



# Canada Gazette

[Home](#)

> [Publications](#)

> [ARCHIVED — Vol. 144 \(2010\)](#)

> [ARCHIVED — September 1, 2010](#)

> [ARCHIVED — Renewable Fuels Regulations](#)

## ARCHIVED — Renewable Fuels Regulations



[This Web page has been archived on the Web.](#)

### Archived Content

Information identified as archived is provided for reference, research or recordkeeping purposes. It is not subject to the Government of Canada Web Standards and has not been altered or updated since it was archived. Please contact us to request a format other than those available.

Vol. 144, No. 18 — September 1, 2010

Registration

SOR/2010-189 August 23, 2010

CANADIAN ENVIRONMENTAL PROTECTION ACT, 1999

P.C. 2010-1080 August 23, 2010

Whereas, pursuant to subsection 332(1) ([see footnote a](#)) of the *Canadian Environmental Protection Act, 1999* ([see footnote b](#)), the Minister of the Environment published in the *Canada Gazette*, Part I, on April 10, 2010, a copy of the proposed *Renewable Fuels Regulations*, substantially in the annexed form, and persons were given an opportunity to file comments with respect to the proposed Regulations or to file a notice of objection requesting that a board of review be established and stating the reasons for the objection;

Whereas the Governor in Council is of the opinion that the proposed Regulations could make a significant contribution to the prevention of, or reduction in, air pollution resulting from, directly or indirectly, the presence of renewable fuel in gasoline, diesel fuel or heating distillate oil;

And whereas, pursuant to subsection 140(4) of that Act, before recommending the proposed Regulations, the Minister of the Environment offered to consult with the provincial governments and the members of the National Advisory Committee who are representatives of aboriginal governments;

Therefore, Her Excellency the Governor General in Council, on the recommendation of the Minister of the Environment, pursuant to sections 140 ([see footnote c](#)) and 326 of the *Canadian Environmental Protection Act, 1999* ([see footnote d](#)), hereby makes the annexed *Renewable Fuels Regulations*.

### RENEWABLE FUELS REGULATIONS

#### INTERPRETATION

#### Definitions

1. (1) The following definitions apply in these Regulations.

“auditor”

« *vérificateur* »

“auditor”, in respect of a participant or a producer or importer of renewable fuel, means a person who

(a) is independent of the participant, producer or importer, as the case may be; and

(b) is certified, for the purposes of carrying out International Organization for Standardization quality assurance (ISO 9000 series) assessments, by

(i) the Standards Council of Canada,

(ii) the International Register of Certificated Auditors, or

(iii) any other nationally or internationally recognized accreditation organization.

“authorized official”

« *agent autorisé* »

“authorized official” means

(a) in respect of a corporation, an officer of the corporation who is authorized to act on its behalf;

(b) in respect of any other person, that person or a person authorized to act on behalf of that person; and

(c) in respect of any other entity, a person authorized to act on its behalf.

“batch”

« *lot* »

“batch” means an identifiable quantity of liquid fuel, with a single set of physical and chemical characteristics.

“biocrude”

« *biobrut* »

“biocrude” means a liquid feedstock that is derived from renewable fuel feedstock and that is used as a feedstock, with petroleum-derived feedstocks, in a production facility in Canada in the production of gasoline, diesel fuel, heating distillate oil or other liquid petroleum fuels.

“biodiesel”

« *biodiesel* »

“biodiesel” means a liquid fuel that

(a) is comprised of at least one mono-alkyl ester produced from one or more renewable fuel feedstocks in reaction with an alcohol reactant;

(b) is suitable for use in a diesel engine; and

(c) may contain substances, other than the mono-alkyl esters described in paragraph (a), that are not produced from renewable fuel feedstocks, the combined volume of which substances accounts for less than 1.5% of the volume of the fuel.

“blending facility”

« *installation de mélange* »

“blending facility” means

(a) a non-mobile facility in Canada where liquid petroleum fuel is blended with renewable fuel; and

(b) a fleet of mobile facilities in which that blending occurs in Canada, including a fleet of any

combination of cargo tankers, railway cars, boats, marine vessels or any other type of mobile facility.

"combustion device"

« *appareil à combustion* »

"combustion device" means a device in which liquid fuel is combusted to produce useful heat or energy and includes an engine, boiler, furnace and burner.

"competition vehicle"

« *véhicule de compétition* »

"competition vehicle" means a vehicle, boat or marine vessel that is used exclusively for competition.

"compliance period"

« *période de conformité* »

"compliance period" means a gasoline compliance period or a distillate compliance period, as the context requires.

"denaturant"

« *dénaturant* »

"denaturant" means a mixture of hydrocarbons that

(a) has an end boiling point of less than 225°C;

(b) is added to ethanol to make it unsuitable for use as a beverage; and

(c) comprises in volume not less than 0.96% and not more than 4.76% of the volume of the ethanol when combined with the mixture of hydrocarbons.

"diesel fuel"

« *carburant diesel* »

"diesel fuel" means a liquid petroleum fuel that

(a) is sold or represented as diesel fuel or as fuel suitable for use in a diesel engine; or

(b) 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.

"distillate compliance period"

« *période de conformité visant le distillat* »

"distillate compliance period" means

(a) the period that begins on the day referred to in subsection 40(3) and that ends on December 31 of the next calendar year; and

(b) after that December 31, each calendar year.

"ethanol"

« *éthanol* »

"ethanol" means a liquid fuel that

(a) has a molecular formula of  $C_2H_5OH$ ;

- (b) is produced from one or more renewable fuel feedstocks;
- (c) contains a denaturant;
- (d) may contain water the volume of which accounts for up to 1.0% of the volume of the fuel; and
- (e) may contain substances, other than denaturants and water, that are not produced from renewable fuel feedstocks, the combined volume of which substances account for less than 1.0% of the volume of the fuel.

“finished gasoline”  
« *essence finie* »

“finished gasoline” means gasoline that

- (a) is sold or represented as a fuel suitable for use in a spark-ignition engine; or
- (b) has an antiknock index of at least 86, as determined by the applicable test method listed in the National Standard of Canada standard *CAN/CGSB-3.5-04, Unleaded Automotive Gasoline*.

“gasoline”  
« *essence* »

“gasoline” means a liquid petroleum fuel that is

- (a) sold or represented as gasoline, as a fuel suitable for use in a spark-ignition engine or as only requiring the addition of a renewable fuel or oxygenate to make it suitable for use in a spark-ignition engine; or
- (b) suitable for use in a spark-ignition engine and has the following characteristics, as determined by the applicable test method listed in the National Standard of Canada standard *CAN/CGSB-3.5-04, Unleaded Automotive Gasoline*:
  - (i) a vapour pressure of at least 38 kPa,
  - (ii) an antiknock index of at least 80,
  - (iii) a distillation temperature, at which 10% of the fuel has evaporated, of not less than 35°C and not greater than 70°C, and
  - (iv) a distillation temperature, at which 50% of the fuel has evaporated, of not less than 65°C and not greater than 120°C.

“gasoline compliance period”  
« *période de conformité visant l'essence* »

“gasoline compliance period” means

- (a) the period that begins on December 15, 2010 and that ends on December 31, 2012; and
- (b) after 2012, each calendar year.

“heating distillate oil”  
« *mazout de chauffage* »

“heating distillate oil” means a liquid petroleum fuel that is

- (a) sold or represented as fuel suitable for use in a domestic-type oil burner; or
- (b) suitable for use in a domestic-type oil burner.

“high-renewable-content fuel”

« *carburant à haute teneur en carburant renouvelable* »

“high-renewable-content fuel” means a liquid petroleum fuel whose renewable fuel content is

(a) greater than 10% and less than or equal to 85% of the volume of the fuel, if the fuel is gasoline;

(b) greater than 5% and less than or equal to 80% of the volume of the fuel, if the fuel is diesel fuel; and

(c) greater than 25% and less than or equal to 80% of the volume of the fuel, in any other case.

It does not include a liquid petroleum fuel whose renewable fuel content is chemically indistinguishable from the liquid petroleum fuel.

“liquid petroleum fuel”

« *carburant à base de pétrole liquide* »

“liquid petroleum fuel” means a liquid hydrocarbon-based fuel, even if the fuel has renewable fuel content, but does not include renewable fuel.

“military combat equipment”

« *équipement militaire de combat* »

“military combat equipment” means a vehicle, boat, marine vessel, aircraft, engine or heater that is designed for use in combat or combat support during military activities, including reconnaissance missions, rescue missions and training missions.

“month”

« *mois* »

“month” means

(a) for the period that begins on December 15, 2010 and that ends on January 31, 2011, that period; and

(b) in any other case, a calendar month.

“neat renewable fuel”

« *carburant renouvelable pur* »

“neat renewable fuel” means biodiesel or another renewable fuel if that other renewable fuel is

(a) produced at a facility that uses only renewable fuel feedstock for the production of fuel;

(b) suitable for use in a combustion device; and

(c) chemically indistinguishable from gasoline, diesel fuel, heating distillate oil, or any other liquid petroleum fuel that is suitable for use in a combustion device.

“neat renewable fuel consumer”

« *consommateur de carburant renouvelable pur* »

“neat renewable fuel consumer”, in relation to a batch of neat renewable fuel, means

(a) if the batch is dispensed from a retail or card-lock facility into a fuel tank of a combustion device, the owner of the facility;

(b) if the batch is dispensed from a facility, other than a facility referred to in paragraph (a), that is operated by the owner of a fleet of vehicles into the fuel tanks of the fleet vehicles, the owner of the fleet of vehicles; and

(c) in any other case, the person who uses the batch as fuel in a combustion device.

“oxygenate”

« *produit oxygéné* »

“oxygenate” means an oxygen-containing, ashless, organic compound that, when added to a liquid petroleum fuel, increases the oxygen content in the fuel.

“participant”

« *participant* »

“participant” means a person referred to in section 10.

“pre-distillate compliance period”

« *période précédant la période de conformité visant le distillat* »

“pre-distillate compliance period” means the period that begins on December 15, 2010 and that ends on the day that is the earlier of July 31, 2012 and the day before the day on which the first distillate compliance period begins.

“primary supplier”

« *fournisseur principal* »

“primary supplier” means

(a) in respect of gasoline, diesel fuel or heating distillate oil that is produced at a production facility, a person who owns, leases, operates, controls, supervises or manages the production facility; and

(b) in respect of gasoline, diesel fuel or heating distillate oil that is imported, the importer.

“production facility”

« *installation de production* »

“production facility” means a petroleum refinery, or another facility, in Canada at which gasoline, diesel fuel or heating distillate oil is produced, but does not include a blending facility unless the blending facility is part of or adjacent to a petroleum refinery.

“renewable fuel”

« *carburant renouvelable* »

“renewable fuel” means

(a) ethanol;

(b) biodiesel; and

(c) a liquid fuel, other than spent pulping liquor, that is produced from one or more renewable fuel feedstocks but may contain substances that are not produced from renewable fuel feedstocks, the combined volume of which substances accounts for less than 1.5% of the volume of the fuel.

“renewable fuel feedstock”

« *matière première de carburant renouvelable* »

“renewable fuel feedstock” means

(a) wheat grain;

(b) soy grain;

(c) grains other than those mentioned in paragraphs (a) and (b);

(d) cellulosic material that is derived from ligno-cellulosic or hemi-cellulosic matter that is available on a renewable or recurring basis;

(e) starch;

(f) oilseeds;

(g) sugar cane, sugar beets or sugar components;

(h) potatoes;

(i) tobacco;

(j) vegetable oils;

(k) algae;

(l) vegetable materials or other plant materials, other than those mentioned in paragraphs (a) to (k), including biomass;

(m) animal material, including fats, greases and oils;

(n) animal solid waste; and

(o) municipal solid waste.

“scientific research”

« *recherche scientifique* »

“scientific research” does not include research into the preferences of consumers for differing properties of fuels or marketing research.

“spent pulping liquor”

« *liqueur de cuisson résiduaire* »

“spent pulping liquor” means a by-product of the chemical process of turning wood into pulp that consists of wood residue and pulping agents.

“trade”

« *échange* »

“trade” means exchange or sell.

“trading period”

« *période d'échange* »

“trading period”, in respect of a compliance period, means the period that begins on the first day of the compliance period and that ends on March 31 of the calendar year following the end of the compliance period.

“triglyceride-derived biocrude”

« *biobrut issu de triglycérides* »

“triglyceride-derived biocrude” means a biocrude that is a glyceride in which the glycerol is chemically bound with three fatty acids.

“unfinished gasoline”

« *essence non finie* »

“unfinished gasoline” means gasoline other than finished gasoline.

## Incorporation by reference

(2) A standard or method that is incorporated by reference in these Regulations is incorporated as amended from time to time.

## GENERAL

### APPLICATION

#### Non-application threshold — primary suppliers

**2.** (1) Sections 5 to 25, paragraphs 29(*b*), (*f*) and (*g*) and sections 30 to 33 and 35 do not apply, in respect of a gasoline compliance period or of a distillate compliance period, as the case may be, to a primary supplier who produces without any importation or imports without any production, or produces and imports in total, less than 400 m<sup>3</sup> of

(*a*) gasoline, during every period of 12 consecutive months in the gasoline compliance period; and

(*b*) diesel fuel and heating distillate oil, during every period of 12 consecutive months in the distillate compliance period.

#### Non-application threshold — renewable fuel

(2) Section 34 does not apply, in respect of a compliance period, to a person who produces without any importation or imports without any production, or produces and imports in total, less than 400 m<sup>3</sup> of renewable fuel, during every period of 12 consecutive months in the compliance period.

#### Non-application — certain fuels

(3) Sections 5 to 25, paragraphs 29(*b*), (*f*) and (*g*) and sections 30 to 33 and 35 do not apply, in respect of a compliance period, to a primary supplier who, during the compliance period, produces without any importation or imports without any production, or produces and imports combined, only gasoline, diesel fuel and heating distillate oil that is described in any of paragraphs 6(4)(*a*) to (*j*), or any combination of them.

#### Non-application — section 28

(4) Section 28 does not apply, in respect of a compliance period, to a person to whom both subsections (1) and (2), or both subsections (2) and (3), apply in respect of the compliance period.

#### Non-application — para. 139(2)(*d*) of the Act

(5) These Regulations do not apply in respect of a fuel that is imported in a fuel tank that supplies the engine of a conveyance that is used for transportation by water, land or air.

#### Opting in notice

**3.** (1) Despite section 2, these Regulations apply to a primary supplier, or a producer or importer of renewable fuel, who opts-in by sending a written notice to the Minister requesting that these Regulations are to apply to them. These Regulations so apply as of a day that is specified in the notice, which day must be at least one day after the day on which the notice is sent.

#### Information

(2) The opt-in notice must contain the information set out in Schedule 1 or 6, as the case may be.

#### Rescinding opt-in notice

(3) The primary supplier, or the producer or importer, as the case may be, may rescind the opt-in notice by fulfilling the requirements described in paragraphs 11(3)(*a*) to (*c*).



## MEASUREMENT OF VOLUMES

### Requirements

**4.** (1) Subject to subsections (2) and (3), any volume that a person is required to record under these Regulations must be determined

(a) by one or more measurement devices that comply with the *Weights and Measures Act* and the regulations made under that Act; or

(b) in accordance with a measurement standard or method that is appropriate for that determination and is cited in the American Petroleum Institute's *Manual of Petroleum Measurement Standards*.

### Requirements — transitory rule

(2) A person may, for the 180 days after the coming into force of this section, use a measurement standard or method that deviates from one referred to in paragraph 1(b), if the person describes that deviation in the report on measurement methods sent under section 35.

### Non-application of subsection (1)

(3) If there is no measurement device, standard or method referred to in subsection (1) that would allow the person to determine the volume in accordance with that subsection, the person must record the volume as accurately determined by another person who is independent of them. They must record the following information obtained from the other person:

(a) the name and civic address of the other person;

(b) the volume, expressed in litres, as determined by the other person and the type of fuel or biocrude that the volume comprises;

(c) the date on which and the location where the determination was made;

(d) the measurement device, standard or method used to determine the volume; and

(e) the type of renewable fuel in the volume, if any, and the volume of that renewable fuel, expressed in litres.

### Volumetric correction

(4) A volume referred to in subsection (1) must be corrected to a temperature of 15°C and, in the case of a volume of biocrude, by subtracting the volume of water contained in the biocrude, if any. However, a person who imports a batch of fuel may correct the volume of the batch to 60°F, if the person records that they made the correction.

### Volumetric correction — transitional

(5) Despite subsection (4), a volume referred to in paragraph (1)(b) or subsection (3) need not, for the 180 days after the coming into force of this section, be corrected to a temperature of 15°C or 60°F.

### When volume determined

(6) If the volume of a batch of liquid petroleum fuel is to be measured under subsection (1) at a production facility at which it was produced, the volume must be determined as follows:

(a) if the batch is dispatched from a production facility that is owned by a primary supplier to another facility that is owned by the primary supplier in a series of railway cars through which the fuel flows

(i) on dispatch of the batch from the production facility, or

(ii) on receipt of the batch at that other facility;

(b) if the batch is dispensed into the fuel tank of a vehicle or other mobile equipment within the production facility

(i) on the batch being sent to a fuel dispensing device — or the storage tank that services the fuel dispensing device — within the production facility, or

(ii) on the batch being dispensed from that fuel dispensing device; and

(c) in any other case, on dispatch of the batch from the production facility.

Cubic metres rather than litres

(7) A volume that is to be recorded or reported

(a) under section 29 — if the volume is the volume of a batch referred to in subparagraph 29(e)(iii) or (iv) — or under paragraph 32(1)(d) or (2)(d) or any of subsections 32(4), (5) and (8) may be expressed in cubic metres to three decimal places, rather than in litres, if that unit is indicated in the record or report; and

(b) under section 29 — if the volume is a volume not referred to in subparagraph 29(e)(iii) or (iv) — or under any other provision of these Regulations, other than those referred to in paragraph (a), may be expressed in whole cubic metres or in cubic metres to one, two or three decimal places, rather than in litres, if that unit is indicated in the record or report.

Rounding

(8) A volume

(a) referred to in paragraph (7)(a) that is expressed in cubic metres, is to be rounded to the nearest thousandth of a cubic metre and, if the volume is equidistant between two one-thousandths of a cubic metre, to the higher of them; and

(b) referred to in paragraph (7)(b) that is expressed in whole cubic metres or in cubic metres to one, two or three decimal places, is to be rounded, as the case may be, to the nearest whole cubic metre or the nearest one-tenth, one-hundredth, or one-thousandth of a cubic metre and, if the volume is equidistant between two whole cubic metres or two one-tenths, one-hundredths or one-thousandths of a cubic metre, to the higher of them; and

(c) referred to in paragraph (7)(a) or (b) that is expressed in litres is to be rounded to the nearest litre and, if the volume is equidistant between two litres, to the higher of them.

## PART 1

### REQUIREMENTS PERTAINING TO GASOLINE, DIESEL FUEL AND HEATING DISTILLATE OIL

#### PRESCRIBED QUANTITIES OF RENEWABLE FUEL

Gasoline pool

**5.** (1) For the purpose of section 139 of the Act, the quantity of renewable fuel, expressed as a volume in litres, calculated in accordance with subsection 8(1), must be at least 5% of the volume, expressed in litres, of a primary supplier's gasoline pool for each gasoline compliance period.

Distillate pool

(2) For the purpose of section 139 of the Act, the quantity of renewable fuel, expressed as a volume in litres, calculated in accordance with subsection 8(2), must be at least 2% of the volume, expressed in litres, of a primary supplier's distillate pool for each distillate compliance period.

## GASOLINE POOL AND DISTILLATE POOL

### Gasoline pool

**6.** (1) A primary supplier's gasoline pool for a gasoline compliance period is the total volume of the batches of gasoline that they

- (a) produce at a production facility and, during the gasoline compliance period, either
  - (i) dispatch from the production facility, or
  - (ii) dispense into the fuel tank of a vehicle or other mobile equipment within the production facility; and
- (b) import during the gasoline compliance period.

### Distillate pool

(2) A primary supplier's distillate pool for a distillate compliance period is the total volume of the batches of diesel fuel and heating distillate oil that they

- (a) produce at a production facility and, during the distillate compliance period, either
  - (i) dispatch from the production facility, or
  - (ii) dispense into the fuel tank of a vehicle or other mobile equipment within the production facility; and
- (b) import during the distillate compliance period.

### Batches produced from other batches

(3) Despite subsections (1) and (2), if a primary supplier produces a batch of gasoline, diesel fuel or heating distillate oil at any of their production facilities from other batches of gasoline, diesel fuel or heating distillate oil, as the case may be, received at that production facility, only that portion of the volume of the batch that exceeds the volume of the other batches is counted for the determination of the total volume in their pool. The primary supplier must, under section 29, record this excess portion as if that excess portion were the batch mentioned under that section.

### Excluded volumes

(4) Despite subsections (1) and (2), a primary supplier may subtract from their gasoline pool or distillate pool, as the case may be, the volume of a batch, or of a portion of the batch, of fuel in their pool if they make, before the end of the trading period in respect of the compliance period, a record that establishes that the volume was a volume of one of the following types of fuel:

- (a) gasoline, diesel fuel or heating distillate oil, as the case may be, sold for or delivered for use in aircraft;
- (b) gasoline, diesel fuel or heating distillate oil, as the case may be, sold for or delivered for use in competition vehicles;
- (c) gasoline, diesel fuel or heating distillate oil, as the case may be, sold for or delivered for use in scientific research;
- (d) gasoline, diesel fuel or heating distillate oil, as the case may be, sold for or delivered for use as feedstock in the production of chemicals, other than fuels, in a chemical manufacturing facility;
- (e) diesel fuel or heating distillate oil, as the case may be, sold for or delivered for use in military combat equipment;

(f) diesel fuel or heating distillate oil, as the case may be, represented as kerosene and sold for or delivered for use in unvented space heaters, wick-fed illuminating lamps, or flue-connected stoves and heaters;

(g) gasoline sold for or delivered for use in Newfoundland and Labrador, the Northwest Territories, Yukon, Nunavut and that part of Quebec that is north of latitude 60°N;

(h) diesel fuel or heating distillate oil, as the case may be, sold for or delivered for use in the Northwest Territories, Yukon, Nunavut and that part of Quebec that is north of latitude 60°N;

(i) gasoline, diesel fuel or heating distillate oil, as the case may be, for export; and

(j) gasoline, diesel fuel or heating distillate oil, as the case may be, in transit through Canada, from a place outside Canada to another place outside Canada.

#### Exclusion of renewable fuel

(5) Despite subsections (1) and (2), a primary supplier may subtract from their gasoline pool or distillate pool, as the case may be, a volume of renewable fuel that is in a batch of fuel in the pool or in an excess portion of a batch of fuel referred to in subsection (3) in the pool if they have a record that establishes that that volume is renewable fuel.

#### Reduction for use of biocrude — gasoline

(6) A primary supplier may subtract from their gasoline pool for a gasoline compliance period 20% of the volume, if any, of biocrude, other than triglyceride-derived biocrude, that they used as feedstock to produce liquid petroleum fuel during the gasoline compliance period.

#### Reduction for use of biocrude — distillate

(7) A primary supplier may subtract from their distillate pool for a distillate compliance period

(a) 20% of the volume, if any, of biocrude, other than triglyceride-derived biocrude, that they used as feedstock to produce liquid petroleum fuel during the distillate compliance period; and

(b) 85% of the volume, if any, of triglyceride-derived biocrude that they used as feedstock to produce liquid petroleum fuel during the distillate compliance period.

### USE OF COMPLIANCE UNITS

#### Representing renewable fuel

**7.** (1) Compliance units, which represent litres of renewable fuel, created under Part 2 are used to establish compliance with section 5.

#### Use of compliance units

(2) A compliance unit may only be used once to establish compliance with section 5 and only in respect of the compliance period during which it was created under any of sections 13 to 16 or into which it was carried forward or carried back under any of sections 21 to 24.

#### Use of distillate compliance units for gasoline compliance

(3) Distillate compliance units may be used to establish compliance with subsection 5(1) for a gasoline compliance period to the extent that they are assigned as the value for  $DtG_{DG}$  in subsection 8(1).

### VOLUME OF RENEWABLE FUEL

#### Gasoline pool

**8. (1)** The volume of renewable fuel in a primary supplier's gasoline pool for a gasoline compliance period is to be determined in accordance with the equation

$$RF_G = Cre_G + Rec_G - Tr_G - Can_G + CF_G + CB_G + DtG_{DG}$$

where

$RF_G$  is the volume, expressed in litres, of renewable fuel in their gasoline pool;

$Cre_G$  is the volume, expressed in litres, that is equal to the number of gasoline compliance units that they created during the gasoline compliance period;

$Rec_G$  is the volume, expressed in litres, that is equal to the number of gasoline compliance units, in respect of the gasoline compliance period, that they received in trade;

$Tr_G$  is the volume, expressed in litres, that is equal to the number of gasoline compliance units, in respect of the gasoline compliance period, that they transferred in trade to another primary supplier;

$Can_G$  is the volume, expressed in litres, that is equal to the number of gasoline compliance units, in respect of the gasoline compliance period, that they are required to cancel;

$CF_G$  is the volume, expressed in litres, that is equal to the number of gasoline compliance units that they carried forward into the gasoline compliance period;

$CB_G$  is the volume, expressed in litres, that is equal to the number of gasoline compliance units that they carried back into the gasoline compliance period, minus the volume, expressed in litres, that is equal to the number of gasoline compliance units that they carried back from the gasoline compliance period into the preceding gasoline compliance period; and

$DtG_{DG}$  is the volume, expressed in litres, that is equal to the number, if any, of distillate compliance units that they assign as the value for  $DtG_{DG}$  for the gasoline compliance period.

Distillate

**(2)** The volume of renewable fuel in a primary supplier's distillate pool for a distillate compliance period is to be determined in accordance with the equation

$$RF_D = Cre_D + Rec_D - Tr_D - Can_D + CF_D + CB_D - DtG_{DD}$$

where

$RF_D$  is the volume, expressed in litres, of renewable fuel in their distillate pool;

$Cre_D$  is the volume, expressed in litres, that is equal to the number of distillate compliance units that they created during the distillate compliance period;

$Rec_D$  is the volume, expressed in litres, that is equal to the number of distillate compliance units, in respect of the distillate compliance period, that they received in trade;

$Tr_D$  is the volume, expressed in litres, that is equal to the number of distillate compliance units, in respect of the distillate compliance period, that they transferred in trade to another primary supplier;

$Can_D$  is the volume, expressed in litres, that is equal to the number of distillate compliance units, in respect of the distillate compliance period, that they are required to cancel;

$CF_D$  is the volume, expressed in litres, that is equal to the number of distillate compliance units that they carried forward into the distillate compliance period;

$CB_D$  is the volume, expressed in litres, that is equal to the number of distillate compliance units that they carried back into the distillate compliance period, minus the volume, expressed in litres, that is equal to the number of distillate compliance units that they carried back from the distillate compliance period into the preceding distillate compliance period; and

$DtG_{DD}$  is the volume, expressed in litres, that is equal to

- (a) for distillate compliance periods other than the first one, the value that they assigned for  $DtG_{DG}$  in subsection (1) for the gasoline compliance period that is the same period as the distillate compliance period, and
- (b) for the first distillate compliance period, the total of the values that they assigned for  $DtG_{DG}$  in subsection (1) for gasoline compliance periods that overlapped with the first distillate compliance period.

## REGISTRATION AS A PRIMARY SUPPLIER

### Registration

**9.** (1) A primary supplier must register by sending to the Minister a registration report that contains the information set out in Schedule 1 at least one day before, during any period of 12 consecutive months in a gasoline compliance period, they produce without any importation or import without any production, or produce and import in total, their 400th  $m^3$

- (a) of gasoline; or
- (b) of diesel fuel or heating distillate oil, or any combination of them.

### Change of information

(2) If the information provided in the registration report — other than the information referred to in item 1 of Schedule 1 — changes, the primary supplier must send a notice to the Minister that provides the updated information no later than five days after the change.

## PART 2

### COMPLIANCE UNIT TRADING SYSTEM

#### PARTICIPANTS

#### Who are participants

**10.** Participants in the trading system are

- (a) primary suppliers; and
- (b) elective participants.

#### Elective participants

**11.** (1) An elective participant is a person other than a primary supplier who

- (a) does one or more of the following:
  - (i) blends, in Canada, renewable fuel with liquid petroleum fuel,
  - (ii) produces, in Canada, a liquid petroleum fuel — other than gasoline, diesel fuel and heating distillate oil — by using biocrude as a feedstock,
  - (iii) imports into Canada a liquid petroleum fuel — other than gasoline, diesel fuel and heating distillate oil — that has renewable fuel content,

(iv) sells, in Canada, neat renewable fuel to a neat renewable fuel consumer for use as fuel in a combustion device, and

(v) uses, as fuel in a combustion device in Canada, neat renewable fuel that they produced or imported; and

(b) registers by sending to the Minister a registration report that contains the information set out in Schedule 2 at least one day before they first create a compliance unit.

#### Change of information

(2) If the information provided in the registration report — other than the information referred to in item 1 of Schedule 2 — changes, the elective participant must send a notice to the Minister that provides the updated information no later than five days after the change occurs.

#### End of participation

(3) An elective participant may end their participation in the trading system if they

(a) send to the Minister a notice stating that they will end their participation as of a specified date;

(b) provide any report or notice that is required by these Regulations; and

(c) cancel, as of that specified date, all their compliance units.

### CREATION OF COMPLIANCE UNITS

#### Participants who may create

**12.** (1) Only the following participants may create a compliance unit:

(a) the owner of the blended fuel on its blending referred to in section 13;

(b) the importer of the batch referred to in section 14;

(c) the user of biocrude as feedstock to produce the fuel referred to in section 15; or

(d) the seller of the neat renewable fuel, or the participant, referred to in section 16.

#### Single creator

(2) If there is more than one person described in any of paragraphs (1)(a) to (d), the creator of the compliance unit is the participant who, under a written agreement between all those persons, is designated to be the creator of the compliance unit. Without that agreement, no compliance unit is created.

#### Blending in Canada — gasoline compliance units

**13.** (1) Subject to subsection (3), a single gasoline compliance unit is created for each litre of renewable fuel on its blending in Canada with a batch of liquid petroleum fuel other than diesel fuel or heating distillate oil.

#### Blending in Canada — distillate compliance units

(2) Subject to subsection (3), a single distillate compliance unit is created for each litre of renewable fuel on its blending in Canada with a batch of diesel fuel or heating distillate oil.

#### Confirmation of creation

(3) The creation of a compliance unit under subsection (1) or (2) is confirmed on the making of a record

(a) of the information set out in subsection 32(1) related to the resulting blended batch and, if the resulting blended batch is high-renewable-content fuel, subsection 32(3); and

(b) referred to in section 31 of its creation.

No recording, no creation

(4) Without that recording, the compliance unit is deemed never to have been created.

Importation — gasoline compliance units

**14.** (1) Subject to subsection (3), a single gasoline compliance unit is created for each litre of renewable fuel that is contained in a batch of liquid petroleum fuel, other than diesel fuel or heating distillate oil, on its importation into Canada.

Importation — distillate compliance units

(2) Subject to subsection (3), a single distillate compliance unit is created for each litre of renewable fuel that is contained in a batch of diesel fuel, or heating distillate oil, on its importation into Canada.

Confirmation of creation

(3) The creation of a compliance unit under subsection (1) or (2) is confirmed on the making of a record

(a) of the information set out in subsection 32(2) related to the imported batch and, if the imported batch is high-renewable-content fuel, subsection 32(3); and

(b) referred to in section 31 of its creation.

No recording, no creation

(4) Without that recording, the compliance unit is deemed never to have been created.

Triglyceride-derived biocrude

**15.** (1) Subject to subsection (3), 17 distillate compliance units are created for each 20 litres of triglyceride-derived biocrude on its use as feedstock to produce liquid petroleum fuel in Canada.

Other biocrude

(2) Subject to subsection (3), a single gasoline compliance unit and a single distillate compliance unit are created for each five litres of biocrude, other than triglyceride-derived biocrude, on its use as feedstock to produce liquid petroleum fuel in Canada.

Confirmation of creation

(3) The creation of a compliance unit under subsection (1) or (2) is confirmed on the making of a record

(a) of the information set out in subsection 32(4) related to the use of biocrude as feedstock; and

(b) referred to in section 31 of its creation.

No recording, no creation

(4) Without that recording, the compliance unit is deemed never to have been created.

Neat renewable fuel — gasoline compliance units

**16.** (1) Subject to subsection (3), a single gasoline compliance unit is created for each litre of a batch of neat renewable fuel on its



(a) sale in Canada to a neat renewable fuel consumer for use as fuel in a combustion device other than a diesel engine or domestic-type burner; or

(b) use in Canada as fuel in a combustion device other than a diesel engine or domestic-type burner by a participant who produced or imported the fuel.

#### Neat renewable fuel — distillate compliance units

(2) Subject to subsection (3), a single distillate compliance unit is created for each litre of a batch of neat renewable fuel on its

(a) sale in Canada to a neat renewable fuel consumer for use as fuel in a diesel engine or domestic-type burner; or

(b) use in Canada as fuel in a diesel engine or domestic-type burner by a participant who produced or imported the fuel.

#### Confirmation of creation

(3) The creation of a compliance unit under subsection (1) or (2) is confirmed on the making of a record

(a) of the information set out in subsection 32(5) related to the sale for use, or the use, as fuel in a combustion device of the batch of neat renewable fuel, as the case may be; and

(b) referred to in section 31 of its creation.

#### No recording, no creation

(4) Without that recording, the compliance unit is deemed never to have been created.

#### Limitation

**17.** (1) Despite sections 13 to 15, no compliance unit may be created in respect of

(a) a resulting blended batch or imported batch of gasoline, or a batch of gasoline produced from biocrude used as feedstock, if the volume of renewable fuel in the batch comprises more than 85% of the total volume of the batch;

(b) a resulting blended batch or imported batch of liquid petroleum fuel other than gasoline, or a batch of liquid petroleum fuel other than gasoline produced from biocrude used as feedstock, if the volume of renewable fuel in the batch comprises more than 80% of the total volume of the batch; and

(c) a batch of renewable fuel that results from blending.

#### Limitation — municipal solid waste

(2) Despite sections 13 to 16, no compliance unit may be created in respect of renewable fuel, or biocrude, that was in whole or in part produced from municipal solid waste unless the participant has records that demonstrate that the municipal solid waste

(a) has a biogenic carbon content, based on random sampling done at least once every three years, of greater than 50% of the total carbon content, by mass; and

(b) is sorted and pre-processed at a facility that has removed all but trace quantities of any pesticides, paints, petroleum oils, solvents, sludges that contain heavy metals, material from tires or radioactive, corrosive, explosive or infectious materials.

### OWNERSHIP OF COMPLIANCE UNITS

## Ownership of compliance units

**18.** (1) On creation, a compliance unit is owned by the participant who created it.

### Single owner

(2) At any given time, a compliance unit may only have a single owner.

### Maximum number of gasoline compliance units

**19.** (1) Subject to subsection (3), the number of gasoline compliance units in respect of a gasoline compliance period that a primary supplier may own at the end of each month during the gasoline compliance period must not exceed the greater of

(a) six multiplied by the number of litres in the primary supplier's gasoline pool at the end of that month, determined as if the compliance period ended at the end of that month, and

(b) 0.01 multiplied by the number of litres in the primary supplier's gasoline pool for the preceding gasoline compliance period.

### Maximum number of distillate compliance units

(2) Subject to subsection (3), the number of distillate compliance units in respect of a distillate compliance period that a primary supplier may own at the end of each month during the distillate compliance period must not exceed the greater of

(a) six multiplied by the number of litres in the primary supplier's distillate pool at the end of that month, determined as if the compliance period ended at the end of that month, and

(b) 0.004 multiplied by the number of litres

(i) in the case of the first distillate compliance period, in the primary supplier's distillate pool determined using the pre-distillate compliance period as if it were the distillate compliance period in question, and

(ii) in any other case, in the primary supplier's distillate pool for the preceding distillate compliance period.

### Number of compliance units deemed not included

(3) For the purpose of subsection (1) or (2), the number of gasoline compliance units or distillate compliance units, as the case may be, that a primary supplier owns at the end of a month is deemed not to include the number of those compliance units, in respect of the compliance period in question, that, during the next month, they transferred in trade that were in excess of those that they received in trade.

## TRADING OF COMPLIANCE UNITS

### To primary suppliers

**20.** (1) A compliance unit may only be transferred in trade to a primary supplier.

### When trading permitted

(2) Only a compliance unit created during, or carried forward into, a compliance period may be transferred in trade, and only if the trade occurs during the trading period in respect of the compliance period.

## CARRY FORWARD OF COMPLIANCE UNITS

### Carry forward — primary suppliers (gasoline)

**21.** (1) Before the end of the trading period in respect of a gasoline compliance period, a primary supplier may carry forward their surplus gasoline compliance units — up to a maximum of 0.01 multiplied by the number of litres in their gasoline pool for that gasoline compliance period — into the next gasoline compliance period.

#### Surplus gasoline compliance units

(2) The number of surplus gasoline compliance units referred to in subsection (1) is the number that equals the number of litres determined according to the following formula:

$$RF_G - (0.05 \times P_G)$$

where

$RF_G$  is the volume, expressed in litres, that the primary supplier determined for the description  $RF_G$  in accordance with subsection 8(1) for that gasoline compliance period; and

$P_G$  is the number of litres in the primary supplier's gasoline pool for that gasoline compliance period, as determined in accordance with section 6.

#### Carry forward — primary suppliers (distillate)

**22.** (1) Before the end of the trading period in respect of a distillate compliance period, a primary supplier may carry forward their surplus distillate compliance units — up to a maximum of 0.004 multiplied by the number of litres in their distillate pool for that distillate compliance period — into the next distillate compliance period.

#### Surplus distillate compliance units

(2) The number of surplus distillate compliance units referred to in subsection (1) is the number that equals the number of litres determined according to the following formula:

$$RF_D - (0.02 \times P_D)$$

where

$RF_D$  is the volume, expressed in litres, that the primary supplier determined for the description  $RF_D$  in accordance with subsection 8(2) for that distillate compliance period; and

$P_D$  is the number of litres in the primary supplier's distillate pool for that distillate compliance period, as determined in accordance with section 6.

#### Carry forward into first distillate compliance period

(3) When the pre-distillate compliance period ends, a primary supplier may carry forward into the first distillate compliance period distillate compliance units that they own at the end of the pre-distillate compliance period and that have not been assigned, under subsection 7(3), as the value for  $DtG_{DG}$  in subsection 8(1). The number of distillate compliance units that may be so carried forward must not exceed 0.004 multiplied by the number of litres in the primary supplier's distillate pool determined using the pre-distillate compliance period as if it were the distillate compliance period in question, and for the purpose of subsection 25(4), those distillate compliance units are, during any period between the end of the pre-distillate compliance period and the beginning of the first distillate compliance period, considered to be in the process of being carried forward.

#### Carry forward — elective participants

**23.** An elective participant may, before the end of the trading period in respect of a compliance period, carry forward their compliance units — up to a maximum of the number of compliance units that they created during the compliance period — into the next compliance period. For greater certainty, no distillate compliance units may be carried forward by an elective participant into the first distillate

compliance period or any gasoline compliance period that occurs before the first distillate compliance period.

## CARRY BACK OF COMPLIANCE UNITS

### Carry back

**24.** (1) Subject to subsection (2), during the last three months of a trading period in respect of a compliance period, a primary supplier may carry back into the compliance period some, or all, of their compliance units.

### Maximum carried back

(2) The maximum number of compliance units that may be carried back is

(a) for gasoline compliance units, 0.0025 multiplied by the number of litres in the primary supplier's gasoline pool for the gasoline compliance period; and

(b) for distillate compliance units, 0.001 multiplied by the number of litres in the primary supplier's distillate pool for the distillate compliance period.

## CANCELLATION OF COMPLIANCE UNITS

### Carry back

**25.** (1) For each compliance unit that a primary supplier carried back into a compliance period, the primary supplier must, before the end of the trading period in respect of the compliance period, cancel from their compliance units that remain after that carrying back

(a) two gasoline compliance units for each gasoline compliance unit carried back; and

(b) two distillate compliance units for each distillate compliance unit carried back.

### Exports

(2) For each litre of renewable fuel in a batch of liquid petroleum fuel exported by a participant, or by one of their affiliates who is not a participant, during a compliance period, the participant must, before the end of the trading period in respect of the compliance period, cancel compliance units that were created during, or carried forward or carried back into, the compliance period as follows:

(a) one distillate compliance unit, if the liquid petroleum fuel was diesel fuel or heating distillate oil; and

(b) one gasoline compliance unit or one distillate compliance unit, in any other case.

### Excess compliance units

(3) If, at the end of a month, a primary supplier owns a number of compliance units in respect of a compliance period in excess of the maximum permitted under section 19 for the month, that number of their compliance units in respect of the compliance period is cancelled at the end of the next month.

### Unused compliance units

(4) At the end of the trading period in respect of a compliance period, a compliance unit in respect of the compliance period that is neither used nor carried forward is cancelled.

## PART 3

## RECORDS AND REPORTING

## GENERAL

## Ministerial request for samples and information

**26.** Any person who produces, imports or sells gasoline, diesel fuel, heating distillate oil, other liquid petroleum fuel, renewable fuel or biocrude must, on the Minister's request, provide to the Minister

- (a) a sample of the fuel or biocrude;
- (b) a copy of any record required to be made by the person under these Regulations;
- (c) the name and civic address of any person from whom the fuel or biocrude was acquired and the date of acquisition; or
- (d) a copy of the measurement standard or method used to determine a volume under these Regulations.

## Electronic report or notice

**27.** (1) A report or notice that is required under these Regulations must be sent electronically in the form and format specified by the Minister and must bear the electronic signature of an authorized official.

## Paper report or notice

(2) If the Minister has not specified an electronic form and format or if it is impractical to send the report or notice electronically in accordance with subsection (1) because of circumstances beyond the person's control, the report or notice must be sent on paper, signed by an authorized official, and in the form and format specified by the Minister. However, if no form and format has been so specified, it may be in any form and format.

## Non-application — auditor's report

(3) Subsections (1) and (2) do not apply to the auditor's report referred to in section 28.

## AUDITOR'S REPORT

## Auditing of records and reports

**28.** (1) A participant, or a producer or importer of renewable fuel, must have their records and reports that are required under these Regulations in respect of each compliance period audited by an auditor. The audit must assess whether the participant's, the producer's or the importer's practices and procedures are, in the auditor's opinion, appropriate to ensure, and to demonstrate, compliance with these Regulations.

## Auditor's reports

(2) The participant, the producer or the importer must obtain a report, signed by the auditor, in respect of the audit that contains the information set out in Schedule 3. They must, on or before June 30 following the end of the compliance period, send the auditor's report to the Minister.

## Non-application — no compliance units created

(3) Subsections (1) and (2) do not apply, in respect of a compliance period, to a producer or importer of a renewable fuel who demonstrates, in supporting documents sent together with a report referred to in subsection 34(4), that no compliance units were created from renewable fuel that they produced or imported during the compliance period.

## Non-application before first distillate compliance period

(4) During the period before the first distillate compliance period, subsections (1) and (2) do not apply to a primary supplier who, during that period, does not produce or import gasoline or create, or receive in trade, a compliance unit.

## PRIMARY SUPPLIERS

### Records of batches — gasoline pool and distillate pool

**29.** A primary supplier must make a record of every batch of gasoline, diesel fuel or heating distillate oil that they produce or import during a gasoline compliance period. The record must contain the following information:

- (a) the volume, expressed in litres, of the batch;
- (b) the volume, expressed in litres, of renewable fuel, if any, in the batch;
- (c) whether the batch was finished gasoline, unfinished gasoline, diesel fuel or heating distillate oil;
- (d) the production facility at which the batch was produced or the province via which the importation of the batch occurred;
- (e) the date or dates on which the primary supplier
  - (i) imported the batch,
  - (ii) dispatched the batch from that production facility,
  - (iii) sent the batch to a fuel dispensing device — or the storage tank that services the fuel dispensing device — within that production facility, or
  - (iv) dispensed the batch from that fuel dispensing device;
- (f) if the entire volume of the batch is subtracted under subsection 6(4), the paragraph of that subsection that describes the fuel; and
- (g) if a portion of the volume of the batch is subtracted under subsection 6(4), the paragraph of that subsection that describes the fuel and the volume, expressed in litres, of the portion.

### Annual report

**30.** For each compliance period during which a primary supplier produces or imports gasoline, diesel fuel or heating distillate oil, they must, on or before April 15 following the end of the compliance period, send a report to the Minister that contains the information set out in Schedule 4 for the compliance period.

## PARTICIPANTS

### Compliance unit account book

**31.** (1) For each trading period in respect of a compliance period, a participant must make a record in a compliance unit account book of the gasoline compliance units and of the distillate compliance units, as the case may be, that they

- (a) created during, carried forward or carried back into, or carried forward or carried back from, the compliance period;
- (b) transferred in trade, received in trade, or cancelled during the trading period in respect of the compliance period; and
- (c) for distillate compliance units, used to establish compliance with subsection 5(1) for a gasoline compliance period because they were assigned, under subsection 7(3), as the value for  $DtG_{DG}$  in subsection 8(1).

### Information

(2) The participant must, in the compliance unit account book for each month of the trading period in respect of a compliance period, make a record of the month and year and — in respect of any compliance units created during, carried forward or carried back into, or carried forward or carried back from, the compliance period — a record of

- (a) for each blending facility at which the participant created compliance units, the number of compliance units created as a result of the blending of renewable fuel with liquid petroleum fuel;
- (b) for each province via which the participant imported liquid petroleum fuel with renewable fuel content, the number of compliance units they created as a result of that importation;
- (c) for each production facility, the number of compliance units that the participant created as a result of the production of liquid petroleum fuel from biocrude used as feedstock;
- (d) the number of compliance units that the participant created under section 16 in respect of neat renewable fuel;
- (e) for each other participant from whom the participant received in trade compliance units, the number of compliance units so received;
- (f) for each primary supplier to whom the participant transferred in trade compliance units, the number of compliance units so transferred;
- (g) the number of compliance units that the participant carried forward under sections 21 to 23;
- (h) the number of compliance units that the participant carried back under subsection 24(1);
- (i) the number of compliance units that the participant cancelled under subsection 25(1);
- (j) for each province via which exportation occurred, the number of compliance units that the participant cancelled under subsection 25(2);
- (k) the number of their compliance units cancelled under subsection 25(3);
- (l) the number of their compliance units cancelled under subsection 25(4);
- (m) in the case of an elective participant who ends their participation in the trading system, the number of compliance units cancelled on the date on which they ended their participation;
- (n) in the case of a primary supplier, the number they assigned, if any, under subsection 7(3), as the value for  $DtG_{DG}$  in subsection 8(1); and
- (o) the date on which the record was made.

When record made

(3) The record must be made within 15 days after the end of the month for which the information is required to be recorded.

Cumulative information

(4) In addition, the record must, for each period that begins on the first day of the compliance period and ends at the end of the month in respect of which the information is required to be recorded, include

- (a) the number of compliance units referred to in each of paragraphs (2)(a) to (n);
- (b) the number of compliance units that the participant created, carried forward, carried back, transferred in trade, received in trade or cancelled, as the case may be; and
- (c) the balance of the participant's compliance units.

## Format

(5) The compliance unit account book must be in the form and format specified by the Minister. However, if no form and format is so specified, it may be in any form and format.

## Records for blended fuel

**32.** (1) A participant who creates a compliance unit under section 13 must make a record of the following information for each batch of the resulting blended fuel:

(a) the civic address and name, if any, of the facility where the blending occurred or, if the blending occurred in a mobile facility, the province where it occurred;

(b) the date on which the batch was blended;

(c) the volume, expressed in litres, of the liquid petroleum fuel that was blended with the renewable fuel and the type of liquid petroleum fuel it was:

(i) finished gasoline,

(ii) unfinished gasoline,

(iii) diesel fuel,

(iv) heating distillate oil, or

(v) another type of liquid petroleum fuel, in which case, the type must be specified;

(d) the type and volume, expressed in litres, of renewable fuel that was blended with the liquid petroleum fuel and, if known,

(i) the name, civic address and telephone number of the person from whom the renewable fuel was acquired and of the person who produced the renewable fuel, and

(ii) each type of renewable fuel feedstock that was used to produce the renewable fuel; and

(e) the content of renewable fuel in the batch, expressed as per cent by volume.

## Records for imported fuel

(2) A participant who creates a compliance unit under section 14 must make a record of the following information for each batch of the imported fuel:

(a) the province via which the importation occurred and the point of entry into Canada;

(b) the date that the batch was imported and, if known, the name, civic address and telephone number of the person from whom the batch was acquired and of the person who produced the batch;

(c) the volume, expressed in litres, of the batch and the type of fuel it was:

(i) finished gasoline,

(ii) unfinished gasoline,

(iii) diesel fuel,

(iv) heating distillate oil, or

(v) another type of liquid petroleum fuel, in which case, the type must be specified;

(d) for the renewable fuel in the batch,



- (i) the type of renewable fuel,
  - (ii) the volume, expressed in litres, of the renewable fuel, and
  - (iii) if known, each type of renewable fuel feedstock that was used to produce the renewable fuel and the country of origin of that renewable fuel; and
- (e) the content of renewable fuel in the batch, expressed as per cent by volume.

#### Records for high-renewable-content fuel

(3) A participant who creates a compliance unit under section 13 or 14 must make a record of the following information for each batch of high-renewable-content fuel that resulted from blending or was imported, as the case may be:

- (a) information that establishes that the high-renewable-content fuel
  - (i) was sold in Canada for use as fuel in a combustion device and was identified as being high-renewable-content fuel in a cautionary statement in both official languages that identified its renewable fuel type, that specified its minimum renewable fuel content and that stated that it may not be suitable for some engines and that the owner's manual ought to be consulted on this matter, which statement must have been
    - (A) on the fuel dispensing device that dispensed the fuel into a fuel tank of a combustion device, in a location and manner that allowed it to be easily read by a person while dispensing the fuel, or
    - (B) in a document provided, prior to the sale or transfer of the fuel, to the person who used it as fuel in a combustion device, or
  - (ii) was used in Canada by the participant as fuel in a combustion device;
- (b) the type of combustion device, namely, a diesel engine, a domestic-type burner, a spark-ignition engine, a boiler, a furnace or another type; and
- (c) the civic address of each facility to which the high-renewable-content fuel was delivered to be dispensed into a fuel tank of a combustion device and the date of that delivery.

#### Records for biocrude as feedstock

(4) A participant who creates a compliance unit under section 15 must, once per month, make a record that contains the following information related to the use of biocrude as feedstock during the previous month:

- (a) the civic address and name, if any, of the production facility; and
- (b) for each of type of biocrude so used,
  - (i) the month and year in which the biocrude was used,
  - (ii) the volume, expressed in litres,
  - (iii) the name of each person from whom the biocrude was acquired, if any,
  - (iv) if known, the name of each person who produced the biocrude, and
  - (v) if known, each type of renewable fuel feedstock that was used to produce the biocrude and the country of origin of that biocrude.

#### Records for neat renewable fuel

- (5) A participant who creates a compliance unit under section 16 must make a record of the following

information for the batch of neat renewable fuel in question:

(a) information that establishes that the neat renewable fuel

(i) was sold in Canada for use as fuel in a combustion device and, for neat renewable fuel that is biodiesel, was identified as being neat renewable fuel in a cautionary statement in both official languages that identified its type and that stated that it may not be suitable for some engines and that the owner's manual ought to be consulted on this matter, which statement must have been

(A) on the fuel dispensing device that dispensed the fuel into a fuel tank of a combustion device, in a location and manner that allowed it to be easily read by a person while dispensing the fuel, or

(B) in a document provided, prior to the sale or transfer of the fuel, to the person who used it as fuel in a combustion device, or

(ii) was used in Canada by the participant as a fuel in a combustion device;

(b) the type of combustion device, namely, a diesel engine, a domestic-type burner, a spark-ignition engine, a boiler, a furnace or another type;

(c) the type of neat renewable fuel and the volume, expressed in litres, of the batch;

(d) the date on which the batch was sold or used;

(e) the name and the civic address of the neat renewable fuel consumer in respect of the batch;

(f) the civic address of each facility where the neat renewable fuel was dispensed into the fuel tank of the combustion device;

(g) the name, civic address and telephone number of the person, if any, from whom the neat renewable fuel was acquired and of the person who produced the neat renewable fuel, if known; and

(h) if known, each type of renewable fuel feedstock that was used to produce the neat renewable fuel.

#### Records for trades

(6) For each trade, a participant who transfers in trade, or receives in trade, compliance units must record the following information:

(a) the name of the primary supplier who received compliance units in trade;

(b) the name of the other participant who transferred in trade the compliance units to the participant;

(c) the date of the trade and the trading period in respect of which the trade is made;

(d) the number of gasoline compliance units traded, if any; and

(e) the number of distillate compliance units traded, if any.

#### Record — section 19

(7) Within 15 days after the end of each month during a compliance period, a primary supplier must make a record of the number calculated in accordance with subsection 19(1) or (2), as the case may be, for that month.

#### Records for exports

(8) For each batch of renewable fuel, or of liquid petroleum fuel that has renewable fuel content, that is exported by a participant or by one of their affiliates who is not a participant, the participant must

make a record of

- (a) the province via which the batch was exported;
- (b) the type of fuel, from the following fuel types, that was exported:
  - (i) renewable fuel, in which case, the type of renewable fuel and, if known, each type of renewable fuel feedstock that was used to produce that renewable fuel,
  - (ii) finished gasoline,
  - (iii) unfinished gasoline,
  - (iv) diesel fuel,
  - (v) heating distillate oil, or
  - (vi) another type of liquid petroleum fuel, in which case, the type must be specified; and
- (c) the volume, expressed in litres, of the batch of renewable fuel or of the renewable fuel content in the batch, as the case may be.

#### Documents establishing renewable fuel

(9) A person who creates a compliance unit based on a litre of renewable fuel or neat renewable fuel must have documentation that establishes that the fuel is renewable fuel or neat renewable fuel, as the case may be, as defined in subsection 1(1).

#### Documents establishing biocrude

(10) A person who creates a compliance unit based on a volume of biocrude must have documentation that establishes

- (a) in the case of biocrude other than triglyceride-derived biocrude, that it is biocrude as defined in subsection 1(1); and
- (b) in the case of triglyceride-derived biocrude, that it is triglyceride-derived biocrude as defined in that subsection.

#### Annual report

**33.** For each compliance period in respect of which a compliance unit is created, carried forward, carried back, transferred in trade, received in trade, or cancelled by a participant, the participant must, on or before April 15 following the end of the compliance period, send a report to the Minister that contains the information set out in Schedule 5 for the compliance period.

### PRODUCERS OR IMPORTERS OF RENEWABLE FUEL

#### Registration

**34.** (1) A producer in, or an importer into, Canada of renewable fuel must register by sending to the Minister a registration report that contains the information set out in Schedule 6 at least one day before they produce without any importation or import without any production, or their production and importation combined reaches, 400 m<sup>3</sup> of renewable fuel during any period of 12 consecutive months in a gasoline compliance period.

#### Change of information

(2) If the information provided in the registration report — other than the information referred to in item 1 of Schedule 6 — changes, the producer or importer must send a notice to the Minister that provides the updated information no later than five days after the change.

## Record-keeping

(3) The producer or importer must — for each batch of renewable fuel that they produce in, import into or sell in Canada during a gasoline compliance period — make a record of the following information:

- (a) the type of renewable fuel;
- (b) if known, each type of renewable fuel feedstock that was used to produce the renewable fuel;
- (c) the volume of the batch, expressed in litres;
- (d) for a batch that was produced, the civic address of the facility at which it was produced and the date or dates on which they dispatched the batch from that facility or sent the batch to a fuel dispensing device within that facility;
- (e) for a batch that was imported, the province via which importation occurred, the date of importation of the batch and its country of origin;
- (f) the date of sale, if any, of the batch and the name of the person to whom it was sold;
- (g) whether the batch of renewable fuel is to be exported and, if so
  - (i) in the case of fuel that is sold by the producer or the importer prior to its exportation, the province in which the fuel was located when ownership of the fuel was transferred by that sale, and
  - (ii) in any other case, the province via which the exportation is to occur; and
- (h) if known, whether the batch of renewable fuel is to be blended with liquid petroleum fuel at a facility in Canada and, if so, the name of the person, or persons, who is to own the resulting blended fuel and the civic address of the facility.

## Annual report

(4) For each gasoline compliance period during which the producer or importer produces or imports renewable fuel, they must, on or before February 15 following the end of the compliance period, send a report to the Minister that contains the information set out in Schedule 7 for the gasoline compliance period.

## PERSONS WHO ARE REQUIRED TO REGISTER

### Report on measurement methods

**35.** (1) A person who sends a registration report must send to the Minister a report on measurement methods, signed by an authorized official, that contains the information set out in Schedule 8 on or before the later of the day that is 180 days after the day on which this section comes into force and the day on which they send the registration report. The report on measurement methods must provide that information for each facility, and for each province via which importation occurs, that is, or is to be, identified in the registration report.

### Change of information

(2) If the information provided in the report on measurement methods — other than the information reported under item 1 of Schedule 8 — changes, the person must send a notice to the Minister that provides the updated information no later than five days after the change.

### Decommissioning of a facility

(3) Subsection (1) does not apply in respect of a production facility that is decommissioned, and ceases producing gasoline, diesel fuel and heating distillate oil, before the day that is 180 days after this section comes into force.

## SELLERS OF FUEL FOR EXPORT

### Record-keeping

**36.** (1) A person other than a participant, or a producer or importer of renewable fuel, who, during a gasoline compliance period, sells for export a batch of renewable fuel, or of liquid petroleum fuel that has renewable fuel content, must record

(a) the type of fuel, from the following fuel types, that was so sold:

(i) renewable fuel, in which case, the type of renewable fuel must be specified and, if known, each type of renewable fuel feedstock that was used to produce that renewable fuel,

(ii) finished gasoline,

(iii) unfinished gasoline,

(iv) diesel fuel,

(v) heating distillate oil, or

(vi) another type of liquid petroleum fuel, in which case, the type must be specified; and

(b) the volume, expressed in litres, of the batch of renewable fuel or of the renewable fuel content in the batch of liquid petroleum fuel, as the case may be; and

(c) the province in which the batch was located when ownership of the batch was transferred.

### Annual report

(2) For each gasoline compliance period during which the person sold for export a batch referred to in subsection (1), they must, on or before February 15 following the end of the compliance period, send a report to the Minister that contains the following information for the compliance period, for each type of renewable fuel by each province in which the fuel was located when ownership of the fuel was transferred by that sale:

(a) the volume, expressed in litres, of renewable fuel sold for export and, if known, that volume, by each type of renewable fuel feedstock; and

(b) the volume, expressed in litres, of renewable fuel content in each type of liquid petroleum fuel sold for export.

### Non-application

(3) Subsections (1) and (2) do not apply to a person who, during a gasoline compliance period, sells for export less than 1000 m<sup>3</sup> of renewable fuel or of liquid petroleum fuel that has renewable fuel content.

## RECORD-MAKING AND RETENTION OF INFORMATION

### When records made

**37.** Except as otherwise provided in these Regulations, records must be made as soon as feasible but no later than 15 days after the information to be recorded becomes available.

### Retention of records

**38.** (1) A person who is required under these Regulations to make a record or send a report or notice must keep the record or a copy of the report or notice, as well as any supporting documents that relate to the information contained in that record or copy, for at least five years after they make the record or send the report or notice. The record or copy must be kept at the person's principal place of

business in Canada or at any other place in Canada where it can be inspected. If the record or copy is kept at one of those other places, the person must provide the Minister with the civic address of that other place.

#### Supporting documents

(2) Every participant must keep supporting documents evidencing the information recorded under section 31 in their compliance unit account book and recorded under sections 29 and 32, including,

- (a) data on and calculations of volumes recorded;
- (b) dated metered-values, bills of lading, invoices, sales receipts, records of payment and records of transactions for gasoline, diesel fuel, heating distillate oil, renewable fuel and biocrude that are used, blended, sold, imported or acquired from or transferred to another fuel supplier or facility; and
- (c) dated contracts, records of transfer, invoices, records of payment and agreements for transfers of gasoline, diesel fuel, heating distillate oil, renewable fuel, biocrude and compliance units.

#### INTERIM REPORTS

December 15, 2010 to December 31, 2011

**39.** A person who would, if the first gasoline compliance period were to finish on December 31, 2011, be required to submit a report under section 30 or 33 or subsections 34(4) or 36(2) must submit an interim report to the Minister for the period that begins on December 15, 2010 and that ends on December 31, 2011 in accordance with that section or subsection but as if that period were the first gasoline compliance period.

#### COMING INTO FORCE

##### Registration

**40.** (1) Subject to subsections (2) and (3), these Regulations come into force on the day on which they are registered.

##### Gasoline requirements and trading system

(2) Subsection 5(1), sections 6 to 8, sections 12 to 25 and 28 to 33, subsections 34(3) and (4) and sections 36 and 39 come into force on December 15, 2010.

##### Distillate requirements

(3) Subsection 5(2) comes into force on a day to be fixed by amendment to this subsection.

#### SCHEDULE 1 (Subsection 9(1))

##### REGISTRATION REPORT — INFORMATION REQUIRED FROM A PRIMARY SUPPLIER

##### **1.** Information respecting the primary supplier:

- (a) their name and civic address;
- (b) the name, title, civic and postal addresses, telephone number and, if any, email address and fax number, of their authorized official; and
- (c) the name, title, civic and postal addresses, telephone number and, if any, email address and fax number, of a contact person, if different from the authorized official.

**2.** For each production facility at which the primary supplier produces gasoline, diesel fuel or heating distillate oil, the civic address and name, if any, of the facility.

**3.** For each production facility at which the primary supplier produced, and for each province via which they imported — during the calendar year before the calendar year in which the report or notice, as the case may be, is sent — any of the following fuels, the volume, expressed in litres, so produced or imported of:

- (a) finished gasoline;
- (b) unfinished gasoline;
- (c) diesel fuel; and
- (d) heating distillate oil.

**4.** For each use, export or transit described in any of paragraphs 6(4)(a) to (j) of these Regulations — during the calendar year before the calendar year in which the report or notice, as the case may be, is sent — the volume, expressed in litres, of each of gasoline, diesel fuel and heating distillate oil, if known,

- (a) produced at each of the primary supplier's production facilities; and
- (b) imported by the primary supplier, for each province via which importation occurred.

**5.** The information required under Schedule 2 other than that required under its item 1.

SCHEDULE 2  
(*Subsection 11(1)*)

REGISTRATION REPORT — INFORMATION REQUIRED FROM A PARTICIPANT

**1.** Information respecting the participant:

- (a) their name and civic address;
- (b) the name, title, civic and postal addresses, telephone number and, if any, email address and fax number, of their authorized official; and
- (c) the name, title, civic and postal addresses, telephone number and, if any, email address and fax number, of a contact person, if different from the authorized official.

**2.** For each non-mobile facility in Canada at which renewable fuel is blended with a liquid petroleum fuel and the resulting blended fuel is owned, in whole or in part, by the participant, the following information:

- (a) the civic address and name, if any, of the facility;
- (b) for each type of liquid petroleum fuel with which a renewable fuel was blended — during the calendar year before the calendar year in which the report or notice, as the case may be, is sent — at the facility to result in liquid petroleum fuel other than high-renewable-content fuel,
  - (i) the volume, expressed in litres, if known, of the liquid petroleum fuel with which the renewable fuel was blended,
  - (ii) the volume, expressed in litres, if known, of the renewable fuel blended,
  - (iii) the type of renewable fuel and, if known, each type of renewable fuel feedstock that was used to produce the renewable fuel, and
  - (iv) a description of the primary use of the products that resulted from the blending; and
- (c) for each type of liquid petroleum fuel with which a renewable fuel was blended — during the calendar year before the calendar year in which the report or notice, as the case may be, is sent —

at the facility to result in high-renewable-content fuel,

- (i) the volume, expressed in litres, if known, of the liquid petroleum fuel with which the renewable fuel was blended,
- (ii) the volume, expressed in litres, if known, of the renewable fuel blended,
- (iii) the type of renewable fuel and, if known, each type of renewable fuel feedstock that was used to produce the renewable fuel, and
- (iv) a description of the primary use of the products that resulted from the blending.

**3.** For each fleet of mobile facilities in each province in which renewable fuel is blended with a liquid petroleum fuel and the resulting blended fuel is owned, in whole or in part, by the participant, the following information:

- (a) the type and number of mobile facilities;
- (b) the province where the blending occurs; and
- (c) for each type of liquid petroleum fuel with which a renewable fuel was blended in one or more of the fleet's mobile facilities during the calendar year before the calendar year in which the report or notice, as the case may be, is sent,
  - (i) the volume, expressed in litres, if known, of the liquid petroleum fuel with which the renewable fuel was blended,
  - (ii) the volume, expressed in litres, if known, of the renewable fuel blended,
  - (iii) the type of renewable fuel and, if known, each type of renewable fuel feedstock that was used to produce the renewable fuel, and
  - (iv) a description of the primary use of the products that resulted from the blending.

**4.** For each facility in Canada at which biocrude is used by the participant as feedstock to produce liquid petroleum fuel, the following information:

- (a) the civic address and name, if any, of the facility, and
- (b) for each type of biocrude used by the participant as feedstock at the facility during the calendar year before the calendar year in which the report or notice, as the case may be, is sent,
  - (i) if known, each type of renewable fuel feedstock that was used to produce the biocrude,
  - (ii) the volume, expressed in litres, if known, of biocrude used,
  - (iii) a description of the primary use of the products produced at the facility, and
  - (iv) a description of the process in which the biocrude is used as a feedstock.

**5.** For each province via which the participant imported — during the calendar year before the calendar year in which the report or notice, as the case may be, is sent — liquid petroleum fuel with renewable fuel content by each type of liquid petroleum fuel imported, the following information:

- (a) the volume, expressed in litres, if known, of the liquid petroleum fuel imported;
- (b) the volume, expressed in litres, if known, of renewable fuel in the liquid petroleum fuel imported;
- (c) the type of renewable fuel and, if known, each type of renewable fuel feedstock that was used to produce that renewable fuel and the country of origin of that renewable fuel; and
- (d) a description of the primary use of the products imported.



**6.** If, during the calendar year before the calendar year in which the report or notice, as the case may be, is sent, the participant sold neat renewable fuel in Canada to a neat renewable fuel consumer for use as fuel in a combustion device, or used neat renewable fuel in Canada as fuel in a combustion device, separately, for each type of neat renewable fuel so sold and for each type of neat renewable fuel so used, the following information:

(a) if known, the total volume, expressed in litres, so sold or used and the volume, expressed in litres, by each type of renewable fuel feedstock that was used to produce that neat renewable fuel; and

(b) if known, the type of combustion device in which the neat renewable fuel was so used, namely, a diesel engine, a domestic-type burner, a spark-ignition engine, a boiler, a furnace or another type.

**7.** The volume, expressed in litres, of renewable fuel and of biocrude, in Canada owned by the participant as of the last day of the month before the month in which the report or notice, as the case may be, is sent.

**8.** The civic address, or addresses, at which records, copies of reports or notices, and any supporting documents required under these Regulations are kept.

### SCHEDULE 3 (Subsection 28(2))

#### AUDITOR'S REPORT — INFORMATION REQUIRED

**1.** The name, civic address and telephone number of the participant or of the producer or importer of renewable fuel.

**2.** The name, civic address, telephone number and qualifications of the auditor and, if any, the auditor's fax number and email address.

**3.** The procedures followed by the auditor to assess the validity of the information sent under these Regulations and a statement of the auditor's opinion as to whether, as the case may be, the participant's, producer's or importer's practices and procedures were appropriate to ensure, and demonstrate, compliance with these Regulations.

**4.** A statement by the auditor that they have assessed whether the participant, producer or importer, as the case may be, has determined volumes in accordance with the information on measurement methods that the participant, producer or importer sent under section 35 of these Regulations.

**5.** For primary suppliers, the auditor's assessment of whether the primary supplier has determined

(a) the volume of their gasoline pool and of their distillate pool in accordance with section 6 of these Regulations; and

(b) the volume of renewable fuel in their gasoline pool and in their distillate pool in accordance with section 8 of these Regulations.

**6.** (1) For participants, a statement by the auditor that the auditor has reviewed

(a) all the participant's documentation in respect of their transfers in trade or receipt in trade of compliance units; and

(b) the participant's compliance unit account book.

(2) The auditor's assessment of whether entries in the participant's compliance unit account book are evidenced by the other records and documents required under these Regulations.

**7.** The auditor's assessment of the extent to which the participant, producer or importer, as the case may be, has complied with these Regulations in respect of the gasoline compliance period or distillate

compliance period, as the case may be.

**8.** A description by the auditor of the nature and date, if the auditor is able to determine the date, of any inaccuracy in the participant's, producer's or importer's records, as the case may be, and of any other deviation from the requirements of these Regulations by the participant, producer or importer.

SCHEDULE 4  
(Section 30)

ANNUAL REPORT — INFORMATION REQUIRED FROM A PRIMARY SUPPLIER

**1.** Information respecting the primary supplier:

(a) their name and civic address;

(b) the name, title, civic and postal addresses, telephone number and, if any, email address and fax number, of their authorized official; and

(c) the name, title, civic and postal addresses, telephone number and, if any, email address and fax number, of a contact person, if different from the authorized official.

**2.** The volume, expressed in litres, of their gasoline pool and the value of each of the elements of the equation in subsection 8(1) of these Regulations.

**3.** The volume, expressed in litres

(a) in the case of a gasoline compliance period that ends before the beginning of the first distillate compliance period, of their distillate pool determined using the gasoline compliance period as if it were the distillate compliance period;

(b) in the case of a gasoline compliance period during which the first distillate compliance period begins, of their distillate pool determined using the period that begins on the day that the gasoline compliance period begins and that ends on the day before the beginning of the first distillate compliance period as if it were the distillate compliance period; and

(c) in any other case, of their distillate pool.

**4.** The value of each of the elements of the equation in subsection 8(2) of these Regulations.

**5.** For each production facility and for each province via which importation occurred, the volume, expressed in litres, other than any volume referred to in paragraphs 6(a) and (b), of the following fuels produced at the facility or imported:

(a) finished gasoline;

(b) unfinished gasoline;

(c) diesel fuel; and

(d) heating distillate oil.

**6.** For each fuel described in any of paragraphs 6(4)(a) to (j) of these Regulations,

(a) the sum of the volumes, expressed in litres, subtracted under subsection 6(4) of these Regulations of each of gasoline, diesel fuel and heating distillate oil

(i) for each production facility, and

(ii) for each province via which importation occurred; and

(b) the sum of the sums obtained under subparagraphs (a)(i) and (ii).

SCHEDULE 5  
(Section 33)

ANNUAL REPORT — INFORMATION REQUIRED FROM A PARTICIPANT

**1.** Information respecting the participant:

(a) their name and civic address;

(b) the name, title, civic and postal addresses, telephone number and, if any, email address and fax number, of their authorized official; and

(c) the name, title, civic and postal addresses, telephone number and, if any, email address and fax number, of a contact person, if different from the authorized official.

**2.** For each non-mobile facility in Canada at which the participant created a compliance unit by blending renewable fuel with a liquid petroleum fuel, the following information:

(a) the civic address and name, if any, of the facility;

(b) for each type of liquid petroleum fuel with which a renewable fuel was blended at the facility to result in liquid petroleum fuel other than high-renewable-content fuel,

(i) the volume, expressed in litres, of the liquid petroleum fuel with which the renewable fuel was blended,

(ii) the volume, expressed in litres, of the renewable fuel blended,

(iii) the type of renewable fuel and, if known, each type of renewable fuel feedstock that was used to produce that renewable fuel, and

(iv) the number of gasoline compliance units and of distillate compliance units that were created under section 13 of these Regulations; and

(c) for each type of liquid petroleum fuel with which a renewable fuel was blended at the facility to result in high-renewable-content fuel,

(i) the volume, expressed in litres, of the liquid petroleum fuel with which the renewable fuel was blended,

(ii) the volume, expressed in litres, of the renewable fuel blended,

(iii) the volumetrically-weighted average of renewable fuel content in the resulting high-renewable-content fuel, expressed as volume per cent,

(iv) the type of renewable fuel and, if known, each type of renewable fuel feedstock that was used to produce that renewable fuel, and

(v) the number of gasoline compliance units and of distillate compliance units that were created under section 13 of these Regulations.

**3.** For each province in which the participant created a compliance unit by blending renewable fuel with liquid petroleum fuel in a mobile facility that is part of a fleet, the following information:

(a) the type and number of those mobile facilities;

(b) the province where the blending occurred; and

(c) for each type of liquid petroleum fuel with which a renewable fuel was blended to result in liquid petroleum fuel other than high-renewable-content fuel,

- (i) the volume, expressed in litres, of the liquid petroleum fuel with which the renewable fuel was blended,
  - (ii) the volume, expressed in litres, of the renewable fuel blended,
  - (iii) the type of renewable fuel and, if known, each type of renewable fuel feedstock that was used to produce that renewable fuel, and
  - (iv) the number of gasoline compliance units and of distillate compliance units that were created under section 13 of these Regulations; and
- (d) for each type of liquid petroleum fuel with which a renewable fuel was blended to result in high-renewable-content fuel,
- (i) the volume, expressed in litres, of the liquid petroleum fuel with which the renewable fuel was blended,
  - (ii) the volume, expressed in litres, of the renewable fuel blended,
  - (iii) the volumetrically-weighted average of renewable fuel content in the resulting high-renewable-content fuel, expressed as volume per cent,
  - (iv) the type of renewable fuel and, if known, each type of renewable fuel feedstock that was used to produce that renewable fuel, and
  - (v) the number of gasoline compliance units and of distillate compliance units that were created under section 13 of these Regulations.

**4.** For each province in which the participant created a compliance unit by importing liquid petroleum fuel with renewable fuel content, the following information:

- (a) for each type of liquid petroleum fuel other than high-renewable-content fuel that was imported,
- (i) the volume, expressed in litres, of the liquid petroleum fuel imported,
  - (ii) the volume, expressed in litres, of the renewable fuel in the imported liquid petroleum fuel,
  - (iii) the type of renewable fuel and, if known, each type of renewable fuel feedstock that was used to produce the renewable fuel and the country of origin of that renewable fuel, and
  - (iv) the number of gasoline compliance units and of distillate compliance units that were created under section 14 of these Regulations; and
- (b) for each type of high-renewable-content fuel imported,
- (i) the volume, expressed in litres, of the liquid petroleum fuel imported,
  - (ii) the volume, expressed in litres, of the renewable fuel in the imported liquid petroleum fuel,
  - (iii) the volumetrically-weighted average of renewable fuel content in the imported high-renewable-content fuel, expressed as volume per cent,
  - (iv) the type of renewable fuel and, if known, each type of renewable fuel feedstock that was used to produce the renewable fuel and the country of origin of that renewable fuel, and
  - (v) the number of gasoline compliance units and of distillate compliance units that were created under section 14 of these Regulations.

**5.** For each production facility in Canada at which the participant created a compliance unit by using biocrude as feedstock, and for each type of biocrude, the following information:

(a) the civic address and name, if any, of the facility;

(b) the volume, expressed in litres, of biocrude used as feedstock and, if known, that volume, by each country of origin; and

(c) the number of gasoline compliance units and of distillate compliance units created under section 15 of these Regulations.

**6.** For each facility in Canada at which the participant created a compliance unit by using neat renewable fuel, and for each province in which the participant created a compliance unit by selling neat renewable fuel to a neat fuel consumer, the following information:

(a) the civic address and name, if any, of the facility, or the province, as the case may be;

(b) the volume, expressed in litres, of neat renewable fuel sold to each neat renewable fuel consumer, the name of the neat renewable fuel consumer and, if known, each type of combustion device in which the neat renewable fuel was used as fuel;

(c) the volume, expressed in litres, of neat renewable fuel used as fuel by the participant and, if known, that volume by each type of combustion device in which the neat renewable fuel was so used; and

(d) the number of gasoline compliance units and of distillate compliance units created under section 16 of these Regulations.

**7.** For each other participant from whom the participant received in trade compliance units, the name of that other participant and the number of gasoline compliance units and of distillate compliance units so received during the trading period in respect of the compliance period.

**8.** For each primary supplier to whom the participant transferred in trade compliance units, the name of that primary supplier and the number of gasoline compliance units and of distillate compliance units so transferred in trade during the trading period in respect of the compliance period.

**9.** (1) The number of gasoline compliance units and of distillate compliance units, if any, that were, in respect of the compliance period,

(a) carried forward into the next compliance period;

(b) carried forward into the compliance period from the preceding compliance period;

(c) carried back into the compliance period; and

(d) carried back from the compliance period into the preceding compliance period.

(2) In addition, for the first distillate compliance period, the number of distillate compliance units carried forward into that period, if any.

**10.** The number of gasoline compliance units and of distillate compliance units, if any, cancelled

(a) under subsection 25(1) of these Regulations as a result of the primary supplier having carried back compliance units;

(b) under subsection 25(3) of these Regulations because they were in excess of the maximum permitted;

(c) under subsection 25(4) of these Regulations because compliance units were neither used nor carried forward; and

(d) under paragraph 11(3)(c) of these Regulations as a result of the elective participant ending their participation in the trading system.

**11.** For each province from which the participant, or one of their affiliates who is not a participant, exported a liquid petroleum fuel with renewable fuel content

(a) the volume exported, expressed in litres, by type of liquid petroleum fuel;

(b) in the case of exported diesel fuel and heating distillate oil, the volume, expressed in litres, of renewable fuel contained in those fuels, by each type of renewable fuel and by each type of renewable fuel feedstock, if known, that was used to produce that renewable fuel;

(c) in the case of exported liquid petroleum fuel other than diesel fuel and heating distillate oil, the volume, expressed in litres, of renewable fuel contained in that fuel, by each type of renewable fuel and by each type of renewable fuel feedstock, if known, that was used to produce that renewable fuel; and

(d) the number of gasoline compliance units and of distillate compliance units cancelled under subsection 25(2) of these Regulations.

**12.** If the participant is a primary supplier, for each month during the gasoline compliance period or distillate compliance period, as the case may be,

(a) the number of gasoline compliance units in respect of the gasoline compliance period

(i) owned by the primary supplier at the end of the month,

(ii) that, during the next month, they transferred in trade that were in excess of those that they received in trade, and

(iii) as determined in accordance with subsection 19(1) of these Regulations; and

(b) the number of distillate compliance units in respect of the distillate compliance period

(i) owned by the primary supplier at the end of the month,

(ii) that, during the next month, they transferred in trade that were in excess of those that they received in trade, and

(iii) as determined in accordance with subsection 19(2) of these Regulations.

**13.** The number of gasoline compliance units and of distillate compliance units owned by the participant at the end of the trading period in respect of the compliance period.

**14.** The following information for each province in which the acquisition or transfer took place, by each type of renewable fuel and biocrude:

(a) the name of any person from whom the participant acquired, in Canada, renewable fuel or biocrude during the compliance period and the volume, expressed in litres, of that fuel or biocrude so acquired from that person;

(b) the name of any person to whom the participant transferred, in Canada, ownership of renewable fuel or biocrude during the compliance period and the volume, expressed in litres, of that fuel or biocrude so transferred to that person; and

(c) the volume, expressed in litres, of renewable fuel and of biocrude, in Canada, owned by the participant at the end of the compliance period.

**15.** If a form and format has been specified by the Minister under subsection 31(5) of these Regulations, a copy of the participant's compliance unit account book referred to in subsection 31(1) of these Regulations for the trading period in respect of the compliance period.

REGISTRATION REPORT — INFORMATION REQUIRED FROM A PRODUCER OR IMPORTER OF RENEWABLE FUEL

**1.** Information respecting the producer or importer:

(a) their name and civic address;

(b) the name, title, civic and postal addresses, telephone number and, if any, email address and fax number, of their authorized official; and

(c) the name, title, civic and postal addresses, telephone number and, if any, email address and fax number, of a contact person, if different from the authorized official.

**2.** For each facility in Canada at which the producer produces renewable fuel

(a) the civic address and name, if any, of each facility;

(b) the type of renewable fuel produced and each type of renewable fuel feedstock that was used to produce the renewable fuel; and

(c) the volume, expressed in litres, if known, of each type of renewable fuel produced during the calendar year before the calendar year in which the report or notice, as the case may be, is sent.

**3.** For each province via which the importer imports renewable fuel,

(a) the type of renewable fuel imported and, if known, each type of renewable fuel feedstock that was used to produce the renewable fuel and the country of origin of that renewable fuel; and

(b) the volume, expressed in litres, if known, of each type of renewable fuel imported during the calendar year before the calendar year in which the report or notice, as the case may be, is sent.

**4.** The civic address, or addresses, at which records, copies of reports or notices, and any supporting documents required under these Regulations are kept.

SCHEDULE 7  
(Subsection 34(4))

ANNUAL REPORT — INFORMATION REQUIRED FROM A PRODUCER OR IMPORTER OF RENEWABLE FUEL

**1.** Information respecting the producer or importer:

(a) their name and civic address;

(b) the name, title, civic and postal addresses, telephone number and, if any, email address and fax number, of their authorized official; and

(c) the name, title, civic and postal addresses, telephone number and, if any, email address and fax number, of a contact person, if different from the authorized official.

**2.** For each facility in Canada at which renewable fuel was produced and for each province via which renewable fuel was imported, the volume, expressed in litres, of each type of renewable fuel produced or imported during the gasoline compliance period and, if known, each type of renewable fuel feedstock that was used to produce it and, if imported, the country of origin of that renewable fuel.

**3.** For each province in which the producer or importer, during the gasoline compliance period, sold — or produced, or imported, for export — renewable fuel, by type of renewable fuel and by each type of renewable fuel feedstock, the volume, expressed in litres,

(a) sold;

(b) sold for blending at another facility in Canada, if known;

(c) sold for export; and

(d) produced, or imported, for export.

**4.** The name of each person to whom renewable fuel referred to in paragraphs 3(a) to (c) was sold and the volume, expressed in litres, so sold, for each province in which the fuel was located when ownership of the fuel was transferred by that sale.

SCHEDULE 8  
(*Subsection 35(1)*)

REPORT ON MEASUREMENT METHODS — INFORMATION REQUIRED

**1.** Information respecting the person:

(a) their name and civic address;

(b) the name, title, civic and postal addresses, telephone number and, if any, email address and fax number, of their authorized official; and

(c) the name, title, civic and postal addresses, telephone number and, if any, email address and fax number, of a contact person, if different from the authorized official.

**2.** For each facility in Canada at which the person is, under these Regulations, to determine a volume of fuel or of biocrude, the civic address, name, if any, and type of the facility.

**3.** For each province via which the person is to import a volume of fuel,

(a) the location, within that province, of each point of entry into Canada;

(b) the mode of transportation used for the importation, namely, by cargo tanker, railway car, boat, marine vessel or by another mode of transportation, in which case, that mode; and

(c) if, for the purposes of these Regulations, the volume of the batch is to be determined at a facility

(i) in Canada, its civic address, name, if any, and the type of facility, and

(ii) in a country other than Canada, the name of that country and the type of facility.

**4.** For each facility referred to in item 2 or paragraph 3(c),

(a) a description of each place within the facility at which the determination of volume is to be made;

(b) if the volume is the volume of a batch of fuel, a description of how the batch is identified at that facility;

(c) if the volume is to be determined in accordance with paragraph 4(1)(a) of these Regulations,

(i) a description of the measurement device, if any, including the type and manufacturer,

(ii) a statement that the device has been installed and inspected in accordance with the *Weights and Measures Act* and the regulations made under that Act, and

(iii) the frequency of calibration for the device, if any, and the name, civic address and telephone number of the person who last calibrated it, if any;

(d) if the volume is to be determined in accordance with paragraph 4(1)(b) of these Regulations,

(i) a description of the measurement standard or method that is to be used, including the title and the organization that publishes it, and if known, the published repeatability and the published precision, and,



- (ii) the number, page or other identifier of the measurement standard or method in the American Petroleum Institute's *Manual of Petroleum Measurement Standards* that is to be used;
- (e) if the volume is to be determined in accordance with subsection 4(3) of these Regulations,
  - (i) a detailed explanation as to why no measurement device, standard or method referred to in subsection 4(1) of these Regulations would allow the person to determine the volume in accordance with that subsection, and
  - (ii) a detailed description of the measurement device, standard or method that the independent person is to use to determine the volume and its repeatability and precision;
- (f) the temperature to which the volume is to be corrected; and
- (g) for biocrude, the methodology for measuring and subtracting the water content of the biocrude.

5. If the volume was determined in accordance with subsection 4(2) of these Regulations,

- (a) a description of the measurement standard or method that was used, including the title and the organization that publishes it, and if known, the published repeatability and the published precision;
- (b) the number, page or other identifier of the measurement standard or method in the American Petroleum Institute's *Manual of Petroleum Measurement Standards* that was deviated from; and
- (c) a description of the deviation.

## **REGULATORY IMPACT ANALYSIS STATEMENT**

*(This statement is not part of the Regulations.)*

### ***Executive summary***

**Issue:** Greenhouse gases (GHGs) are primary contributors to climate change. The most significant sources of GHG emissions are anthropogenic, mostly as a result of combustion of fossil fuels. The emissions of GHGs have been increasing significantly since the industrial revolution and this trend is likely to continue if no action is taken. Historical data indicates that emissions in 2008 were about 19% above the 1990 levels. The Government of Canada is committed to reducing Canada's total GHG emissions by 17% from 2005 levels by 2020.

In 2008, the GHG emissions from the transportation sector contributed around 27% to Canada's inventory of emissions. Modeling results from Natural Resources Canada (NRCan) indicate that the use of renewable fuels in liquid petroleum fuel can contribute to GHG emission reductions on a lifecycle basis.

Existing Government of Canada initiatives on renewable fuels have had limited success in achieving significant reductions in GHG emissions. In view of the environmental concerns related to climate change, additional actions are required to further reduce these emissions.

**Description:** The *Renewable Fuels Regulations* (the Regulations) are a key element of the Government's Renewable Fuels Strategy. [\(see footnote 1\)](#) The objective of the Regulations is to reduce GHG emissions by mandating an average 5% renewable fuel content based on the gasoline volume, thereby contributing towards the protection of Canadians and the environment from the impacts of climate change. The Regulations are estimated to result in an incremental reduction of GHG emissions of about 1 MT CO<sub>2</sub>e per year over and above the reductions attributable to existing provincial requirements already in place. The Regulations fulfill the commitments under the Renewable Fuels Strategy of reducing GHG emissions from liquid petroleum fuels and create a demand for renewable fuels in Canada.

These Regulations, along with the development of regulations to limit emissions of carbon dioxide (CO<sub>2</sub>) from cars and light-duty trucks, will contribute towards achieving Canada's domestic commitments. The Regulations will promote an integrated and nationally consistent approach, and make a significant contribution to reductions in air pollution from GHGs to protect the health and environment of Canadians.

The Regulations will require fuel producers and importers to have an average renewable fuel content of at least 5% based on the volume of gasoline produced and imported. The Regulations include provisions that govern the creation of compliance units, allowing trading of these units among participants and also require record keeping and reporting to ensure compliance.

Certain provisions of the Regulations will come into force on the day on which they are registered, while the 5% requirement and provisions for compliance units will come into force on December 15, 2010. The Regulations also include provisions requiring an average 2% renewable fuel content in diesel fuel and heating distillate oil based on annual volumes. This requirement will only be brought into force once the technical feasibility of renewable diesel fuel use under a range of Canadian conditions has been demonstrated.

**Cost-benefit statement:** Over a 25-year period, the Regulations are estimated to result in a cumulative reduction of 23.8 MT CO<sub>2</sub>e in GHG emissions (or an average annual incremental reduction of 1 MT CO<sub>2</sub>e per year). Although it is difficult to quantify and monetize the full range of benefits attributable to the Regulations, and such an exercise does not take into account the broader socio-economic benefits of the full range of elements of Canada's climate change strategy, it is estimated that on their own the benefits of the Regulations will be \$560 million using a carbon value of \$25 per tonne. Other benefits to the economy will also complement the benefits to the environment from the Regulations, including increased production of renewable fuels and related increased employment and income. In addition, other government initiatives to improve vehicle efficiency and to develop next generation renewable fuel production technologies are also expected to contribute towards GHG emission reductions over time.

The present value of the cost associated with the Regulations is estimated to be \$1.9 billion. Gasoline producers and importers will incur costs of \$775 million, which includes investments needed to upgrade or modify refinery installations and distribution and blending systems; costs to consumers are expected to total \$1.1 billion resulting from increased fuel consumption due to the lower energy content of ethanol-blended gasoline; and costs to the federal government for enforcement, compliance promotion and development and maintenance of the electronic reporting system would be approximately \$2.3 million. Income from the crop sector is estimated to increase by 0.7%. While the income impacts in the livestock sector are expected to decline by less than 1%, no measurable impacts on downstream sectors are expected.

**Business and consumer impacts:** The distribution of impacts on industry and consumers would be relatively uneven across the country in part due to existing mandates in some provinces and the availability of renewable fuels. As a result, the Regulations would have minimal impacts in some provinces or regions (such as British Columbia, Manitoba, Saskatchewan and Ontario) where ethanol-blended gasoline is already available, with most impacts concentrated in regions where provincial renewable fuel requirements are not yet in place.

The total incremental cost to the petroleum refining sector is expected to be about 1% of industry revenue. Positive impacts in terms of increased sales volume due to lower energy content of ethanol-blended gasoline for fuel producers are expected. These could amount to 10% of the \$1.1 billion in total incremental costs to consumers. The renewable fuel production sector stands to gain in terms of the ability to grow its production capacity from the increase in the demand for renewable fuels. Some increase in employment and other economic activities is also expected from this expansion.

The impact on consumers would be reflected partly as an increase in gasoline demand due to the lower energy content of ethanol-blended gasoline in comparison to conventional gasoline. These impacts would mainly be incurred in provinces (such as Alberta, Quebec and the Atlantic Provinces) where renewable fuel mandates are currently not in place. On a per-vehicle basis, the average annual impact of the efficiency loss on consumer expenditure on gasoline is estimated to be \$23 for 2011.

In addition, consumers will also be impacted by a small increase in fuel price at the pump if the fuel producers pass on their incremental costs down the supply chain. The precise magnitude of the price impact, given differences between regions and across fuel suppliers, is difficult to predict. In the event that all industry costs are passed on to the consumers, it is estimated that average price increase over the 25-year period ranges from 0.05 ¢/L in provinces like Ontario where a provincial mandate is already in place to 0.17 ¢/L in Quebec and the Atlantic Provinces where renewable fuel requirements are not in place. In most cases, such small price increases are likely to be unnoticeable given the usual price fluctuations experienced in the gasoline market.

The impacts on the agricultural sector's income and production are expected to be less than 1%; therefore, the impacts on downstream meat and food processing sector as well as on food prices are also expected to be minimal.

**Domestic and international coordination and cooperation:** Extensive consultations were conducted with industry, provincial and territorial governments, other federal government departments and environmental non-governmental organizations (ENGOS). The renewable fuel content requirements were developed based on these consultations. In addition, discussions with the United States Environmental Protection Agency (U.S. EPA) were also undertaken to better understand the development process of its rule.

**Performance measurement and evaluation plan:** The evaluation of the Regulations will be based, among other criteria, on the volume of renewable fuel blended with liquid petroleum fuels in Canada. This will be determined from information and data submitted in accordance with the reporting requirements. The Regulations will also be evaluated based on criteria included in the evaluation plan of Environment Canada's components of the regulation of renewable fuel content in gasoline, diesel and heating distillate oil. This evaluation plan will be completed in the 2011–2012 fiscal year.

## **Issue**

Greenhouse gases, upon being emitted to the atmosphere, alter its composition, thereby affecting its chemical and physical properties. As a result of human activities, predominantly the combustion of fossil fuels, the atmospheric concentrations of GHGs have increased substantially since the onset of the industrial revolution. This has led to an enhanced greenhouse effect — or global warming — and other climatic changes and represents a global air pollution problem. In view of the historical emissions of GHGs from anthropogenic sources, and the quantity of emissions expected over the century, GHGs as a significant air pollutant are expected to remain the greatest contributors to climate change.

Historical data on GHG emissions indicate that the transportation sector accounts for approximately 27% of GHGs ([see footnote 2](#)) emitted in Canada in 2008. Given the continued contribution of GHG emissions from the transportation sector to air pollution, its impact on climate change and Canada's national and international commitments and interests, actions by government on a number of fronts are required to implement Canada's climate change objectives. Natural Resources Canada (NRCan), through the use of their GHGenius model (version 3.15) have determined that GHG emissions from liquid petroleum fuels, on a lifecycle basis and under typical Canadian conditions, can be reduced with the use of renewable fuels.

The Regulations will make a significant contribution to the prevention of, and reduction in, air pollution. The Regulations are estimated to result in a reduction in air pollution of approximately one

megatonne per year of GHG emissions over and above the reductions attributable to existing provincial requirements. This is about the equivalent of taking a quarter of a million vehicles off the road.

While a significant contribution to the reduction in air pollution associated with GHG emissions will be achieved as a result of the Regulations, it is important to assess other air pollutants. A recent study ([see footnote 3](#)) by Health Canada found that the ubiquitous use of 10% ethanol-blended gasoline in Canada would result in minimal changes in levels of other smog-related ambient air pollutants. It was found that there are no substantial differences in the predicted health effects between conventional gasoline and 10% ethanol-blended gasoline with respect to air contaminants such as nitrogen dioxide (NO<sub>2</sub>), sulphur dioxide (SO<sub>2</sub>), ozone and particulate matter (PM<sub>2.5</sub>).

### Strategic Environmental Screening

In 2006, Environment Canada conducted a Strategic Environmental Screening of the Government of Canada's intent to require an average 5% renewable fuel content based on the volume of gasoline and 2% renewable fuel content in diesel and heating distillate oil, and the resulting impacts on air pollution. The screening, which was conducted prior to the development of the Renewable Fuels Strategy, considered impacts on GHG emissions and air pollutants as a result of the proposed renewable fuel content requirement.

The screening indicated that the proposed renewable fuel content requirement for gasoline, diesel and heating distillate oil is expected to increase the use of ethanol over and above the provincial mandates already in place. Emissions reduction factors from the NRCan model (GHGenius) indicated that both these requirements represented a potential reduction of approximately 2.75 MT CO<sub>2</sub>e emissions per year, more than double the emissions reductions generated by provincial regulations. Since 2006, a number of provinces have established renewable fuel requirements.

With respect to air pollutant emissions (such as NO<sub>x</sub>, SO<sub>x</sub>) as a result of a 5% renewable fuel requirement under representative Canadian conditions, test results from the United States (U.S.) were used for the screening. The U.S. results suggest that widespread use of 10% ethanol could decrease volatile organic compounds (VOCs) and PM<sub>2.5</sub> by 7% and 50%, respectively. On the other hand, increases in NO<sub>2</sub> emissions between 0 and 15%, as well as increases in acetaldehyde by 100% are also expected. The impacts of biodiesel use were also assessed based on U.S. test results and are expected to be more balanced. The U.S. test results indicate that use of 20% biodiesel could reduce most emissions, including acetaldehyde (by approximately 7%). However, NO<sub>2</sub> emissions may increase or decrease by up to 2%. The preliminary assessment by Health Canada indicated that there are no expected health impacts associated with ethanol use at blends of up to 10%.

### **Objectives**

The Government of Canada made commitments under the Renewable Fuels Strategy to reduce GHG emissions by introducing regulations to require renewable fuel content based on gasoline, diesel and heating distillate oil volumes. The objective of the Regulations is to reduce GHG emissions, thereby contributing towards the protection of Canadians and the environment from the impacts of climate change and air pollution. The Regulations are estimated to result in a reduction of GHG emissions of about 1 MT CO<sub>2</sub>e per year. This represents a significant contribution to the reduction in air pollution, equivalent to taking a quarter of a million vehicles off the road. This would be achieved through a requirement for an average annual 5% renewable fuel content based on the volume of gasoline produced and imported. These Regulations also support the Renewable Fuels Strategy objective to expand Canadian use of renewable fuels by creating a demand for these fuels in the Canadian marketplace.

The Regulations are part of the Government's overall approach to reduce emissions of GHGs and air pollutants to protect the health and environment of Canadians. The Government of Canada is committed to reducing these emissions through regulatory measures such as developing regulations to limit emissions of CO<sub>2</sub> from cars and light-duty trucks as well as measures to reduce emissions of air pollutants and GHGs from major industrial sources. The Regulations, in conjunction with these measures,

are expected to contribute towards achieving the Government of Canada's commitment to reduce domestic emissions of GHGs by 17% below the 2005 level.

The general approach adopted for the Regulations aligns with the U.S. Renewable Fuel Standard, while taking into consideration specific Canadian climatic and economic conditions.

## **Description**

### **The Regulations**

The Regulations, developed under the *Canadian Environmental Protection Act, 1999* (CEPA 1999), require gasoline fuel producers and importers to have an average annual renewable fuel content equal to at least 5% of the volume of gasoline that they produce or import, commencing on December 15, 2010. The requirement for renewable fuel content is on the basis of the regulatee's total annual volumes. Compliance is based on the calendar year, other than the first compliance period, which extends from the start date to December 31, 2012.

Renewable fuel content in any liquid petroleum-based fuel can contribute towards meeting the 5% renewable fuel content. These renewable fuels can be produced from any type of renewable fuel feedstock (for example corn, wheat, barley, forestry and wood waste), but does not include spent pulping liquor ([see footnote 4](#)) (often referred to as black liquor). Fuels produced from municipal solid waste materials are also recognized as renewable fuel, provided the municipal solid waste material has a demonstrated biogenic carbon content of greater than 50% of the total carbon content and was sorted and pre-processed to remove all but trace amounts of undesirable materials such as pesticides, paints, petroleum oils, tire material and others, as prescribed in the Regulations.

The Regulations also include a system of tradable compliance units to enable gasoline fuel producers and importers to demonstrate compliance. This bridges the gap between the point at which fuel is produced or imported and the point at which renewable fuel is blended with gasoline. Renewable fuels are most often blended close to their point of use, at locations downstream of the refinery. Regulatory provisions have been included to allow for the creation and trading of compliance units, which represent litres of renewable fuel. Companies can obtain, through trading, compliance units from others participating in the trading system in situations where they cannot blend renewable fuels in their gasoline, or they may use the compliance units that they have created by blending renewable fuel in gasoline, diesel or other petroleum fuels.

The Renewable Fuels Strategy includes a requirement for an average annual 2% renewable fuel content in diesel and heating distillate oil, intended to be implemented upon successful demonstration of renewable diesel fuel use under the range of Canadian conditions. The Regulations include provisions for this requirement, but do not specify a coming into force date. The coming into force date for this requirement will be determined at a later date subject to the technical feasibility of renewable content in diesel fuel and heating distillate oil. Natural Resources Canada is assessing the technical feasibility through their National Renewable Diesel Demonstration Initiative (NRDDI), and is expected to provide a recommendation in the summer of 2010.

In addition to the general provisions, the Regulations are divided into three parts. The key elements are summarized in the sections below.

### **General provisions**

The general provisions of the Regulations indicate when specific sections do not apply and address how volumes are to be measured. Specific sections of the Regulations do not apply to persons that only produce or import fuel volumes for special uses (such as exports, aviation, scientific research, competition vehicles, kerosene for use in heaters, lamps or stoves, military combat equipment, feedstocks in the production of chemicals, gasoline sold for or delivered for use in Newfoundland and Labrador, the Northwest Territories, Yukon, Nunavut and the part of Quebec that is north of latitude 60° N and gasoline that is in transit through Canada).

In addition, any regulatee that produces or imports less than 400 m<sup>3</sup> of fuel in a compliance period is

not subject to the renewable fuel content requirements of the Regulations. Persons that produce or import fuels below the 400 m<sup>3</sup> threshold or for special uses are nevertheless subject to some record-keeping provisions detailed in the Regulations. A person producing or importing quantities below this threshold level may elect to participate in the trading system by registering as a participant. In this case, all the applicable requirements of the Regulations would apply.

#### Part I of the Regulations: Requirements pertaining to gasoline [\(see footnote 5\)](#)

Part I sets out the requirements pertaining to

- 5% renewable fuel content of the gasoline pool [\(see footnote 6\)](#)  
Pool refers to the respective total volumes of gasoline or diesel fuel and heating distillate oil that are produced and imported during a compliance period. ;
- pool refers to the respective total volumes of gasoline or diesel fuel and heating distillate oil that are produced and imported during a compliance period;
- methodologies for determining the gasoline and distillate pools;
- compliance units, which are to be used for establishing compliance with the Regulations (each compliance unit represents one litre of renewable fuel);
- calculation methodologies for the determination of required renewable fuel volumes; and
- registration provisions.

#### *Exclusions*

The Regulations allow the following specific uses to be excluded from the pool when calculating the required renewable fuel volume:

- fuels used for special purposes such as aviation, kerosene for use in heaters, lamps or stoves, competition vehicles, scientific research, chemical feedstock, and military combat equipment;
- fuel used in the Northwest Territories; Yukon; Nunavut; and Quebec, north of the 60th parallel;
- gasoline used in Newfoundland and Labrador; and
- fuel exported from Canada or in transit through Canada.

#### *Registration requirements*

A one-time registration report must be submitted to Environment Canada by the primary suppliers (as described in the Regulations) upon reaching the 400 m<sup>3</sup> threshold for the production or import of gasoline or of diesel fuel and heating distillate oil. The information is required for facilities producing gasoline, diesel fuel or heating distillate oil, blending renewable fuel, using biocrude as feedstock to produce liquid petroleum fuel, as well as the province of import. The details on the type of information to be provided in the registration report are set out in Schedules 1 and 2 of the Regulations.

In the event of a change in the information, the updated information is to be submitted to Environment Canada no later than five days after the change.

#### Part 2 of the Regulations: Tradable compliance units system

Part 2 establishes the requirements for a compliance unit trading system for participants which are primary suppliers and others who elect to participate in the trading system.

The regulatory requirements governing the creation and the limits on the creation of compliance units, ownership, provisions for trading, conditions to allow carrying compliance units forward and back between compliance periods, and cancellation of the compliance units are detailed in the Regulations.

#### *Election to participate in a trading system*

Primary suppliers are automatically considered trading system participants. Elective participation in the trading system, after submitting a one-time registration report, is also allowed for persons that

- blend renewable fuel with liquid petroleum fuel;



- use biocrude as a feedstock to produce a liquid petroleum fuel other than gasoline, diesel fuel or heating distillate oil;
- import a liquid petroleum fuel, other than gasoline, diesel fuel and heating distillate oil, that contains renewable fuel;
- sell neat (pure) renewable fuel to a neat renewable fuel consumer (final user) for use as fuel in a combustion device; or
- use neat renewable fuel that they produced or imported as fuel in a combustion device.

These persons are referred to as elective participants. If an elective participant chooses to withdraw their participation, they may do so after notifying Environment Canada, submitting any outstanding reports and cancelling their remaining compliance units.

Participants in the trading system may create compliance units at the time of

- blending renewable fuel into liquid petroleum fuel;
- importing liquid petroleum fuel with renewable fuel content;
- using biocrude as a feedstock to produce liquid petroleum fuel;
- selling neat (pure) renewable fuel to a neat renewable fuel consumer (final user) for use in a combustion device; and
- using neat renewable fuel produced or imported as fuel in a combustion device.

There are two types of compliance units: distillate and gasoline. A distillate compliance unit may be created from any of the above actions with respect to diesel fuel or heating distillate oil (such as blending renewable fuel into diesel fuel or heating distillate oil, or importing diesel fuel or heating distillate oil with renewable fuel content). Gasoline compliance units may be created from any of the above actions in respect of liquid petroleum fuels other than diesel fuel or heating distillate oil (such as blending renewable fuel into gasoline or importing gasoline with renewable fuel content).

Generally, compliance units may only be used to demonstrate compliance in the compliance period during which they were created. Under specific conditions outlined in the Regulations, some compliance units may be carried back into the previous compliance period, and excess compliance units may be carried forward for use in the following compliance period. Distillate compliance units may also be used to establish compliance with the 5% requirement for gasoline.

### Part 3 of the Regulations: Records and reporting

Reports must be signed by an authorized official and submitted electronically in the format provided by Environment Canada. In the event that a format has not been provided, paper reports may be submitted.

#### *Reporting, record-keeping and retention of information*

The Regulations prescribe specific record-keeping and annual reporting requirements for primary suppliers, elective participants, producers or importers of renewable fuels and sellers of fuel for export who are not participants in the trading system. The submission deadlines for the annual reports are specified in the Regulations. In addition, primary suppliers, elective participants, producers or importers of renewable fuels and sellers of fuel for export who are not participants in the trading system must submit an interim report for the first compliance period, which is due April 15, 2012, for primary suppliers and elective participants, and February 15, 2012, for producers or importers of renewable fuels and sellers of fuel for export who are not participants in the trading system.

#### *Auditor's report*

Participants in the trading system and renewable fuel producers and importers must have their records and reports audited by an independent auditor to assess whether or not their practices and procedures are appropriate to demonstrate compliance with the Regulations. The audit report must contain the information set out in Schedule 3 of the Regulations, be signed by the auditor and submitted by the participants in the trading system and the renewable fuel producers and importers by June 30 following the end of a compliance period. The first audit report is due June 30, 2013.

## *Registration and reports for producers and importers of renewable fuels*

A one-time registration report must be submitted to Environment Canada by producers and importers of renewable fuels at least one day before producing and/or importing the 400th m<sup>3</sup> of renewable fuel during a compliance period. The registration information, as prescribed in Schedule 6 of the Regulations, is required for each production facility at which renewable fuel is produced and for each province into which renewable fuel is imported.

In the event of a change in the information provided to Environment Canada, the submission of the updated information to Environment Canada is required no later than five days after the change.

Producers and importers of renewable fuel must also submit an annual report to Environment Canada by February 15 following the end of a compliance period. The first such report is due February 15, 2013. Producers and importers of renewable fuel have record-keeping obligations under the Regulations.

## *Records and reports for sellers of fuel for export*

Persons who sell fuel for export, but who are not participants in the trading system, must retain certain records and submit an annual report to Environment Canada by February 15 following the end of a compliance period. The first such report is due February 15, 2013.

## *Report on measurement methods*

Any person who submits a registration report is also required to submit a one-time report to Environment Canada on the methods used for measuring volumes, as prescribed in Schedule 8. The submission of the report is required within 180 days of the Regulations' coming into force. Information is not required to be reported in respect of a production facility decommissioned and ceasing to produce gasoline, diesel fuel and heating oil within 180 days of the Regulations coming into force. In the event that the information provided changes, the submission of updated information to Environment Canada is required no later than five days after the change.

All records or copies of reports and notices, as prescribed in the Regulations, must be kept for at least five years at the regulatee's principal place of business in Canada.

## Coming into force

The Regulations come into force on the day on which they are registered; however, some provisions come into force later, starting on December 15, 2010. These include

- the requirement for 5% renewable content based on a primary supplier's gasoline pool;
- requirements around the creation and use of compliance units; and
- reporting and record keeping, with the exception of registration and a report on measurement methods.

The coming into force of the requirements for a 2% annual renewable fuel content in diesel fuel and heating distillate oil will be determined based on the technical feasibility as stated above.

## Background

Total GHG emissions in Canada in 2008 were 734 MT CO<sub>2</sub>e, which were about 19% above the 1990 levels. Canadian emissions come from a broad range of sources throughout the economy, including industry (47%), transportation (27%), industrial processes (7%), agriculture (8%), and other sources (11%). ([see footnote 7](#)) Given the significance of its contribution to Canadian emissions, each sector must play a role in addressing the challenges of climate change.

## National context

Since 1980, the Government of Canada has supported the development of alternative fuels and has been active in the research and development of technologies and in the implementation of market-based programs (such as fiscal incentives and economic assistance) to encourage the production and



use of renewable fuel.

A number of demonstration programs aimed at evaluating and promoting the production and use of renewable fuels have been implemented by the Government of Canada, such as the Biodiesel Targeted Measure and the Ethanol Expansion Program (EEP).

Through the implementation of programs such as these, the Government of Canada has demonstrated its commitment to expanding the production and use of cleaner, renewable biofuels such as ethanol and biodiesel. More recently, the Government of Canada adopted the four-pronged Renewable Fuels Strategy to

- reduce GHG emissions resulting from fuel use;
- encourage greater production of renewable fuels;
- provide new market opportunities for agricultural producers and rural communities; and
- accelerate the commercialization of new renewable fuel technologies (such as cellulosic).

Subsequently, in support of the Renewable Fuels Strategy, on December 30, 2006, the Government of Canada published a notice of intent ([see footnote 8](#)) to develop regulations that would require an average 5% renewable fuel content based on gasoline volumes by 2010 and an average 2% for diesel fuel and heating distillate oil volumes by no later than 2012.

On April 23, 2007, the Government of Canada established the ecoAgriculture Biofuels Capital Initiative (ecoABC) ([see footnote 9](#)) for which Agriculture and Agri-food Canada (AAFC) is responsible. This four-year, \$200-million initiative would provide repayable contributions of up to \$25 million per project to help farmers overcome the challenges of raising the capital necessary for the construction or expansion of renewable fuel production facilities.

Another program in support of the Renewable Fuels Strategy is the ecoENERGY for Biofuels Initiative (ecoENERGY) ([see footnote 10](#)) managed by NRCan. Announced on December 3, 2007, the ecoENERGY program supports the production of renewable alternatives to gasoline and diesel and encourages the development of a competitive domestic industry for renewable fuels. This program will invest up to \$1.5 billion over nine years in support of renewable fuels production in Canada.

The 2007 budget also made \$500 million available over eight years to the Sustainable Development Technology Canada (SDTC) ([see footnote 11](#)) overseen by Environment Canada and NRCan to establish — in collaboration with the private sector — large-scale facilities for the production of next-generation renewable fuels. Next-generation renewable fuels produced from non-food feedstocks (such as wheat straw, corn stover, wood residue and switchgrass) have the potential to generate greater environmental benefits in terms of GHG emission reductions than traditional renewable fuels.

In addition to these commitments, the 2008 budget provided a further \$10 million over two years for scientific research and analysis on renewable fuels emissions to support the development of regulations, and for demonstration projects to assess the technical feasibility of biodiesel under Canadian climate and conditions.

The Regulations will further support the use of renewable fuels in Canada and increase the demand for these fuels. Domestic production levels are expected to be influenced by the initiatives in place under the Renewable Fuels Strategy.

#### Actions in other Canadian jurisdictions

Some provinces have established minimum renewable fuel content requirements for gasoline. The following table summarizes the provincial requirements for gasoline that have been announced or implemented to date.

**Table 1: Legislated Provincial Renewable Fuel Mandates for Gasoline**

Province	Regulated Level <sup>1</sup>	Implementation Timeframe
----------	------------------------------	--------------------------

British Columbia	5%	By 2010
Saskatchewan	7.5%	In 2007
Manitoba	8.5%	In 2008
Ontario	5%	In 2007

Source: Canada West Foundation (February 2008), *Building on Our Strengths — An Inventory of Current Federal, Provincial, and Territorial Climate Change Policies*.

<sup>1</sup> The existing mandated provincial percentages are based on the volumes used or sold to end users, rather than on volumes of gasoline produced.

The penetration of renewable fuel from the legislated mandates is expected to be significant. Indeed, projections suggest that provincial requirements currently in force would result in the use of nearly 1.3 billion litres of renewable fuel by 2010, or about 3.2% of the projected Canadian gasoline pool and 67% of the proposed regulatory requirement.

Alberta's renewable fuel standard will be implemented in April 2011, requiring 5% renewable fuel content in gasoline. Quebec has a target of 5% renewable fuel in 2012 based on cellulosic; however, it does not plan to put in place a regulation to this effect.

#### Actions in international jurisdictions

Global production and use of renewable fuels has long been on the rise for reasons that range from concerns about air quality and climate change associated with petroleum fuels, to rising oil prices and energy security. Renewable fuel requirements have been implemented by various countries, including the United States, Brazil, the European Union (EU), Japan and India.

#### *United States*

The United States passed the Renewable Fuels Standard (RFS) in 2007 through their *Energy Policy Act of 2005*. Their initial regulated requirement was set at the volume of renewable fuel in the market at the time, which equated to an annual average requirement of 4.02% ethanol in gasoline. The level has been revised annually based on renewable fuel volumes set out in the *Energy Independence and Security Act of 2007* and forecast gasoline consumption. For 2011, their proposed level based on current projections of gasoline volumes is 7.95%. The RFS also includes a credit trading system which allows regulatees to comply with the RFS through the purchase of credits. It also permits renewable fuels that are not blended into gasoline, such as biodiesel and biogas, to be included in the RFS program. The rule defines who generates the credits and under what conditions, how credits are transferred from one party to another and the weighting factor for credits from different types of renewable fuel.

The *Energy Independence and Security Act of 2007* also established new renewable fuel categories and eligibility requirements, including setting the first ever mandatory GHG reduction thresholds for the various categories of fuels. For each renewable fuel pathway, GHG emissions would be evaluated over the full life cycle, including production and transport of the feedstock; land use change; production, distribution, and blending of the renewable fuel; and end use of the renewable fuel. The lifecycle GHG emissions performance reduction thresholds as established by EISA range from 20% to 60% reduction depending on the renewable fuel category. This lifecycle analysis includes a penalty for international indirect land use change (ILUC) and US or foreign renewable fuel feedstock must also comply with renewable biomass provisions through an aggregate approach.

In March 2010, the United States published the final rule of the national RFS program (referred to as RFS2). The revised requirements establish new specific volume requirements for cellulosic biofuel, biomass-based diesel, advanced biofuel and conventional renewable fuel. Of these modifications, the most notable is the volume standard under RFS2, which has been increased beginning in 2008 from 5.4 to 9.0 billion gallons. Thereafter, the required volume would continue to increase, eventually reaching 36 billion gallons by 2022. All RFS2 requirements apply to foreign producers, in addition to the domestic producers and blenders.

### *European Union*

In May 2003, the EU put in place the *Directive on the promotion of the use of biofuels and other renewable fuels for transport* (the directive) for promoting the use of renewable fuels for EU transport. The directive stipulated that national measures must be taken by countries across the EU, aiming to replace 5.75% of gasoline and diesel with renewable fuels by December 31, 2010. This increases to a minimum of 10% in 2020. The percentages are calculated on the basis of energy content of the fuel and apply to gasoline and diesel fuel for transport purposes placed on the markets of member states. Member states were encouraged to take on national “indicative” targets in conformity with the overall target.

On January 14, 2008, the EU Environment Commissioner announced that the EU was rethinking its biofuel program due to environmental and social concerns. The resulting Fuel Quality Directive calls for tighter lifecycle GHG savings thresholds for biofuels over conventional fuels, which begin at 35% and rise incrementally to 60% by 2018.

### *Brazil*

Since it was first launched in 1975, the Brazilian Ethanol Program has been one of the largest commercial applications of biomass for energy production and use in the world. In 1976, the government made it mandatory to blend ethanol with gasoline, and the mandatory blend level was originally set at 10%. Mandatory blend levels have increased incrementally since then, and on July 1, 2007, the mandatory blend was raised to 25% of ethanol in gasoline.

In 2004, Brazil also launched the National Program for Production and Use of Biodiesel. The legislation, put in place in 2005, established minimum percentages for biodiesel in diesel fuel. Between 2008 and 2012, the mandatory requirement is set at 2%, increasing to 5% from 2013 onwards.

### *Japan*

The main driver for Japan’s biomass policy is their commitment under the Kyoto Protocol to reduce CO<sub>2</sub> emissions by 6% from 1990 levels by 2010. On May 18, 2006, the Ministry of Economy, Trade and Industry introduced a new strategy to decrease fossil fuel dependency by 20% by 2030. This policy would include, among other measures, raising allowable maximum ethanol blending in gasoline from 3% to 10% by 2020.

### *India*

India initiated a national biofuels strategy under which 5% ethanol blending in gasoline is mandatory. India has set an indicative target of a minimum 20% ethanol-blended gasoline and 10% biodiesel-blended diesel nationally by 2017.

## Sector profiles

### *Petroleum refining sector*

There are currently 16 refineries under the operation of 9 refining-marketing companies in Canada. The three major companies, namely Imperial Oil, Shell and Suncor market nationally and operate three or more refineries each. For the most part, other companies market locally and only operate one refinery. These facilities employ approximately 7 400 people in the sector. Of these facilities, four are located in Ontario; three are located in each of Alberta and Quebec; two are located in British

Columbia; and Saskatchewan, New Brunswick, Nova Scotia and Newfoundland and Labrador have one facility each.

The production capacity of these refineries in 2007 was approximately 117 billion litres. Refineries in Canada are generally operating at 90% of their capacity (95% being considered as the optimum utilization rate, taking into account maintenance shutdowns and other unplanned events).

A total of 108 billion litres of crude oil was sent to refineries in 2007, with imports accounting for 49.9 billion litres. The total production of refined petroleum products was approximately 123 billion litres, of which motor gasoline is the most important refined product, representing about 36% of the total production. Diesel accounts for another 23%. While the total production of refined products varies from year to year, the proportion of each product to the total does not change significantly. In January of 2007, domestic sales of refined petroleum products by region were 32% in Ontario, 20% in Quebec, 18% in Alberta, 11% in the Atlantic Provinces, and 19% in the other provinces and territories in Canada.

Canadian petroleum refining operations and producers of other petroleum and coal products (e.g. producers of petroleum waxes, petroleum jelly, recyclers of used motor oils) contributed an estimated \$2.6 billion to Canadian gross domestic product (GDP) and accumulated \$68.6 billion in total revenues in 2007. Of the 123 billion litres of refined petroleum products produced in Canada, Canadian refineries satisfied approximately 84% of domestic demand. Canada exported over 25 billion litres of refined petroleum products while importing 16 billion litres. ([see footnote 12](#))

The net revenues in the petroleum refining industry have increased from \$0.8 billion in 1998 to \$5.2 billion in 2007 or by 20.8% per year on average. In 2007, the growth rate was 16%.

#### *Fuel transportation and distribution sector*

The transportation and distribution infrastructure for petroleum-based fuels is primarily dominated by the major oil producers in Canada. Regional fuel producers and independent marketers have a smaller share of the distribution system. The petroleum distribution system caters to both the transportation of crude oil to refineries as well as the distribution of the refined petroleum products to the primary storage terminals. The transportation of refined petroleum product (post-refinery) is done by tanker trucks, rail, marine tankers or pipeline depending on the quantity of fuel and the geographic location.

The Canadian downstream petroleum industry can be divided into three distinct regions: Western Canada, Ontario and Quebec/ Atlantic Canada. In the Quebec/Atlantic region, product movements from refineries to terminals occur primarily by ship, except for the products moved to Ontario via the Trans Northern Pipeline (TNPL) and the products moved by rail between Saint-Romuald and Montréal — for which a pipeline replacement is being considered.

In 2006, approximately 80 billion litres of refined petroleum products were moved via pipelines across Canada. In 2007, crude oil and other pipeline transportation contributed approximately \$1.4 billion or approximately 0.1% to GDP. The share of total transportation of goods by rail, water and truck transportation to GDP, on the other hand, was approximately \$28.5 billion or nearly 2.3% in 2007. Transportation and warehousing accounted for approximately 848 944 jobs in 2007 of which employment in truck transportation was the highest at 288 809, followed by rail transportation at 46 005; water transportation at 13 984 and petroleum, natural gas and other pipelines with 9 632 jobs.

#### *Fuel storage terminals*

There are 1 833 storage terminals spread across Canada, comprising 76 primary terminals, 614 bulk plants and 1 143 cardlock facilities. The majority of these terminals (approximately 67%) are located in the West, with Ontario and the Eastern provinces accounting for 16% and 17% of these storage terminals, respectively. Ontario, British Columbia and Quebec account for 66% of the primary terminals in Canada. These primary terminals are owned by the petroleum fuel producers and are shared to optimize efficiency. Primary terminals are, for the most part, located close to major markets and transportation modes. Multiple producers often load petroleum products at the same terminal, where the addition of proprietary additives takes place before distribution to bulk plants or retail stations.

Most blending with renewable fuels would typically occur at the terminals (a small amount currently takes place at retail stations as well) and separate tanks are required on-site for renewable fuel storage before blending.

The bulk plants, representing the second level of storage facility, account for 33% of all storage facilities in Canada and are located in areas where retail distribution is not economical. They operate as secondary points of storage and distribution, but also of sales, and as such are typically not shared facilities (unlike primary terminals).

Cardlock facilities provide fuel to commercial truckers such as long-distance haulers and delivery vehicles. These are controlled access facilities, as opposed to retail stations. Diesel is the main fuel offered for sale at these facilities primarily because the principal fuel used by commercial fleets is diesel. In the last 30 years, cardlock facilities have become the principal suppliers of fuel to commercial trucking operations. Due to the lack of availability of total cardlock supply data for Canada, it is difficult to accurately estimate the share of cardlock sales volume. However, it is likely that cardlock operations account for roughly 70% of all diesel demand in Canada.

#### *Gasoline retail sector*

Marketing and retailing of gasoline is carried out by many different firms, a significant majority of which are also involved in retailing diesel. Some of these firms are integrated refiner-marketers who produce the fuel, distribute it and market it through affiliated or licensed operators who own the individual retail outlets. Approximately 28% of retail stations are owned or operated by integrated refiner-marketers. Independent marketers (the remaining 72%) buy their product from Canadian fuel producers or import fuels and tend to be smaller operators.

The number of retail stations has declined steadily from around 20 000 in the late 1980s to less than 13 000 in 2008. Quebec and Ontario had the largest number of gasoline retail stations, accounting for more than half of the total, followed by Alberta and British Columbia with 13% and 11%, respectively. The total volume of gasoline sold by the retail stations in 2007 was approximately 37.6 billion litres (and 5.7 billion litres of diesel), with a combined retail sales value of \$46.1 billion. By 2008, sales had increased to \$53 billion. Total retail trade, including but not limited to gasoline retail stations, in Canada accounted for approximately 6% of GDP in 2007 and accounted for nearly 2 million jobs. In the same year, the marketing margin represented approximately 5.6% of the average total pump price of gasoline, and 5.9% in 2008. Currently, ethanol-blended fuels are available at approximately 16% of the retail outlets across the country.

#### *Renewable fuel facilities*

Currently there are 14 commercial ethanol-producing plants operating in Canada with a total production capacity of approximately 1.4 billion litres. The ecoENERGY program, an element of the Renewable Fuels Strategy, provides production incentives to renewable fuel producers. Based on the incentives available under ecoENERGY, a number of renewable fuel producers are currently building additional capacity, which would in effect increase the annual production capacity to 2 billion litres of ethanol by 2011–12.

The Canadian ethanol production facilities are operated by a range of companies in various industry sectors, such as the chemical sector and the food-manufacturing sector. While some companies specialize in ethanol production and supply it directly to fuel producers, others are part of integrated petroleum companies. These integrated petroleum companies do not supply unblended ethanol to the domestic market as the ethanol they produce is used within the company's own distribution channels.

In Canada, corn (in the East) and wheat (in the West) are the primary feedstocks for the production of ethanol. There are also a few demonstration projects currently underway to test the production of the next generation renewable fuels from forestry and agricultural residues as well as municipal organic wastes.

Imports of ethanol have experienced a high growth rate in the last 10 years increasing from 10 million litres in 1998 to 511 million litres in 2007, with exports remaining stable between 14 and 19 million litres

during the same period.

Due to lack of sufficient publicly available data for the ethanol production facilities, their contribution to GDP, employment and other key macro-economic indicators cannot be determined. However, they are expected to grow in the future and contribute to the Canadian economy directly and indirectly.

### *Agricultural sector*

In the primary agriculture sector, large farms dominate production, accounting for only 2.5% of farms, but 40% of revenues. In 2007 and 2008, as commodity prices have risen, farm market receipts and net farm income for grain and oilseed farms have also increased. Canada ranks as the second largest in the world for the availability of arable land per person which also accounts for Canada being a large producer and exporter of agricultural products. Canada's share of land suitable for agricultural production is only a small percentage (5%) of the total.

The agriculture, forestry, fishing and hunting sector contributed nearly 2.2% to the GDP in 2007, of which crop production accounted for approximately 54.5%. The crop production sector employed nearly 298 844 persons. In 2007, the value of crops exported was nearly \$13 billion while imports totalled \$6.4 billion, with the United States being the largest trading partner followed by Japan.

### ***Regulatory and non-regulatory options considered***

A number of alternatives, including regulatory and non-regulatory options, were considered to achieve the 5% renewable fuel content based on gasoline volumes and the related GHG emission reductions and are discussed below.

#### *Status quo*

The option of taking no action to require renewable fuel content was rejected as it would not result in achieving further reduction of GHG emissions that is possible by requiring renewable fuel content based on gasoline volumes. Though there are provincial renewable fuel mandates in place, they would fall short of the level of GHG reductions that can be achieved with a national 5% renewable fuel requirement based on gasoline volumes. With the current provincial mandates in place, the renewable fuel content is approximately 1.3 billion litres, resulting in 1.75 MT CO<sub>2</sub>e reductions in GHG emissions in 2010. However, with a 5% renewable fuel requirement at the national level, an additional 0.7 billion litres of renewable fuel would be used, resulting in approximately 1 MT CO<sub>2</sub>e of GHG emission reductions each year. Therefore, to achieve this additional use in renewable fuels and related GHG emission reductions, the status quo cannot be maintained.

#### *Market-based instruments*

Market-based instruments, which include fiscal incentives, taxes, and fees and charges were given due consideration. Market-based instruments work by providing incentives aimed at changing consumer and producer behaviour. When properly designed and implemented, market-based instruments can promote cost-effective ways of dealing with environmental issues. In addition, they can provide long-term incentives for emission reduction and technological innovation.

Fiscal incentives such as tax exemptions could be used to encourage the blending of renewable fuels in gasoline that would result in GHG emissions reduction. Up until April 1, 2008, renewable fuel purchases were exempted from the federal fuel excise tax. However, this exemption did not yield significant market penetration for renewable fuels. To be successful, tax exemptions would need to be set at a level which is cost-neutral to incent the desired level of renewable fuel blending and associated GHG emissions reduction. This would impose significant costs on the federal government without guaranteeing that further GHG emissions reductions are achieved.

Moreover, other fiscal incentives (such as subsidies, financial assistance, grants) to encourage domestic production of renewable fuel and the commercialization of next-generation renewable fuels as well as expansion of the agricultural market are currently in place under the Renewable Fuels Strategy. These fiscal incentives on their own were considered unlikely to ensure that the desired GHG reductions

through blending of renewable fuels would be achieved. Subsidizing domestic production of renewable fuel would not guarantee its blending in Canada. Similarly, the successful commercialization of next-generation renewable fuels through research and development funding by the federal government would not necessarily translate into the use of these renewable fuels in Canada.

Therefore, these types of market-based instruments are more effective in conjunction with regulatory measures rather than as stand-alone.

### Voluntary measures

Voluntary instruments such as environmental performance agreements or memoranda of understanding are highly dependent on stakeholder participation and support. Historically, participation by fuel producers and importers in other fuel-related voluntary initiatives has not had significant success. Moreover, during consultations, industry has indicated that it does not favour a voluntary approach. In addition, voluntary approaches lack rigorous quantification and verification procedures that ensure the set objectives are met. As a consequence, it was considered that voluntary instruments would not create the necessary buy-in from all fuel producers and importers and these measures were not considered any further.

### Regulations

Regulations controlling fuel quality under the Fuels Division of CEPA 1999 may apply to producers, importers or sellers of fuels. While blending of renewable fuels in traditional petroleum-based fuels typically occurs downstream of production, it would not be practical to design regulations that would be effective in requiring all persons selling fuel to ensure that their fuel contain the prescribed amount of renewable fuels.

While retailers could be subject to the requirements of regulations, not only are retailers numerous, but placing the regulatory obligation on them would be a significant administrative burden.

### Regulations with compliance units

Renewable fuels are generally added downstream of fuel production. Therefore, the use of CEPA 1999 authority to develop regulations for tradable units systems (section 326) was considered in order to address this fact in conjunction with the Fuels Division of CEPA 1999. The provisions regarding tradable units enable a regulatory mechanism providing for the creation of "compliance units" to demonstrate compliance. This would allow units to be generated upon the blending of renewable fuel into traditional petroleum-based fuel. The producer or importer of the traditional petroleum-based fuel would use these units to demonstrate compliance. This approach also provides flexibility to fuel producers that are unable to blend renewable fuels cost-effectively or to importers unable to import compliant blended fuels to obtain, in trade, compliance units to demonstrate compliance with the requirements. This approach is similar to the approach of the United States, with some differences to account for Canadian circumstances.

Given the above, regulation with compliance units has been retained as the preferred option.

### **Benefits and costs**

An analysis of benefits and costs was conducted to assess the impacts of the Regulations on stakeholders, including the Canadian public, industry and government. Following comments received during the *Canada Gazette*, Part I, comment period, some changes have been made to the analysis to reflect stakeholders' concerns and suggestions, as well as newly available data. These changes are discussed below.

### Analytical framework

The approach to cost-benefit analysis identifies, quantifies and monetizes, where possible, the incremental costs and benefits of the Regulations. The cost-benefit framework consists of the following elements:

Regions. The costs and benefits have been estimated on a regional basis. The regions are defined as "West," which includes British Columbia, Alberta, Saskatchewan and Manitoba; the central region, which only includes the province of Ontario, will be referred to simply as "Ontario," and "Quebec and Atlantic Provinces" includes Quebec, New Brunswick, Nova Scotia, and Prince Edward Island. These regions have been defined as such in order to preserve the confidentiality of the data collected for this analysis. Since fuel for use in Yukon, Northwest Territories, Nunavut and Newfoundland and Labrador may be excluded from a producer or importer's pool, these regions have not been included in the analysis.

Incremental impact. Impacts are analyzed in terms of incremental changes to emissions, costs and benefits to stakeholders and the economy. The incremental impacts were determined by comparing two scenarios: one with and the other without the Regulations. The two scenarios are presented below.

Timeframe for analysis. The time horizon used for evaluating the economic impacts is 25 years. The first year of the analysis is 2010, when the Regulations are expected to come into force.

Approach to cost and benefit estimates: These have been estimated in monetary terms to the extent possible and are expressed in 2007 Canadian dollars. Whenever this was not possible, due either to lack of appropriate data or difficulties in valuing certain components, incremental impacts were evaluated in qualitative terms.

The Regulations will result in a significant contribution to the reduction of air pollution from GHGs. Due to the complexity of evaluating benefits associated with climate change, it is difficult to monetize the benefits associated with this GHG emissions reduction. Estimates of carbon value contained in published studies are used to provide an order of magnitude for these benefits.

While a significant contribution to the reduction in air pollution associated with GHG emissions will be achieved as a result of the Regulations, the Regulations would result in negligible changes in the level of emissions of criteria air contaminants (smog) such as nitrogen dioxide (NO<sub>2</sub>), sulphur dioxide (SO<sub>2</sub>), ozone and particulate matter (PM<sub>2.5</sub>) levels. The assessment of these air pollutants was limited to a qualitative description.

Discount rate. A discount rate of 8% was used for estimating the present value of the costs, while a discount rate of 3% was used for estimating the present value of the benefits in this analysis. A sensitivity analysis of the key variables to test the variability of cost estimates was also conducted.

Benefit and cost estimates are based primarily on Environment Canada's study conducted in 2009, [\(see footnote 13\)](#) supplemented by additional information from NRCan and other sources. The data has been extrapolated to provide estimates for the Canadian market for renewable fuels. It is acknowledged that the analysis is highly sensitive to, among other parameters, the forecasts for gasoline prices over the relevant time period. At the same time, these are particularly difficult parameters to predict with a high degree of confidence. For example, in its 2009 *Annual Energy Outlook Retrospective Review: Evaluation of Projections in Past Editions (1982-2009)*, the U.S. Energy Information Administration reports that the absolute average percentage error in its price per barrel forecast since 1994 was 30.6% above or below the actual price for any given year. [\(see footnote 14\)](#) For this reason Environment Canada has updated its analysis presented in the *Canada Gazette*, Part I, to incorporate a range of forecasted gasoline prices in order to better reflect the level of uncertainty on this key parameter.

The estimated costs and benefits of the Regulations are based on the 5% renewable fuel requirement for the gasoline pool.

#### Business-as-usual scenario

The business-as-usual (BAU) scenario is based on an estimated growth in demand of gasoline over a 25-year period and an estimated growth in the demand for renewable fuels. These growth rates take into account the provincial mandates in place as of October 1, 2009. Provincial mandates have been put into place in four provinces (namely British Columbia, Saskatchewan, Manitoba and Ontario; see



Table 1) with varying levels of renewable fuel requirements. These provincial requirements can be met through the existing and planned annual renewable fuel production capacity, estimated to total approximately 2 billion litres.

Demand volumes for renewable fuels as a result of provincial requirements were calculated by multiplying demand volumes for gasoline by the officially mandated renewable fuel requirements in those provinces. Annual demand for renewable fuel is therefore estimated to increase from 1.3 billion litres in 2010 to 1.8 billion litres in 2034.

The demand volumes for gasoline were calculated for the years 2010–2034 by starting with the actual demand for 2008 and applying a growth rate based on annual increases in demand. These volumes include the renewable fuels component and they are presented in the table below.

**Table 2: Estimated Demand for Gasoline and Ethanol under the BAU Scenario (2010–2034)**

(Million litres)

<b>Demands</b>	<b>West</b>	<b>Ontario</b>	<b>Quebec and Atlantic Provinces</b>	<b>Total</b>
Gasoline Demand	440 466	485 462	321 303	1 247 231
Renewable Fuel Demand	15 272	24 273	0	39 545
Average Renewable Fuel Demand	611	971	0	1 582

The estimated reductions in GHG emissions were calculated based on the emission factors ([see footnote 15](#)) of 1.19 and 1.47 MT CO<sub>2</sub>e per billion litres for domestically produced corn-based and wheat-based ethanol, respectively, under the BAU scenario. It was further assumed that given the current and planned production of renewable fuels in Canada, 100% of ethanol production in Ontario and Quebec and the Atlantic Provinces would be corn-based, while the West would rely on 100% wheat-based ethanol. The emission factors were multiplied by the renewable fuel volumes required to meet the existing provincial mandates over the 25-year period in order to estimate the total emission reductions attributable to these mandates. The provincial mandates are estimated to achieve approximately 51.3 MT CO<sub>2</sub>e of GHG emission reductions over a 25-year period (or an average reduction of 2 MT CO<sub>2</sub>e per year).

#### Regulatory scenario

The regulatory scenario is based on the implementation of the provisions of the Regulations, taking into account the prescribed requirements and their implementation schedule as well as changes reflecting stakeholders' concerns and suggestions received during the *Canada Gazette*, Part I, comment period.

As in the BAU scenario, it is expected that the demand for gasoline would grow at the same annual rates. However, due to the lower energy content of ethanol, the estimated demand for ethanol-blended gasoline would increase to make up for the loss in energy. According to NRCan estimates, the use of E10 increases fuel consumption by an average of 2.2% compared to the consumption of conventional gasoline. ([see footnote 16](#)) The total demand for gasoline has therefore been adjusted to account for this lower energy content of ethanol-blended gasoline as a result of the 5% renewable fuel requirement. This would translate into an increase in demand for ethanol-blended gasoline of 4.4 billion litres over the 25-year period. Following the effective date for the 5% renewable fuel content requirement, the demand for renewable fuel is expected to increase over and above the demand that is

forecasted based on the provincial requirements. The additional renewable fuel demand is calculated as the difference between the demand to meet provincial mandates and the additional quantities required to meet the proposed federal 5% renewable fuel requirement. The annual demand for renewable fuel, to meet both provincial and federal requirements, is estimated to increase from approximately 2 billion litres in 2010 to 2.8 billion litres in 2034.

The demand volumes for gasoline were calculated for the years 2010–2034 by starting with the actual demand for 2008 and applying a growth rate based on annual increases in demand. These volumes include the renewable fuels component and they are presented in the table below.

**Table 3: Estimated Incremental Demand for Gasoline and Ethanol under the Regulated Scenario (2010–2034)**

(Million litres)

Demand	West	Ontario	Quebec and Atlantic Provinces	Total
Energy Adjusted Gasoline Demand	441 776	486 379	323 442	1 251 597
Renewable Fuels Demand	5 954	4 168	9 725	19 847
Average Renewable Fuel Demand	238	167	389	794

Given the current production capacity, it is assumed that the increased demand for renewable fuel would be met through existing and increased production capacity. ([see footnote 17](#)) However, some level of imports, primarily from the United States, would be needed while the domestic production capacity expands. This would take place during the first four years of the Regulations' coming into force. For the purpose of analysis, the following assumptions are made:

- Ethanol demand over and above the existing capacity of approximately 2 billion litres (including volumes supported under the EcoEnergy program) would be met from 2010 to 2013 through imports from the central United States.
- Three ethanol plants, one in Ontario, of a 210 million litre capacity, and two in the West, of a 130 million litre capacity each, would be constructed by 2014. This would add 470 million litres to the existing capacity.
- The capital costs have been brought up to date to be approximately \$163 million for a 210 million litre capacity plant and \$133 million ([see footnote 18](#)) for a 130 million litre capacity plant. The estimates are derived from a recent version of NRCan's financial model that has been validated by industry.
- Operating costs, provided by NRCan from the same model, are estimated to be \$0.433 per litre for a 210 million litre capacity corn-based plant and \$0.486 per litre for a 130 million litre capacity wheat-based plant.

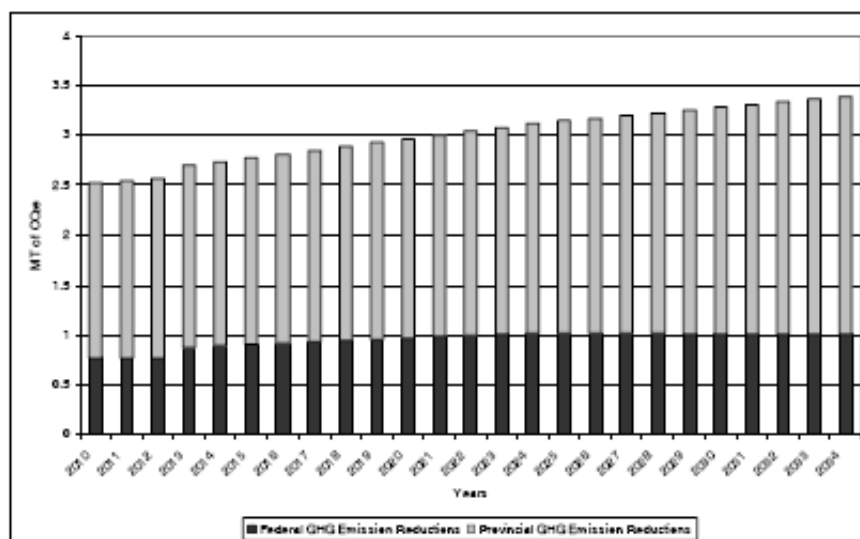
The incremental reductions in GHG emissions are calculated as a product of the GHG emission factors for domestically produced ethanol (similar to the BAU scenario) and the incremental volume of the renewable fuel required to meet the 5% federal mandate. In addition, as some imports of ethanol (primarily from the United States) would be needed to meet the shortfall in domestic production, the GHG emissions have been adjusted to reflect the emission factor of the corn-based ethanol of the central United States. The GHGenius model estimates the emission factor for corn-based ethanol from the central United States to be 0.74 MT CO<sub>2</sub>e per billion litres. Once the proposed renewable fuel content requirements are in place, the cumulative reductions in GHG emissions attributable to the 5%

renewable fuel requirement under the Regulations are estimated to be approximately 23.8 MT CO<sub>2</sub>e (or an average reduction of 1 MT CO<sub>2</sub>e per year). The sensitivity of GHG emission reductions was tested to determine the impact on GHG emissions for two scenarios — incremental renewable fuel demand is met entirely through supplies from domestic production in one case and through imports from the central United States in the second case. If the incremental demand for renewable fuels is met entirely through domestic production, the GHG emission reductions are estimated to be 25 MT CO<sub>2</sub>e, while GHG emission reductions for renewable fuels imported entirely from the central United States are estimated to be 21 MT CO<sub>2</sub>e. This variation in GHG emissions is primarily due to the lower central United States emission factor.

It should be noted that as some provinces have renewable fuel mandates in place, according to the cost-benefit analysis, the Regulations would largely impact provinces that did not have renewable fuel requirements as of October 1, 2009. Therefore, the incremental impacts for these provinces would be higher.

The GHG emission reductions attributable to the Regulations account for 32% of the total emission reductions when combining the federal and provincial mandates. Figure 1 presents the estimated emissions trends for 25 years under the two scenarios.

**Figure 1: GHG Emission Reductions (2010–2034)**



### Costs to industry

#### Fuel producers and importers

Fuel producers and importers of gasoline would bear a portion of the incremental cost associated with the regulatory requirements. As the renewable fuel content in gasoline increases with the Regulations' coming into force, investments will be needed to upgrade or modify refinery installations and distribution and blending systems. Investments of \$107.6 million will be required to produce gasoline blendstock for blending with renewable fuel. In addition to the capital costs, \$214.2 million in operation and maintenance costs will be incurred.

Incremental capital costs for terminal upgrades will also be borne by fuel producers, as these are owned and operated by them. Due to confidentiality of the cost data, the information provided by the fuel producers was aggregated for all refinery and terminal upgrades and/or modifications at the regional level. The capital costs for terminals include the building of truck, rail or barge receiving facilities, purchase of new storage capacity, cleaning of existing tanks, installation of blending equipment, as well as the upgrade of lines, pumps, seals and vapour recovery systems.

The details of the incremental costs to fuel producers and importers for the 25-year analysis period

are presented in the table below:

**Table 4: Present Value of Incremental Costs to Fuel Producers and Importers (2010–2034)**

(Constant 2007 \$M)

<b>Cost</b>	<b>West</b>	<b>Ontario</b>	<b>Quebec and Atlantic Provinces</b>	<b>Total</b>
Capital Costs	56.1	14.8	36.7	107.6
Operation and Maintenance Costs	119.4	2.2	92.6	214.2
Net cost of purchasing renewable fuels	27.3	19.1	44.6	91.1
Cost of purchasing renewable fuels	1,455.2	1,018.7	2,376.9	4,850.8
Avoided purchase of gasoline	(1,427.9)	(999.5)	(2,332.2)	(4,759.7)
Renewable Fuel Transportation Costs	103.6	72.5	169.2	345.3
Administrative Costs	2.2	2.2	5.6	10.0
<b>Total</b>	<b>308.6</b>	<b>110.8</b>	<b>348.7</b>	<b>768.2</b>

As shown, the incremental costs are highest in Quebec and the Atlantic Provinces due to the absence of renewable fuel requirements, quantities of gasoline and renewable fuel demand, and the number of refineries and terminals that would need to be upgraded. In Ontario, despite the provincial mandate, fuel producers are planning to expand the existing infrastructure in the province and blend significant additional volumes of renewable fuel in order to meet the national requirements. Similarly, while a significant portion of the incremental costs could be attributed to Alberta in the West, investments similar to those in Ontario would also be made in other provinces in that region where additional volumes of renewable fuels are likely to be blended.

The fuel producers and importers would also incur an estimated incremental cost of \$91.1 million in purchasing the requisite volumes of renewable fuel. This incremental cost represents the difference between the cost of purchasing renewable fuels and the avoided purchase of gasoline. The cost of purchasing renewable fuels is based on the average annual spot market price of ethanol for the years 2005–2009, available from the Chicago Board of Trade, of 48 ¢/L. Projections of ethanol prices for the subsequent years are based on the capital cost and operating costs ([see footnote 19](#)) of building the three plants required to meet the incremental demand of renewable fuels. Since feedstock costs represent 70–75% of the operating costs, an average growth rate of 0.5% for corn and of 1.6% for wheat have been added to the feedstock part of the operating costs to reflect the average growth in the price of corn and wheat. ([see footnote 20](#)) The avoided purchase of gasoline was calculated using an updated projection of Canadian wholesale gasoline prices. ([see footnote 21](#)) Over the 25-year period, the results are similar to those published in the *Canada Gazette*, Part I.

The estimated costs of transportation of renewable fuel are approximately \$345.3 million and are based on the information provided by fuel producers. These costs vary depending on the proximity of the refinery to renewable fuel production facilities. Therefore, an approximate average transportation cost of 4.0 ¢/L has been calculated to estimate the total transportation costs. This cost is similar to the cost used by the U.S. EPA in the regulatory impact analysis study for its *Renewable Fuel Standard*. It is unlikely that any new renewable fuel production capacity would be built in Quebec and the Atlantic Provinces; consequently, the transportation costs are higher in these provinces. However, during the initial years, some imports from the United States would be needed to meet the shortfall in domestic production as renewable fuel production capacity is expanded. The imports would primarily be needed to meet the renewable fuel demand in Quebec and the Atlantic Provinces. As the transportation costs were not available and it is not known where the renewable fuel would be imported from, the average transportation cost has been applied.

The administrative costs of \$10 million can be attributed to the regulatory requirements of measuring gasoline and renewable fuel volumes, reporting, and record keeping. These costs to meet the specific requirements of the Regulations will be incurred in addition to those of respecting the provincial mandates.

#### Retail outlets

The incremental costs to fuel retail outlets primarily include one-time capital costs of \$6.8 million for retail site conversion, including purchase of new tanks and/or cleaning of old tanks in order to accommodate the new blended fuel. Additional operating and maintenance costs were estimated to be negligible and as a result have not been calculated. The cost data for retail site upgrades was provided by the fuel producers, which sell 90% of the total volume sold through the retail outlets in Canada. The remaining 10% volume is predominantly sold through retail outlets owned by three independent companies in Quebec.

**Table 5: Present Value of Incremental Costs to Upgrade Retail Outlets (2010–2034)**

(Constant 2007 \$M)

Costs	West	Ontario	Quebec and Atlantic Provinces	Total
Capital Costs	1.8	0.7	4.3	6.8

As shown in the above table, the incremental costs to retail outlets are highest in Quebec and the Atlantic Provinces, where there are no renewable fuel requirements. Therefore, the majority of the retail outlets in this region, especially those located in highly populated areas, would have to invest in upgrades to their facilities.

#### Ethanol producers

As the renewable fuel content in gasoline increases, investments would be needed to build additional renewable fuel production facilities. As stated earlier, two plants of 130 million litres each would need to be built in the West and one plant of 210 million litres would need to be built in Ontario primarily to meet the incremental demand for renewable fuel in Alberta, Quebec and the Atlantic Provinces. The present value of these investments over the 25-year period is estimated to be \$293 million. Ethanol producers will also incur \$3.9 billion in operating costs. The estimated costs of producing ethanol were accounted for in the cost to fuel producers and importers of purchasing renewable fuels.

For Ontario, although it is assumed that the additional facility would be built to meet the future demand for renewable fuel in the Quebec and the Atlantic Provinces, it is also probable that part of the excess renewable fuel volumes would be transported to other provinces in the West to cover the shortfall in supply in that region.

### Costs to consumers

Due to the lower energy content ([see footnote 22](#)) of ethanol-blended gasoline, it is expected that consumers would increase their volume of gasoline consumed. Taking into account the lower energy content, it is estimated that approximately 4.4 billion litres of additional gasoline would be required over the 25-year period. As a consequence, the present value of the total increase in consumer expenditure on gasoline is estimated to be approximately \$1.1 billion over the same period. This increase in consumer expenditure was calculated as the product of the incremental volumes of gasoline times an updated projection of Canadian retail gasoline prices. ([see footnote 24](#)) The retail prices are lower than those used in the CBA published in the *Canada Gazette*, Part I. As a result, the cost to consumers is reduced by half. Due to the high sensitivity of the analysis to the gasoline prices over the relevant period, a sensitivity analysis for gasoline prices is presented later in this document.

**Table 6: Present Value of Incremental Costs to Consumers (2010–2034)**

(Constant 2007 \$M)

Increments	West	Ontario	Quebec and Atlantic Provinces	Total
Total cost of incremental gasoline purchases (\$M)	330.7	231.5	540.1	1,102.2

The majority of the increase in gasoline purchases would be incurred by consumers in Quebec and the Atlantic Provinces, where renewable fuel requirements are currently not in place. Some of the increased gasoline purchases would also be incurred in other provinces in the West and in Ontario, as fuel producers plan to sell gasoline with higher levels of ethanol content (such as E10), even though renewable fuel requirements are currently in place. Therefore, lower cost increases are expected to be incurred in Ontario and some of the provinces in the West, where the requisite infrastructure is already in place.

On a per-vehicle basis, the average impact on consumer expenditure on gasoline is estimated to be \$23 for 2011. These costs are not expected to significantly increase the fuelling cost on average, though impacts would vary depending on the ethanol content of fuels offered.

### Costs to the Government

Costs to the Government of Canada of the Regulations fall into three principal categories: enforcement costs, compliance promotion costs, and development and maintenance costs for the electronic reporting system. These incremental costs are presented in the following table.

**Table 7: Present Value of Incremental Costs to Government (2010–2034)**

(Constant 2007 \$M)

Categories	Incremental Costs
Enforcement	1.3
Compliance Promotion	0.4
Development and Maintenance of the Electronic Reporting System	0.6

<b>Total</b>	<b>2.3</b>
--------------	------------

With respect to enforcement costs, a one-time amount of \$250,000 would be required to train enforcement officers. Following the delivery of the training, the enforcement costs for five years are estimated to require an undiscounted annual budget of \$117,672 for inspections (including operations and maintenance costs and transportation costs), investigations and measures to deal with alleged violations (including environmental protection compliance orders and injunctions). For subsequent years, enforcement costs are estimated to require an undiscounted annual budget of \$88,459 for inspections, investigations, measures to deal with alleged violations and prosecutions.

Total enforcement costs for on-site inspections, investigations and measures to deal with alleged violations are estimated to be \$1.3 million (present value) over the 25-year period.

Compliance promotion requires an annual budget of \$303,137 during the first year of coming into force of the Regulations for training, workshops, conferences, meetings with provincial counterparts, preparation and mailing of compliance information material to stakeholders, advertising, etc. In subsequent years, the costs are lower and are mostly related to annual compliance strategy development, data collection and organization. The present value of total compliance promotion costs is estimated to be \$0.4 million over the 25-year period.

The total undiscounted incremental cost of \$580,000 would be incurred for the electronic reporting system. This amount includes the cost of purchasing the server and peripheral equipment, the cost of setting up the reporting and tracking system, as well as operation and maintenance costs of the system. The present value of total electronic reporting system costs is estimated to be \$0.6 million over the 25-year period.

#### Benefits to Canadians

Use of renewable fuel can offer environmental benefits stemming from reduction in GHG emissions and some tailpipe emissions, such as carbon monoxide, benzene and 1,3-butadiene. However, renewable fuel use may result in increased emissions of volatile organic compounds, nitrogen oxides and acetaldehyde.

#### Emissions of greenhouse gases

Achieving a renewable volume equal to 5% of Canada's fuel pool would result in an incremental average of 794 million litres of renewable fuel being blended with gasoline each year. This is expected to result in an incremental lifecycle GHG emission reduction of an average of 1 MT CO<sub>2</sub>e per year. This is a significant contribution to the reduction in air pollution associated with GHG emissions, which is equivalent to taking a quarter of a million vehicles off the road.

The emission factors, presented in the baseline scenario, were multiplied by the renewable fuel volumes required over the 25-year period in order to obtain a total GHG emission reduction of 23.8 MT CO<sub>2</sub>e attributable to the Regulations. The largest gains in GHG emission reductions occur in Quebec and the Atlantic Provinces, accounting for approximately 47% of the reductions. This is primarily attributed to the fact that no renewable fuels are currently in use in those provinces.

**Table 8: Present Value of Estimated Incremental Benefits of GHG Emission Reductions (2010–2034)**

(Constant 2007 \$M)

<b>Location</b>	<b>GHG Emission Reductions (MT CO<sub>2</sub>e)</b>	<b>Regulated Scenario Estimate \$25/tonne</b>

West	7.6	180.3
Ontario	5.0	116.4
Quebec and Atlantic Provinces	11.2	264.1
<b>Total for Canada</b>	<b>23.8</b>	<b>560.8</b>

Although research to determine the appropriate value of carbon for use in cost-benefit analysis is continuing, a value of \$25 per tonne of CO<sub>2</sub>e has been adopted for this analysis. This value is consistent with the expected U.S. price of carbon and the current trading value of permits in the European Climate Exchange. The present value of GHG emission reduction benefits is estimated to be \$560.8 million. ([see footnote 25](#))

The incremental benefits from reductions in GHG emissions are estimated to be higher in Quebec and the Atlantic Provinces, since these benefits are primarily attributable to the Regulations. The share of Ontario and the West (with the exception of Alberta for the purposes of this analysis) would be lower, as a majority of the GHG emission reductions have already been achieved under the provincial renewable fuel mandates. It is worth noting that these benefits are global in nature; therefore, they cannot be attributed entirely to Canada or to particular regions within Canada.

A significant contribution to the reduction in air pollution associated with GHG emissions will be achieved as a result of the Regulations, which will contribute towards reducing the impacts of climate change. In addition, next-generation renewable fuels, such as cellulosic ethanol, are expected to provide greater environmental benefits than grain-based ethanol. Ethanol made from cellulose is projected to emit 60% fewer GHG emissions than gasoline (compared to the 40–50% reductions that stem from use of grain-based ethanol). However, due to high uncertainty as to the timing of commercialization of cellulosic ethanol technologies, this alternative source of ethanol was not considered in the analysis.

#### Emissions of criteria air contaminants

The Regulations are expected to result in changes in the emissions of air pollutants. Emissions of criteria air contaminants (CACs) such as benzene, 1,3-butadiene, and CO are expected to decrease while emissions of acetaldehyde would increase. These changes in emissions, although small, are expected to contribute to the health and environmental benefits to be achieved in combination with other initiatives. However, given the level of potential increases and decreases in specific CAC emissions related to the 5% use of ethanol-blended gasoline, the implications for human health and the environment is less certain and remains a challenging area of research.

Health Canada undertook a detailed impact study in order to evaluate the potential risks and benefits to the health of Canadians that might result from the widespread use of 10% ethanol in gasoline (E10). ([see footnote 26](#)) The health impacts of E10 were evaluated relative to those associated with the use of conventional gasoline. The Health Canada study focused on two Canadian regions: the East and the West, where the East covers the provinces of Ontario and Quebec, and the West covers the western part of Canada, for a total population of eight million.

Using atmospheric modelling to evaluate the potential impacts in 2000 for the East and in 2000 and 2010 for the West, the results indicate that the use of E10 in Canada would result in minimal changes in the ambient levels of air pollutants. Generally, small decreases in atmospheric concentrations of benzene, 1,3-butadiene, and CO were observed, along with a slight increase in atmospheric concentration of acetaldehyde for the E10 fuel scenarios. In addition, the use of E10 had almost no impact on NO<sub>2</sub>, SO<sub>2</sub>, ozone and PM<sub>2.5</sub>.



Translating the changes in emissions into health impacts using 13 health endpoints, [\(see footnote 27\)](#) the study found that differences in pollutant concentrations between use of conventional gasoline and E10 scenarios resulted in various health outcomes across the East and West regions. For the year 2000, the results indicate greater health benefits across all health endpoints for the West region compared to the East. At the regional level, reduced health effects were associated with changes in CO, NO<sub>2</sub>, ozone, and PM<sub>2.5</sub>, while a minor increased effect was associated with SO<sub>2</sub> for the West. For the East, health benefits were derived for CO, ozone, and SO<sub>2</sub>, while increased risks were associated with NO<sub>2</sub> and PM<sub>2.5</sub>.

Based on these results, the total value of benefits associated with ozone, NO<sub>2</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> and CO for all health endpoints was estimated to be less than \$4 million in the East and \$9.2 million in the West. The health benefit associated with E10 fuel use in 2010 compared to the conventional gasoline use for all endpoints was valued at \$6.4 million for the West domain.

The Health Canada study acknowledges that quantifying benefits associated with changes in the emissions of air pollutants across Canada involves complex modelling that requires adequately determining the local distribution of air emissions and atmospheric levels of the pollutant. These are very challenging to estimate as they depend on various factors such as traffic volumes, emission inventory, predominant winds, geography, etc. The health impacts must then be estimated based on the changes in air pollutant levels. Although accepted methodologies exist for the monetization of health impacts in general (willingness-to-pay for reduced mortality and morbidity rates, increased health care costs, etc.), these impacts are difficult to monetize.

Overall, the study concludes that there are no substantial differences in predicted health effects between use of conventional gasoline use and use of E10. This assessment indicates that increasing E10 use in Canada would have a neutral effect on human health. Based on these conclusions, it is expected that a 5% renewable fuel content in the gasoline pool would also have no noticeable impact on human health.

#### Impact on agriculture

Agriculture and Agri-Food Canada (AAFC) conducted an internal analysis of the impact of 5% ethanol and 2% biodiesel targets on the Canadian agriculture sector in early 2007, considering all jurisdictions in Canada. The results of this internal analysis were adjusted to reflect the 5% renewable fuel content requirement under the Regulations (accounting for 33% of renewable fuel demand), excluding existing provincial mandates and the federal biodiesel requirement. As a result, 25% of the estimated impacts are assumed to be attributable to the Regulations.

Overall, the federal renewable fuel requirement is expected to have minimal impacts on the primary agriculture sector and no measurable downstream impacts. Based on the AAFC analysis, the agriculture sector would experience very small impacts. These impacts are discussed in more detail below. In general, it is expected that the Canadian agriculture sector would be impacted to a greater extent by renewable fuel requirements in other countries, such as the United States.

#### Impact on the crop sector

Based on the AAFC analysis, the impact on income of the crop sector is estimated to be a small increase of less than 2.7%. Adjusting this result to reflect only the federal requirement, the impact represents a 0.7% increase in income. This minimal impact is due to the fact that Canada is a price taker in the world market for crops, and changes in Canadian demand would not have any significant impact on world prices. However, there could be small shifts in local prices as a result of increased demand for renewable fuel feedstock, but no changes are expected in the prices of other crops.

Trade in agricultural crops is not expected to be significantly impacted. Wheat export may experience minor decreases. However, it would likely be low-quality wheat which would be diverted to the production of renewable fuel.

Since 1999, Canada, and in particular Ontario, has been a net importer of corn, largely as a result of

the expansion of the red meat industry. Imports are expected to increase in order to meet the demand for renewable fuel feedstock in eastern Canada. However, this would have little impact on the price of corn in the world market.

### Impact on livestock

As negligible impacts are expected on crop prices, livestock feed prices are consequently not expected to show any significant change as a result of the Regulations. Based on the AAFC analysis, the net economic impact on the livestock sector is expected to be less than 0.025% (25% of the full impact estimate), given that feed price impacts are expected to be negligible. There may be some changes in the local distribution of livestock feed, but this would have a minimal impact on overall livestock income or operations.

In addition, no changes are expected in the trade of live animals or of meat, or in other related sectors such as poultry and dairy. Impacts on employment in the livestock industry are expected to be negligible.

### Impact on land use

The federal renewable fuel requirement is not expected to result in increases or changes in land use. Changes in cropping activities as a result of the renewable fuel requirement are expected to take place within the existing crop land base. Since no significant changes in crop prices or land use would occur, there would be little impact on crop intensification at the national level. However, there could be limited impact in a few regions. There may be small increases in fertilizer use as there could be small regional expansion of corn production, but this is not expected to result in changes on water quality or GHG emissions from the agriculture sector.

### Distributional impacts

#### Fuel producers and importers

The average annual incremental costs associated with the Regulations incurred by the petroleum refining sector represent less than 1% of the net revenues and are therefore not expected to significantly impact the profitability of the sector. Moreover, it is expected that the majority, if not all, of these costs would be passed down along the supply chain through the final retail price. However, due to increased sales of ethanol-blended gasoline, approximately 10% of the total cost incurred by consumers due to the lower energy content of ethanol would contribute to increased revenues for fuel producers. This additional revenue would likely offset some of the incremental costs incurred by the fuel producers as a result of the Regulations.

### Renewable fuels facilities

The Regulations could result in a significant increase in renewable fuel production with the demand for renewable fuel expected to increase from one billion litres in 2009 to nearly two billion in 2011–2012. This estimate includes the increase in production capacity due to new facilities and upgrades to existing ones that have received a production incentive under the ecoENERGY program under the Renewable Fuels Strategy. While forecasts of renewable fuel production are somewhat uncertain, it is assumed that the majority of the renewable fuel would be met through domestic production. However, some imports, primarily from the central United States, are expected to compensate for periodic shortfalls while domestic production increases.

An important by-product of renewable fuel production is the distillers' grain, which is primarily used as animal feed. Revenue from distillers' grain would contribute significantly to the profitability of renewable fuel producers.

In the longer term, as the demand for renewable fuels continues to increase, it would be reasonable to assume that additional domestic renewable fuel production facilities would come online over the 25-year period. The contribution of this industry to the GDP is, therefore, expected to grow over time.

## Agricultural sector

The Canadian renewable fuels industry relies on the agriculture sector to provide the necessary feedstocks such as corn and wheat. Further expansion of the renewable fuel industries in Canada is expected to rely on feedstock supplied by the Canadian agricultural sector. However, the projected level of renewable fuel production in Canada is not expected to impair the agriculture sector's ability to provide agricultural commodities for traditional uses, such as for food production and livestock feed. Consequently, downstream industries such as meat and food processing are not expected to be impacted with respect to production, employment, price and trade. Furthermore, impacts on consumer food prices are not expected.

Although there are no significant income, price or land use impacts on the Canadian agriculture and agri-food sector, production of renewable fuels contributes to diversification of the agriculture and agri-food sector by creating a new market for agricultural commodities. Additionally, the ecoAgriculture Biofuels Capital Initiative, which provides capital support for the construction or expansion of a renewable fuels facility, requires farmer investment in an effort to move farmers into value-added production as opposed to only producing a commodity. Moreover, renewable fuel facilities built in rural locations have yielded benefits for those communities by increasing the number of jobs and manufacturing activity.

## Employment

The capital investments to upgrade the refineries, terminals and retail outlets are expected to create employment in the initial years, as the industry ramps up to comply with the Regulations. In addition, the transportation of renewable fuels would require expansion of the existing fuel transportation infrastructure which would also have a positive impact on employment. Due to the characteristics of ethanol, the most likely mode of transportation from production facilities to the point where it is blended with gasoline would be through trucking. Some transportation would also be done through rail. However, due to lack of data it is not possible to estimate the specific shares for these modes of transportation. Nonetheless, it is likely that the increase in renewable fuel being transported would also result in increase in employment in this sector.

As demand and, consequently, production of renewable fuels increases as a result of the Regulations, new jobs would be created in the renewable fuel industry. Based on a study recently presented by the renewable fuels industry which studied the employment creation from the construction of 28 ethanol production plants, it was estimated that the construction of the three ethanol plants considered here would generate approximately 3 000 direct and indirect jobs during the construction phase of these plants.

In addition, according to an NRCan study, ([see footnote 28](#)) an ethanol plant with an annual production capacity of up to 100 million litres would require 30 employees for operations; plants with an annual capacity of 200 million litres or more would create 40 jobs. Taking into consideration these employment numbers and assuming three additional ethanol plants will be built, the renewable fuels production sector would be responsible for a total of approximately 100 direct jobs per year, over the period considered.

## Consumers

Consumers are expected to incur the bulk of the total incremental cost associated with the Regulations. In addition to the direct cost of incremental volumes of blended gasoline purchases, consumers would likely experience a small increase in the price of gasoline at the pump as the incremental costs for the petroleum refining sector are passed on to consumers. Assuming all industry costs are passed on to the consumer, regional average cost over 25 years range from 0.05 ¢/L in Ontario to a relatively higher impact of 0.17 ¢/L in Quebec and the Atlantic Provinces.

The magnitude of any increase in fuel price from the cost increase to industry is difficult to predict. In most if not all cases, it is likely to be unnoticeable in the usual day-to-day price fluctuations experienced in the gasoline market. However, short-term price changes could be higher, such as in cases of temporary shortages of renewable fuel supply. It is probable that higher, more volatile prices

may be experienced in the first few years as the supply infrastructure is established.

### Competitiveness

The Canadian economy is highly integrated with the United States economy. As the United States has implemented similar requirements for renewable fuel content in gasoline, no international competitiveness impacts are anticipated on the refining industry.

However, domestic competitiveness impacts are expected for fuel producers in the Atlantic Provinces. Fuel producers that only market within the region would face competition from national fuel producers that plan to meet their corporate requirement by supplying renewable fuel blends in other regions. The small domestic market (accounting for approximately 6% of the Canadian gasoline demand) and the lack of regionally sourced renewable fuel further place fuel producers in the Atlantic Provinces at a competitive disadvantage with the national fuel producers. Costs are expected to be an important consideration for these regional fuel producers and their ability to have access to secure and cheap renewable fuels would play a significant role. To remain competitive, they would have to be able to pass on their incremental costs to the final consumers. The Atlantic Provinces are subject to fuel price controls, which may impact the ability to pass the estimated incremental average regional cost of 0.17 ¢/L on to the consumer.

For the renewable fuel industry to be competitive in the domestic market, it will have to supply ethanol at a price that is similar to import prices. Given the current market conditions, federal and provincial incentives currently in place, and revenues from by-products, the Canadian renewable fuel industry is expected to remain profitable overall.

### Conclusions

Although the Regulations impose costs on industry, consumers and government, they will also result in benefits from reduced GHG emissions. While realized costs and benefits will be sensitive to changes in key parameters such as gasoline price forecasts, expected values arising from this analysis are summarized in the table below.

**Table 9: Incremental Cost-Benefit Statement (2010–2034)**

(Constant 2007 \$M)

<b>Incremental Costs and Benefits</b>	<b>Base Year: 2010</b>	<b>2022</b>	<b>Final Year: 2034</b>	<b>Total 10 Year (PV)<sup>1</sup> 2010–2020</b>	<b>Total 25 Year (PV)<sup>1</sup> 2010–2034</b>	<b>Average Annual</b>
<b>A. Quantified Industry Costs</b>						
<u>Cost to Fuel Producers &amp; Importers</u>						
Capital Costs	14.8	0.0	0.0	107.6	107.6	4.3
Operation & Maintenance Costs	18.6	18.6	18.6	149.2	214.3	8.6
Net Cost of Purchasing	(45.4)	25.3	103.4	(104.9)	91.1	3.6

Renewable Fuels						
Renewable Fuel Transportation Costs	26.3	31.5	38.0	54.9	345.4	13.8
Administrative Costs	0.9	0.9	0.9	1.8	10.1	0.4
<b><i>Sub-Total</i></b>	<b>15.2</b>	<b>76.3</b>	<b>160.9</b>	<b>164.2</b>	<b>768.5</b>	<b>30.7</b>
<u>Cost to Upgrade Retail Outlets</u>						
Capital Costs	0.9	0.0	0.0	1.9	6.8	0.3
<b><i>Sub-Total</i></b>	<b>0.9</b>	<b>0.0</b>	<b>0.0</b>	<b>1.9</b>	<b>6.8</b>	<b>0.3</b>
<b><i>Total Industry Costs</i></b>	<b>16.1</b>	<b>76.3</b>	<b>160.9</b>	<b>166.1</b>	<b>775.3</b>	<b>31.0</b>
<b>B. Quantified Consumer Costs</b>						
Gasoline Purchases	84.1	101.2	119.7	691.9	1,102.2	44.1
<b><i>Total Consumer Costs</i></b>	<b>84.1</b>	<b>101.2</b>	<b>119.7</b>	<b>691.9</b>	<b>1,102.2</b>	<b>44.1</b>
<b>C. Quantified Government Costs</b>						
Enforcement	0.3	0.1	0.1	0.4	1.3	0.05
Compliance Promotion	0.3	0.0	0.0	0.4	0.4	0.02
Electronic Reporting System	0.5	0.0	0.0	0.5	0.6	0.02
<b><i>Total Government Costs</i></b>	<b>0.11</b>	<b>0.1</b>	<b>0.1</b>	<b>1.3</b>	<b>2.3</b>	<b>0.09</b>

<b>Total Costs</b>	<b>100.3</b>	<b>177.6</b>	<b>280.7</b>	<b>859.3</b>	<b>1,879.8</b>	<b>75.2</b>
<b>D. Quantified Environmental Impacts</b>						
Reduction in GHG Emissions (MT CO <sub>2</sub> e)	0.77	0.99	1.00	9.70	23.8	0.95
Benefits of GHG Emission Reductions at \$25/tonne	20.5	33.5	42.8	244.7	560.8	22.4
<b>E. Net Benefit</b>	(79.8)	(144.1)	(237.9)	(614.6)	(1,319.0)	(52.8)
With gasoline price 20% lower	(136.6)	(211.4)	(317.3)	(1,335.3)	(2,050.5)	(82.0)
With gasoline price 20% higher	(25.0)	(77.0)	(158.4)	(417.0)	(587.5)	(23.5)
<b>F. Qualitative Impacts</b>						
Fuel producers	<ul style="list-style-type: none"> <li>• There could be additional costs related to new volume measurement counters if the current measurement methods are inadequate. This could impose costs over and above those identified above.</li> <li>• Fuel producers could experience an increase in revenue due to the increased demand for ethanol-blended gasoline as a result of the lower energy content of the blended fuel. This increase in revenue, amounting to 10% of the increase in consumer costs, could off-set some of the incremental cost to fuel producers to supply the blended fuel.</li> </ul>					
Agriculture	<ul style="list-style-type: none"> <li>• There could be some increase in income for the crop sector, estimated to be less than 0.7%.</li> <li>• Small changes in local prices of crops used as renewable fuel feedstock are expected as a result of increased demand for these crops; however, no impacts are expected in the prices of other crops.</li> <li>• As negligible impacts are expected on crop prices, livestock feed prices are consequently not expected to show any significant change. These changes in price are expected to result in less than one percent decline in income from cattle and hog operations.</li> <li>• Minimal (close to zero) negative impacts on employment in the livestock industry are expected as a result of the slight increase in the price of livestock feed.</li> </ul>					

	<ul style="list-style-type: none"> <li>Changes in cropping activities are expected to take place within the existing crop land base, with little impact on crop intensification at the national level.</li> </ul>
Environment	<ul style="list-style-type: none"> <li>Due to minor regional expansion of corn production, a small <del>increase in fertilizer use could be experienced. This is not</del> expected to result in changes on water quality or GHG emissions from agricultural activities.</li> </ul>
Health	<ul style="list-style-type: none"> <li>The use of E10 would have negligible impacts on criteria air contaminants with an overall neutral effect on human health. Therefore, it is expected that a 5% renewable fuel content would also have a similar impact on human health.</li> </ul>
Employment	<ul style="list-style-type: none"> <li>Some increases in employment are expected due to increased transportation of renewable fuels, construction of renewable fuel plants, and upgrades to refineries, terminals and storage facilities.</li> </ul>

1: PV refers to Present Value

The present value of total incremental costs is estimated to be \$1.9 billion. The majority of these incremental costs would be passed on to consumers. Average annual incremental costs are estimated to be \$75 million.

The average annual reductions in GHG emissions are estimated to be approximately one MT CO<sub>2</sub>e with an incremental benefit of \$560.8 million using a value of \$25 per tonne. The Regulations are estimated to result in a net cost of approximately \$1.3 billion. Given the high degree of uncertainty surrounding the appropriate value of carbon, the net impact could range from a net benefit of \$363.4 million (at \$100 per tonne) to a net cost of \$1.6 billion (at \$10 per tonne).

### Sensitivity analysis

#### *Gasoline prices*

As the analysis is highly sensitive to the forecasts for gasoline prices over the relevant time period, Environment Canada has updated its analysis from the *Canada Gazette*, Part I, to incorporate the latest NRCAN forecast of oil prices, as well as incorporating a range of +/- 20 % on forecasted wholesale and at the pump gasoline pre-tax prices (roughly +/- 11 cents per litre) in order to better reflect the level of uncertainty on this key parameter.

**Table 10: Sensitivity of +/-20% on Gasoline Prices**

(Constant 2007 \$M)

<b>-20% Scenario</b>	<b>CG2 Scenario</b>	<b>+20% Scenario</b>	
<b>Net Cost of Purchasing Renewable Fuels</b>	1,043.0	91.1	(860.8)
<b>Cost of Purchasing Ethanol</b>	4,850.8	4,850.8	4,850.8

<b>Avoided Purchase of Gasoline</b>	(3,807.8)	(4,759.7)	(5,711.6)
<b>Cost to Consumers</b>	881.8	1,102.2	1,322.7
<b>Total Cost</b>	2,611.3	1,879.8	1,148.3
<b>Net Benefit</b>	(2,050.5)	(1,319.0)	(587.5)

Lower wholesale gasoline prices make gasoline more competitive compared to ethanol. In that case, the present value of the net cost of the Regulations would rise by over \$700 million to over \$2 billion and would be closer to the results published in the *Canada Gazette*, Part I. Conversely, if the price of gasoline were to be 20% higher, the net cost of this measure would decline by a similar amount to less than \$600 million. The results demonstrate a high sensitivity to gasoline price assumptions.

#### *Social cost of carbon*

Estimates of the social cost of carbon (SCC) vary widely and there is no consensus as to precise values to use for a benefits analysis. For example, experts such as Tol, Nordhaus and Hope ([see footnote 29](#)) have reported mean SCC values in the range of \$10 to \$25 per tonne of CO<sub>2</sub>e, whereas Stern has reported a value closer to \$100. In part, this lack of consensus relates to key parameter choices in the estimation of the SCC, for example the appropriate discount rate to use in the calculation. It is generally acknowledged that estimates, even from the same model, vary widely depending on the chosen levels of key variables. In addition, it is widely acknowledged that the SCC would normally increase by about 2% per year. Other proxies for the SCC include the price of carbon on exchange markets and target prices announced by key jurisdictions. The price of carbon on the European Climate Exchange (ECX) has been trading in the range of \$22–27. ([see footnote 30](#)) Recent United Kingdom target ranges from \$44 to \$134. ([see footnote 31](#)) Together, the above factors suggest that plausible SCC estimates would normally fall within a range of approximately \$10 to \$100 per tonne of CO<sub>2</sub>e.

**Table 11: Sensitivity of the Social Cost of Carbon**

(Constant 2007 \$M)

<b>Location</b>	<b>GHG Emission Reductions (MT CO<sub>2</sub>e)</b>	<b>Low Estimate \$10/tonne</b>	<b>Regulated Scenario Estimate \$25/tonne</b>	<b>High Estimate \$100/tonne</b>
West	7.6	72.1	180.3	721.2
Ontario	5.0	46.6	116.4	465.7
Quebec and Atlantic Provinces	11.2	105.6	264.1	1,056.3
<b>Total for Canada</b>	<b>23.8</b>	<b>224.3</b>	<b>560.8</b>	<b>2,243.2</b>

Sensitivity analysis on the \$10 to \$100 range (including a growth rate of 2% per year) was



conducted. Thus, while the present value of GHG emission reduction benefits is estimated to be \$560.8 million at \$25 per tonne a plausible range of \$224.3 million to \$2.2 billion should also be considered.

## ***Rationale***

The Government of Canada is committed to reducing GHG emissions and increasing the use of renewable fuels through a number of regulatory and non-regulatory actions. In order to do so, the Government of Canada has adopted a comprehensive Renewable Fuels Strategy to reduce GHG emissions, encourage the use and production of renewable fuels and promote economic growth and sustainable development. A number of initiatives have been put in place to achieve the objectives of the Renewable Fuels Strategy.

One of the key elements of the Renewable Fuel Strategy was to require 5% renewable fuel in liquid petroleum fuels. In order to achieve this objective, a number of regulatory and non-regulatory options were considered. Given that voluntary and market-based instruments have had only limited success in increasing the use of renewable fuels and cannot guarantee that renewable fuels would be blended in Canada, they were considered unlikely to achieve the 5% renewable fuel content requirement. The use of regulations in combination with a trading system was considered to be an effective way of achieving this requirement. While reducing GHG emissions, this approach also provides flexibility to industry to meet the requirement and ensures production and use of renewable fuels in Canada.

As a consequence, a cost-benefit analysis was conducted for the selected regulatory instrument which indicated that it would result in a reduction of approximately 23.8 MT CO<sub>2</sub>e of GHG emissions over a period of 25 years. The incremental cost of achieving these reductions is estimated to be \$1.9 billion over the same period with associated benefits of \$560.8 million or a net average annual incremental cost of approximately \$75 million. Although the bulk of these costs would be borne by consumers in provinces where renewable fuel requirements are currently not in place, the overall impacts are estimated to be less than 1¢ per litre of gasoline, which would likely be lost in the day-to-day fluctuations in gasoline prices. Given the GHG emission reductions, the benefits in terms of employment and increased economic activity, domestic and international commitments of the Canadian government, and considering the GHG emission reductions achieved through other measures, the overall impact of the Regulations will be positive.

In addition, consultations with various stakeholders also showed general support for the proposed approach. In response to the various comments and suggestions raised during these consultations, a number of flexibility mechanisms (such as carry forward and back of compliance units and certain exclusions) have been included in the Regulations. These mechanisms have been designed to ensure compliance to the renewable fuel requirement by industry, while ensuring that reductions in GHG emissions are achieved.

Furthermore, Environment Canada also considered actions taken in other countries and undertook discussions with the U.S. EPA on its RFS. The general approach adopted under the Regulations is based on the U.S. RFS with specific design requirements to take into consideration the Canadian context.

As a consequence of the above, the Regulations are considered to be the most effective way of fulfilling the Government of Canada's commitment outlined in the Renewable Fuels Strategy.

## ***Consultation***

### ***The consultation process***

Since 2006, Environment Canada has organized a number of consultation and information sessions with various stakeholders on the proposed regulatory approach for requiring renewable fuel content based on gasoline, diesel and heating distillate oil volumes, including the following:

- In May 2006, the Government of Canada announced its intention to ensure that an average 5% content in Canadian motor fuels be made up of renewable fuels, such as ethanol and biodiesel, by the year 2010.
- Environment Canada, in collaboration with AAFC and NRCan, held a consultation session on

September 14, 2006, with various stakeholders potentially affected by the Government of Canada's commitment to require a 5% average renewable content in Canadian transportation motor fuels by 2010, such as gasoline and diesel. The consultation offered the stakeholders the opportunity to raise any concern and make suggestions.

- Following the initial consultations, Environment Canada published, on December 30, 2006, the Notice of Intent (NOI) to develop a federal regulation requiring renewable fuels. The NOI sets out the proposed regulatory approach and key design elements.

Twenty-seven written submissions were received on the NOI. Comments came from various organizations (representing agricultural trade, petroleum and renewable fuel producers, automobile manufacturers and the trucking industry), individual companies (petroleum and renewable fuel producers, and a storage tank manufacturer), and environmental organizations. One provincial department also commented.

Environment Canada held cross-country bilateral consultations on the NOI in early 2007. A briefing on the NOI was provided to provincial and territorial governments via the Council of Energy Ministers Working Group. Environment Canada met with 50 parties in total, representing environmental non-governmental organizations, fuel producers, renewable fuel producers, industry associations, aboriginal organizations and other governments.

Through these consultations, ([see footnote 32](#)) briefings and information sessions, Environment Canada assured the stakeholders that the concerns raised would be taken into consideration during the drafting of the proposed Regulations. Through these consultations, stakeholders gained an increased understanding of the elements of the NOI and Environment Canada officials were able to gain an in-depth understanding of the various positions and concerns of stakeholders.

In 2009, additional consultations were undertaken:

- In May, an information session ([see footnote 33](#)) was organized by Environment Canada to communicate the key decisions made by the Government of Canada in developing the proposed Regulations. At the information session, Environment Canada also outlined the next steps in the regulatory development process, which include drafting, consulting and publishing the proposed Regulations in the *Canada Gazette*.
- In the summer, in order to ensure the workability of a regulatory design, Environment Canada set up a technical advisory working group comprised of the key stakeholders from the most affected industries. The technical advisory working group reviewed the draft document for the proposed regulatory text, and provided advice on the definitions, workability and technical details. ([see footnote 34](#))
- At the same time, Environment Canada offered to consult with the Canadian Environmental Protection Act National Advisory Committee (CEPA NAC) on the proposed Regulations respecting renewable fuels. Four provinces, namely Saskatchewan, Ontario, Quebec and New Brunswick, provided comments on the proposed Regulations.

Stakeholders generally expressed support for national regulations to require renewable fuels. However, there was a wide spectrum of views expressed concerning the various elements of the proposed Regulations and their design.

A summary of the comments and of the concerns expressed on specific issues during these various consultation and information sessions along with Environment Canada's response is provided below.

#### Regional implications

- Some regional stakeholders, particularly in Atlantic Canada, were concerned about the competitive disadvantage regional fuel producers could face in comparison to their national counterparts. In particular, stakeholders were opposed to the use of a compliance unit trading system, within the proposed Regulations, coupled with the use of a company-based limit. They indicated that both mechanisms could result in higher regional competitiveness impacts, particularly in the case of Quebec, Atlantic Canada and Newfoundland and Labrador, since all provinces west of Quebec have already implemented or plan to require the use of ethanol-

blended gasoline in advance of the federal Regulations; therefore, they have the needed infrastructure in place. This competitive disadvantage would be further compounded by the short lead time for implementation of the proposed Regulations.

While acknowledging the cost implications of the proposed approach for Atlantic Canada, Environment Canada clarified that the proposed Regulations would apply at the point at which gasoline is produced or imported. Tradable compliance units are included as the regulatory mechanism for demonstrating compliance. The compliance units would be generated upon the blending of renewable fuel into traditional petroleum-based fuel and then used by the refiner to demonstrate compliance. Fuel producers that are unable to blend renewable fuels economically can purchase compliance units to demonstrate compliance with the proposed requirements.

A company-wide limit was selected over the use of a facility-based limit as ethanol is added downstream of the point at which it can be regulated. Therefore, a facility limit is not possible. In addition, the use of company-wide limits fits with the implementation of an effective system of tradable compliance units. A system of tradable compliance units on a facility basis would likely result in companies operating multiple facilities averaging these units at the corporate level, resulting in the same effect as a company-wide approach. In addition, this would further increase the regulatory complexity and administrative burden.

- Regional fuel producers in the Atlantic Provinces were also concerned about the short lead time for implementation of the proposed Regulations, claiming this would further affect their competitiveness.

The publication of the NOI in December 2006 clearly indicated the Government of Canada's intent to put in place regulations requiring renewable fuel content based on gasoline volumes by 2010, and based on diesel fuel and heating distillate oil volumes no later than 2012. Environment Canada is committed to respecting these implementation dates. However, the concerns of industry were taken into consideration during the drafting of the proposed Regulations, which includes various flexibility mechanisms such as an extended first compliance period of 16 months, provisions to carry forward and carry back excess compliance units, and allowing trading of compliance units up to three months after the end of a compliance period. In addition, gasoline used in Newfoundland and Labrador may be excluded from the regulatee's pool, given the region's particular situation in terms of geographical location, renewable fuel supply considerations and small market.

- Regional fuel producers in the Atlantic Provinces were concerned about the limited potential for producing renewable fuels in the region, which would mean that the renewable fuel requirement would need to be met through imports.

Environment Canada acknowledged these concerns and included the aforementioned flexibility mechanisms in the proposed Regulations to alleviate some of the resulting impacts.

#### Fuel quality specifications

- The NOI indicates that fuel quality specifications for renewable fuels or the final blended product would not be included in the proposed Regulations. The motor vehicle industry argued that fuel quality specifications for renewable fuels should be included as part of the proposed Regulations. In their view, these specifications would ensure that the renewable fuel and the final blended product are of sufficient quality so that vehicle engine technology is not compromised.

Environment Canada reiterated the position adopted in the NOI and clarified that renewable fuel quality standards would not be included in the proposed Regulations. The Canadian General Standards Board is the responsible authority for developing fuel quality standards (including standards for renewable fuel quality) through a consensus process with the public and private sectors.

#### Labelling

- Representatives from the motor vehicle industry recommended establishing a cap for ethanol

concentrations in gasoline and biodiesel content in diesel fuels. In addition, it was suggested that the quality of renewable fuel blendstocks and finished blends should also be regulated.

Environment Canada recognizes the need to inform consumers on the use of higher level blends and explored how information on high renewable fuel levels could be provided to consumers under the proposed Regulations. After consideration, Environment Canada included a provision in the proposed Regulations which stipulated that to create compliance units for higher level blends there must be evidence establishing the nature of the higher blend fuel, either through appropriate labelling on the fuel dispensing pump or documents provided directly to the consumer.

#### Differential weighting (or biases) for renewable fuels

- A number of stakeholders favoured an approach where renewable fuels with higher GHG lifecycle reduction potential are assigned a higher weighting towards meeting the renewable fuel content requirement. However, renewable fuel producers opposed the use of biases.

Environment Canada, after giving due consideration to the issue and taking into account the complexities and controversies around GHG lifecycle analysis, decided not to include differential weightings for renewable fuels. Differential weightings may be considered in the future once there is a better understanding of the GHG lifecycle analysis of various fuels.

#### CEPA National Advisory Committee (CEPA NAC) consultations

Environment Canada offered to consult with CEPA NAC members in June 2009. Bilateral meetings between Environment Canada officials and Quebec, Ontario, New Brunswick and Saskatchewan were held in early September 2009. Most provinces support the proposed Regulations, but a few concerns were raised.

- New Brunswick voiced the concerns that, given the absence of local production, renewable fuel will have to be imported, resulting in higher cost to consumers and placing local fuel producers at a competitive disadvantage with no commensurate regional benefits. Furthermore, this would increase security risk with the fuel supply system. Given these challenges, New Brunswick conducted a study on the impacts of the proposed Regulations on the consumers and the fuel suppliers in their region. The study recommended that a two-year deferral of the proposed Regulations is needed for the Atlantic Provinces in order to allow for the development of a reliable supply of trading unit credits. This should be coupled with a phased approach of a minimum of one year for facilities who have insufficient off-site blending capability outside of Canada. In addition, as an alternative, a carry forward option was suggested. New Brunswick has indicated that they intend to provide an official position.

Environment Canada did not include a two-year deferral or phased-in approach for the Atlantic Provinces. However, a number of key flexibilities to mitigate the impacts of the proposed requirements on the regional fuel producers were included. These flexibilities included an extended initial compliance period to December 31, 2011, and the exclusion of gasoline for use in the Northwest Territories; Yukon; Nunavut; Quebec, north of the 60th parallel; and in Newfoundland and Labrador. The proposed Regulations also included provisions for the carry forward and carry back of surplus compliance units.

- Quebec raised concerns with the 2010 implementation timeline of the proposed Regulations. They argued that the target of the proposed Regulations and timeline are counter to its goal of encouraging use of cellulosic ethanol by 2012 through non-regulatory means.

Environment Canada has clarified that the proposed Regulations include flexibilities such as renewable fuel made from a variety of feedstocks (e.g. cellulose, municipal waste) which would be recognized as contributing towards meeting the 5% renewable fuel content requirement.

#### **Comments received following pre-publication of the proposed Regulations in the *Canada Gazette, Part I*, on April 10, 2010**

The proposed Regulations were pre-published in the *Canada Gazette*, Part I, for a 60-day public comment period. During that period, 76 comments were received from parties including the petroleum industry, producers of renewable fuel, forestry and chemical industries which are potential renewable fuel feedstock producers, vehicle manufacturers, users of petroleum fuels, environmental organizations, the general public and one provincial government.

Comments received touched on many elements of the proposed Regulations, as well as on the Regulatory Impact Analysis Statement (RIAS). A summary of the comments and how they are addressed in the final Regulations is presented below.

Notices of objection were received from 116 parties requesting that the Minister of the Environment establish a board of review under section 333 of CEPA 1999. The notices of objection were considered. A board of review will not be convened and a response will be provided for each request.

#### *Implementation timing and start of the 5% requirement*

Some parties were of the view that the Regulations should not be passed at this time as more time was needed to assess and review ongoing studies. The petroleum industry and one province were strongly of the view that the proposed September 1, 2010 start date did not provide sufficient lead time for industry. The petroleum industry pointed out that time was required to make necessary changes to infrastructure, to information technology systems and to internal procedures and practices relating to complying with the administrative requirements of the Regulations, such as record keeping and reporting.

Some representatives of the petroleum industry indicated that they could not make recommendations on a start date without knowing the final provisions of the Regulations. Others recommended starting the 5% requirement four months after the publication of the final Regulations or in 2011. Various parties suggested adding additional implementation flexibility by setting a minimum provincial volume requirement at 1.2 billion litres/year in order for the federal regulation to apply, having a phase-in period with a less stringent requirement, and delaying or exempting the 5% requirement in the Atlantic Provinces.

Comments received from the renewable fuel industry on the implementation date indicated that it should not be delayed from September 1, 2010, as to do so at this point would constitute an unfair and unreasonable interference with marketplace expectations.

- The final Regulations adjust the start date of the 5% requirement to December 15, 2010. A consequent change was also made to lengthen the first gasoline compliance period from 16 months to 24.5 months, now ending on December 31, 2012. As well, an interim report for the period from December 15, 2010, to December 31, 2011, was added.

The petroleum industry also commented that more time was required after final Regulations were published in the *Canada Gazette*, Part II, for them to meet regulatory requirements relating to initial reports, measurement protocols, a mandated format for the compliance unit account book, and in order to amend various contracts.

- It is recognized that it may take time for companies to fully comply with those requirements. In response to these comments, the Regulations were revised to provide a 180-day period after the Regulations are registered for companies to submit reports on measurement methods. During those 180 days, the final Regulations also allow for use of measurement methods that deviate from the prescribed standards. A provision was also added to exempt any refinery that is decommissioned and ceases to produce fuel during that 180-day period from submitting the report on measurement methods. The final Regulations do not mandate a format for the compliance unit account book at this time. Environment Canada will monitor the implementation of the Regulations and assess whether it is necessary to specify a format for the account book.

#### Regulatory design aspects

##### *Application*

One party was of the view that the Regulations should avoid specifying the application (i.e. gasoline, diesel fuel, heating oil) and instead “establish a renewable content in the broad array of uses of renewable fuels.”

- The design of the Regulations already provides for a broad array of uses of renewable fuels, as the 5% requirement for gasoline can be met through use of renewable fuel in any liquid petroleum fuel. Therefore, no changes were made in regard to this comment.

#### *Scope and definition of renewable fuel*

Some stakeholders from the chemical industry recommended that gaseous renewable fuels, particularly dimethyl ether, be considered a “renewable fuel” as its use as a diesel fuel substitute could reduce greenhouse gas emissions.

- As stated in the 2006 *Notice of Intent to Develop a Federal Regulation Requiring Renewable Fuels*, ([see footnote 35](#)) these Regulations are primarily intended to increase the use of liquid renewable fuels such as ethanol and biodiesel in Canadian gasoline and diesel fuel. During the regulatory development process, flexibility was added to recognize use of neat renewable fuel and renewable fuel in other liquid petroleum fuels. Extending the scope of qualifying renewable fuels to encompass gaseous fuels would require a major reworking of the Regulations, given that the compliance system is built around liquid fuels. It would also be contrary to the original intent of the Regulations, eroding the intended goal of increasing the use of liquid renewable fuels such as ethanol and biodiesel. Consequently, Environment Canada has not further expanded the regulatory approach to include gaseous renewable fuels.

The petroleum industry suggested that water should be excluded from the maximum limit of non-renewable material allowed under the definition of renewable fuel, while stakeholders in the forestry industry recommended that the maximum limit for such material be increased from 1.5% to 5% by volume.

- The final Regulations add a specific allowance for water of up to 1.0% by volume for ethanol, to the other allowances for denaturant and other contaminants. In respect of other renewable fuels, Environment Canada does not see any technical justification for an additional allowance for water content and has made no change in that regard. The definition of “renewable fuel” was also adjusted to specifically reference ethanol. Consequently, a definition of “ethanol” was added to the final Regulations.

#### *Restrictions on certain renewable fuels*

Some stakeholders who use diesel fuel suggested that there should be restrictions on the use of diesel containing biodiesel. These restrictions included not more than 5% biodiesel in diesel fuel, seasonal and geographical restrictions on the use of diesel fuel containing biodiesel, and controls to ensure proper blending practices.

- As the Regulations are intended to encourage the use of renewable fuels such as biodiesel in transportation and other applications, Environment Canada has rejected the proposed limitation on blends of biodiesel greater than 5% by volume. However, changes have been made so that such fuel will be considered and treated as “high-renewable-content fuel”. To create compliance units for high-renewable-content fuel, records must demonstrate that information on the nature of the fuel was made available to the consumer. In regard to suggested seasonal and geographical restrictions and controls on blending practices, Environment Canada believes that those issues are best dealt with by the industries involved. No changes were made to the proposed Regulations in this regard.

#### *Next-generation renewable fuels*

One stakeholder recommended that next-generation renewable fuels should be preferentially treated by the Regulations, while another stakeholder suggested that there be a specific requirement for renewable fuels with lower lifecycle emissions of greenhouse gases.

- Environment Canada, after giving due consideration to the issue and taking into account the complexities and controversies around GHG lifecycle analysis, has decided not to include mandates or differential treatment of renewable fuels based on greenhouse gas emissions. Such an approach might be considered in the future once there is a better understanding of the greenhouse gas lifecycle analysis of various fuels.

### *Renewable fuel feedstocks*

A wide range of comments was received regarding what should be considered as “renewable fuel feedstock”. Suggested additions included spent pulping liquor, waste carbon dioxide, tires and algae. One stakeholder suggested removing items that compete for human and animal consumption. Several environmental organizations objected to allowing municipal solid waste as a renewable fuel feedstock as they felt that to do so would be a disincentive for waste reduction efforts.

- The definition of “renewable fuel feedstock” was developed based on the definition used by the U.S. EPA in phase 1 of its Renewable Fuel Standard. In general, it covers a broad range of feedstocks recognized as being renewable, including algae. It does not include CO<sub>2</sub> or tires as they are not considered renewable. No changes were made to the final Regulations in regard to these comments.

### *Creation of compliance units from use of neat pyrolysis oil*

Stakeholders from the forestry industry recommended that the use of neat pyrolysis oil should create compliance units. The renewable fuels industry opposed such a change.

- As stated in the 2006 *Notice of Intent to Develop a Federal Regulation Requiring Renewable Fuels*, ([see footnote 36](#)) these Regulations are primarily intended to increase the use of liquid renewable fuels such as ethanol and biodiesel in Canadian gasoline and diesel fuel. Pyrolysis oil is a renewable fuel that, due to its properties, cannot be blended with petroleum fuels. It can, however, be further processed to produce renewable fuels that can be blended with petroleum fuels. Accordingly, under the Regulations, pyrolysis oil may be considered a biocrude and compliance units can be created by its use as biocrude in a petroleum refinery. Further extending the scope of qualifying renewable fuels to encompass fuels, like pyrolysis oil, that cannot be blended with gasoline or diesel fuel would be contrary to the original intent of the Regulations. In addition, if the Regulations allowed compliance units to be created from use of neat pyrolysis oil, the large potential volume could mean that there would be very little incremental use of renewable fuels such as ethanol and biodiesel, which would erode the intended goal of increasing the use of liquid renewable fuels such as ethanol and biodiesel. Therefore, the final Regulations do not provide for creation of compliance units from the use of neat pyrolysis oil.

### *High-renewable-content fuels*

Vehicle manufacturers and some fuel users expressed concern that the proposed Regulations did not establish appropriate maximum levels for renewable fuel content in gasoline and diesel fuel. The proposed definition of “high-renewable-content fuel” included a minimum threshold of at least 25% renewable fuel content. The parties felt that this minimum threshold was too high. These stakeholders recommended that high-renewable-content fuels be defined with minimum thresholds of 10% renewable fuel content for gasoline and 5% renewable fuel content for diesel fuel. The petroleum industry and the renewable fuel industry were of the view that the minimum threshold of 25% in the proposed Regulations was appropriate.

- The definition of high-renewable-content fuels has been adjusted in the final Regulations to set the minimum thresholds for renewable fuel content at 10% for gasoline, and 5% for diesel fuel. Those blend thresholds align with the blend levels that are currently accepted in the marketplace and for which vehicle manufacturers warranty engines. The levels also correspond to those for which the U.S. requires, or is considering requiring, labelling. The minimum threshold of 25% was retained for fuels other than gasoline and diesel fuel. The maximum threshold of 85% for gasoline and 80% for other fuels was not changed in the final Regulations. The definition was also

adjusted so that high-renewable-content fuels do not encompass fuel blends with renewable content that is indistinguishable from the liquid petroleum fuel. As discussed later, there are also associated provisions requiring records establishing that the consumers of high-renewable-content fuels were informed about the nature of the fuel.

#### *Carry-back of compliance units in consecutive years*

The petroleum industry suggested that the Regulations should allow carry-back of compliance units in consecutive years, particularly as the associated cancellation requirement provides a strong disincentive against such carry-back.

- The final Regulations were adjusted to allow carry-back of compliance units in consecutive years.

#### *Distillate compliance units created during the pre-distillate compliance period*

The petroleum industry proposed that the limit on distillate compliance units created during the pre-distillate compliance period being carried forward for use in the first distillate compliance period be increased from the proposed 20% to 80% or 100%. One company suggested that the end of pre-distillate compliance period should be changed from March 31, 2012, to 16 months after the start of the first gasoline compliance period.

- The final Regulations provide for a maximum 19½ month pre-distillate compliance period, whereas the proposed Regulations provided for 19 months.

#### *Creation of compliance-units for neat and high-renewable-content fuels*

The proposed Regulations required records, where compliance units are created for neat or high-renewable-content fuels, establishing that the consumers of these fuels were informed about the nature of the fuel. Some members of the vehicle manufacturing industry expressed concern that the proposed Regulations were unclear as to how end-users of a high-renewable-content fuel were to be informed of its renewable fuel content. They recommended that the consumer of the fuel be informed prior to final sale and also that any pump labelling include consumer information such as that proposed in the U.S. by the U.S. Federal Trade Commission. They also recommended that a definition of consumer be added.

The petroleum industry strongly opposed any labelling requirements or requirements to notify consumers prior to sale. The renewable fuels industry was of the view that the form and content of consumer information should not be prescribed in the Regulations.

- With high-renewable-content fuels, there is potential for mis-fueling of vehicles. Environment Canada considers that compliance units should not be created for high-renewable-content fuels unless it is established that information regarding the fuel was made available to the consumer. Therefore, the provisions requiring records establishing that the consumers of neat or high-renewable-content fuels were informed about the nature of the fuel have been retained in the final Regulations. The provisions have been adjusted to reflect that the consumer must be notified, by either a document provided to them or by a label on the fuel dispensing device, which contains a cautionary statement identifying the type of renewable fuel, the minimum renewable fuel content, and stating that the fuel may not be suitable for some engines and that the owner's manual ought to be consulted. Where notification is provided to the consumer in a document, that notification must be provided prior to the sale or transfer of the fuel to the consumer. Finally, the provisions also have been adjusted such that they no longer refer to "consumer."

#### *Limitations on creation of compliance units from municipal solid waste*

One stakeholder who is developing a fuel-from-waste project noted that the proposed definition of "renewable fuel feedstock" did not allow any amount of the specified hazardous wastes, and that this was not practicable, as trace quantities of household hazardous wastes cannot be screened out.

- The final Regulations adjust the definition in this regard, such that in order to be renewable fuel



feedstock, municipal solid waste must be sorted or processed at a facility that removes all but trace quantities of such hazardous materials.

### *Excepted fuels*

The petroleum industry recommended adding additional exceptions for kerosene, non-combat use of diesel fuel by the military, diesel fuel that is used in the production of marine fuel oil or other fuel oils, and until 2013, diesel fuel used in railway locomotives. There were also polarized comments from the petroleum industry concerning exempting fuel used within a refinery from production volumes. Finally, it was suggested that the provision regarding the exception for exports be revised to reflect fuel that a supplier reasonably expects to be exported.

- The Regulations have been adjusted to allow primary suppliers to deduct from their distillate pool volumes of kerosene that may meet the definition of diesel fuel and that are represented as kerosene and sold or delivered for use in unvented space heaters, wick-fed illuminating lamps or flue-connected stoves and heaters. This exception was added given potential safety concerns related to renewable fuel content in kerosene used for those applications. No additional pool deductions have been provided as there is no safety reason associated with these fuels containing renewable fuel content. The final Regulations do not exclude fuels that are produced and used within a production facility, as these volumes can be large. However, the provisions have been adjusted to clarify that only such fuel that is produced and dispensed into vehicles or other mobile equipment within the production facility are included as production volumes.

### *Excluded imports*

Some members of the vehicle manufacturing industry asked Environment Canada to make it clear that fuel in a vehicle's fuel tank is not covered by the Regulations when the vehicle is imported into Canada. There was also concern that persons bringing vehicles into Canada could be primary suppliers under the Regulations, given fuel in the vehicle fuel tank.

- A clause has been added to the Regulations to clarify these concerns.

One association representing a sector that is a fuel user recommended that sector companies, who may import fuel, should be explicitly exempted from the Regulations.

- Environment Canada sees no basis to exclude companies in one sector and no changes were made in this regard.

### *Mandate of fuel quality standards*

Vehicle manufacturers and a number of stakeholders who use fuels in vehicles or other mobile equipment recommended that fuel quality standards be mandatory for petroleum fuels, as well as for the renewable fuels that are blended into them.

- Environment Canada remains of the view set out in the notice of intent that application of such commercial specifications is best left to private industry. Therefore, fuel quality standards were not added to the final Regulations.

### *Measurement of volumes*

The petroleum industry expressed concern that the proposed Regulations would require the measurement of volumes of all internal gasoline-like and diesel-like production streams within a production facility, which could require significant time and resources. These parties were of the view that produced volumes should be measured upon dispatch from a refinery, as is done for other federal fuel regulations. Other comments from the petroleum industry suggested the Regulations should not prescribe how volumes are to be measured; rather, companies should be permitted to use any method to measure their volumes provided that they inform Environment Canada of the method in a compliance plan. The petroleum industry also noted that companies may not be complying fully with the measurement standards or methods specified in the American Petroleum Institute's *Manual of Petroleum*

*Measurement Standards*, the primary option by which volumes must be determined.

- In response to the concerns about measuring all internal fuel production volumes, a clarification has been added to the Regulations that volumes, other than those dispensed on-site into mobile equipment, are generally measured on dispatch from a production facility. The description of what comprises the pool has similarly been adjusted. Regarding the suggestion that companies submit a compliance plan indicating how they will measure their volumes, Environment Canada does not consider such a procedure appropriate. The principal parameter being regulated under these Regulations is a company's obligatory percentage of renewable fuels which is based solely upon volume measurements. The regulatory provisions regarding methods for measuring those volumes will ensure that these measurements are made according to recognized and acceptable standards.

#### *Units of measurement*

The proposed Regulations specified litres as the unit of measurement for recording and reporting volumes. The petroleum industry suggested that cubic metres would be more appropriate, noting that volumes are already reported to Environment Canada in cubic metres under other federal fuel regulations.

- Environment Canada generally agrees with this suggestion. The final Regulations provide for recording and reporting volumes in either litres or cubic metres. However, for the specific purpose of creating compliance units, any volumes recorded in cubic metres must be recorded to three decimal places.

#### *Timing for record creation*

The Regulations require that records be made as soon as practical and within 15 days. One petroleum company recommended that the 15-day requirement for making records be dropped. The concern appears to be that it may be necessary to correct records for errors or accounting rebalances.

- The 15-day requirement for making the record in the first place is considered to be reasonable, and so no changes were made in this regard. Environment Canada intends to add material to guidance documents on the Regulations to address possible corrections.

#### *Record for renewable fuel*

One petroleum company noted that provisions requiring records demonstrating that a renewable fuel meets the definition of a renewable fuel creates a liability on suppliers of renewable fuel. The company concluded that this may inhibit new suppliers of renewable fuels from entering the market.

- In order to ensure that renewable fuels are used, it is imperative to be able to establish that a renewable fuel meets the requirements of the Regulations. No change has been made in this regard.

#### *Waivers*

An association representing companies in the petroleum industry suggested that a waiver provision be added to the Regulations. Another association stated that there is a need for a specific waiver regulation covering the various federal fuel regulations.

- Section 147 of the *Canadian Environmental Protection Act, 1999*, allows the Minister, under prescribed circumstances, to grant temporary waivers from any requirements of fuel regulations made under section 140 of the Act (including the *Renewable Fuels Regulations*). *Regulations Prescribing Circumstances for Granting Waivers Pursuant to Section 147 of the Act* were published in the *Canada Gazette*, Part II, on July 7, 2010. ([see footnote 37](#))

#### *Distillate requirement*

Stakeholders had differing views regarding the requirement for 2% renewable fuel content in diesel

fuel and heating oil. The renewable fuel industry wants the requirement to be put into place as soon as possible, while some users of diesel fuel suggested that the use of renewable fuel in diesel fuel should be left up to the market and no regulated requirement was necessary. One petroleum company suggested that all references to the 2% requirement be removed from the Regulations. Generally, the petroleum industry noted that such a requirement represents a more significant challenge than the 5% renewable content for gasoline.

- Because of the integrated nature of the Regulations (i.e., distillate compliance units can be generated and used prior to any distillate requirement), the Regulations include provisions for 2% renewable content for diesel fuel. However, the Regulations do not bring the requirement into force. The coming into force date for this requirement will be determined at a later date subject to the technical feasibility of renewable content in diesel fuel and heating distillate oil under a range of Canadian conditions. Natural Resources Canada is currently conducting demonstration projects to assess the technical feasibility. Once the technical feasibility is established, the Regulations will be amended through a full regulatory process to bring the 2% requirement into force.

#### *Compensation program*

An association representing companies in the petroleum industry suggested that there should be a federal compensation program to compensate regional fuel suppliers when the Regulations disadvantage them relative to their national competitors.

- A compensation program would not be appropriate within the Regulations; no change was made in this regard.

#### *Receipt of fuel at a refinery*

One stakeholder from the petroleum industry noted that subsection 6(3), a provision intended to prevent double-counting of batches of fuel received at a refinery, did not achieve its intended purpose. They suggested addressing this by adding a definition of “gasoline-like blendstock” and using it in that subsection.

- The final Regulations include adjusted wording to clarify the provision.

#### Definitions

##### Biocrude

“Biocrude” is defined in the Regulations as a renewable substitute for crude-oil feedstock that is used, along with petroleum-derived feedstocks, at a fuel production facility. The forest industry suggested that the definition should encompass feedstock that is not used along with petroleum-derived feedstocks.

- Environment Canada does not consider this necessary as a fuel production facility using only feedstock that meets the proposed definition of biocrude would produce fuel that meets the definition of “renewable fuel”. Consequently, compliance units could be created for that fuel under various provisions of the Regulations.

##### Biodiesel

The proposed definition of “biodiesel” provided for up to 10% alcohol content. One party was concerned by the inclusion of alcohol in the definition. A second party pointed out that while up to 10% alcohol may be used in the production process, the alcohol reacts with fatty acids and there is no alcohol left in the final biodiesel product.

- The final Regulations revise the definition to remove the provision for up to 10% alcohol content.

##### Denaturant

One party suggested adding a fourth part to the definition — so that it would read “suitable for the intended purpose in a combustion device”.

- No change was made in this regard as the intended purpose of a denaturant, to make ethanol unsuitable as a beverage, is already included in the definition.

#### *Additives*

One party suggested adding a definition of “additive.”

- As a consequence of various other adjustments, “additive” is not used in the final Regulations. Therefore, a definition was not added.

#### *Combustion device*

One stakeholder indicated that they were concerned that the definition of “combustion device” could be interpreted as including automobiles.

- No change was made in this regard, as the definition is intended to cover vehicles.

#### Comments on the Regulatory Impact Analysis Statement

Many stakeholders, primarily from the renewable fuel industry, commented on the proposed Regulatory Impact Analysis Statement.

#### *GHG reductions*

According to the renewable fuel industry, Environment Canada analysis attributes an unrealistically low value to the GHG reductions that are and will continue to be generated by the Renewable Fuels Sector.

- The analysis presented covers a plausible range of between \$10 and \$100, with a central tendency of \$25 for the social cost of carbon; although that range is under review, the social costs of carbon assumptions have not been modified.

#### *Gasoline/ethanol pricing*

According to the renewable fuel industry, the data used by the consultant to estimate the wholesale gasoline price are too low while ethanol price projections used were too high.

- It is acknowledged that the analysis is highly sensitive to the forecasts for gasoline prices over the relevant time period. At the same time, these are particularly difficult parameters to predict with a high degree of confidence. For example, in its *2009 Annual Energy Outlook Retrospective Review: Evaluation of Projections in Past Editions (1982-2009)*, the U.S. Energy Information Administration reports that the absolute average percentage error in its price per barrel forecast since 1994 was 30.6% above or below the actual price for any given year. For this reason Environment Canada has updated its analysis from the *Canada Gazette, Part I*, to incorporate a range of forecasted gasoline prices in order to better reflect the level of uncertainty of this key parameter.
- The analysis has been improved by replacing the market price and capital cost estimates, used in the analysis pre-published in the *Canada Gazette, Part I*, with recent NRCan data regarding capital and operating costs to better reflect the incremental cost of producing ethanol in Canada.

#### *Double-counting capital costs*

According to the renewable fuel industry, Environment Canada double counted capital costs for ethanol plants in the analysis presented in the *Canada Gazette, Part I*.

- In the absence of sufficient information on the costs of producing ethanol from Canadian industry, Environment Canada used market prices plus capital costs as a proxy for the cost of

producing ethanol (market prices were insufficient to cover incremental production costs, and capital costs were assumed to be representative of government subsidies). The analysis has been improved by replacing the market price and capital costs with recent NRCan data regarding capital and operating costs to better reflect the incremental cost of producing ethanol in Canada.

#### *Employment from ethanol plants*

According to the renewable fuel industry, the employment impacts from construction of new ethanol plants were not reported in the distributional analysis. It presented a study of employment impacts after publication of the proposed Regulations in the *Canada Gazette*, Part I.

- Environment Canada was originally able to report an estimate of employment of 100 direct jobs per year during the operation phase of the three new ethanol plants assumed in the analysis. However, it was not able to obtain estimates of employment during construction. Following publication of the employment study by renewable fuel producers, Environment Canada has reviewed the new information and has incorporated an estimate of 3 000 direct and indirect jobs generated during the construction of the three plants, based on an average of the jobs created by the construction of the 28 plants studied.

#### *Discount rate for costs and benefits*

According to the petroleum industry, discounting the costs at 8% while using 3% for benefits tends to bias the PV of the benefits upwards.

- Environment Canada has used 8% to discount costs, representing the opportunity cost of capital investments and it has used a 3% social discount rate for the analysis of benefits. Environment Canada acknowledges that discounting the benefits at 8% would decrease the present value of the benefits by about \$225 million.

#### *Data out of date for fuel sector*

The petroleum industry has suggested that the fuel refinery production and sales data be updated to 2009 for the final Regulations since they are now available from Statistics Canada.

- It was determined that updating to 2009 data would not materially change the results of the analysis. For reasons of consistency with other data, in constant 2007 dollars, Environment Canada has decided to continue using the same fuel and refinery production and sales data as was used in the previous analysis.

#### *Health impact study out of date*

According to the petroleum industry, the benzene reductions from the recent E10 Health Risk Assessment report that was released by Health Canada are overstated since it was based on pre-benzene control strategies.

- The health risk assessment compared the health impacts of E10 blended fuel to those of conventional gasoline. The fuel specification that was used for the baseline (conventional gasoline) and E10 emission modelling of benzene ranged from 0.7 to 0.8 % volume for both scenarios. Benzene concentration for both fuels was considered identical, since specifications for tailor-blended E10 were used, and the level of benzene in the fuels reflects the benzene control strategy requirement. To characterize human exposures to benzene for the assessment, some monitoring results were used from studies conducted before the implementation of the benzene regulations (in-vehicle, office environments and gas stations); however, the majority (indoor home and outdoor environments) were from studies conducted post regulations. The conclusions of the E10 assessment are based on the relative differences in exposures and health risks for the ethanol and conventional gasoline scenarios and not absolute numbers.

#### *Impacts on livestock sector*

According to some NGOs, the RIAS underestimates cost impacts on livestock sector from increased

feed prices. The main concern is that shifting from a negative pricing basis to a positive pricing basis will have an adverse effect on livestock margins by shifting the livestock/feed price ratio in an unfavourable direction.

- Agriculture and Agri-Food Canada's analysis acknowledges that the incremental demand for grains from additional ethanol production may have some minor impacts on various local prices and in different regions, but Canada is a net importer of corn and a price taker in international corn markets. Therefore, the assumption that increasing ethanol production will not have a significant impact on the price of Canadian feed continues to appear reasonable.

#### *Inclusion of indirect land use changes*

NGOs also provided comments regarding the inappropriate exclusion of indirect land use changes in the cost-benefit analysis. This would mean that as marginal lands are brought into production, there would be losses of ecological goods and services that should be accounted for as societal losses.

- The analysis presented covers impacts on Canada from any incremental changes due to the policy change. The analysis by Agriculture and Agri-Food Canada indicates that Canada is a small open economy. Although some small shifts in imports and exports are to be expected, the policy changes will not significantly influence the overall prices of grains, their production in Canada, or the shifting of marginal lands into production.

### ***Implementation, enforcement and service standards***

#### **Implementation**

For the purpose of implementing the regulatory requirements, Environment Canada would be undertaking a number of compliance promotion activities. These activities would be targeted toward raising awareness and encouraging the regulated community to achieve a high level of overall compliance as early as possible during the regulatory implementation process. This would include the following:

- Developing and distributing basic compliance promotion material (including explanatory notes) nationally to regulatees and stakeholders;
- Focusing on those regulatees who would be most impacted by the Regulations within the first few years;
- Upon request, distributing additional information, industry-specific information or focused information regionally in a tailored approach at a later time; and
- Training Environment Canada compliance promotion staff in a comprehensive manner to respond to regulatees' technical or regulatory questions.

As the regulated community becomes more familiar with the requirements of the Regulations, these activities are expected to decline to a maintenance level. Compliance promotion activities would be revisited from time to time to ensure that the Regulations be implemented in the most effective and efficient manner.

#### **Enforcement**

Since the Regulations would be made under CEPA 1999, enforcement officers will, when verifying compliance with the Regulations, apply the Compliance and Enforcement Policy implemented under the Act. The Policy sets out the range of possible responses to violations, including warnings, directions, environmental protection compliance orders, ticketing, ministerial orders, injunctions, prosecution, and environmental protection alternative measures (which are an alternative to a court trial after the laying of charges for a CEPA 1999 violation). In addition, the Policy explains when Environment Canada will resort to civil suits by the Crown for cost recovery.

When, following an inspection or an investigation, an enforcement officer discovers an alleged violation, the officer will choose the appropriate enforcement action based on the following factors:

- Nature of the alleged violation: This includes consideration of the damage, the intent of the alleged violator, whether it is a repeat violation, and whether an attempt has been made to conceal information or otherwise subvert the objectives and requirements of the Act;
- Effectiveness in achieving the desired result with the alleged violator: The desired result is compliance within the shortest possible time and no repetition of the violation. Factors to be considered include the violator's history of compliance with the Act, willingness to cooperate with enforcement officers, and evidence of corrective action already taken; and
- Consistency: Enforcement officers will consider how similar situations have been handled in determining the measures to be taken to enforce the Act.

Environment Canada will monitor renewable fuel content in gasoline and compliance with the Regulations.

### Service standards

There are no service standards associated with the Regulations.

### **Performance measurement and evaluation**

Measuring the performance of regulatory activities to ensure they continually meet their initial objectives is an important responsibility for the regulating department. With respect to the Regulations, the evaluation and reporting of performance will take place via several regular assessment activities that will vary in scope of analysis and that will be carried out in conjunction with other partners, as required. This section outlines the various assessments and reporting requirements that apply.

A detailed performance measurement and evaluation plan (PMEP) has been developed for the Regulations. The PMEP will be available, upon request, from Environment Canada after the publication of the Regulations in the *Canada Gazette*, Part II. The various evaluations pertaining to the Regulations are highlighted below.

The objective of the Regulations is to reduce GHG emissions by mandating an average of 5% renewable fuel content in most of the produced or imported gasoline, thereby contributing to the protection of Canadians and the environment from the impacts of climate change. The Regulations also support the Renewable Fuels Strategy's objective to expand Canadian production of renewable fuels by ensuring demand for renewable fuels in the marketplace. It is estimated that the Regulations would result in an incremental GHG reduction of approximately 1 MT CO<sub>2</sub>e per year.

The Regulations seek to influence primary suppliers and other entities such as blenders or sellers of fuel that elect to participate in the trading mechanism. With the requirement to add at least 5% renewable fuel content to the volume of gasoline that is produced or imported on an annual basis, the Regulations intend to achieve two intermediate outcomes:

- Increase the volume of renewable content in Canadian fuels; and
- Achieve an incremental reduction of greenhouse gases from the displacement of fossil fuels.

Performance of the Regulations will be measured through a set of key indicators that reflect the activities that would be undertaken by the government and regulated parties. These indicators would be evaluated to assess whether the immediate as well as long-term results have been achieved.

The results will be measured on an annual basis using data submitted to Environment Canada by the regulated community and the GHGenius model to estimate GHG emission reductions.

A set of immediate outcomes will also serve to track the performance of the Regulations. For example, Environment Canada will measure

- Awareness among the regulated community about the regulatory requirements: the activities and material that will be used for the compliance promotion are intended to increase awareness about the Regulations and regulatory requirements;
- Reporting of data on time and accurately by the regulated community; and

- Regulated community is in compliance with the renewable fuel content requirement of the Regulations.

The key indicators to monitor the performance of the Regulations on these immediate outcomes would include

- Percentage of known regulatees who registered under the Regulations;
- Percentage of known sellers of fuel for export who submitted annual reports;
- Percentage of known regulatees that report on time compliance units and the associated volumes of renewable fuels;
- Percentage of known regulatees that report the associated volumes of renewable fuels with accuracy under the Regulations;
- Percentage of known regulatees (primary suppliers and elective participants) who are in compliance with the 5% requirement under the Regulations;
- Results from enforcement activities (inspections, etc.) indicating the rate of compliance (%) with volume requirements of a sample of regulatees inspected;
- Total volume (litres) of renewable fuels that result from activities which create compliance units and that were reported under the Regulations;
- Lifecycle GHG emission reductions (Mt);
- Proportion of compliant primary suppliers that acquired compliance units from others through the compliance units trading system in order to be compliant with the 5% requirement under the Regulations;
- Number of workshops to explain the Regulations; and
- Number of attendees at the workshops.

The sources of data for the measurement of these indicators are the electronic reporting system (and submissions in paper format), which will capture the information directly submitted by companies as part of their annual reporting requirements; the compliance promotion activity reports (attendance reports, reply cards, etc.) and the enforcement activity reports, in particular the compliance rates provided through the National Enforcement and Emergency Management Information System (NEMISIS).

The outcomes identified above would be achieved via a series of activities related to the development and implementation of the Regulations. These include developing and implementing the Regulations; incorporating the Regulations into Environment Canada's existing fuels compliance strategy; developing a compliance and promotion plan; identifying the Regulations under Environment Canada's National Enforcement Plan; incorporating the proposed requirements into the existing Fuels Regulatory Enforcement Plan; developing and operating an electronic reporting tool for regulatees; and preparing an annual report on the performance of the Regulations.

The performance of the Regulations will be reported through the publication of an annual report on the Regulations. In addition, information pertaining to the Regulations and their implementation will be included in the annual report for CEPA 1999, Environment Canada's Report on Plans and Priorities as well as through Departmental Performance Reports. Reporting will also be required under the *Kyoto Protocol Implementation Act*.

In addition to measuring and reporting performance as described above, several formal evaluations of the Regulations and supporting activities will be conducted through different initiatives. These include the evaluation plan of Environment Canada's components of the regulation of renewable fuel content in gasoline, diesel and heating distillate oil, which may also encompass data from external sources or published materials to support a broader scope of enquiry. The plan for this evaluation will be in the 2011-12 fiscal year.

Other indirect impacts of the Regulations, such as those on the agricultural community, renewable fuels producers and other areas, will be monitored, as appropriate, through the evaluation of other programs supporting the Renewable Fuels Strategy led by AAFC. Specifically, NRCAN will evaluate its ecoENERGY for biofuels program and AAFC will conduct an evaluation of its ecoABC initiative in 2010-11 and will coordinate an analysis of the Renewable Fuels Strategy in 2010-11.



Periodic assessments of the Regulations should be conducted as a result of Bill C-33. According to this Act, a comprehensive review should be conducted, one year after its coming into force and every two years thereafter, of the environmental and economic aspects of renewable fuel production in Canada. The Act came into force on September 28, 2009; hence, the first such review could occur as early as September 28, 2010.

Finally, the Renewable Fuels Strategy includes a requirement for an average annual 2% renewable fuel content in diesel and heating distillate oil by 2011, subject to a demonstration of the technical feasibility. The current PMEP is focussed on the effectiveness of the current regulatory measure, and a more complete review of both gasoline and diesel renewable fuel measures, including efficiency indicators, would be considered during the 2% renewable fuel content in diesel and heating distillate oil regulatory process.

### ***Contacts***

Helen Ryan  
Executive Director  
Oil, Gas and Alternative Energy Division  
Environment Canada  
351 Saint-Joseph Boulevard, 9th Floor  
Gatineau, Quebec  
K1A 0H3  
Telephone: 819-997-1221  
Fax: 819-953-8903  
Email: Helen.Ryan@ec.gc.ca

Luis Leigh  
Director  
Regulatory Analysis and Valuation Division  
Environment Canada  
10 Wellington Street, 24th Floor  
Gatineau, Quebec  
K1A 0H3  
Telephone: 819-953-1170  
Fax: 819-997-2769  
Email: Luis.Leigh@ec.gc.ca

### [Footnote a](#)

S.C. 2004, c. 15, s. 31

### [Footnote b](#)

S.C. 1999, c. 33

### [Footnote c](#)

S.C. 2008, c. 31, s. 2

### [Footnote d](#)

S.C. 1999, c. 33

### [Footnote 1](#)

Additional information on the Renewable Fuels Strategy is available at [www.ecoaction.gc.ca/ECOENERGY-ECOENERGIE/renewablefuels-carburantsrenouvelables-eng.cfm](http://www.ecoaction.gc.ca/ECOENERGY-ECOENERGIE/renewablefuels-carburantsrenouvelables-eng.cfm).

### [Footnote 2](#)

Environment Canada's GHG emission inventory can be accessed from [www.ec.gc.ca/pdb/GHG/inventory\\_e.cfm](http://www.ec.gc.ca/pdb/GHG/inventory_e.cfm).

### [Footnote 3](#)

Health Canada (2009), Health risks and benefits associated with the use of 10% ethanol-blended

gasoline in Canada (draft report)

[Footnote 4](#)

Spent pulping liquor is defined in the Regulations as “a by-product of the chemical process of turning wood into pulp that consists of wood residue and pulping agents.”

[Footnote 5](#)

Note that compliance units created from blending renewable fuel in diesel fuel and heating distillate oil can be used for compliance with the 5% requirement.

[Footnote 6](#)

Pool refers to the respective total volumes of gasoline or diesel fuel and heating distillate oil that are produced and imported during a compliance period.

[Footnote 7](#)

*Canada's 2008 Greenhouse Gas Inventory: A Summary of Trends* can be accessed at [www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=F1CA74A6-1](http://www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=F1CA74A6-1).

[Footnote 8](#)

The notice of intent can be accessed at [gazette.gc.ca/archives/p1/2006/2006-12-30/html/notice-avis-eng.html](http://gazette.gc.ca/archives/p1/2006/2006-12-30/html/notice-avis-eng.html).

[Footnote 9](#)

Additional information on the program is available at [www.ecoaction.gc.ca/index-eng.cfm](http://www.ecoaction.gc.ca/index-eng.cfm).

[Footnote 10](#)

Ibid.

[Footnote 11](#)

Additional information on the program is available at [www.sdtc.ca/en/index.htm](http://www.sdtc.ca/en/index.htm).

[Footnote 12](#)

Note that the preceding numbers for production, sales, imports and exports do not add up due to inventory changes, the refineries' own consumption of products, and other reasons.

[Footnote 13](#)

ÉcoRessources Consultants (2009), *Cost-Benefit Analysis of the Proposed Regulations to Require Renewable Fuel Content in Canadian Fuels*.

[Footnote 14](#)

*Annual Energy Outlook Retrospective Review: Evaluation of Projections in Past Editions (1982-2009)*: [www.eia.doe.gov/oiaf/analysispaper/retrospective/index.html](http://www.eia.doe.gov/oiaf/analysispaper/retrospective/index.html)

[Footnote 15](#)

The emission factors were calculated as the difference in GHG emissions between conventional gasoline and 10% ethanol-blended gasoline using NRCan's GHGenius model.

[Footnote 16](#)

Additional information is available from [www.oeo.nrcan.gc.ca/transportation/fuels/ethanol/safety.cfm?attr=16](http://www.oeo.nrcan.gc.ca/transportation/fuels/ethanol/safety.cfm?attr=16).

[Footnote 17](#)

Although blending of biodiesel can be used to meet the 5% renewable fuel requirement in gasoline, for the analysis, it is assumed that most of this 5% requirement would be met through the blending of ethanol in gasoline.

[Footnote 18](#)

Cost estimates are based on a study done for NRCan: (S&T)<sup>2</sup> Consultants and Meyers Norris Penny LLP (2004), *Economic, Financial, Social Analysis and Public Policy for Fuel Ethanol — Phase I*.

[Footnote 19](#)

As provided by NRCan, based on the most recent version of their Biodiesel and Ethanol Financial Models.

[Footnote 20](#)

The rates are consistent with Agriculture and Agri-Food Canada's current corn and wheat price projections.

[Footnote 21](#)

The projection is based on the Environment Canada E3MC model, linked to the latest oil price forecast of Natural Resources Canada.

[Footnote 22](#)

Energy content of E10 blended gasoline is 2.2% lower in comparison to conventional gasoline, after adjusting for vehicle efficiency and fuel economy improvements.

[Footnote 23](#)

Calculated as a difference in BAU and regulated scenario gasoline demand.

[Footnote 24](#)

The projection is based on the Environment Canada E3MC model.

[Footnote 25](#)

A 3% discount rate was used for estimating the present value of benefits.

[Footnote 26](#)

Health Canada (2009), "Health Risks and Benefits Associated with the Use of 10% Ethanol-blended Gasoline in Canada."

[Footnote 27](#)

The health endpoints included acute exposure mortality, acute respiratory symptom days, adult chronic bronchitis cases, asthma symptom days, cardiac emergency room visits, cardiac hospital admissions, child acute bronchitis episodes, chronic exposure mortality, elderly cardiac hospital admissions, minor restricted activity days, emergency room visits due to respiratory illnesses, hospital admissions due to respiratory illnesses, and days of restricted activity.

[Footnote 28](#)

(S&T)<sup>2</sup> Consultants and Meyers Norris Penny LLP (2004), *Economic, Financial, Social Analysis and Public Policy for Fuel Ethanol — Phase I*.

[Footnote 29](#)

Watkiss and Downing (2008), "The Social Cost of Carbon: Valuation estimates and their use in UK policy." IAJ The Integrated Assessment Journal, *Bridging Sciences & Policy*, Vol. 8, Iss. 1 (2008), pp. 85–105.

[Footnote 30](#)

ECX price of carbon of 15 euros was converted to Canadian dollars using an exchange rate of 1 euro = \$1.58.

[Footnote 31](#)

UK price of carbon range of £25 to £76 was converted to Canadian dollars using an exchange rate of £1 = \$1.76.

[Footnote 32](#)

The summary of the comments is available at [www.ec.gc.ca/ceparegistry/documents/part/RF-CR\\_com/ov-ap.cfm](http://www.ec.gc.ca/ceparegistry/documents/part/RF-CR_com/ov-ap.cfm).

[Footnote 33](#)

The information presented can be accessed at [www.ec.gc.ca/cleanair-airpur/default.asp?lang=En&n=C95BCB29-1](http://www.ec.gc.ca/cleanair-airpur/default.asp?lang=En&n=C95BCB29-1).

[Footnote 34](#)

Technical issues raised and the means proposed to address them can be accessed from [www.ec.gc.ca/ceparegistry/documents/participation/renewable\\_fuels/default.cfm](http://www.ec.gc.ca/ceparegistry/documents/participation/renewable_fuels/default.cfm).

[Footnote 35](#)

<http://www.gazette.gc.ca/archives/p1/2006/2006-12-30/html/notice-avis-eng.html>

[Footnote 36](#)

<http://www.gazette.gc.ca/archives/p1/2006/2006-12-30/html/notice-avis-eng.html>

[Footnote 37](#)

Those Regulations, along with the accompanying regulatory impact analysis statement, are available at [www.ec.gc.ca/CEPARegistry/regulations/detailReg.cfm?intReg=179](http://www.ec.gc.ca/CEPARegistry/regulations/detailReg.cfm?intReg=179).

Date modified: 2011-10-01