves CCS or EOR:</p> <ul style="list-style-type: none"> CO₂ Capture and Permanent Storage Enhanced Oil Recovery with CO₂ Capture and Permanent Storage 	<p>The CI of hydrogen is deemed to be 67.8 gCO₂e/MJ (reference carbon intensity of hydrogen indicated in item 2, column 2 of Schedule 1 of the Regulations).</p> <p>Note that in this case, any energy efficiency activities up to a CI of 67.8 g/MJ would be taken into account under the Low-CI Hydrogen Integration QM.</p>
The use of electricity or thermal energy from a combined heat and power system where CO ₂ emissions are captured for CCS or EOR	<ul style="list-style-type: none"> CO₂ Capture and Permanent Storage Enhanced Oil Recovery with CO₂ Capture and Permanent Storage 	The emissions in the project and the CI of electricity and thermal energy produced from the CHP system do not include any emissions reductions attributed to capturing and injecting CO ₂ e into a geological formation

* Please refer to paragraph (d) of the definition of low-CI fuel in the Regulations, which is hydrogen that has a carbon intensity that does not exceed 90% of the reference carbon intensity set out in item 2, column 2 of Schedule 1 of the Regulations.

8.0 Monitoring Requirements

Data, parameters and variables required for the quantification of baseline scenario and project emissions may be:

- directly measured (ex. Metered);
- prescribed (ex. Using an emission factor from the Fuel LCA Model);
- estimated or calculated (ex. Engineering estimates, mass balances); or
- a combination of the above.

8.1 Data Requirements

For each set of data, parameter or variable for each source or sink in the baseline scenario and project, the following must be identified and reported:

- The type of estimation method to be used (ex. Directly measured, prescribed, estimated or calculated);
- The specific method to be used (ex. Metered, using a carbon intensity in the Fuel LCA Model);
- The frequency at which it will be monitored (ex. Continuous, daily);
- Justification for the method and frequency chosen;
- Uncertainty associated with the method used.

Table 1 indicates an example of headings for a table to provide this information for the baseline scenario and the project.

Table 1: Example headings for data and monitoring requirements

Source or Sink	Data/Parameter/Variable	Unit	Type of Estimation method	Specific Method	Frequency	Justification for method and frequency	Uncertainty
			Ex. Directly measured, prescribed, estimated or calculated	Ex. Metered, using a carbon intensity in the Specifications for Fuel LCA Model Ci Calculations	Ex. Continuous, daily		

When more than one option is available, priority should be given to the method that provides the most detail and accuracy. For example, continuous metering provides more detail and accuracy than an annual measurement.

GHG monitoring criteria and procedures must be applied in accordance with the monitoring plan. All data and information related to the monitoring of the project should be recorded and documented. Where measurement and monitoring equipment is used, it must be ensured it is calibrated or verified and maintained as appropriate. More specifically, metering should be placed at the measurement boundary between equipment that the project affects and equipment that it does not affect.

In addition to reporting the uncertainty for each data, parameter or variable, an overall uncertainty analysis for the emission reductions from the project must be conducted. The uncertainty analysis will help determine which data should be measured or estimated in a way that the relative error is less than 5% of the number of credits. For more information, please refer to the definition of uncertainty and the section entitled Managing Data Quality under ISO 14064-2 as well as the document entitled *Method for Validation, Verification and Certification* for the Clean Fuel Regulations.

8.2 Data Requirements for V_{Canada} and V_{Total}

Table 2 provides additional requirements about supporting documentation and information to include in the Annual Credit Creation Report for V_{Canada} and V_{Total} . These two parameters are used to help determine the total emission reductions for the compliance period in the equation indicated in section 7.1 Emission reduction quantification of this QM.

Table 2: Additional requirements about supporting documentation for V_{Canada} and V_{Total}

Description	Unit	Measured /Calculated	Method	Frequency	Additional Details
V_{Canada}	m ³	Calculated	Based on records and/or measurements, as the case may be. Crude oil may be measured in different units and converted into m ³ at standard conditions.	Annual	A volume of gasoline, diesel, crude oil or bitumen, as the case may be, may be included in V_{Canada} only if records are retained that establish that this volume of gasoline, diesel, crude oil or bitumen met the conditions mentioned in the description of V_{Canada} in section 7.1 of this QM, for that type of project. The total volume V_{Canada} as well as the volume of the gasoline, diesel, crude oil or bitumen as the case may be, included in V_{Canada} must be included in the report.
V_{Total}	m ³	Calculated	Based on records and measurements, as the case may be. Crude oil may be measured in different units and converted into m ³ at standard conditions.	Annual	The total volume V_{Total} as well as the volume of the gasoline, diesel, crude oil or bitumen as the case may be, must be included in the report.

8.3 CI Determined using the Fuel LCA Model

A CI of electricity, low-CI fuel or material input that is determined under section 76 or 79 and approved under subsection 85(1) of the Regulations, must adhere to all requirements, or the CI will cease to be valid, referred to in section 86 of the Regulations. The registered creator or CI contributor will also be required to submit a CI Pathway Report annually on April 30 following the compliance period, in order to use the CI to create credits, or it will become invalid under section 86(2) of the Regulations.

9.0 Reporting Requirements

9.1 Application for Recognition of CO₂e-Emission-Reduction Project (section 34 and Schedule 4 of the Regulations)

1. Items 1, and 2(c) to (g) of Schedule 4 of the Regulations.
2. The name of the project.
3. For the purpose of items 2(a) of Schedule 4 of the Regulations, Project Location of the fossil fuel facility or any other facilities related to the project including GPS coordinates (5 decimals), civic addresses if any, and supporting documentation that includes aerial photographs, maps, or satellite imagery demonstrating the project locations.
4. For the purpose of items 2(b) of Schedule 4 of the Regulations, if applicable, the name, serial number, GPS coordinates (5 decimals) and, if any, civic address of any equipment with which

the project is carried out, if the equipment is not located at the fossil fuel facility or other facilities.

5. Evidence that the reduction of CO₂e emissions started on or after July 1, 2017.
6. For the purpose of item 2(e)(i) of Schedule 4 of the Regulations, a description and justification of the baseline scenario, including:
 - a. the specified activities that would have been carried out if not for the implementation of the project and the CO₂e emissions that would have resulted from those activities;
 - b. the information under section 6.5 Baseline Scenario Reporting Requirement of this QM;
 - c. in the case of a CHP project, 24 months of evidence of the amount and source(s) of electricity and thermal energy consumed at the fossil fuel facility prior to the project start date, if any, provided on a monthly basis:
 - i. for any portion of electricity supplied from the electrical network: the purchasing receipts for the 24-month period are required (on a monthly basis);
 - ii. for each fossil fuel sourced electricity consumed at the fossil fuel facility before the project, other than the electricity from the electrical network : the technology description, fuel source, quantity of fuel, nameplate capacity of equipment, hours of operation, and electricity generated as measured by a meter in the 24-month period;
 - iii. for each fossil fuel sourced thermal energy consumed at the fossil fuel facility before the project: the technology description, fuel source, quantity of fuel, nameplate capacity of equipment, hours of operation, and thermal energy produced in the 24-month period;
 - iv. evidence of which electricity source and which thermal energy source before the project were displaced by the electricity and thermal energy produced by the CHP system in the project, if applicable.
7. Engineering drawing(s) or process flow diagram(s) that identify the selected sources and sinks, relevant process equipment, mass flows and energy flows and other data necessary to calculate the emission reductions for both the project and baseline scenario. Each piece of equipment or stream appearing on the engineering drawings or process flow diagrams shall be clearly identified.
8. For each set of data, parameter or variable for each source or sink in the project and baseline scenario, the information listed under section 8.1 Data Requirements of this QM.
9. A list of sources and sinks excluded from the quantification.
10. A description of how the operating conditions will compare between the baseline scenario and the project and if they impact the emissions between the two scenarios. In the case in which they do differ, the measures that will be taken to normalize the data.
11. A description of all sources of flared, vented and fugitive emissions within the boundaries, including the compositions of the flared, vented and fugitive emission streams leaving the system boundaries, if applicable.
12. For a project of a type listed under the section 3.2 Specific Eligibility and Ineligibility Criteria of this QM:
 - a. a description of how the eligibility criteria for that type of project is met and ineligibility criteria for that type of project is not met; and
 - b. evidence or records of how an eligibility criteria is met, if it is indicated in section 3.2 Specific Eligibility and Ineligibility Criteria to provide evidence or records for a particular type of project.
13. List of references covering all information sources used in support of the calculation of credits.
14. Signed transmittal letter by the project applicant attesting to the accuracy of the information.

15. In the case of a CHP project that involves the installation of a new CHP system, demonstration that the CI of the electricity produced by the CHP system is less than 40 gCO₂e/MJ, including the detailed calculation in accordance with Appendix B.
16. If the project applicant requests the use of an alternate method for assessing the CI eligibility threshold for a CHP project that involves the installation of a new CHP system, the following information must be provided:
 - a. the rational and justification for requesting an alternate method;
 - b. the description of the alternate method;
 - c. the detailed equation and calculation methodology.
17. If the project applicant requests the use of an alternate method for a combined heat and power system to determine the CI of the electricity and thermal energy, the following information must be provided:
 - a. the rational and justification for requesting an alternate method;
 - b. the description of the alternate method;
 - c. the detailed equation and calculation methodology.

9.2 Annual Credit Creation Report

For the purpose of item 2(f)(ii), the following information cannot be updated from the project application in the annual credit creation report:

1. Item 2(e) of Schedule 4 of the Regulations;
2. Items 3 and 4 of section 9.1 of this QM;
3. Items 6 to 9 of section 9.1 of this QM; and
4. Items 16 and 17 of section 9.1 of this QM.

Information required to be reported in the annual credit creation report:

1. Report required as per section 120 of the Regulations with the requirements in Schedule 11.
2. All inputs into the baseline and the project listed in the table created in item 8 of the Application for Recognition of CO₂e-Emission-Reduction Project.
3. The values of V_{Canada} and V_{Total} referred to in Table 2 as well as the calculation of these values including:
 - a. the volume of the gasoline, diesel, crude oil or bitumen, as the case may be, included in V_{Canada} ;
 - b. the volume of the gasoline, diesel, crude oil or bitumen, as the case may be, included in V_{Total} .
4. In the case of a CHP project that involves the installation of a new combined heat and power system, demonstration that the CI of the electricity produced by the CHP system is less than 40 g/MJ, including the detailed calculation in accordance with Appendix B.

10.0 Record Keeping Requirements

Refer to sections 165 to 168 of the Regulations and the Monitoring Plan referred to in section 136 and Schedule 21.

11.0 Verification

For the verification of a report, referring to a CO₂e-emission-reduction project; the relevant requirements set out in sections 129 to 154 of the Regulations and the relevant specifications set out in the *Method for Verification and Certification – Clean Fuel Regulation* apply, including the following requirements.

11.1 Materiality Thresholds

11.1.1 Quantitative materiality thresholds

The quantitative materiality thresholds to be applied while verifying the Annual Credit Creation Report for a CO₂e-emission-reduction project, are the quantitative materiality thresholds described in sections 150 and 151 of the Regulations and in the *Method for Verification and Certification – Clean Fuel Regulations*.

11.1.2 Qualitative materiality thresholds

The qualitative materiality thresholds to be applied while verifying the Annual Credit Creation Report for a CO₂e-emission-reduction project are described in the *Method for Verification and Certification – Clean Fuel Regulations*.

APPENDIX A: Subtraction of electricity or thermal energy not consumed at a fossil fuel facility

As indicated in section 3.1 General Eligibility and Ineligibility Criteria of this QM, electricity and thermal energy not consumed at a fossil fuel facility is not eligible for credit creation. As such, emissions from electricity or thermal energy not consumed at a fossil facility must be subtracted from the total baseline or project emissions or not included in total baseline or project emissions.

Subtracting the Emissions

When total baseline or project emissions include emissions associated with the production of electricity or thermal energy that is not consumed at a fossil fuel facility, emissions from the produced electricity or thermal energy not consumed at a fossil facility may be subtracted.

Electricity not Consumed at a Fossil Fuel Facility

In order to subtract emissions from electricity not consumed at a fossil fuel facility, the emissions are calculated using the amount of electricity not consumed at a fossil fuel facility (*Electricity Transferred*) multiplied by *Electricity CI*.

For the project emissions of a combined heat and power project, the *Electricity CI* is determined in accordance with Appendix B of this QM using the allocation method Fuel Chargeable to Power (FCP), explained in Appendix 4 of the *Specifications for Fuel LCA Model Calculations*.

In other cases, the *Electricity CI* is the CI* for Excess Electricity for the province or territory where the project is located, set out in Table 15 of the *Specifications for Fuel LCA Model Calculations*.

*These carbon intensities may be updated periodically. The carbon intensities published in the most recent version of the *Specifications for Fuel LCA Model CI Calculations* for the compliance period in which credit creation is occurring must be used.

Thermal not Consumed at a Fossil Fuel Facility

In order to subtract emissions from thermal energy not consumed at a fossil fuel facility, the emissions are calculated using the amount of thermal energy transferred or sold that is not consumed at a fossil fuel facility (*Thermal Energy Transferred*) multiplied by the *Thermal Energy CI*.

For a combined heat and power project, the *Thermal Energy CI* is determined in accordance with Appendix B of this QM using the allocation method Fuel Chargeable to Power (FCP), explained in Appendix 4 of the *Specifications for Fuel LCA Model Calculations*.

In other cases, the *Thermal Energy CI* is the CI for Purchased or transferred Steam/Heat set out in Table 15 of the *Specifications for Fuel LCA Model CI Calculations*.

Subtracting Emissions from Electricity or Thermal Energy not Consumed at a Fossil Fuel Facility

$$\begin{aligned} Emissions_{Project} &= \text{Annual Total System Emissions} - \text{Electricity Transferred} \times \text{Electricity CI} \\ &\quad - \text{Thermal Energy Transferred} \times \text{Thermal Energy CI} \end{aligned}$$

Not Including the Emissions

If the carbon intensities of the electricity and thermal energy are determined as well as the quantity of electricity and thermal energy consumed at the fossil fuel facility, the calculation of the emissions in the baseline scenario or in the project may include the portion of electricity and thermal energy consumed at the fossil fuel facility and not include the portion of electricity and thermal energy that is not consumed at a fossil fuel facility. For example, the equation in section [6.4](#) Baseline Scenario for Combined Heat and Power of this QM for a combined heat and power project does not include the quantity of electricity or thermal energy that is not consumed at a fossil fuel facility. The emissions are calculated by multiplying the CI of the electricity by the quantity of electricity consumed at a fossil fuel facility and multiplying the CI of the thermal energy by the quantity of thermal energy consumed at a fossil fuel facility.

APPENDIX B: Method for calculating the CI of electricity and thermal energy produced by a CHP system

Method for assessing the CI electricity threshold

As indicated in the specific eligibility criteria for a CHP project, if the project involves the installation of a new CHP system, it may be eligible provided the CI of the electricity produced by the CHP system is less than 40 gCO₂e/MJ, as determined in accordance with this Appendix.

In this case, the CI of electricity must be determined as part of the project application as well as each Annual Credit Creation Report. Credits may be created for a compliance period only if the CI of electricity, determined in accordance with this Appendix, is less than the CI eligibility threshold of 40 gCO₂e/MJ during that compliance period.

This section provides specifications that must be followed to determine the CI of electricity for the sole purpose of assessing the CI eligibility threshold of 40gCO₂e/MJ. This method is not used for the purpose of creating credits (please refer to the section Calculation of the CI of electricity and the CI of thermal energy in the baseline scenario or in the project below). For the purpose of assessing the CI eligibility threshold, it is possible to include reductions for activities that create credits under the Regulations or other QMs. This is not the case for the purpose of creating credits.

The allocation method Fuel Chargeable to Power (FCP), explained in Appendix 4 of the *Specifications for Fuel LCA Model Calculations*, is used to determine the CI of the electricity and thermal energy produced from the CHP system. For the purpose of assessing the CI eligibility threshold, the emissions from the CHP system in the project should be quantified in accordance with the following specifications:

1. The emissions are calculated based on a lifecycle approach using the carbon intensities included in section 9 of the *Specifications for Fuel LCA Model CI Calculations*;
2. For the project application, the CI is calculated based on historical data, if available, or based on engineering estimates.
3. For the Annual Credit Creation Report, the CI is calculated based on data for the compliance period during which credits are created.
 - In other words, the CI determined for assessing the CI eligibility threshold is an average CI over a year.
 - For the first Annual Credit Creation Report, the data is based on only the portion of the compliance period for which credits are created.
4. If the emissions emitted by the CHP system are captured and injected into a geological formation, these reductions may be taken into account in the calculation of the CI. In this case, the CO₂e emissions from the CHP system:
 - do not include emissions that are:

- captured in accordance with the laws of Canada or a province that regulate that capture;
 - are transported and stored in accordance with the laws of Canada or a province that regulate that transportation or storage, as the case may be; and
 - are not subsequently released into the atmosphere;
 - include emissions related to the CO₂ capture (ex. fuel or electricity used to capture the CO₂).
5. The reductions associated with low-CI fuels that are gaseous at standard conditions used in the CHP system to produce electricity or thermal energy can be accounted for in the calculation of the CI, even if credits are created under the Regulations or under a specific quantification method, provided that:
- the emissions are calculated using a CI for the low-CI fuel that was approved under subsection 85(1) of the Regulations;
 - the registered creator possesses supporting documents that:
 - establish the fuel was physically supplied to the facility where the CHP system is located or supplied to that facility by means of a contractual agreement;
 - indicate the quantity of the fuel that was supplied to the facility where the CHP system is located during the portion of the compliance period for which credits are created and that indicate the name of the person from whom the fuel was purchased;
 - indicate the CI of the fuel and the alphanumeric identifier assigned to that CI under subsection 85(1);
 - if the fuel was supplied by means of a contractual agreement, establish that there is a physical connection between the facility where the CHP system is located and the producer of the fuel and that the quantity of the fuel supplied to that facility during the portion of the compliance period for which credits are created does not exceed the quantity of the fuel produced by the producer of the fuel and injected in a pipeline during that portion of the compliance period.
6. If the conditions mentioned in item 5 above are not satisfied:
- Biogas, RNG and hydrogen used in the CHP system, if any, are deemed to be natural gas: the CI of the biogas, RNG and hydrogen is deemed to be the CI of natural gas;
 - Renewable propane used in the CHP system, if any, is deemed to be propane: the CI of renewable propane is deemed to be the CI of propane;
 - The CI of natural gas and propane are included in Table 15 of the *Specifications for Fuel LCA Model Calculations*.

Calculation of the CI of electricity and the CI of thermal energy in the baseline scenario or in the project

The CI of the electricity and thermal energy produced by a combined heat and power involved in an eligible CHP project must be determined in the following cases:

- the source of electricity or thermal energy being displaced is the existing CHP system involved in the project (refer to the values CI_{EBP} and CI_{TBP} in the equation indicated in section [6.4](#) Baseline Scenario for Combined Heat and Power of this QM);

- only a portion of the electricity and thermal energy produced by the CHP system in the project is consumed at the fossil fuel facility as outlined in section 7.2 Combined Heat and Power Project and Appendix A of this QM.

In these cases, the allocation method Fuel Chargeable to Power (FCP), explained in Appendix 4 of the *Specifications for Fuel LCA Model Calculations*, is used to determine the CI of the electricity and thermal energy produced by the CHP system. The emissions from the CHP system in the baseline scenario or in the project should be quantified in accordance with the following specifications:

1. The emissions are calculated based on a lifecycle approach using the carbon intensities included in section 9 of the *Specifications for Fuel LCA Model CI Calculations*;
2. The CI is calculated based on data for the compliance period during which credits are created.
 - o In other words the CI determined for the baseline scenario and the project is an average CI over a year;
 - o For the first Annual Credit Creation Report, the data is based on only the portion of the compliance period for which credits are created.
3. If the emissions emitted by the CHP system are captured and injected into a geological formation, these emissions are accounted for in the determination as if they were vented directly to the atmosphere.
 - o In other words, the determination does not include any emissions reductions attributed to capturing and injecting CO₂e into a geological formation.
4. The reductions associated with the use of a low-CI fuel that is hydrogen in the CHP system to produce electricity or thermal energy cannot be accounted for in the quantification.
 - o Hydrogen used in the CHP system, if any, are deemed to be natural gas: the CI of the hydrogen is deemed to be 67.8 gCO₂e/MJ (reference carbon intensity of hydrogen indicated in item 2, column 2 of Schedule 1 of the Regulations)
5. The reductions associated with the use of a low-CI fuel that is biogas, RNG or renewable propane in the CHP system to produce electricity or thermal energy can be accounted for in the quantification, provided that:
 - o the same amount of fuel has not created credits under the Regulations or has not been included in another recognized project;
 - o the fuel is supplied physically and directly to the fossil fuel facility;
 - o the emissions are calculated using a CI for the low-CI fuel that was approved under subsection 85(1) of the Regulations;
 - o the registered creator has an attestation from the producer or importer of the low-CI gaseous fuel that this producer or importer is not creating credits for the quantity of the low-CI gaseous fuel used in the project;
 - o the register creator possesses supporting documents that:
 - establish the fuel was physically and directly supplied the facility where the CHP system is located;
 - indicate the quantity of the fuel that was produced by the producer and supplied to the facility where the CHP system is located during the portion of the compliance period and indicate the name of the person from whom the fuel was purchased;
 - indicate the CI and the alphanumeric identifier assigned to that CI approved under subsection 85(1);

6. If the conditions mentioned in item 5 above are not satisfied:
 - Biogas and RNG used in the CHP system, if any, are deemed to be natural gas: the CI of the biogas and RNG are assumed to be the CI of natural gas;
 - Renewable propane used in the CHP system, if any, is deemed to be propane: the CI of renewable propane is assumed to be the CI of propane;
 - The CI of natural gas and propane are included in Table 15 of the *Specifications for Fuel LCA Model Calculations*.