

RENEWABLE FUELS REGULATIONS REPORT

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NOTICE

The information contained in this report is compiled from data received by Environment and Climate Change Canada as of September 19, 2017, submitted by the regulated parties pursuant to the requirements of the Renewable Fuels Regulations under the *Canadian Environmental Protection Act, 1999*. Information submitted to Environment and Climate Change Canada has not been validated in its entirety, may be subject to reporting errors and is subject to ongoing verifications.

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LIST OF TERMS

Batch

An identifiable quantity of liquid fuel, with a single set of physical and chemical characteristics.

Biodiesel

In this report, biodiesel refers specifically to mono-alkyl esters (i.e. fatty acid methyl or ethyl esters) produced from vegetable oils or rendered animal fat, and that is suitable for use in a diesel engine.

Biomass-Based Diesel Fuel

Means a fuel that is composed of, or derived from the oils of plants or animals as well as the fats of plants or animals, and that is intended for use in diesel engines. This includes biodiesel, hydrogenation derived renewable diesel (HDRD), and hydrotreated vegetable oil (HVO).

Diesel Fuel

Means a liquid petroleum fuel that is sold or represented as diesel fuel or as a fuel suitable for use in a diesel engine, or is subject to evaporation at atmospheric pressure, boils within the range of 130°C to 400°C and is suitable for use in a diesel engine. For regulatory purposes, diesel fuel is grouped with heating distillate oil, and is collectively referred to as "distillate."

Distillate Pool

A primary supplier's distillate pool is the total volume of the batches of diesel fuel and heating distillate oil that they import and produce at a production facility during a distillate compliance period. It includes fuel both dispatched from the production facility and dispensed into the fuel tank of a vehicle or other mobile equipment within the production facility.

Eastern Canada

A term used throughout the report representing Ontario, Quebec, Nova Scotia, New Brunswick, Prince Edward Island, and Newfoundland and Labrador.

Elective Participant

Anyone, other than a primary supplier, who does one or more of the following in Canada: blends renewable fuel with liquid petroleum fuel, produces a liquid petroleum fuel other than gasoline, diesel fuel and heating distillate oil by using biocrude as a feedstock; imports a liquid petroleum fuel other than gasoline, diesel fuel and heating distillate oil that has renewable fuel content; sells neat renewable fuel to a neat renewable fuel consumer for use as a fuel in a combustion device; and uses neat renewable fuel that they produced or imported as a fuel in a combustion device. An elective participant becomes a part of the trading system when they register, by sending to the Minister the report that contains the information set out in Schedule 2, at least

one day before they first create a compliance unit.

Feedstock

For the purposes of this report, a feedstock can be considered to mean a type of renewable raw material that is converted to a renewable fuel or energy product. This includes, but is not limited to: grains, cellulosic material, starch, oilseeds, sugar cane, sugar beets, potatoes, tobacco, vegetable oils, algae, vegetable materials, plant matter, animal material, animal fats, oils, and greases, animal solid waste, and municipal solid waste.

Gasoline Pool

A primary supplier's gasoline pool is the total volume of the batches of gasoline that they import and produce at a production facility during the gasoline compliance period. It includes gasoline that is dispatched from the production facility and dispensed into the fuel tank of a vehicle or other mobile equipment within the production facility.

Heating Distillate Oil

Means a liquid petroleum fuel that is sold or represented as fuel suitable for use in a domestic-type oil burner, or suitable for use in a domestic-type oil burner. For regulatory purposes, heating distillate oil is grouped with diesel fuel, and is collectively referred to as "distillate."

High-Renewable-Content Fuel

A liquid petroleum fuel whose renewable content is either: greater than 10% and less than or equal to 85% of the volume if it is gasoline, greater than 5% and less than or equal to 80% of the volume if it is diesel fuel, and greater than 25% and less than or equal to 80% of the volume in any other case.

Hydrogenation Derived Renewable Diesel (HDRD)/Hydrotreated Vegetable Oil (HVO)

A renewable diesel fuel that is produced from hydrodeoxygenated vegetable oils or rendered animal fat. For the purposes of the Renewable Fuels Regulations, this fuel is considered to be chemically indistinguishable from liquid petroleum fuel.

Neat Renewable Fuel

Means biodiesel or another renewable fuel produced at a facility that uses only renewable fuel feedstock for the production of fuel, suitable for use in a combustion device, and is chemically indistinguishable from gasoline, diesel, heating distillate oil or any other suitable liquid petroleum fuel.

Primary Supplier

A primary supplier is a person who produces or imports gasoline, diesel fuel, or heating distillate oil. In respect of gasoline, diesel fuel, or heating distillate oil that is produced at a production facility, it is a person who owns, leases, operates, controls, supervises, or manages the production facility. In respect of gasoline, diesel fuel, or

heating distillate oil that is imported, it is the importer.

Producers or Importers of Renewable Fuel

A person who produces in or imports renewable fuel into Canada is a regulated party. Those who produce or import, or who produce without any importation or import without any production, or who produce and import a combined 400 m³ of renewable fuel during any period of 12 consecutive months in a compliance period are subject to section 34 of the Renewable Fuels Regulations.

Seller of Fuel for Export

A person other than a participant, or a producer or importer of renewable fuel, who, during any year sells for export a batch of renewable fuel, or of liquid petroleum fuel that has renewable fuel content.

Western Canada

A term used throughout the report representing British Columbia, Alberta, Saskatchewan, Manitoba, the Yukon, the Northwest Territories, and Nunavut.

For more definitions to terms that may appear in this report, please refer to the *Renewable Fuels Regulations*.

1.0 SUMMARY

The objective of the *Renewable Fuels Regulations* ("Regulations") is to reduce greenhouse gas (GHG) emissions by mandating renewable fuel content in gasoline, diesel fuel, and heating distillate oil produced in and imported into Canada, thereby contributing to the protection of Canadians and the environment from the impacts of climate change. As such, the Regulations require fuel producers and importers to have an average renewable content of at least 5% based on the volume of gasoline that they produce and import, as well as 2% based on the volume of diesel fuel and heating distillate oil that they produce and import.

The information contained in this report is compiled from the data received by Environment and Climate Change Canada, as of September 19, 2017, for the 2013 and 2014 compliance periods pursuant to the requirements of the Regulations. For gasoline, the 2013 compliance period covered January 1, 2013 to December 31, 2013, and the 2014 compliance period covered January 1, 2014 to December 31, 2014. Due to different coming into force dates of the Regulations, the distillate period incorporated January 1, 2013 to December 31, 2014. Subsequent compliance periods will follow the calendar year for both gasoline and distillate. The following are some key findings that will be discussed in this report.

Based on values reported under Schedule 4¹ of the Regulations, key findings for the 2013 gasoline compliance period include:

- A total of 32.3 billion litres of gasoline were produced in Canada, and 7.74 billion litres were imported into Canada;
- The gasoline pool volume was 38.7 billion litres;
- A total of 1.72 billion litres of ethanol were produced in Canada, and 1.15 billion litres of ethanol were imported into Canada; and
- Approximately 2.84 billion gasoline compliance units, representing litres of renewable fuel in gasoline, were created during the 2013 compliance period.

Based on values reported under Schedule 4² of the Regulations, key findings for the 2014 gasoline compliance period include:

- A total of 32.6 billion litres of gasoline were produced in Canada, and 8.23 billion litres of gasoline were imported into Canada;
- The gasoline pool volume was 39.1 billion litres;

¹ It is suspected that some primary suppliers misreported fuel volumes under Schedule 4: *Information Required from a Primary Supplier*, with respect to their excluded volumes, in certain situations.

² It is suspected that some primary suppliers misreported fuel volumes under Schedule 4, with respect to their excluded volumes, in certain situations.

- A total of 1.76 billion litres of ethanol were produced in Canada, and 1.30 billion litres of ethanol were imported into Canada; and
- Approximately 2.96 billion gasoline compliance units, representing litres of renewable fuel in gasoline, were created during the 2014 compliance period.

Based on values reported under Schedule 4³ of the Regulations, key findings for the 2013-2014 distillate compliance period include:

- A total of 59.0 billion litres of distillate were produced in Canada, and 5.58 billion litres of distillate were imported into Canada;
- The distillate pool volume was 55.7 billion litres;
- A total of 510 million litres of biomass-based diesel were produced in Canada, and 1.22 billion litres were imported into Canada; and
- Approximately 1.19 billion distillate compliance units, representing litres of renewable fuel in diesel fuel and heating distillate oil, were created during the compliance period.

Key findings related to compliance with the Regulations include:

- The average renewable fuel content, as a percentage of the gasoline pool, was approximately 7% for 2013, and 8% for 2014⁴;
- The average renewable fuel content, as a percentage of the distillate pool, during the 2013-2014 compliance period was approximately 2%;
- For the 2013 and 2014 compliance periods, all primary suppliers reported that they achieved the minimum of 5% renewable fuel content in their gasoline pool;
- For the 2013 to 2014 compliance period, two primary suppliers reported instances of alleged non-compliance with the minimum of 2% renewable fuel content in their distillate pool;
 - One primary supplier has been convicted under these regulations for not achieving its renewable fuel content obligations with respect to its distillate pool; and
- It is suspected that some reports submitted by regulated parties contain errors or deviations from the regulatory requirements. Compliance verification is ongoing, and the results reported here are subject

³ It is suspected that some primary suppliers misreported fuel volumes under Schedule 4 with respect to their excluded volumes, in certain situations.

⁴ The average renewable fuel contents in the national gasoline and distillate pools are calculated from the volume of compliance units created during the compliance period and the volume of gasoline and distillate pools reported in Schedule 4 of the Regulations. These values do not represent the renewable fuel volume reported by a primary supplier in Schedule 4.

to change. Suspected violations have been referred to Environment and Climate Change Canada's Enforcement Branch.

Key findings related to the overall environmental performance of the Regulations include:

- Lifecycle greenhouse gas emission reductions⁵ of 8.6 megatonnes of CO₂ equivalent (MtCO₂e) were estimated to have been achieved based on reported fuel volumes and feedstock data;
- A reduction of 4.0 MtCO₂e was estimated for the 2013 compliance period; and
- A reduction of 4.6 MtCO₂e was estimated for the 2014 compliance period.

⁵ The estimated greenhouse gas emission reductions are based on the volumes of renewable fuels that created compliance units, as reported in Schedule 5 of the Regulations. The emission factors were obtained from GHGenius (version 4.03).

2.0 UPDATES TO THE RENEWABLE FUELS REGULATIONS

The Regulations were amended by the Government of Canada in 2013. These amendments included a permanent, national provision to allow primary suppliers to exclude diesel fuel or heating distillate oil sold for or delivered for space heating purposes from the 2% renewable fuel content requirement. A six-month extension to the provision excluding diesel fuel and heating distillate oil sold for or delivered for use in Nova Scotia, New Brunswick, and Prince Edward Island was also introduced. As of January 1, 2013, the exemption from the 2% renewable content requirement for those parts of Quebec on or south of latitude 60°N expired, and the exemption for the Maritime Provinces ended on June 30, 2013.

3.0 PERFORMANCE OF THE REGULATIONS

This section provides a brief overview of the methodology used to estimate the greenhouse gas (GHG) emission reductions resulting from the implementation of the Regulations. These values were determined using the renewable fuel volumes, reported in Schedule 5: *Information Required from a Participant of the Regulations*, as well as emission factors obtained from GHGenius (version 4.03).

3.1 GREENHOUSE GAS EMISSION REDUCTIONS

It is estimated that lifecycle GHG emission reductions of approximately 8.6 MtCO₂e were achieved in the 2013 to 2014 compliance periods because of the renewable fuel volumes used to create compliance units. There were approximately 4.0 MtCO₂e of reductions during 2013, and 4.6 MtCO₂e of reductions during 2014. The estimated reductions were calculated using the volumes of renewable fuels blended, the renewable fuel content in imported fuel less the renewable fuel content in exported fuel, and the volume of neat renewable fuel used or sold, as reported in Schedule 5 of the Regulations. The emission factors were obtained from GHGenius (version 4.03). The estimates carry limitations and uncertainties associated with lifecycle assessment modelling. The GHG emission factors used are presented in Table 3.1. The units are in kilograms of carbon dioxide equivalent (CO₂e) reduced (negative number) per litre of renewable fuel used (kgCO₂e/L), relative to the baseline gasoline or diesel. This unit accounts for the difference in energy densities between fuels, allowing for easy determination of total emission reductions, based on the amount of renewable fuel used.

Table 3.1: GHG Emission Reduction Factors

Feedstock	GHG Emission Reduction Factors (kgCO₂e/L)
Corn-based ethanol	-1.070
Wheat-based ethanol	-1.570
Canola biodiesel	-3.065
Soy biodiesel	-2.597
Tallow biodiesel	-3.927
Corn oil biodiesel	-2.491
Biodiesel from waste grease	-3.065
HDRD and HVO from palm	0.0002
HDRD and HVO from tallow	-3.703

The GHG emission reduction estimates were based on the type of feedstocks used to produce the renewable fuels that ultimately created compliance units, as reported in Schedule 5 of the Regulations. When a feedstock type was not reported, it was estimated, and when multiple feedstocks were reported, the volume of fuel produced by each feedstock was estimated.

4.0 DATA FROM ANNUAL REPORTING

This section summarizes the data submitted to Environment and Climate Change Canada regarding the 2013 and 2014 compliance periods. The distillate compliance period incorporated 2013 and 2014 due to different coming into force dates of the Regulations. The information presented in this section is based on data that was submitted under Schedule 4, *Information Required from a Primary Supplier*; Schedule 5, *Information Required from a Participant*; and Schedule 7, *Information Required from a Producer or Importer of Renewable Fuel*. The data was submitted to Environment and Climate Change Canada using the Renewable Fuels Regulations Electronic Reporting System, which is a mandatory online reporting system, and reflects any subsequent corrections or revisions received as of September 19, 2017. Any information submitted after this date was not considered for this report.

In total, 26 primary suppliers, 10 elective participants, and 48 renewable fuel producers and importers submitted annual reports to Environment and Climate Change Canada for these compliance periods. A list of registered parties and their activities during the compliance periods is provided in Appendix A: *List of Registered Parties with Activity During the Compliance Period*. A dynamic list of registrants can be accessed online at <https://www.canada.ca/en/environment-climate-change/services/managing-pollution/energy-production/fuel-regulations/renewable/list-registrants.html>.

4.1 LIQUID PETROLEUM FUELS PRODUCED AND IMPORTED

Primary suppliers report on four types of liquid petroleum fuels that they produce and import, which make up their pool: finished gasoline, unfinished gasoline, diesel fuel, and heating distillate oil. Table 4.1a shows the volumes reported for the compliance periods as reported in Schedule 4 of the Regulations. These volumes have been combined to protect confidentiality, when necessary.

Primary suppliers may exclude volumes from their pool(s) if it is a type of fuel that is listed in subsection 6(4) of the Regulations. These excluded volumes are not to be reported as part of production and import volumes, but it is suspected that some companies misreported and included these excluded volumes. This is the main reason for the discrepancy between the total volume produced and imported, and the reported pool volume, provided in Table 4.1b. These exclusions are further explained in section 4.2.

Table 4.1a: Liquid Petroleum Fuel Produced in and Imported into Canada During the 2013 and 2014 Compliance Periods, Not Including Excluded Volumes

	Gasoline (m ³)	Gasoline (m ³)	Distillate (m ³)	Distillate (m ³)
	2013	2014	2013	2014
Produced	32,292,387	32,649,550	28,044,611	30,946,427
Imported	7,738,728	8,226,240	2,874,047	2,705,535
Total	40,031,114	40,875,790	30,918,659	33,651,961

Note: These volumes do not include reported volumes excluded under subsection 6(4) of the Regulations.

Table 4.1b shows the gasoline and distillate pool volumes reported by primary suppliers during the 2013 and 2014 compliance periods. A primary supplier's renewable fuel obligations are determined from these volumes.

Table 4.1b: Gasoline and Distillate Pools Reported for the 2013 and 2014 Compliance Periods

	2013 (L)	2014 (L)	2013 & 2014 Total (L)
Gasoline Pool	38,736,128,786	39,054,581,639	-
Distillate Pool	26,733,265,239	29,008,692,793	55,741,958,032

Tables 4.1c and 4.1d further break down the production and imports of gasoline and distillate by regions. To maintain confidentiality, activity was split between Eastern and Western Canada.

Table 4.1c: Gasoline Produced in and Imported into Canada by Region during the 2013 and 2014 Compliance Periods

Region	Gasoline Produced (m ³)	Gasoline Imported (m ³)	Gasoline Produced (m ³)	Gasoline Imported (m ³)
	2013		2014	
Western Canada	13,239,475	976,377	13,951,378	746,222
Eastern Canada	19,052,912	6,762,350	18,698,172	7,480,018
Canada	32,292,387	7,738,728	32,649,550	8,226,240

Table 4.1d: Distillate Produced in and Imported into Canada by Region during the 2013 to 2014 Compliance Periods

Region	Distillate Produced (m ³)	Distillate Imported (m ³)	Distillate Produced (m ³)	Distillate Imported (m ³)
	2013		2014	
Western Canada	15,061,498	1,154,808	16,246,199	468,944
Eastern Canada	12,983,114	1,719,239	14,700,228	2,236,591
Canada	28,044,611	2,874,047	30,946,427	2,705,535

4.2 VOLUMES EXCLUDED FROM POOLS

Subsection 6(4) of the Regulations allows fuels intended for certain uses to be excluded from a primary supplier's gasoline or distillate pool. Primary suppliers must have a record that establishes that these volumes were sold or delivered for the specified use. These are fuels for use:

- in aircraft;
- in competition vehicles;
- in scientific research;
- as feedstock in the production of chemicals (other than fuels) in a chemical manufacturing facility;
- in the North (Yukon, the Northwest Territories, Nunavut, and Quebec north of 60°N)
- in Newfoundland and Labrador
- for export, or in transit through Canada from a place outside Canada to another place outside Canada
- in the case of diesel fuel and heating distillate oil:
 - in military combat equipment;
 - represented as kerosene and sold for or delivered for use in unvented space heaters, wick-fed illuminating lamps, or flue-connected stoves and heaters;
 - sold for or delivered for use for space heating purposes; and
 - from January 1, 2013 until June 30, 2013, sold for or delivered for use in Nova Scotia, New Brunswick, and Prince Edward Island (PEI).

Primary suppliers are required to report these excluded volumes by production or import and according to liquid petroleum fuel type (finished gasoline, unfinished gasoline, diesel fuel, and heating distillate oil), under Schedule 4 of the Regulations. Due to the limited use of certain provisions, the data presented has been aggregated to maintain confidentiality. Tables 4.2a and 4.2c show the volumes excluded from the pools nationally by liquid petroleum fuel type. Tables 4.2b, 4.2d, and 4.2e show the exclusions by use for each fuel type.

Table 4.2a: Gasoline Pool Exclusions

Excluded from Production and Imports	2013 (m³)	2014 (m³)
Gasoline	7,637,007	6,718,420

Table 4.2b: Gasoline Pool Exclusions, by Use

Excluded from Production and Imports, by Use	2013 (m³)	2014 (m³)
For Aircraft and/or for use in Newfoundland & Labrador, the Territories, and Quebec north of 60°	567,347	597,112
For Export	7,069,660	6,121,308
Total	7,637,007	6,718,420

Table 4.2c: Distillate Pool Exclusions

Excluded from Production and Imports	2013 (m³)	2014 (m³)	2013 & 2014 Total (m³)
Diesel Fuel	13,286,121	12,414,703	25,700,824
Heating Distillate Oil	3,794,090	2,587,511	6,381,602
Total Volume of Distillate Excluded	17,080,212	15,002,214	32,082,426

Table 4.2d: Diesel Fuel Exclusions, by Use

Excluded from Production and Imports, by Use	2013 (m³)	2014 (m³)	2013 & 2014 Total (m³)
For Aircraft and for Military Combat Equipment*	5,593,566	5,767,162	11,360,727
Kerosene	*	563,870	563,870
For space heating purposes	697,393	702,476	1,399,868
For use in Newfoundland & Labrador, the Territories, and Quebec north of 60°	1,037,109	1,026,012	2,063,121
For use in Nova Scotia, New Brunswick, and PEI, from January 1, 2013 to June 30, 2013	747,573	**	747,573
For Export	5,210,481	4,355,183	9,565,664
Total	13,286,121	12,414,703	25,700,824

*To protect confidentiality, 2013 Kerosene exclusions were aggregated with exclusions for Space Heating Purposes.

**Despite the exclusion for Nova Scotia, New Brunswick, and PEI expiring in 2013, a small volume was reported for 2014. This has been aggregated with the exclusions for Newfoundland & Labrador, the Territories, and Quebec north of 60° to protect confidentiality.

Table 4.2e: Heating Distillate Oil Exclusions, by Use

Excluded from Production and Imports, by Use	2013 (m³)	2014 (m³)	2013 & 2014 Total (m³)
Space heating purposes	1,401,901	974,326	2,376,228
Other*	2,392,189	1,613,185	4,005,374
Total	3,794,090	2,587,511	6,381,602

*Other includes exclusions for Military Combat Equipment; for Newfoundland & Labrador, the Territories, and Quebec north of 60°; for Nova Scotia, New Brunswick, and Prince Edward Island between January 1, 2013 and June 30, 2013; and for Export.

4.3 RENEWABLE FUELS PRODUCED, IMPORTED AND, SOLD

Persons who produce or import greater than 400 m³ of renewable fuel in a year must report on their renewable fuel volumes produced, imported, sold, and exported, in Schedule 7 of the Regulations. Tables 4.3a and 4.3b summarize the volumes of ethanol and biomass-based diesel that were produced in and imported into Canada during the compliance periods. These volumes do not represent the total amount of renewable fuel blended with liquid petroleum fuel.

Table 4.3a: Ethanol Volumes Produced and Imported

	2013 (m³)	2014 (m³)
Produced	1,716,560	1,755,918
Imported	1,151,992	1,301,994
Total Produced and Imported	2,868,553	3,057,912

Table 4.3b: Biomass-Based Diesel Volumes Produced and Imported

	2013 (m³)	2014 (m³)
Biodiesel Produced	159,157	351,455
Biodiesel Imported	315,354	266,335
HDRD Imported	288,989	346,356
Total Produced and Imported	763,500	964,146

The transactions related to the sale and export of renewable fuel, reported under Schedule 7, are summarized in Table 4.3c and 4.3d. These volumes do not include sales of blended renewable fuels. There appears to have been incorrect reporting, with the possibility that the same fuel was reported as "Sold for Export" and as "Produced or Imported for Export." Certain companies reported the exact same volume in both places. For clarity, "Produced or Imported for Export" is meant to cover fuel exported by the producer or importer where ownership is transferred outside of Canada, while "Sold for Export" is meant to cover fuel that is sold to another party within Canada that exports it or where ownership of exported fuel changes in Canada.

Table 4.3c: Ethanol Volumes Sold or Exported

	2013 (m³)	2014 (m³)
Sold	3,499,248	3,765,965
Sold for Blending at Another Facility in Canada	1,390,030	1,346,431
Sold for Export	0	0
Produced or Imported for Export	*	0

*The small volume of reported fuel is not shown to protect confidentiality.

Table 4.3d: Biomass-Based Diesel Sold or Exported

	2013 (m³)	2014 (m³)
Sold	588,296	711,265
Sold for Blending at Another Facility in Canada	34,876	70,933
Sold for Export	154,578	306,201
Produced or Imported for Export	67,884	61,457

4.4 RENEWABLE FUEL FEEDSTOCKS

Renewable fuel producers and importers are required to report on the type of feedstock that was used to produce their renewable fuel, if known. The feedstock data collected by Environment and Climate Change Canada (ECCC) is limited, since companies are only required to report the feedstock that was used to produce the fuel and not how much fuel was produced from each feedstock. Because of this, in cases where more than one feedstock was reported, ECCC estimated the volumes produced from each feedstock were estimated based on what was reported under renewable fuel sold.

In addition, different regulated parties may be interpreting the feedstock options in the Regulations. Producers and importers must select the feedstock type(s) as they appear in the definition of *renewable fuel feedstock* in section 1 of the Regulations. The defined feedstock types may aggregate some of the most commonly used feedstocks, which may influence reporting errors. Table 4.4a shows the feedstock types available to select. For example, "Other grains" in this context refers to any grains, excluding corn or wheat, although regulated parties may have used this category to report corn, which should have been reported under the "Starch" category. In addition, "Not reported" is a category that was added during the data aggregation process to reflect that some reports specified renewable fuel volumes without specifying a feedstock type.

Table 4.4a: Feedstocks as Defined in the Regulations

Feedstock
Algae
Animal material
Animal solid waste
Cellulosic material
Municipal solid waste
Oilseeds
Other grains (excluding corn or wheat)
Other vegetable oils (for example canola oil, corn oil, etc)
Palm oil
Potatoes
Soy Oil
Starch (for example corn)
Sugar cane, sugar beets or sugar components
Tobacco
Vegetable materials or other plant materials
Wheat grain

Tables 4.4b and 4.4c and Figures 4.4a, 4.4b, 4.4c, and 4.4d show the volumes of ethanol and biodiesel produced in Canada, by feedstock type, during the 2013 and 2014 compliance periods, which ECCC

estimated based on reporting under Schedule 7 of the Regulations.

Table 4.4b: Estimated Volumes of Ethanol Produced in Canada, by Feedstock

Feedstock	2013 (m³)	2014 (m³)
Other grains (excluding corn or wheat)	570,410	8,513
Starch (for example corn)	905,699	1,405,560
Wheat grain	240,451	341,846
Total	1,716,560	1,755,918

ECCC carried out compliance promotion activities to clarify where feedstocks should be reported; however, it is suspected that the majority of volumes reported under “Other grains” in 2013 was corn-based, despite the feedstock choices outlined in the Regulations.

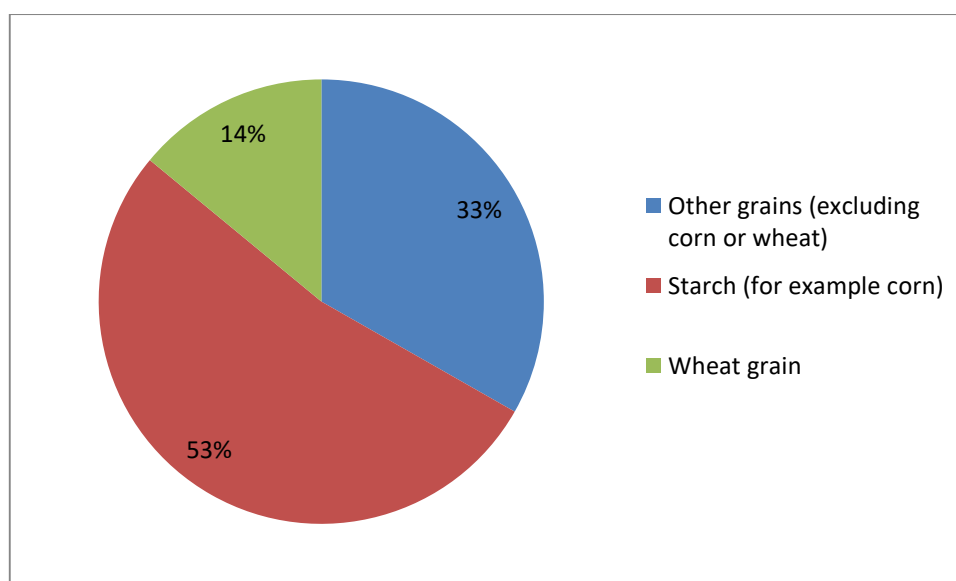


Figure 4.4a: Ethanol Produced in Canada During 2013, by Feedstock

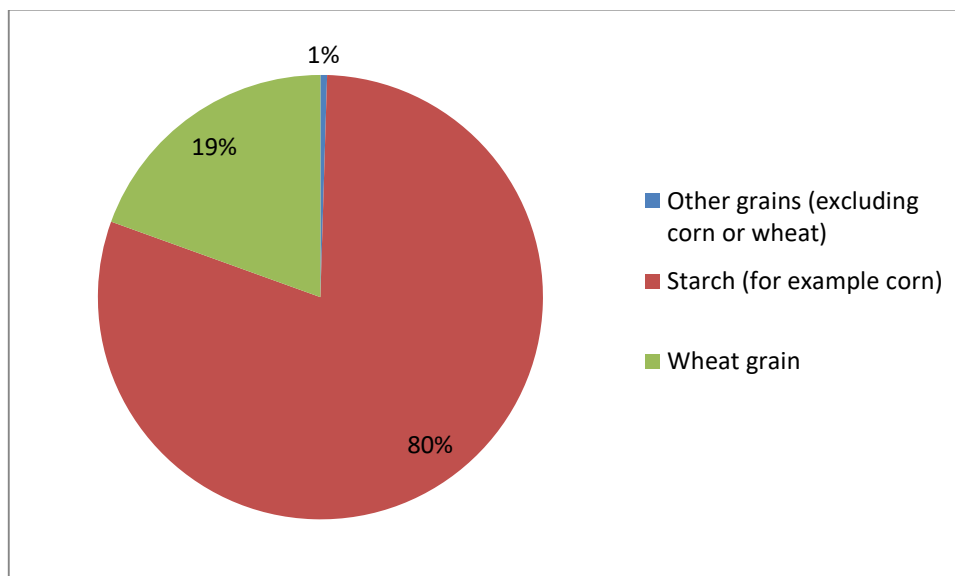


Figure 4.4b: Ethanol Produced in Canada During 2014, by Feedstock

Table 4.4c: Estimated Volumes of Biodiesel Produced in Canada, by Feedstock

Feedstock	2013 (m ³)	2014 (m ³)
Animal Material	94,530	86,549
Oilseeds and Other grains (excluding corn or wheat)	38,100	228,011
Other vegetable oils (for example canola oil, corn oil, etc) and Starch (for example corn)	24,438	23,730
Soy Oil	2,089	13,165
Total	159,157	351,455

The reported volumes under "Oilseeds" and "Other grains" are suspected to mostly represent canola oil. A small volume was reported as being produced from "Starch," which is suspected to represent production from corn oil. It is also suspected that a portion of production reported as "Other vegetable oils" represents production from yellow grease or other waste cooking oils.

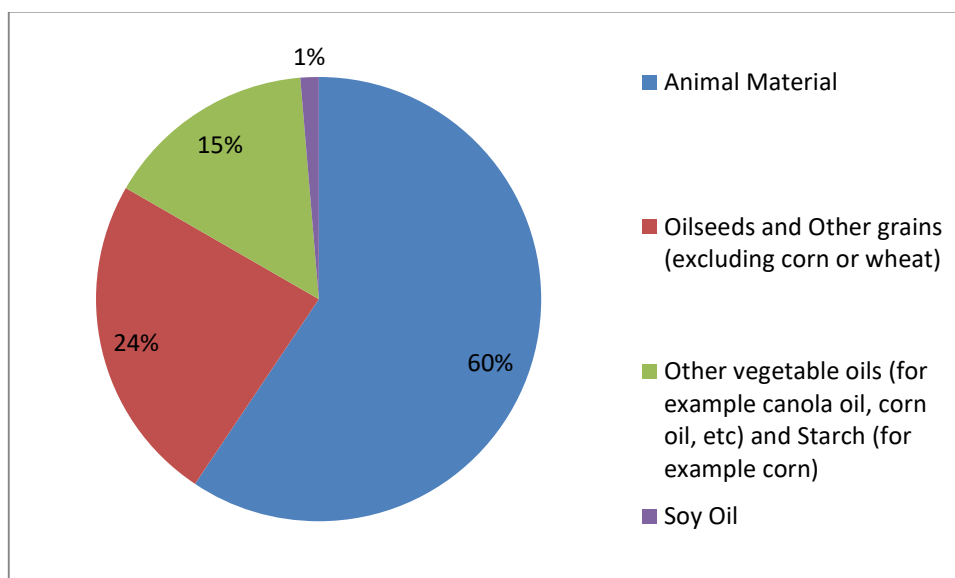


Figure 4.4c: Biodiesel Produced in Canada During 2013, by Feedstock

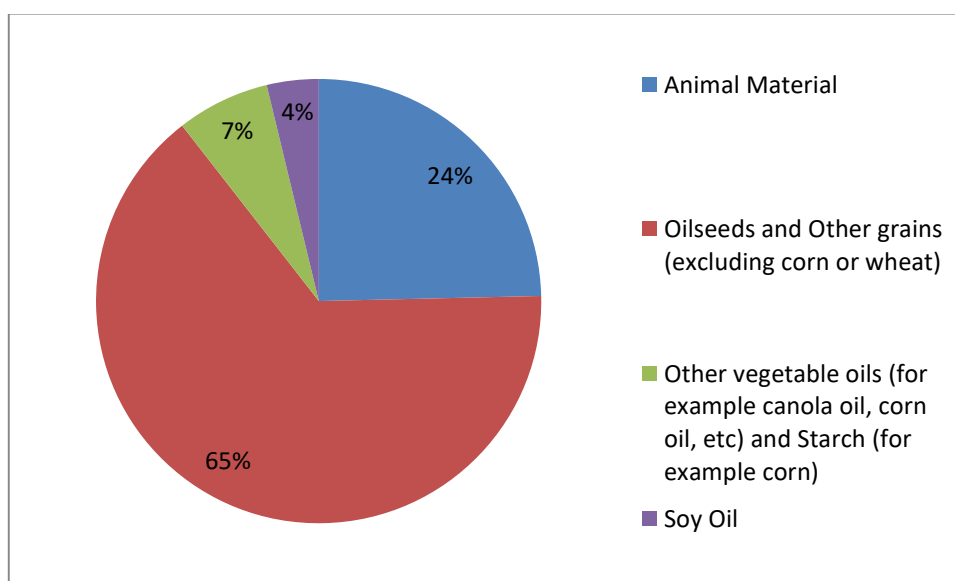


Figure 4.4d: Biodiesel Produced in Canada During 2014, by Feedstock

Tables 4.4d and 4.4e and Figures 4.4e, 4.4f, 4.4g, and 4.4h show the volumes of ethanol and biomass-based diesel imported into Canada, by feedstock type, during the 2013 and 2014 compliance periods, which were estimated based on reporting of feedstocks under Schedule 7 of the Regulations.

Table 4.4d: Estimated Volumes of Ethanol Imported into Canada, by Feedstock

Feedstock	2013 (m ³)	2014 (m ³)
Other grains (excluding corn or wheat) and Not reported*	130,945	76,377
Starch (for example corn)	1,021,048	1,225,617
Total	1,151,992	1,301,994

*To protect confidentiality, values have been aggregated.

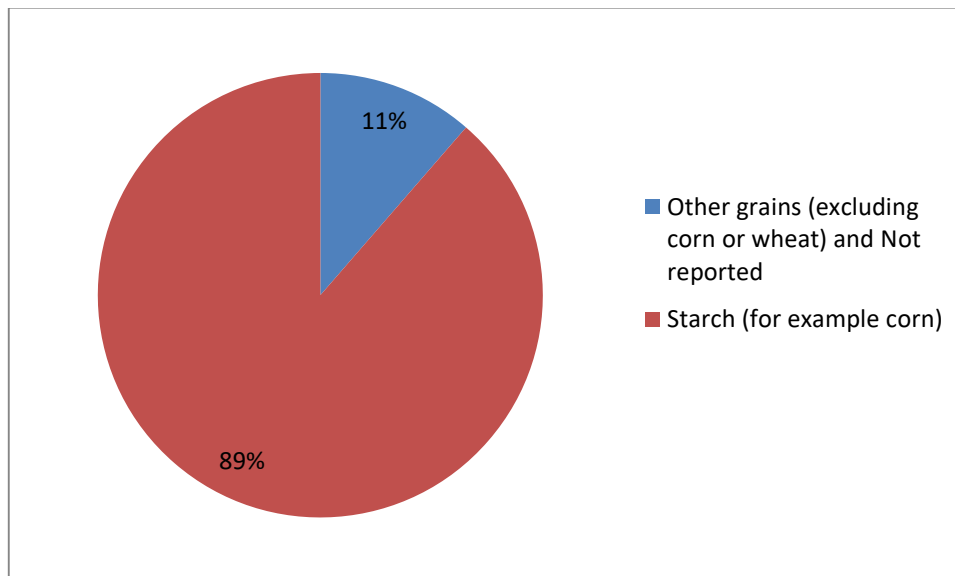


Figure 4.4e: Ethanol Imported into Canada During 2013, by Feedstock Type

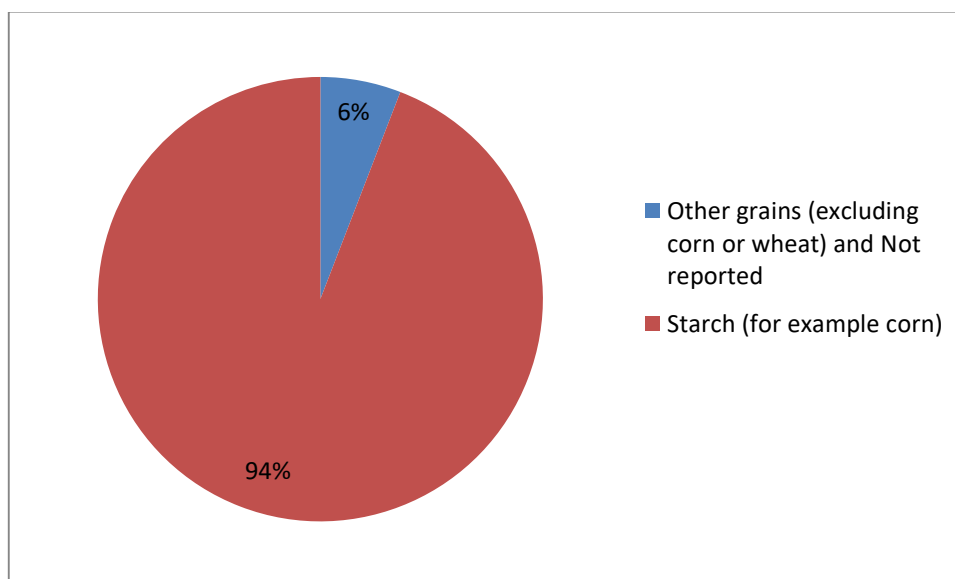


Figure 4.4f: Ethanol Imported into Canada During 2014, by Feedstock Type

Table 4.4e: Estimated Volumes of Biomass-Based Diesel Imported into Canada, by Feedstock

Feedstock	2013 (m ³)	2014 (m ³)
Soy Oil	116,416	47,365
Other vegetable oils (for example canola oil, corn oil, etc)	46,410	103,487
Palm Oil	na	279,641
Other*	441,517	182,198
Total	604,343	612,691

*To protect confidentiality, values have been aggregated. For 2013, "Other" includes oilseeds, other grains (excluding corn or wheat), palm oil, and not reported. For 2014, "Other" includes animal material, other grains (excluding corn or wheat), starch (for example corn), vegetable material or other plant materials, and not reported.

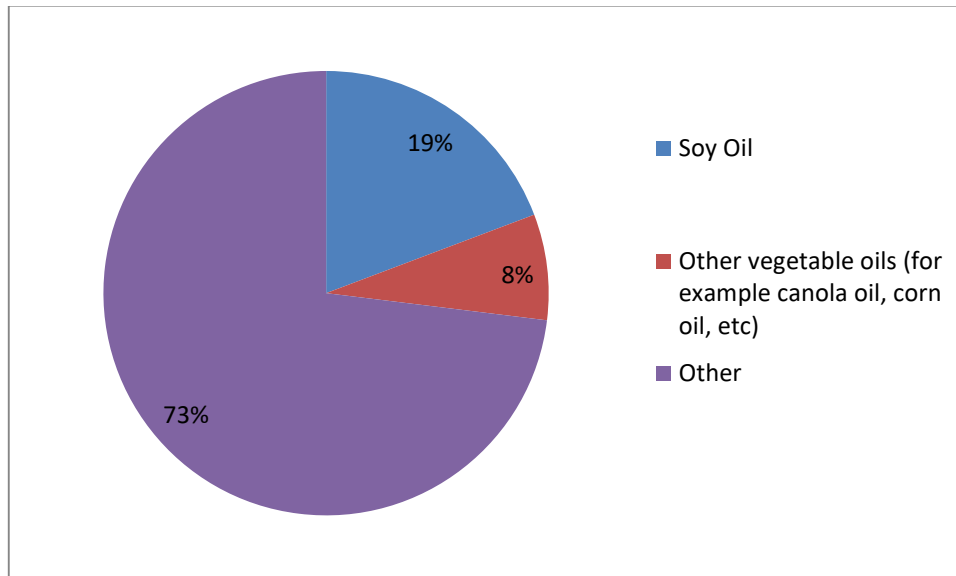


Figure 4.4g: Biomass-Based Diesel Imported into Canada During 2013, by Feedstock⁶

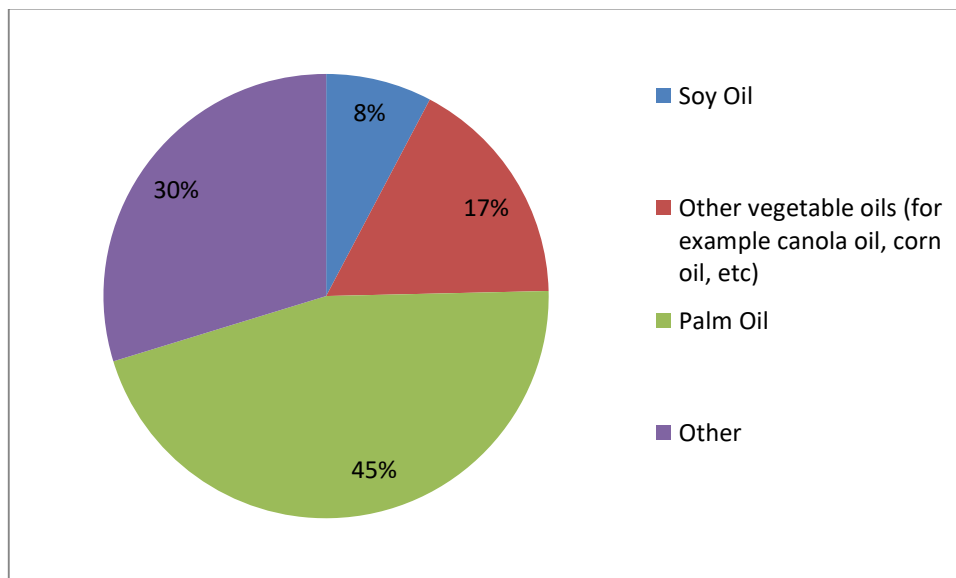


Figure 4.4h: Biomass-Based Diesel Imported into Canada During 2014, by Feedstock⁷

⁶ "Other" includes oilseeds, other grains (excluding corn or wheat), palm oil, and not reported.

⁷ "Other" includes animal material, other grains (excluding corn or wheat), starch (for example corn), vegetable material or other plant materials, and not reported.

5.0 COMPLIANCE WITH THE REGULATIONS

This section summarizes the activities undertaken by primary suppliers and elective participants to comply with the Regulations. In addition to blending renewable fuels, this includes using the compliance unit trading system to acquire compliance units. The section also highlights primary suppliers' compliance with the two renewable fuel content requirements.

5.1 COMPLIANCE UNITS

The Regulations include a compliance unit trading system to provide regulated parties with flexible compliance options. In addition to creating compliance units, primary suppliers may also acquire compliance units from other participants. Compliance units represent renewable fuel, with one compliance unit being equal to one litre of renewable fuel. To meet their compliance obligations, primary suppliers must hold sufficient compliance units at the end of the trading period, in respect of a compliance period, to demonstrate compliance with the 2% and 5% renewable fuel content requirements, as the case may be. Gasoline compliance units (GCUs) may only be used to meet the 5% requirement, while distillate compliance units (DCUs) may be used to meet the 2% requirement or may be converted to gasoline compliance units to meet the 5% renewable fuel requirement.

A party that may create compliance units is a primary supplier or an elective participant, which are referred to as participants. A participant may create compliance units by:

- Blending renewable fuel with liquid petroleum fuel;
- Importing liquid petroleum fuel with renewable fuel content;
- Using biocrude to produce liquid petroleum fuel;
- Selling neat renewable fuel (as defined in the Regulations) to a neat renewable fuel consumer; or
- Using neat renewable fuel, in a combustion device, that they produced or imported themselves.

The compliance units that were created during the 2013 and 2014 compliance periods are presented in Tables 5.1a and 5.1b for each province and territory. Approximately 2.84 and 2.96 billion gasoline compliance units were reported to have been created in the 2013 and 2014 compliance periods, respectively. Meanwhile, approximately 1.19 billion distillate compliance units were created in the 2013 to 2014 compliance period.

Table 5.1a: Gasoline Compliance Units Created During the Compliance Periods

Provinces	2013 (GCUs)	2014 (GCUs)
Alberta	399,934,667	395,970,487
British Columbia	236,577,487	318,030,529
Manitoba	150,052,104	147,904,221
Ontario	1,206,630,438	1,236,196,202
Quebec, New Brunswick, & Nova Scotia*	635,227,797	650,049,766
Saskatchewan	209,899,308	212,872,807
Total	2,838,321,801	2,961,024,012

*GCUs created were combined for these provinces, to protect confidentiality.

Table 5.1b: Distillate Compliance Units Created During the Compliance Period

Provinces	2013 (DCUs)	2014 (DCUs)	2013 & 2014 Total (DCUs)
Alberta	165,306,323	178,037,684	343,344,007
British Columbia	160,692,746	182,068,374	342,761,120
Manitoba	24,133,353	23,233,893	47,367,246
Ontario	26,848,360	41,628,035	68,476,395
Quebec, New Brunswick, & Nova Scotia*	128,964,437	104,159,932	233,124,369
Saskatchewan	79,129,288	76,261,488	155,390,776
Canada	585,074,507	605,389,406	1,190,463,913

*DCUs created were combined for these provinces, to protect confidentiality.

The most common method of creating compliance units was the blending of renewable fuel with liquid petroleum fuel. A small number of units were created by importing blended renewable fuel or by using neat renewable fuel; however, these were aggregated with units created by blending to preserve confidentiality.

Participants that created compliance units by blending renewable fuel with liquid petroleum fuel were also required to report whether high-renewable-content fuel blends were created. In the case of gasoline, this includes fuel blends that contain an ethanol content that is greater than 10% and less than or equal to 85%. In the case of biodiesel blended with diesel or distillate, this includes fuel blends that are greater than 5% and less than or equal to 80% biodiesel. In the case of HDRD or HVO, the definition for high-renewable-content fuel does not apply. The total volumes of fuel blended (renewable fuel and liquid petroleum fuel) are presented in Tables 5.1c and 5.1d below. Of the 29.5 and 31.3 billion litres of ethanol-containing gasoline that were blended to create gasoline compliance units during the 2013 and 2014 compliance periods, respectively, none were reported as high-renewable-content fuel. Of the 16.7 billion litres of blended biomass-based diesel and diesel that were produced during the 2013 and 2014 compliance period, 1.5 billion litres were reported as high-renewable-content fuel.

Table 5.1c: Blends of Gasoline and Ethanol

Blend Type	2013 (m³)	2014 (m³)
Other than High-Renewable-Content Fuel	29,512,166	31,270,567
High-Renewable-Content Fuel (E11 – E85)	0	0
Total	29,512,166	31,270,567

Table 5.1d: Blends of Diesel and Biomass-Based Diesel

Blend Type	2013 (m³)	2014 (m³)	2013 & 2014 Total (m³)
Other than High-Renewable-Content Fuel	7,446,751	7,703,086	15,149,837
High-Renewable-Content Fuel (B6 – B80)	499,010	1,033,892	1,532,902
Total	7,945,761	8,736,978	16,682,739

In addition to creating compliance units, the Regulations contain provisions that enable participants to trade, carry forward (into the next period), and carry backwards (into the previous period) compliance units. Participants are responsible for recording each transaction and demonstrating compliance with these provisions. The following two tables summarize the compliance unit transactions as reported under Schedule 5 of the Regulations. Compliance units received in trade should equal those transferred in trade, but due to suspected reporting errors, they do not. Verification of these transactions is ongoing.

Table 5.1e: Gasoline Compliance Unit Transactions

Transactions	2013 (GCU's)	2014 (GCU's)
Created During Compliance Period	2,838,321,801	2,961,024,012
Received in Trade	891,790,593	882,769,613
Transferred in Trade	891,790,576	882,769,565
Cancelled*	1,080,522,704	987,399,423
Carried Forward (into this period)	591,260,240	412,598,585
Carried Forward (into next period)	412,252,915	437,420,158
Carried Back (into this period)	0	0
Carried Back (from this period into preceding period)	0	0
Distillate compliance units assigned to gasoline compliance units	0	0

*Does not include units cancelled for export of blended fuel.

Table 5.1f: Distillate Compliance Unit Transactions

Transactions	2013 & 2014 Total (DCUs)
Created During Compliance Period	1,190,463,913
Received in Trade	459,150,175
Transferred in Trade	459,710,043
Cancelled*	28,050,127
Carried Forward (into this period)	88,862,637
Carried Forward (into next period)	136,680,511
Carried Back (into this period)	0
Carried Back (from this period into preceding period)	0
Distillate compliance units assigned to gasoline compliance units	0

*Does not include units cancelled for export of blended fuel.

5.2 COMPLIANCE WITH THE RENEWABLE FUEL REQUIREMENTS

This subsection provides primary suppliers' compliance rates with the two renewable fuel content requirements as well as the reported average renewable fuel content in the national pools for the 2013 and 2014 compliance periods.

The Regulations require primary suppliers to have renewable fuel equivalent to at least 5% of their gasoline pool and 2% of their distillate pool for each compliance period. The compliance unit trading system may permit primary suppliers to meet their obligations without acquiring or blending any renewable fuel. Furthermore, the Regulations allow for a limited number⁸ of excess compliance units to be carried forward into the next compliance period or carried back into the previous compliance period. Thus the renewable fuel content, RF_G for gasoline and RF_D for distillate, are calculated in accordance with subsections 8(1) and 8(2) of the Regulations. These equations account for compliance units that were created, traded, cancelled, carried forward into the compliance period and carried back to the preceding compliance period.

The average renewable fuel content in the gasoline and distillate pools for a compliance period are then calculated as:

$$\%RF_G = RF_G / \text{Gasoline Pool}$$

$$\%RF_D = RF_D / \text{Distillate Pool}$$

All volumes are expressed in litres.

The compliance results for the 2013 and 2014 compliance periods are presented in Tables 5.2a and 5.2b. During these periods, 13 companies had gasoline pools and 25 companies had distillate pools. For a complete list of registered companies and their activities, see Appendix A: *List of Registered Parties and their Activities*.

For the 2013 and 2014 compliance periods, all primary suppliers reported that they achieved the minimum of 5% renewable fuel content in their gasoline pool, based on information reported under their Schedule 4, and verifications by independent auditors.

Two out of 25 companies reported instances of alleged non-compliance with the minimum of 2% renewable fuel content in their distillate pool for the 2013 to 2014 compliance period. This was based on information reported under Schedule 4, which was verified by independent auditors. On May 14, 2018, the Canadian National Railway Company (CN) pleaded guilty to importing a fuel, during 2011 and 2012, which did not meet the requirements of the Renewable Fuels Regulations. CN was fined \$25,000 and was ordered by the court to pay a sum of \$1,101,627 to promote the protection of the environment. The fine and penalty will be directed to the Environmental Damages Fund administered by Environment and Climate Change Canada.

Tables 5.2a and 5.2b show the renewable fuel content in the gasoline and distillate pools for individual primary

⁸ In accordance with sections 21 to 23 of the Regulations.

suppliers. Certain primary suppliers reported renewable fuel content significantly in excess of the regulatory obligation, some of which were within the limits of high-renewable-content fuel. In the case of the gasoline pools, no blends of high-renewable-content gasoline were reported based on the results in Table 5.1c. The reason for this is that some companies acquired compliance units that were in excess of their needs from other participants. Some of these excess compliance units may have been carried forward, while others were cancelled. As can be seen in Table 5.1e, many gasoline compliance units were carried forward, but even more were cancelled for these compliance periods.

Table 5.2a: Reported Renewable Fuel Content in Gasoline Pools for the 2013 and 2014 Compliance Periods

Company Name	2013	2014
Chevron Canada Limited	5%	6%
Elbow River Marketing Ltd	N/A	5%
Federated Co-operatives Ltd.	10%	11%
Greenergy Fuels Canada Inc	9%	12%
Husky Oil Operations Limited	21%	17%
Imperial Oil	6%	6%
Irving Oil Operations GP	10%	8%
Morgan Stanley Capital Group Inc	5%	5%
Produits Pétroliers Norcan SENC	6%	12%
Shell Canada Products	8%	8%
Suncor Energy Products Partnership	10%	10%
Valero Energy Inc	6%	7%
Western Petroleum Company	6%	6%

"N/A" means that the regulated party did not have an obligation (a gasoline or distillate pool) during this compliance period.

Table 5.2b: Reported Renewable Fuel Content in Distillate Pools for the 2013 to 2014 Compliance Period

Company Name	2013 - 2014
1068444 Ontario Limited	26%
Canadian National Railway Co.	2%
Canadian Natural Resources Limited	0%
Canadian Pacific Railway Company	2%
Chevron Canada Limited	3%
CityServiceValcon, LLC	2%
Federated Co-operatives Ltd.	3%
FS Partners, a division of Growmark	6%
Gra Ham Energy Ltd.	0%
Greenenergy Fuels Canada Inc	4%
Husky Oil Operations Limited	4%
Idemitsu Apollo Corporation	2%
Imperial Oil	2%
Irving Oil Operations GP	2%
Morgan Stanley Capital Group Inc	2%
NOVA Chemicals (Canada) Ltd.	2%
Petro-Canada Lubricants Inc.	2%
Produits Pétroliers Norcan SENC	2%
Shell Canada Products	2%
Shell Trading Canada, an Alberta Partnership	N/A
Suncor Energy Oil Sands Limited Partnership	2%
Suncor Energy Products Partnership	2%
Syncrude Canada Ltd.	2%
Valero Energy Inc	2%
Western Petroleum Company	2%

"N/A" means that the regulated party did not have an obligation (a gasoline or distillate pool) during this compliance period.

The reported renewable fuel content per primary supplier does not accurately reflect how much renewable fuel was actually used in Canada. To determine a more accurate representation, the total number of compliance units created for a given period can be compared to the reported pool volume for the same compliance period by:

$$\%Average\ RF\ Content = Sum\ of\ Compliance\ Units\ Created / Pool$$

Based on this calculation, the renewable fuel content in gasoline was approximately 7% for the 2013 compliance period, and 8% for the 2014 period. For the 2013 to 2014 compliance period, the renewable fuel content was approximately 2% of the distillate pool.

5.3 QUALITY OF REPORTING

The reports received by Environment and Climate Change Canada for the 2013 and 2014 compliance periods contained a significant number of errors, and extensive work was required to verify the data. Compliance verification of this data is ongoing. As such, the preceding analysis was performed on the data as reported, and all aspects of it are subject to change. Environment and Climate Change Canada may consider publishing updated results on the Government of Canada's Open Data Portal.

Environment and Climate Change Canada continues to provide information to regulated parties to ensure the timeliness and completeness of reports for the coming compliance periods. Please refer to the [Renewable Fuels Regulations Performance Report: December 2010 to December 2012](#) online for a more detailed discussion of compliance promotion and enforcement activities Environment and Climate Change Canada has undertaken to improve compliance with the Regulations.

Further information regarding the first gasoline and distillate compliance periods can be found in the [Renewable Fuels Regulations Report: December 15, 2010 to December 31, 2012](#).

6.0 CONCLUSION

The data received from regulated parties for the 2013 and 2014 compliance periods indicate that the Regulations are on track to meeting their objective of reducing GHG emissions. Lifecycle greenhouse gas emissions reductions are estimated at 8.6 MtCO₂e over the 2013 and 2014 compliance periods.

Both renewable fuel requirements were met on a national pool basis in the 2013 and 2014 compliance periods. The reported average renewable fuel content in the gasoline pools were 7% for the 2013 compliance period, and 8% for the 2014 period. Meanwhile, the reported average renewable fuel content in the distillate pool for the 2013 to 2014 compliance period was 2%.

All primary suppliers reported that they achieved the minimum of 5% renewable fuel content in their gasoline pool, and two primary suppliers reported instances of alleged non-compliance with the minimum of 2% renewable fuel content in their distillate pool for the 2013 and 2014 compliance periods. Overall, this is an improvement from the 2010 to 2012 compliance periods, during which one primary supplier reported an instance of alleged non-compliance with the gasoline requirement and five with the distillate requirement.

APPENDIX A: LIST OF REGISTERED PARTIES AND THEIR ACTIVITIES

Table A.1: List of Registered Parties with Activity During the Compliance Periods

Regulated Parties	Primary Supplier: Gasoline Pool	Primary Supplier: Distillate Pool	Elective Participant	Producer or Importer of Ethanol	Producer or Importer of Biomass-Based Diesel
1068444 Ontario Limited		X			
1714141 Alberta Ltd.			X		
1796640 Ontario Limited			X		X
ADM Agri-Industries Company					X
Archer Daniels Midland Company					X
Astra Energy Canada Inc.			X	X	X
BioUrja Trading LLC				X	
BIOX Canada Ltd.					X
C&N ETHANOL MARKETING CORPORATION				X	
Canada Clean Fuels Inc			X		
Canadian National Railway Co.		X			
Canadian Pacific Railway Company		X			
Chevron Canada Limited	X	X			
CHS Inc.				X	
CITY-FARM BIOFUEL LTD					X
CityServiceValcon,		X			

Regulated Parties	Primary Supplier: Gasoline Pool	Primary Supplier: Distillate Pool	Elective Participant	Producer or Importer of Ethanol	Producer or Importer of Biomass-Based Diesel
LLC					
Consolidated Biofuels Ltd.					X
DSM Nutritional Products Canada Inc.					X
Eco-Energy Inc				X	X
Elbow River Marketing Limited Partnership				X	X
Elbow River Marketing Ltd	X			X	X
Federated Co-operatives	X	X			
FS Partners, a division of Growmark		X			X
G&B Fuels Inc			X		
Gale's Gas Bars Limited					
Gra Ham Energy Ltd.		X			
Great Lakes Biodiesel					X
Green Plains Trade Group, LLC				X	
Greenergy Fuels Canada Inc	X	X		X	X
GreenField Ethanol of Quebec Inc.				X	
GreenField Johnstown Limited Partnership				X	
GreenField Specialty Alcohols Inc.				X	
GROWING POWER				X	

Regulated Parties	Primary Supplier: Gasoline Pool	Primary Supplier: Distillate Pool	Elective Participant	Producer or Importer of Ethanol	Producer or Importer of Biomass-Based Diesel
HAIRY HILL LIMITED PARTNERSHIP					
Husky Oil Operations Limited	X	X		X	
Idemitsu Apollo Corporation		X			
Imperial Oil	X	X			X
Innoltek inc.			X		X
Integrated Grain Processors Co-operative Incorporated				X	
Irving Oil Operations GP	X	X		X	X
Kawartha Ethanol Inc.				X	
Les Petroles Parkland Ltée			X		
Les solutions carburants BioMix			X		
Mansfield Oil Company of Gainesville				X	X
Methes Energies Canada Inc.					X
Milligan Biofuels Inc.					X
Morgan Stanley Capital Group Inc	X	X			
Murex LLC				X	
NorAmera BioEnergy Corp.				X	
Noroxel Energy Ltd.					X

Regulated Parties	Primary Supplier: Gasoline Pool	Primary Supplier: Distillate Pool	Elective Participant	Producer or Importer of Ethanol	Producer or Importer of Biomass-Based Diesel
North West Bio-Energy Ltd.				X	
NOVA Chemicals (Canada) Ltd.		X			
Permolex Ltd.				X	
Petro-Canada Lubricants Inc.		X			
Pound-Maker Agventures Ltd				X	
Les Produits Pétroliers Norcan SENC	X	X			
QFIBIODIESEL					X
REG Marketing & Logistics Group, LLC					X
Rothsay, a Division of Darling International Canada Inc.			X		X
RPMG, Inc.				X	
Shell Canada Products	X	X			X
Shell Trading Canada, an Alberta Partnership	X	X		X	X
Suncor Energy Oil Sands Limited Partnership		X			
Suncor Energy Products Inc.				X	
Suncor Energy Products Partnership	X	X			X
Syncrude Canada		X			

Regulated Parties	Primary Supplier: Gasoline Pool	Primary Supplier: Distillate Pool	Elective Participant	Producer or Importer of Ethanol	Producer or Importer of Biomass-Based Diesel
Ltd.					
Terra Grain Fuels Inc				X	
Tombstone Energy Solutions Ltd					X
Trafigura AG					X
TransMontaigne Marketing Canada Inc.			X		
Valero Energy Inc	X	X		X	X
Western Petroleum Company	X	X		X	X
Wilson Fuel Co. Limited			X		