

Guide and Director's Directions – Renewable Fuel Content Requirements for Petroleum Diesel Fuel

Ministry of the Environment and Climate Change

December 2015

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Introduction

Introduction

Blending and Performance Requirements

As part of Ontario's commitment to reduce greenhouse gas (GHG) emissions and improve air quality, the Ministry of the Environment and Climate Change introduced the Greener Diesel – Renewable Fuel Content Requirements for Petroleum Diesel Fuel Regulation (O.Reg. 97/14). The Greener Diesel regulation, which came into force on April 1, 2014, expands the use of bio-based diesel fuels with better environmental performance by requiring that a minimum performance-adjusted percentage of diesel made from renewable sources be blended in diesel fuels sold or used in the Province.

The regulation includes the following requirements for fuel suppliers:

- **Blending** - An average adjusted volume of 2% of bio-based diesel is required to be blended into petroleum diesel during the initial compliance period (April 1, 2014 to December 31, 2015); followed by a 3% annual average adjusted volume for the second compliance period (2016); and a 4% average adjusted volume for subsequent compliance years (2017 onwards).
- **Greenhouse Gas Performance Requirement** - A 30% average improvement in lifecycle greenhouse gas emissions compared to petroleum diesel for the bio-based diesel blended during the initial compliance period; followed by an increase to a 50% annual average for the second compliance period, and 70% for subsequent compliance years.

The blending requirements apply to most uses of petroleum diesel fuel (i.e. on-road, off-road) but do not apply to fuel used in a furnace or boiler to produce heat or used to power an aircraft. Petroleum diesel volumes supplied to, from, or within Northern Ontario are exempted from the blending and GHG performance requirements during the first two compliance periods (if elected).

Fuel suppliers have significant flexibility to comply with the regulation:

- **Phasing:** three phases provide fuel suppliers time to adjust their operations and business plans.
- **Average Blending:** annual averaging allows fuel suppliers to choose when and how much to blend.
- **GHG Intensity Volume Adjustment:** allows fuel suppliers to blend lower volumes for bio-based diesel fuels that provide greater GHG benefits.

- **Balance Transfers:** within the compliance period, fuel suppliers that have blended more than required can sell any excess compliance volumes to fuel suppliers that have under-blended.
- **Reporting:** simple reporting approach and timelines aligned with Ethanol in Gasoline requirements to minimize the administrative burden.

Purpose of the Guide

The purpose of this Guide is to help fuel suppliers, bio-based diesel producers, and interested persons understand the requirements set out in the Greener Diesel regulation and to provide direction and general guidance regarding the use of the GHGenius lifecycle assessment model for calculating the GHG intensity of bio-based diesel fuels.

- **Part A** of the Guide is intended to provide an overview of the requirements of the regulation and provide guidance on the completion of the reporting form.
- **Part B** of the Guide includes the formal Director’s Directions, issued under subsection 5(4) of O. Reg. 97/14 specifying the manner in which fuel suppliers must enter data into the GHGenius model to calculate GHG intensity of the bio-based diesel fuels placed in the Ontario market, as well as additional technical guidance.

Users of this Guide should note that information on the regulatory requirements of the Greener Diesel regulation has been included here for convenience only. For more information, contact:

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Electronic version of Acts and Regulations are now available on ServiceOntario Publications’s website (see website address above – click on “Legislation and Bills”). An electronic version of this Guide is also available on the Ministry’s website (<http://www.ontario.ca/ministry-environment-and-climate-change>).

Guide users should check the Ministry of the Environment and Climate Change website, the Environmental Registry or contact the West Central Region to find out if there have been any revisions to this Guide.

Any suggestions for revision or clarification are welcome and should be sent to the Assistant Director of the West Central Region at the following address:

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Part A: Overview of Requirements of the Greener Diesel Regulation

Part A: Overview of Requirements of the Greener Diesel Regulation

Requirements for fuel suppliers

The regulation establishes the following requirements for fuel suppliers. If you are unsure whether you are considered a fuel supplier for the purposes of this regulation (or for which volumes of fuel you hold obligations), please consult subsections 1(1-4) of the regulation and Appendix 1 of this Guide.

Blended diesel quality standards (O.Reg 97/14, Section 3)

Fuel suppliers must ensure prior to distribution that all blended diesel for use or sale in Ontario meets or exceeds one of the following fuel quality standards:

- CAN/CGSB-3.520-2011 – Automotive Diesel Fuel Containing Low Levels of Biodiesel (B1-B5)
- CAN/CGSB-3.522-2011 – Diesel Fuel Containing Biodiesel (B6-B20) / 75.160.20
- CAN/CGSB-3.524-2011 – Biodiesel (B100) for Blending in Middle Distillate Fuels
- CAN/CGSB-3.517-2013 – Diesel Fuel
- ASTM D6751-12 - Standard Specification for Biodiesel Fuel Blend Stock (B100) for Middle Distillate Fuels
- ASTM D7467-13 - Standard Specification for Diesel Fuel Oil, Biodiesel Blend (B6 to B20)
- ASTM D975-14 - Standard Specification for Diesel Fuel Oils

Alternately, a fuel supplier may seek approval from the Director to use a set of standards and specifications deemed equivalent to those listed above.

Minimum bio-based diesel content (O.Reg 97/14, Section 4)

Fuel suppliers must ensure a minimum adjusted volume of bio-based diesel in the diesel fuel they use, distribute and/or sell, averaged over each compliance period (typically a calendar year):

- **Compliance Period 1 (April 1, 2014 to December 31, 2015):** Average adjusted volume of at least 2% bio-based diesel content with a 30% reduction in lifecycle GHG intensity of the biofuel portion relative to petroleum diesel.

Part A

Part A of the compliance report covers basic general information and allows the user to select reporting for the Greener Diesel regulation and specify the compliance period.

Part B

Part B of the compliance report contains all necessary inputs to calculate compliance. Compliance is determined by the following formula, contained in O.Reg. 97/14, subsections 6 (1-3), and represented in the lettered input boxes on the compliance report:

- **For the compliance period beginning April 1, 2014 and ending December 31, 2015:**

$$\text{Average Adjusted Volume} = \left[\frac{\{A [(91.9-y)/27.6] + B - C\}}{D + E - F} \right] \times 100$$

- **For the compliance period beginning January 1, 2016 and ending December 31, 2016:**

$$\text{Average Adjusted Volume} = \left[\frac{\{A [(91.9-y)/45.9] + B - C\}}{D + E - F} \right] \times 100$$

- **For each compliance period after the compliance period ending December 31, 2016:**

$$\text{Average Adjusted Volume} = \left[\frac{\{A [(91.9-y)/64.3] + B - C\}}{D + E} \right] \times 100$$

Where,

Average Adjusted Volume is the average adjusted volume of bio-based diesel, expressed as a per cent. This corresponds to the required amount in each compliance period: 2% in 2014/15, 3% in 2016, and 4% in 2017 and subsequent years.

A is the volume of bio-based diesel (in litres) that the fuel supplier placed in the Ontario market during the compliance period. If you are unsure about whether you have placed a specific volume in the market, please consult the definition in the regulation (subsections 1(2-4)), the Frequently Asked Questions in Appendix 1 or Ministry staff for further guidance.

The “Show Transfer Information” button on the compliance form allows users to input data for balance transfers (B and C), if applicable.

B is the volume of bio-based diesel (in litres) transferred *from* the records and books of account of other fuel suppliers under subsection 5 (2).

C is the volume of bio-based diesel (in litres) transferred *to* the records and books of account of other fuel suppliers under subsection 5 (2).

D is the volume of petroleum diesel (in litres) that the fuel supplier placed in the Ontario market during the compliance period. See references above for further guidance on which volumes are deemed “placed in the Ontario market.”

E is the volume of blended diesel (in litres) that the fuel supplier placed in the Ontario market during the compliance period. See references above for further guidance on which volumes are deemed “placed in the Ontario market.”

E is the volume (in litres) of petroleum diesel and blended diesel that the fuel supplier distributed to, from or within Northern Ontario during the compliance period, if the fuel supplier is electing to exempt these volumes. This option applies to the first two compliance periods (2014/15 and 2016) only.

y is the greenhouse gas intensity (in g CO₂e/MJ) of the bio-based diesel that the fuel supplier placed in the Ontario market during the compliance period, calculated on a weighted average basis by volume (reported in box A of the reporting form). Individual “y_n” GHG intensity values of each type of bio-based diesel must be calculated using the GHGenius lifecycle assessment model as prescribed by the regulation and in accordance with the written Director’s Directions in Part B of this Guide, and may be rounded to one decimal place. Clause (b) of subsection 5(3) of the regulation also requires that the fuel supplier to ensure that a professional engineer is of the opinion that the primary data used to calculate “y” are reasonable and that the calculation of “y” is correct.

To simplify reporting requirements for fuel suppliers, volumes of bio-based diesel will be automatically adjusted in the reporting form based on their corresponding “y” value in relation to the GHG improvement target for the given compliance period. The “y” is the weighted average of all “y_n” values. Accordingly, unless otherwise specified, the instructions in this guide pertain primarily to the calculation of “y_n.”

GHG improvement target is the GHG intensity improvement factor for adjusting volumes in a given compliance period. For the 1st compliance period, the value is 27.6 g CO₂e/MJ (corresponding to a 30% GHG reduction relative to petroleum diesel). For the 2nd compliance period, the value is 45.9 g CO₂e/MJ (corresponding to a 50% GHG reduction relative to petroleum diesel). For the 3rd and subsequent compliance periods, the value is 64.3 g CO₂e/MJ (corresponding to a 70% GHG reduction relative to petroleum diesel). The value for a given period will appear automatically in the form.

The reporting form shall be completed in such a manner to demonstrate that the fuel supplier has met the average volume requirements described in section 4 of the regulation.

As part of the information required under subsection 7(2), “compliance reports,” the following information is required to be provided by fuel suppliers:

- Information identifying the fuel supplier and the officer who submits the report;

- The result of the calculation done under subsection 6 (1), (2) or (3), the values used in reaching that result and the rationale for the use of the values used in the calculation;
- In the case of a fuel supplier who elects to deduct petroleum diesel distributed to, from or within Northern Ontario under subsection 5 (1) of the regulation, a statement to that effect;
- In the case of a fuel supplier who placed bio-based diesel, blended diesel or petroleum diesel in the Ontario market during a compliance period that the fuel supplier reasonably expected to be used for the purpose of generating power in an aircraft or in a furnace or boiler to produce heat, a statement to that effect and the volume of bio-based diesel, blended diesel or petroleum diesel that was sold for those purposes.

As per s. 7 (2) (e), fuel suppliers are also required to submit “sufficient information to determine compliance with the requirements of this regulation and to verify the calculation done under subsection 6(1), (2) or (3).”

To comply with this provision fuel suppliers are required to report the following information in a given compliance period:

- Type of bio-based diesel: renewable diesel, biodiesel, or Fischer-Tropsch diesel
- GHG intensity (as determined using GHGenius 4.03a)
- Feedstock used (e.g. soy, canola, tallow)
- Multi-feedstock calculation method used by bio-based diesel producer (i.e. mass balance or facility-average)

Fuel suppliers are also required to provide the volume and greenhouse gas intensity, calculated on a weighted average basis by volume, of the bio-based diesel contained in the blended diesel that the fuel supplier placed in the Ontario market during each quarter of the compliance period.

In the event that multiple volumes with the same characteristics are sold by the fuel supplier within the quarter (i.e. same GHG intensity, feedstock, fuel type), fuel suppliers shall report the total volume only, along with the corresponding information described above.

The reporting form will automatically adjust the reported volumes using the reported GHG intensity value and the GHG requirement for the given compliance period.

Records (O.Reg 97/14, Section 8)

Fuel suppliers must retain relevant business records and books of account (detailed in section 8 of the regulation) for 7 years following the end of the compliance period in question.

Part B: Director's Directions and Additional Technical Guidance

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B.1 General Information

Subsection 5(4) of the regulation provides for the issuance of written Director's Directions. These are legally-binding directions prescribing the manner in which primary and secondary data are to be input into GHGenius lifecycle assessment model for the purpose of quantifying the greenhouse gas intensity of bio-based diesel. Pursuant to subsection 5(3), fuel suppliers are required to comply with these directions when inputting data into the GHGenius model.

For each section of this document, the text contained within the shaded box reflects the Director's Directions — binding requirements that fuel suppliers must follow when determining the greenhouse gas intensity of bio-based fuels placed into the Ontario market. The text provided outside of the shaded box reflects additional guidance on these requirements, where necessary. If there is any conflict between the text outside the shaded box and text within the shaded box, the text within the shaded box governs to the extent of any conflict.

It is the responsibility of the fuel supplier to ensure that all Director's Directions, as set out in this Part, are followed where applicable.

B.2 Effective Date of Director's Directions

The Directions in B.3.3 to B.3.5 take effect on January 1, 2016 and pertain to compliance from the second period onwards, until such time as any updated Directions take effect. The other instructions are expected to be implemented in the first and all subsequent compliance periods.

B.3 Use of GHGenius Model

The following sections in this document describe the required settings, inputs and outputs for the GHGenius lifecycle assessment model. In the GHGenius model, the value of “y_n” is the feedstock-appropriate sum value in row 20 on the Upstream Results HHV sheet plus the value in cell E143 for renewable diesel or the value in cell F143 for biodiesel, as appropriate, on the Exhaust Emissions sheet.

As per the regulation, fuel suppliers are required to ensure that a professional engineer is of the opinion that:

1. The primary data used to calculate “y” is reasonable; and,
2. The calculation of “y” is correct. In practical terms, it is the renewable fuel producers who will have access to the information necessary to calculate the individual GHG intensity values, “y_n”, using GHGenius, which are then used to calculate “y”, a weighted average.

Fuel suppliers have the option of entering into contractual arrangements with renewable fuel producers that provide that a professional engineer has determined that the primary data used to calculate the “y_n” GHG intensity value are reasonable and that the calculation of “y_n” is correct. The certifying engineer may be employed by the fuel supplier, the renewable fuel producer supplying the bio-based diesel or contracted as a third party.

In practice, this may mean that a renewable fuel producer will provide certified GHG intensity information on a bill of lading. In the event that MOECC requires an audit of the reported compliance information, fuel suppliers should also ensure that their contracts stipulate that records relating to the GHG intensity calculations of bio-based diesel volumes reported in the compliance form are maintained and can be made available upon request from the Ministry.

B.3.1 Default Model Settings

B.3.1.1 Global Warming Potentials (GWP) Setting

When using GHGenius to calculate compliance, the fuel supplier shall select Global Warming Potentials from the Intergovernmental Panel on Climate Change’s Fourth Assessment Report (IPCC AR4), 2007.

GHGenius currently includes GWPs from the IPCC’s Second (SAR, 1995), Third (TAR, 2001) and Fourth (AR4, 2007) Assessment Reports. Fuel suppliers shall use GWPs from the AR4 (a value of 2 in cell B6 on the Input page). This is consistent with the latest international reporting requirements under the UN Framework Convention on

Climate Change (UNFCCC), which apply to Canada's National Inventory Report, produced annually by Environment Canada.

B.3.1.2 Year of Analysis

When using GHGenius to calculate "y_n", the fuel supplier shall set the "Target Year" to the latest year covered by the compliance period.

Year of Analysis is a basic input to the model, directing it to select a set of corresponding default values for that year. Cell B3 is changed, along with the appropriate column for the feedstock in row 233. Users shall set these fields to reflect the compliance period to when "y_n" is calculated. For example, when calculating compliance for the 2016 calendar year (the second compliance period), the target year should be set to '2016.'

The intent is to ensure facilities are reporting their most recent data. If primary data to be input into the model is not up to date with the most recent year, fuel suppliers shall use the most recent year for which a complete set of primary data is available.

B.3.2 GHG Intensity Recalculation

GHG intensities calculated using data input into GHGenius in accordance with the most recent Director's Directions shall be considered valid indefinitely unless:

- There is a significant change in production process or other data input into the model (feedstock, travel distances) that is expected to increase the GHG intensity of the bio-based diesel by 5% or more; or
- A new version of GHGenius is adopted by the Director.

GHG intensities are calculated for each applicable fuel using the GHGenius model, subject to the Directions laid out in this document. Provided that all guidance is followed, fuel suppliers may continue to use the calculated GHG intensity value of a bio-based fuel unless there is a significant change in input data or a new version of GHGenius is adopted by the Director. A significant change is defined as one that is expected to increase GHG intensity by 5% or more. This could result, for example, from a production facility shifting its fuel source from natural gas to coal, or from a production facility that uses a facility average from multiple feedstocks (see B.3.4) shifting its predominant feedstock from yellow grease (waste) to soy (purpose grown). At any time, fuel suppliers may recalculate GHG intensities if a change in production process or other data input into the model results in a lower GHG intensity.

B.3.3 Treatment of Multiple Feedstocks

Treatment of Multiple Feedstocks

Fuel suppliers shall use one of two prescribed approaches when calculating GHG intensities for bio-based fuels produced in facilities with multiple feedstocks:

Feedstock-specific allocation: Separate GHG intensities are allocated on a notional basis to specific volumes of fuel placed in the Ontario market according to the feedstock purchased or used at a facility over a quarterly period. If placing bio-based diesel in other jurisdictions, producers must ensure that each volume of feedstock is only counted once.

Facility average basis: A single GHG intensity value is allocated for all facility output, based on the weighted average of feedstocks used over a quarterly or annual period. If any bio-based diesel is placed in non-Ontario markets on a feedstock-specific basis, the facility average shall be adjusted accordingly.

Fuel suppliers placing bio-based diesel in the Ontario market from facilities with multiple feedstocks shall use one of two approaches for calculating its “y_n” GHG intensity. The feedstock specific allocation approach applies “y_n” GHG intensity values to specific volumes of fuel based on the feedstock(s) used during the period in which those volumes were produced. The facility average basis approach applies a single “y_n” GHG intensity value to facility output, based on a weighted average of feedstocks used during the production period (in this case, typically a quarter, year or compliance period). If bio-based diesel from the facility is also being placed outside of Ontario, producers must be careful to adjust either approach appropriately. Suppliers shall report feedstocks used and product type, i.e. fatty acid methyl ester, Fischer-Tropsch diesel or hydrogenation derived renewable diesel. The choice of accounting approaches is at the discretion of fuel suppliers and bio-based diesel producers.

B.3.4 Facility Data Inputs

Facility Data Inputs

When using GHGenius to calculate compliance, obligated parties shall complete all cells specified in Appendix 2 of this Guide, using primary (directly measured) data unless otherwise specified.

Directly measured data (e.g. “behind the plant gate”) are to be eligible for input, e.g. natural gas used. The transport of feedstock to the plant and from the plant to the blending point shall be entered by the user. This is information that the plant should have as primary data. Emissions from the production of the raw material for the feedstock production are out of the direct control of the biofuel producer and must not be changed.

B.3.5 Treatment of New Pathways

Treatment of New Pathways

GHG intensity values may only be calculated by inputting primary data for feedstocks and pathways that are in the prescribed version of GHGenius. GHG intensity values may not be calculated for pathways that are not included in the prescribed version of GHGenius and these fuels may not be used for compliance with the Regulation.

These Directions limit inputs to data that are directly measured by renewable fuel suppliers (e.g. “behind the plant gate”). Modifications to upstream components in the GHGenius model (e.g. feedstock production) to create “boutique” pathways are not permitted. New feedstock/technology pathways are ineligible for compliance purposes until the Director adopts a version of the model that includes those new feedstocks or technologies.

Appendix 1. Frequently Asked Questions and Answers on Greener Diesel Regulation

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1. How would the Ministry adopt a different version of GHGenius?

Adopting a different version of GHGenius could represent a simple or a more significant change.

Administrative or minor changes such as a correction to unintended software errors are typically denoted by a letter change in the model version, e.g. moving from version 4.03a to 4.03b. This kind of change will be managed through posting an information notice on the Environmental Registry.

More complex model changes include updates based on new technical information such as new fuels, feedstocks or vehicle technology pathways. These types of changes are denoted by a number change in the model version and a proposal to update to a new version of GHGenius would be posted to the Environmental Registry for public and stakeholder consultation prior to a decision on whether to adopt a new version. MOECC recognizes that fuel suppliers need time to adjust their compliance plans.

To provide fuels suppliers with certainty in the purchase of product for the next compliance period, the process for adopting a new version of GHGenius will provide sufficient notice prior to taking effect.

2. What level of written evidence is required?

Sufficient written evidence to enable the accurate determination of compliance is required. Fuel suppliers are encouraged to secure and maintain records that contain sufficient information to enable the accurate determination of compliance with the Greener Diesel regulation in the event of a compliance audit or investigation.

The types of records that must be kept are described in detail in section 8 of the regulation and can include: dated records of meter readings, bills of lading, invoices, sales receipts, records of payment and records of transaction for volumes of bio-based diesel, blended diesel or petroleum diesel that are exported from Ontario. This requirement is similar to Ontario's Ethanol in Gasoline regulation and most of the required records are likely already kept for accounting, tax compliance purposes, or for compliance purposes in other jurisdictions.

3. Should GHGenius results be rounded for use in the compliance equation?

It is best to round to the nearest tenth of a MJ. The regulation reports the diesel fuel GHG intensity to a tenth of a g/MJ.

4. Considering the definition of “blended diesel”, is B99.99 considered biodiesel or blended diesel?

B99.99 is considered biodiesel. The Canadian General Standards Board (CGSB) standard allows biodiesel to contain up to 0.5% petroleum diesel by volume.

5. How is co-mingling of blended diesel in the pipeline accounted for?

A mass balance approach can be used to account for blending renewable diesel at out-of-province facilities and then shipping the final blended product via pipeline to Ontario. Fuel suppliers can calculate volumes of bio-based diesel for compliance purposes provided that they can provide reasonable evidence of the proportion of volume actually “placed in the Ontario market” (i.e., sold/used in Ontario).

6. When is lifecycle greenhouse gas intensity determined?

The lifecycle greenhouse gas (GHG) intensity of bio-based diesel can be determined at any point during the compliance period and up to March 31 of the year following a compliance period, when the compliance report must be submitted. The lifecycle GHG intensity may be applied in compliance calculations once a professional engineer is of the opinion that the primary data used to calculate the GHG intensity are reasonable, and that its calculation is correct.

If a new version of GHGenius has been adopted by the Director, then it must be applied for all new lifecycle GHG intensity calculations for subsequent compliance periods.

7. Considering the term “First Placed in the Ontario Market,” who has the obligation to account for volumes placed in the Ontario market?

Similar to the Ethanol in Gasoline regulation, the Greener Diesel regulation is designed to capture each litre once. This occurs when petroleum or blended diesel is first placed in the Ontario market as stated in subsection 1(2) of the regulation. If a fuel supplier is not the first one placing the fuel in the market, they have no blending obligation for that volume as provided for in subsection 1(4).

8. If fuel is acquired in Ontario under an inter-refinery agreement, who has the obligation?

Under the regulation, petroleum diesel or blended diesel is not distributed if it is transferred from one refiner to another as the result of an inter-refiner agreement. The fuel supplier who acquired petroleum diesel or blended diesel volumes this way and used it or sold it at wholesale or retail in Ontario has the obligation. If a fuel supplier acquired petroleum diesel or blended diesel in Ontario under an inter-refiner agreement and uses it or sells it, they would be first placing it in the Ontario market. The original refiner (who may have manufactured it or imported it) does not have the obligation. The Ministry expects the refiners involved in inter-refiner agreements to be aware of who will have the obligation to comply with the obligations set out in the regulation.

A fuel supplier does not need to have refining facilities located in Ontario in order to be considered a refiner for the purposes of inter-refinery agreements.

9. Are transferred volumes adjusted based on GHG performance?

Volumes for transfer are “compliance volumes” so are already adjusted based on greenhouse gas performance. Compliance volumes are based on the GHG intensity calculated using Director’s Directions and is deemed reasonably calculated and correct by a professional engineer (see 15, below, for further discussion of the calculation).

10. Will Ontario be providing a trading platform for balance sheet transfers?

Balance Sheet Transfers are the responsibility of obligated parties, like the Ethanol in Gasoline regulation.

11. If I add bio-based diesel with diesel fuel that already contains some bio-based diesel (i.e., blended diesel) and used or sold it at wholesale or retail, am I considered a ‘fuel supplier’ under the regulation?

Assuming you are neither a refiner nor a manufacturer of diesel, to be considered a fuel supplier you must either import some diesel or blend some bio based diesel into diesel that does not already have some bio-based diesel in it.

12. If I am a fuel supplier but also blend bio-based diesel into some blended diesel what portion of the blended fuel am I responsible for reporting?

Fuel suppliers that blend bio-based diesel with blended diesel and use it or sell it (wholesale or retail) in Ontario only need to report the additional volume of bio-based diesel that has not been placed into the Ontario market. The regulation is designed to avoid double-counting by capturing each litre once. Average adjusted compliance volumes above the required level can be transferred to obligated parties who require additional compliance volumes for that period.

13. As Northern Ontario is exempt in the first two compliance periods, are there any other requirements?

Fuel suppliers of petroleum diesel distributed to, from or within Northern Ontario are exempt from fulfilling the requirements of the compliance formula, but are still required to comply with the remainder of the regulation (e.g. meeting quality standards, and requirements to submit a report and keep records).

14. In the absence of Director’s Directions, will I be in compliance if I used a feedstock not in the approved version of GHGenius (4.03a) in the first compliance period?

For the first compliance period, there are no Directions in effect and fuel suppliers must comply with the regulation as written. This includes ensuring that a professional

engineer is of the opinion that the primary data used to calculate “y” are reasonable and the calculation of “y” is correct.

15. What are the calculations involved in determining compliance volumes for balance sheet transfers?

The reporting form automatically calculates a fuel supplier’s compliance balance for the period in question. Surplus volumes may be transferred to another fuel supplier (and are reported under the term “C” in the compliance formula). Deficit volumes must be made up with transfers from another fuel supplier (and are reported under the term “B” in the compliance formula).

Appendix 2. List of Required Facility Data Inputs

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A2.1 – Model Set-Up

Item	Work Sheet	Cell(s)	Value to Input
Target year (year of analysis)	Input	B3	Use value corresponding to compliance period
Country/region	Input	B5 to M5	Use an appropriate default button as per region of analysis
GWP selector (Global Warming Potential)	Input	B6	Use value of 2 (i.e. IPPC 2007 values).
HRD feedstock	Input	B50	Select relevant HRD feedstock from drop-down menu if producing hydro-processed renewable diesel (HRD)

A2.2 – Feedstock and Energy Inputs

Item (in base year)	Work Sheet	Cell(s)	Value(s) to Input
Base year	Input	AF234 to AQ234 or BH234 as per feedstock(s) and fuel type	Same as B3.
Net electricity purchased (kWh)	Input	AF236 to AQ236 or BH236 as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)
Diesel (litres)	Input	AF237 to AQ237 or BH237 as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)
Natural gas (litres)	Input	AF238 to AQ238 or BH238 as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)
Coal (kg)	Input	AF238 to AQ238 or BH238 as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)
Wood, grass, crop residue, MSW, RDF (kg)	Input	AF239 to AQ239 or BH239 as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)
Corn/soybeans /canola/wheat rendering, fish oil (kg)	Input	AF240 to AQ240 or BH240 as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)

A2.3 – Transportation Inputs

Feedstocks – Average km shipped

Item	Work Sheet	Cell(s)	Value(s) to Input
By Rail	Transport	B78 to AM78 as per feedstock(s) type	Value(s) based on verifiable source(s) or rail company values
Domestic water	Transport	B79 to AM79 as per feedstock(s) type	Value(s) based on verifiable source(s), e.g. searates.com or sea-distances.org
International water	Transport	B80 to AM80 as per feedstock(s) type	Value(s) based on verifiable source(s), e.g. searates.com or sea-distances.org
Pipeline, tram, conveyor	Transport	B81 to AM81 as per feedstock(s) type	Value(s) based on verifiable source(s)
Truck	Transport	B82 to AM82 as per feedstock(s) type	Value(s) based on verifiable source(s)

Feedstocks – Tonnes-shipped/tonne-produced

Item	Work Sheet	Cell(s)	Value(s) to Input
By Rail	Transport	B84 to AM84 as per feedstock(s) type	Value(s) based on original source measurement(s)
Domestic water	Transport	B85 to AM85 as per feedstock(s) type	Value(s) based on original source measurement(s)
International water	Transport	B86 to AM86 as per feedstock(s) type	Value(s) based on original source measurement(s)
Pipeline, tram, conveyor	Transport	B87 to AM87 as per feedstock(s) type	Value(s) based on original source measurement(s)
Truck	Transport	B88 to AM88 as per feedstock(s) type	Value(s) based on original source measurement(s)

Finished Fuels – Average km shipped

Item	Work Sheet	Cell(s)	Value(s) to Input
By Rail	Transport	B92 to AQ92 as per fuel type	Value(s) based on verifiable source(s) or rail company values
Domestic water	Transport	B93 to AQ93 as per fuel type	Value(s) based on verifiable source(s), e.g. searates.com or sea-distances.org
International water	Transport	B94 to AQ94 as per fuel type	Value(s) based on verifiable source(s), e.g. searates.com or sea-distances.org
Pipeline, tram, conveyor	Transport	B95 to AQ95 as per fuel type	Value(s) based on verifiable source(s)
Truck	Transport	B96 to AQ96 as per fuel type	Value(s) based on verifiable source(s)

Finished Fuels – Tonnes-shipped/tonne-produced

Item	Work Sheet	Cell(s)	Value(s) to Input
By Rail	Transport	B98 to AQ98 as per fuel type	Value(s) based on original source measurement(s)
Domestic water	Transport	B99 to AQ99 as per fuel type	Value(s) based on original source measurement(s)
International water	Transport	B100 to AQ100 as per fuel type	Value(s) based on original source measurement(s)
Pipeline, tram, conveyor	Transport	B101 to AQ101 as per fuel type	Value(s) based on original source measurement(s)
Truck	Transport	B102 to AQ102 as per fuel type	Value(s) based on original source measurement(s)

A2.4 – Chemical Inputs

Item	Work Sheet	Cell(s)	Value(s) to Input
Citric Acid	Alt Fuel Prod	AO32, AQ32, AS32, AU32, AW32, AY32, BA32, BC32, BE32 and/or BG32, or BN32, as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)
Enzymes	Alt Fuel Prod	AO33, AQ33, AS33, AU33, AW33, AY33, BA33, BC33, BE33 and/or BG33, or BN33, as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)
Ethanol	Alt Fuel Prod	AO34, AQ34, AS34, AU34, AW34, AY34, BA34, BC34, BE34 and/or BG34, or BN34, as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)
Hydrochloric acid	Alt Fuel Prod	AO35, AQ35, AS35, AU35, AW35, AY35, BA35, BC35, BE35 and/or BG35, or BN35, as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)
Hydrogen	Alt Fuel Prod	AO36, AQ36, AS36, AU36, AW36, AY36, BA36, BC36, BE36 and/or BG36, or BN36, as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)

Item	Work Sheet	Cell(s)	Value(s) to Input
Magnesium silicate (kg)	Alt Fuel Prod	AO38, AQ38, AS38, AU38, AW38, AY38, BA38, BC38, BE38 and/or BG38, or BN38, as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)
Methanol (L)	Alt Fuel Prod	AO39, AQ39, AS39, AU39, AW39, AY39, BA39, BC39, BE39 and/or BG39, or BN39, as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)
Sodium Hydroxide	Alt Fuel Prod	AO40, AQ40, AS40, AU40, AW40, AY40, BA40, BC40, BE40 and/or BG40, or BN40, as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)
Nitric acid (kg)	Alt Fuel Prod	AO41, AQ41, AS41, AU41, AW41, AY41, BA41, BC41, BE41 and/or BG41, or BN41, as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)
Nitrogen (N) (kg)	Alt Fuel Prod	AO42, AQ42, AS42, AU42, AW42, AY42, BA42, BC42, BE42 and/or BG42, or BN42, as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)
Petroleum (L)	Alt Fuel Prod	AO43, AQ43, AS43, AU43, AW43, AY43, BA43, BC43, BE43 and/or BG43, or BN43, as per	Value(s) based on original source measurement(s)

Item	Work Sheet	Cell(s)	Value(s) to Input
		feedstock(s) and fuel type	
Phosphate nutrients (P₂O₅) (kg)	Alt Fuel Prod	AO44, AQ44, AS44, AU44, AW44, AY44, BA44, BC44, BE44 and/or BG44, or BN44, as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)
Phosphoric acid (kg)	Alt Fuel Prod	AO45, AQ45, AS45, AU45, AW45, AY45, BA45, BC45, BE45 and/or BG45, or BN45, as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)
Potassium hydroxide (kg)	Alt Fuel Prod	AO46, AQ46, AS46, AU46, AW46, AY46, BA46, BC46, BE46 and/or BG46, or BN46, as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)
Sodium methylate (kg)	Alt Fuel Prod	AO48, AQ48, AS48, AU48, AW48, AY48, BA48, BC48, BE48 and/or BG48, or BN48, as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)
Sulphuric acid (kg)	Alt Fuel Prod	AO50, AQ50, AS50, AU50, AW50, AY50, BA50, BC50, BE50 and/or BG50, or BN50, as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)

A2.5 – Co-Products and Integrated Plants

Item	Work Sheet	Cell(s)	Value to Input if primary data
Glycerine (feed) (kg)	Coprods	Y99	Value based on original source measurement
Glycerine (fuel) (kg)	Coprods	Y99	Value based on original source measurement
Glycerine (crude) (kg)	Coprods	Y99	Value based on original source measurement
Glycerine (refined) (kg)	Coprods	Y99	Value based on original source measurement
Propylene glycol (kg)	Coprods	Y109	Value based on original source measurement
Other gaseous (displacing fossil origin) (L)	Coprods	AO106	Value based on original source measurement
Other liquid (displacing fossil origin) (L)	Coprods	AO108	Value based on original source measurement

The following inputs in Appendix 2.5 are to be used only if primary data is available (i.e. if you are an integrated bio-based diesel plant)

Item	Work Sheet	Cell(s)	Value to Input if primary data
Kilograms of algae meal produced per litre of algae oil produced and used as feed	Input	B256	Value based on original source measurement
Kilograms of bone meal produced per litre of tallow from animal fats produced	Input	B257	Value based on original source measurement
Kilograms of fish meal produced per litre of fish oil produced	Input	B258	Value based on original source measurement
Kilograms of palm meal produced per litre of palm oil produced	Input	B259	Value based on original source measurement
Kilograms per litre of meal burned for power	Coprods	V76	Value based on original source measurement
Fraction electricity displaced (by burning meal for power)	Coprods	V77	Value based on original source measurement
Fraction liquid fuel displaced (by burning meal for power)	Coprods	V78	Value based on original source measurement

