

# Greener Gasoline and Greener Diesel Director's Directions

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DRAFT FOR DISCUSSION – DECEMBER 2019

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# 1. Introduction

Subsection 3.1(2) of O. Reg. 535/05 Greener Gasoline – Bio-based Content Requirements for Gasoline (“Greener Gasoline”) and Subsection 5(4) of O. Reg. 97/14 Greener Diesel – Renewable Fuel Content Requirements for Petroleum Diesel Fuel (“Greener Diesel” and collectively “the Regulations”) provide for the Director to issue written directions (“Director Directions”). These are legally-binding directions prescribing the manner in which primary and secondary data are to be input into GHGenius 4.03a (“GHGenius”) for the purpose of quantifying the greenhouse gas intensity of bio-based content. Pursuant to subsections 3.1(1) and 5(3), fuel suppliers are required to comply with these directions when inputting data into the GHGenius model.

These Director’s Directions take effect on January 1, 2020 and at that time will replace the 2016 Director’s Directions for Greener Diesel and all previous Director Directions.

This document includes six sections:

1. Model set up and common primary data inputs that can be entered/changed in GHGenius 4.03a for both Greener Gasoline and Greener Diesel
2. Primary data inputs that can be entered/changed in GHGenius 4.03a for bio-based content in gasoline
3. Primary data inputs that can be entered/changed in GHGenius 4.03a for bio-based diesel
4. GHG Intensity Expiry and Recalculation
5. Treatment of Multiple Feedstocks
6. Determining GHG Intensity of bio-based content that is not in GHGenius 4.03a

## 2. Primary data inputs that can be entered/changed in GHGenius 4.03a: Greener Gasoline and Greener Diesel

When using GHGenius to calculate carbon intensity, a person shall complete all cells specified in the following table using reproduceable and measurable data, where applicable.

### 2.1 Model Set-Up

Item	Work Sheet	Cell(s)	Value to Input
<b>Target year (year of analysis)</b>	Input	B3	Use value corresponding to compliance period
<b>Country/region</b>	Input	B5 to K5	Use an appropriate default button as per region of analysis
<b>GWP selector (Global Warming Potential)</b>	Input	B6	Use value of 2 (i.e. IPCC 2007 values).

### 2.2 Transportation Inputs

Feedstocks – Average km shipped

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

## 2.3 Feedstocks – Tonnes-shipped/tonne-produced

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

## 2.4 Finished Fuels – Average km shipped

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

## 2.5 Finished Fuels – Tonnes-shipped/tonne-produced

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

### 3. Primary data inputs that can be entered/changed in GHGenius 4.03a for bio-based content in gasoline

When using GHGenius to calculate carbon intensity, a person shall complete all cells specified in the following table using reproduceable and measurable data, where applicable.

#### 3.1 Feedstock and Energy Inputs

Item (in base year)	Work Sheet	Cell(s)	Value(s) to Input
<b>Base year</b>	Input	F234, J234, K234, L234, R234 to AE234 or as per feedstock(s) and fuel type	Same as B3.
<b>Net electricity purchased (kWh)</b>	Input	B246 to M246 or AB236, BF236 as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)
<b>Diesel (litres)</b>	Input	R237 to AE237 or AS237, AT237, as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)
<b>Natural gas (litres)</b>	Input	B238 to M238 or S248, as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)
<b>Coal (kg)</b>	Input	B249 to M249 or B247, M247, as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)
<b>Wood, grass, crop residue, MSW, RDF (kg)</b>	Input	R239 to AE239 or AS239, AT239, as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)
<b>Corn/soybeans/canola/wheat rendering, fish oil (kg)</b>	Input	R240 to AE240 or AS240, AT240, as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)

### 3.2 Chemical Inputs

Item	Work Sheet	Cell(s)	Value(s) to Input
<b>Acetic Acid</b>	Alt Fuel Prod	F29, G29, H30, Y29 to AM29, as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)
<b>Ammonia (NH<sub>3</sub>) (kg)</b>	Alt Fuel Prod	F30, G30, H30, Y30 to AM30, as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)
<b>Ammonium Sulphate</b>	Alt Fuel Prod	F31, G31, H31, Y31 to AM31, as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)
<b>Citric Acid</b>	Alt Fuel Prod	F32, G32, H32, Y32 to AM32, as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)
<b>Enzymes</b>	Alt Fuel Prod	F33, G33, H33, Y33 to AM33, as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)
<b>Ethanol</b>	Alt Fuel Prod	F34, G34, H34, Y34 to AM34, as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)
<b>Hydrochloric acid</b>	Alt Fuel Prod	F35, G35, H35, Y35 to AM35, as per feedstock(s) and fuel	Value(s) based on original source measurement(s)
<b>Hydrogen</b>	Alt Fuel Prod	F36, G36, H36, Y36 to AM36, as per feedstock(s) and fuel	Value(s) based on original source measurement(s)
<b>Lime</b>	Alt Fuel Prod	F37, G37, H37, Y37 to AM37, as per feedstock(s) and fuel	Value(s) based on original source measurement(s)
<b>Magnesium silicate (kg)</b>	Alt Fuel Prod	F38, G38, H38, Y38 to AM38, as per feedstock(s) and fuelAO38, AQ38, AS38, AU38, AW38, AY38, BA38, BC38, BE38 and/or BG38,	Value(s) based on original source measurement(s)



<b>Item</b>	<b>Work Sheet</b>	<b>Cell(s)</b>	<b>Value(s) to Input</b>
		or BN38, as per feedstock(s) and fuel type	
<b>Methanol (L)</b>	Alt Fuel Prod	F39, G39, H39, Y39 to AM39, as per feedstock(s) and fuel	Value(s) based on original source measurement(s)
<b>Sodium Hydroxide</b>	Alt Fuel Prod	F40, G40, H40, Y40 to AM40, as per feedstock(s) and fuel	Value(s) based on original source measurement(s)
<b>Nitric acid (kg)</b>	Alt Fuel Prod	F41, G41, H41, Y41 to AM41, as per feedstock(s) and fuel	Value(s) based on original source measurement(s)
<b>Nitrogen (N) (kg)</b>	Alt Fuel Prod	F42, G42, H42, Y42 to AM42, as per feedstock(s) and fuel	Value(s) based on original source measurement(s)
<b>Petroleum (L)</b>	Alt Fuel Prod	F43, G43, H43, Y43 to AM43, as per feedstock(s) and fuel	Value(s) based on original source measurement(s)
<b>Phosphate nutrients (P<sub>2</sub>O<sub>5</sub>) (kg)</b>	Alt Fuel Prod	F44, G44, H44, Y44 to AM44, as per feedstock(s) and fuel	Value(s) based on original source measurement(s)
<b>Phosphoric acid (kg)</b>	Alt Fuel Prod	F45, G45, H45, Y45 to AM45, as per feedstock(s) and fuel	Value(s) based on original source measurement(s)
<b>Potassium hydroxide (kg)</b>	Alt Fuel Prod	F46, G46, H46, Y46 to AM46, as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)
<b>Seeds (kg)</b>	Alt Fuel Prod	F47, G47, H47, Y47 to AM47, as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)
<b>Sodium methyate (kg)</b>	Alt Fuel Prod	F48, G48, H48, Y48 to AM48, as per feedstock(s) and fuel	Value(s) based on original source measurement(s)

Item	Work Sheet	Cell(s)	Value(s) to Input
<b>Sugar (kg)</b>	Alt Fuel Prod	F49, G49, H49, Y49 to AM49, as per feedstock(s) and fuel	Value(s) based on original source measurement(s)
<b>Sulphuric acid (kg)</b>	Alt Fuel Prod	F50, G50, H50, Y50 to AM50, as per feedstock(s) and fuel	Value(s) based on original source measurement(s)
<b>Yeast (kg)</b>	Alt Fuel Prod	F51, G51, H51, Y51 to AM51, as per feedstock(s) and fuel	Value(s) based on original source measurement(s)

### 3.3 Co-Products and Integrated Plants

Item	Work Sheet	Cell(s)	Value to Input if primary data
<b>Fraction liquid fuel displaced (by burning meal for power)</b>	Coprods	V76, V77, V78	Value based on original source measurement
<b>Emissions displaced by co-products of corn and wheat-to-ethanol production</b>	Coprods	A10-F10; A12-F12; A13-F13; A15-F15; A16-F16; A21-F21	Value based on original source measurement
<b>Emissions displaced by carbon dioxide capture at ethanol plants instead of power plants</b>	Coprods	A26-A27	Value based on original source measurement
<b>Emission displaced by net electricity production</b>	Coprods	G90:U90; G92-U92; G93-U93	Value based on original source measurement
<b>Carbon Dioxide Capture with Ethanol Plant (0 for No, 1 for Yes)</b>	Input	B254	Value based on original source measurement

## 4. Primary data inputs that can be entered/changed in GHGenius 4.03a for bio-based diesel

When using GHGenius to calculate carbon intensity, a person shall complete all cells specified in the following table using reproduceable and measurable data, where applicable.

### 4.1 Feedstock and Energy Inputs

Item (in base year)	Work Sheet	Cell(s)	Value(s) to Input
<b>Base year</b>	Input	AF234 to AQ234 or BH234, D234, E234, J234, K234 and L234 as per feedstock(s) and fuel type	Same as B3.
<b>Net electricity purchased (kWh)</b>	Input	AF236 to AQ236 or BH236 as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)
<b>Diesel (litres)</b>	Input	AF237 to AQ237 or BH237 as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)
<b>Natural gas (litres)</b>	Input	AF238 to AQ238 or BH238 as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)
<b>Coal (kg)</b>	Input	AF239 to AQ239 or BH239 as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)
<b>Wood, grass, crop residue, MSW, RDF (kg)</b>	Input	AF240 to AQ240 or BH240 as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)
<b>Corn/soybeans/canola/wheat rendering, fish oil (kg)</b>	Input	AF241 to AQ241 or BH241 as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)

## 4.2 Chemical Inputs

Item	Work Sheet	Cell(s)	Value(s) to Input
<b>Acetic Acid (kg)</b>	Alt Fuel Prod	AO29, AQ29, AS29, AU29, AW29, AY29, BA29, BC29, BE29 and/or BG29, or BN29, as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)
<b>Ammonia (NH<sub>3</sub>) (kg)</b>	Alt Fuel Prod	AO30, AQ30, AS30, AU30, AW30, AY30, BA30, BC30, BE30 and/or BG30, or BN30, as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)
<b>Ammonium Sulphate (kg)</b>	Alt Fuel Prod	AO31, AQ31, AS31, AU31, AW31, AY31, BA31, BC31, BE31 and/or BG31, or BN31, as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)
<b>Citric Acid</b>	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)
<b>Enzymes</b>	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)
<b>Ethanol</b>	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)

<b>Item</b>	<b>Work Sheet</b>	<b>Cell(s)</b>	<b>Value(s) to Input</b>
<b>Hydrochloric acid</b>	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)
<b>Hydrogen</b>	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)
<b>Lime (kg)</b>	Alt Fuel Prod	AO37, AQ37, AS37, AU37, AW37, AY37, BA37, BC37, BE37 and/or BG37, or BN37, as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)
<b>Magnesium silicate (kg)</b>	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)
<b>Methanol (L)</b>	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)
<b>Sodium Hydroxide</b>	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)
<b>Nitric acid (kg)</b>	Alt Fuel Prod	AO41, AQ41, AS41, AU41, AW41, AY41, BA41, BC41, BE41	Value(s) based on original source measurement(s)

<b>Item</b>	<b>Work Sheet</b>	<b>Cell(s)</b>	<b>Value(s) to Input</b>
		and/or BG41, or BN41, as per feedstock(s) and fuel type	
<b>Nitrogen (N) (kg)</b>	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)
<b>Petroleum (L)</b>	Alt Fuel Prod	AO43, AQ43, AS43, AU43, AW43, AY43, BA43, BC43, BE43 and/or BG43, or BN43, as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)
<b>Phosphate nutrients (P<sub>2</sub>O<sub>5</sub>) (kg)</b>	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)
<b>Phosphoric acid (kg)</b>	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)
<b>Potassium hydroxide (kg)</b>	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)
<b>Seeds (kg)</b>	Alt Fuel Prod	AO47, AQ47, AS47, AU47, AW47, AY47, BA47, BC47, BE47 and/or BG47, or BN47, as per	Value(s) based on original source measurement(s)

Item	Work Sheet	Cell(s)	Value(s) to Input
		feedstock(s) and fuel type	
<b>Sodium methylate (kg)</b>	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)
<b>Sugar (kg)</b>	Alt Fuel Prod	AO49, AQ49, AS49, AU49, AW49, AY49, BA49, BC49, BE49 and/or BG49, or BN49, as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)
<b>Sulphuric acid (kg)</b>	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)
<b>Yeast (kg)</b>	Alt Fuel Prod	AO51, AQ51, AS51, AU51, AW51, AY51, BA51, BC51, BE51 and/or BG51, or BN51, as per feedstock(s) and fuel type	Value(s) based on original source measurement(s)

### 4.3 Co-Products and Integrated Plants

Item	Work Sheet	Cell(s)	Value to Input if primary data
<b>Glycerine (feed) (kg)</b>	Coprods	Y99	Value based on original source measurement
<b>Glycerine (fuel) (kg)</b>	Coprods	Y100	Value based on original source measurement

<b>Item</b>	<b>Work Sheet</b>	<b>Cell(s)</b>	<b>Value to Input if primary data</b>
<b>Glycerine (crude) (kg)</b>	Coprods	Y101	Value based on original source measurement
<b>Glycerine (refined) (kg)</b>	Coprods	Y102	Value based on original source measurement
<b>Propylene glycol (kg)</b>	Coprods	Y109	Value based on original source measurement
<b>Other gaseous (displacing fossil origin) (L)</b>	Coprods	AO106	Value based on original source measurement
<b>Other liquid (displacing fossil origin) (L)</b>	Coprods	AO108	Value based on original source measurement
<b>Emissions displaced by co-products of biodiesel production</b>	Coprods	A33:A35	Value based on original source measurement

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

<b>Item</b>	<b>Work Sheet</b>	<b>Cell(s)</b>	<b>Value to Input if primary data</b>
<b>Kilograms of algae meal produced per litre of algae oil produced and used as feed</b>	Input	B256	Value based on original source measurement
<b>Kilograms of bone meal produced per litre of tallow from animal fats produced</b>	Input	B257	Value based on original source measurement
<b>Kilograms of fish meal produced per litre of fish oil produced</b>	Input	B258	Value based on original source measurement



<b>Item</b>	<b>Work Sheet</b>	<b>Cell(s)</b>	<b>Value to Input if primary data</b>
<b>Kilograms of palm meal produced per litre of palm oil produced</b>	Input	B259	Value based on original source measurement
<b>Kilograms per litre of meal burned for power</b>	Coprods	V76	Value based on original source measurement
<b>Fraction electricity displaced (by burning meal for power)</b>	Coprods	V77	Value based on original source measurement
<b>Fraction liquid fuel displaced (by burning meal for power)</b>	Coprods	V78	Value based on original source measurement

## 5. GHG Intensity Expiry and Recalculation

Where the Regulations require that a fuel supplier calculate the GHG intensity of particular bio-based content, calculations made using data input into GHGenius 4.03a in accordance with the most recent the Director Directions, prior to the current Director Directions shall be considered valid unless:

- There is a significant change in the production process or other data input into the model (e.g. feedstock, travel distances) that can reasonably be expected to change the GHG intensity of the bio-based content by 5% or more; or
- A different means of calculating GHG intensity of the bio-based content is required by the current Director Directions.

If either of the two conditions identified in the preceding paragraph exist, then a recalculation of GHG intensity is required.

## 6. Treatment of Multiple Feedstocks

Fuel suppliers shall use one of the following methods to calculate the weighted average GHG intensity for bio-based content produced in facilities with multiple feedstocks:

### 6.1 Method 1: Feedstock-specific allocation:

Separate GHG intensities shall be allocated on a quarterly basis to specific volumes of bio-based content produced by the facility according to the feedstock purchased or used at a facility over the quarterly period.

### 6.2 Method 2: Facility average basis:

A single GHG intensity value shall be allocated for all bio-based content produced by the facility, based on the weighted average of feedstocks used over a quarterly or annual period.

For greater certainty, when applying either of these methods, the fuel supplier shall ensure, as required by the Regulations, that only bio-based content that is first placed in the Ontario market is counted for the purpose of the Regulations and that bio-based content that is produced at the facility and not first placed in the Ontario market (e.g. is placed in the market of another province) is not counted for the purposes of the Regulations.

Fuel suppliers shall report feedstocks used and product type, e.g. fatty acid methyl ester, Fischer-Tropsch, hydrogenation derived renewable diesel, ethanol or renewable gasoline. The choice of accounting approaches is at the discretion of fuel suppliers and bio-based fuel producers.

## 7. Determining GHG Intensity of Bio-based content that is not in GHGenius 4.03a

Section 3.1(3) of the Greener Gasoline Regulation and Section 5(5) of the Greener Diesel Regulation allow for fuel suppliers to request that the Director provide a methodology to calculate the GHG intensity of bio-based content not listed in GHGenius 4.03a. Requests made pursuant to that section should include the following minimum information where applicable:

- An explanation of the fuel production technology and how the technology differs from the existing technology in GHGenius 4.03a;
- An explanation of the new feedstock including a description of the inputs used to calculate the GHG intensity of the feedstock

- A description of all modifications made to an existing facility or a description of how a new facility process is different than a facility process that is already included in GHGenius 4.03a.
- A comprehensive description of the life cycle analysis applied to determine GHG intensity, including all background data and emissions factors and, where applicable an explanation of the GHG Lifecycle model and version that should be used to calculate the GHG intensity of the bio-based fuel:
  - Where an existing GHGenius 4.03a pathway should be modified:
    - a list of cells that were modified
    - an explanation about why a modified pathway has more precision and more accurately reflects emissions than an existing one
    - a summary of reasons for selecting the cells and values that were chosen
    - a process flow diagram detailing the modified pathway
    - conversion factors and calculations used and supporting materials
  - If a new pathway that is not in GHGenius 4.03a should be created
    - a list of cells that were chosen
    - a summary of reasons for selecting the cells and values that were chosen
    - a process flow diagram
    - conversion factors and calculations used and supporting materials

In determining whether or not to provide a methodology where a fuel supplier has made a request pursuant to s.3.1(3) or Section 5(5), the Director will consider the following criteria:

- Reproducibility of results using a GHG Lifecycle model
- Science and technology used in the selection of cells used
- Market value and energy content of feedstocks and by-products
- Treatment of feedstocks, processes and the biofuel in other jurisdictions

Requests that the Director provide a methodology to calculate the GHG intensity of bio-based content not listed in GHGenius 4.03a should be sent to: [fuels-report@ontario.ca](mailto:fuels-report@ontario.ca)

Alternatively, the request can be mailed to:

Assistant Director, West Central Region  
 Ministry of the Environment, Conservation and Parks  
 Ellen Fairclough Building  
 119 King Street West, 12th Floor  
 Hamilton ON L8P4Y7

Re: Greener Gasoline & Greener Diesel methodology request