

Canada

Drivers and Policies

Renewable Fuels Regulations (RFRs)¹

The RFRs require fuel producers and importers to have an average renewable content of (1) at least 5% based on the volume of gasoline that they produce or import into Canada and (2) at least 2% based on the volume of diesel fuel and heating distillate oil that they produce or import into Canada. The regulations include provisions that govern the creation of compliance units, allow trading of these units among participants, and also require recordkeeping and reporting to ensure compliance.

Clean Fuel Standard (CFS)²

The CFS, currently under development, will set separate requirements for liquid, gaseous, and solid fossil fuels, based on lifecycle analysis. Primary suppliers of fossil fuels will be the parties responsible for meeting carbon intensity requirements. Liquid fuels regulations will be developed for publication in spring 2019. By 2030, primary suppliers of fossil fuels will be required to reduce the carbon intensity of liquid fuels to 10 g of CO₂e per MJ below their reference carbon intensity, which corresponds to a reduction of approximately 11% and up to 23 Mt of incremental emissions reductions in 2030. Publication of gaseous and solid fuels regulations will follow.

Renewable-fuels-related Standards (Table 1)

The Canadian General Standards Board (CGSB) 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.

Table 1 CGSB Renewable Fuel-quality-related Standards³

| Fuel Standard | Number |
|---|----------------|
| Oxygenated automotive gasoline containing ethanol (E1–E10) | CAN/CGSB 3.511 |
| Automotive ethanol fuel (E50–E85 and E20–E25) | CAN/CGSB 3.512 |
| Denatured fuel ethanol for use in automotive spark ignition fuels | CAN/CGSB 3.516 |
| Diesel fuel containing low levels of biodiesel (B1–B5) | CAN/CGSB 3.520 |
| Diesel fuel containing biodiesel (B6–B20) | CAN/CGSB 3.522 |
| Biodiesel (B100) for blending in middle distillate fuels | CAN/CGSB 3.524 |

¹ <http://www.ec.gc.ca/energie-energy/default.asp?lang=En&n=0AA71ED2-1>

² https://www.canada.ca/en/environment-climate-change/news/2017/12/canada_s_clean_fuelstandardhowitwillwork.html

³ <http://www.tpsgc-pwgsc.gc.ca/ongc-cgsb/index-eng.html>

Passenger Automobile and Light Truck GHG Emission Regulations⁴

In 2010, the Government of Canada released the final *Passenger Automobile and Light Truck Greenhouse Gas Emission Regulations*. In 2014, the second phase of action on light-duty vehicles (LDVs), which contain increasingly stringent greenhouse gas (GHG) emissions standards for LDVs of model years 2017–2025, were published. Under both phases of LDV regulations, spanning model years 2011–2025, the sales-weighted fuel efficiency of new cars is projected to improve from 8.6 liters per 100 kilometers (L/100 km) in 2010 to 6.4 L/100 km in 2020 and to 5.1 L/100 km by 2025. The sales-weighted fuel efficiency of new passenger light trucks is projected to improve from 12.0 L/100 km in 2010 to 9.1 L/100 km in 2020 and to 7.6 L/100 km by 2025.

Heavy-duty Vehicle (HDV) and Engine GHG Emission Regulations⁵

In 2013, the Government of Canada published the *Heavy-duty Vehicle and Engine Greenhouse Gas Emission Regulations*, which introduce GHG emission standards for on-road heavy-duty vehicles and engines of the 2014 and later model years. In 2018, the *Regulations Amending the Heavy-duty Vehicle and Engine Greenhouse Gas Emission Regulations and Other Regulations Made under the Canadian Environmental Protection Act, 1999* (the Amendments) were published in the *Canada Gazette*, Part II. The Amendments establish more stringent GHG emission standards, starting with the 2021 model year for on-road heavy-duty vehicles and engines. Further, the Amendments introduce new GHG emission standards that apply to trailers hauled by on-road transport tractors for which the manufacture is completed on or after January 1, 2020. The Amendments are estimated to result in cumulative fuel savings of about 27.7 billion liters with respect to the portion of the lifetime operation of model years 2020–2029 vehicles that occurs over the 2020–2050 period.

Advanced Motor Fuels Statistics

Figure 1 shows the energy use by fuel type in 2015 for transportation in Canada. Table 2 shows the Canadian supply of and demand for ethanol and biodiesel in 2015. The ethanol proportion is estimated on the basis of production data.

⁴ <https://pollution-waste.canada.ca/environmental-protection-registry/regulations/view?Id=104>

⁵ <https://pollution-waste.canada.ca/environmental-protection-registry/regulations/view?Id=119>

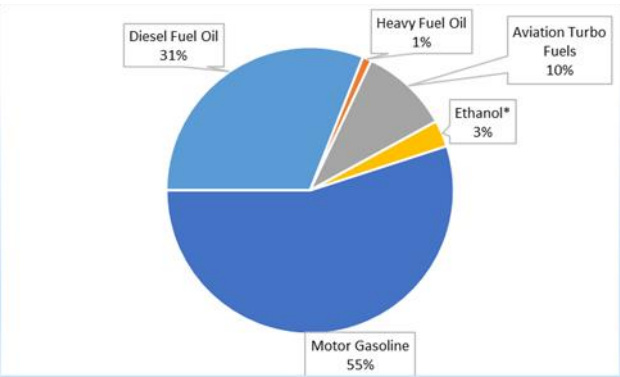


Fig. 1 Fuel Mix of the Transportation Sector 2015⁶

Table 2 Canadian Supply of and Demand for Biofuels in 2015 (in millions of liters)⁷

| Parameter | Ethanol (2015) | Biodiesel (2015) |
|---------------------|----------------|------------------|
| Canadian production | 1,720 | 307 |
| Imports | 1,100 | 383 |
| Exports | 0 | 238 |
| Domestic use | 2,820 | 452 |

Research and Demonstration Focus

ecoTECHNOLOGY for Vehicles (eTV) Program⁸

Transport Canada’s eTV Program is an initiative that conducts in-depth safety and environmental performance testing on a range of new and emerging advanced passenger car and truck technologies. The program investigates the performance of alternative-fuelled vehicles, including electric, compressed natural gas, and hydrogen fuel cell vehicles. Testing results from the eTV Program are being used to develop safety and environmental regulations and industry codes and standards to ensure that new innovations can be introduced in Canada in a safe and timely manner.

⁶ [https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/energy/pdf/energy-factbook-oct2-2018%20\(1\).pdf](https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/energy/pdf/energy-factbook-oct2-2018%20(1).pdf)

⁷ https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/energy/pdf/EnergyFactBook_2016_17_En.pdf

⁸ <https://www.tc.gc.ca/en/programs-policies/programs/ecotechnology-vehicles-program.html>

Electric Vehicle and Alternative Fuel Infrastructure Deployment Initiative⁹

Natural Resources Canada (NRCan) is investing to expand the network of electric vehicle charging and alternative refuelling stations across Canada. The funding supports the deployment of electric vehicle fast chargers; natural gas and hydrogen refuelling stations; the demonstration of next generation charging technologies; and the development of codes and standards for low-carbon vehicles and infrastructure.

Energy Innovation Program (EIP)¹⁰

NRCan's EIP supports clean energy innovation. Accelerating clean technology research and development (R&D) is a key component of the Government of Canada's approach to promoting sustainable economic growth and to supporting Canada's transition toward a low-carbon economy.

Program of Energy Research and Development (PERD)¹¹

PERD is a federal, interdepartmental program operated by NRCan. PERD supports energy R&D conducted in Canada by the federal government and is designed to ensure a sustainable energy future for Canada. Part of PERD consists of coordinated research activities designed to extend key areas of knowledge and technology that will help reduce both the carbon footprint of fuels and vehicle emissions from transportation sources in Canada.

Vehicle Propulsion Technologies (VPT) Program¹²

The National Research Council Canada's VPT program assists Canadian automotive manufacturers to improve the efficiency of internal combustion engines, powertrains, and the use of electric and fuel cell propulsion.

Strategic Innovation Fund¹³

The Strategic Innovation Fund, managed by Innovation, Science and Economic Development Canada, is a government grant provided to support Canadian businesses investing in innovative products, processes, and services. Through cost-sharing assistance, the program helps offset a portion of costs related to researching and implementing new technologies, including automotive technology.

⁹ <https://www.nrcan.gc.ca/energy/alternative-fuels/fuel-facts/ecoenenergy/18352>

¹⁰ <https://www.nrcan.gc.ca/energy/funding/icg/18876>

¹¹ <http://www.nrcan.gc.ca/energy/funding/current-funding-programs/perd/4993>

¹² <https://www.nrc-cnrc.gc.ca/eng/solutions/collaborative/vpt.html>

¹³ <https://www.canada.ca/en/innovation-science-economic-development/programs/strategic-innovation-fund.html>

Pan-Canadian Framework on Clean Growth and Climate Change (PCF)¹⁴

In 2016, Canada's First Ministers adopted the PCF. The initial years of the PCF focused on the design, planning, and delivery of four pillars: pricing carbon pollution; complementary actions to reduce emissions across the economy; adaptation and climate resilience; and clean technology, innovation, and jobs. Looking ahead, this will include work to implement the federal carbon pollution pricing system; publish the Clean Fuel Standard; announce funding decisions for the Low Carbon Economy Fund Challenge; continue construction of renewable energy projects; host the Clean Energy Ministerial/Mission Innovation Ministerial; and undertake scientific activities to address knowledge gaps.

Outlook

As depicted in Table 3, the Canadian transportation sector consists of distinct subsectors — passenger, freight, air, and others (e.g., recreational). Each subsector exhibits different trends during the projected period. GHG emissions from cars, trucks, and motorcycles are projected to decrease by 25 Mt between 2005 and 2030, while those for heavy-duty trucks and rail are projected to increase by 11 Mt. Although absolute emissions are expected to grow in the freight subsector, emissions are expected to decrease relative to business-as-usual levels as a result of various federal, provincial, and territorial programs.¹⁵

Table 3 Transportation: GHG Emissions (Mt CO₂ equivalent)¹⁶

| Transportation Subsector | 2005 | 2020 | 2030 | Δ 2005 to 2030 |
|--|------------|------------|------------|----------------|
| Passenger Transport | 97 | 89 | 73 | -24 |
| Cars, trucks, and motorcycles | 88 | 80 | 64 | -25 |
| Bus, rail, and domestic aviation | 9 | 9 | 9 | 1 |
| Freight Transport | 3 | 70 | 73 | 11 |
| Heavy-duty trucks, rail | 55 | 63 | 66 | 11 |
| Domestic aviation and marine | 8 | 7 | 7 | 0 |
| Other: recreational, commercial, and residential | 11 | 9 | 11 | -1 |
| Total | 171 | 168 | 157 | -14 |

¹⁴ http://publications.gc.ca/collections/collection_2018/eccc/En1-77-2018-eng.pdf

¹⁵ <https://www.canada.ca/en/environment-climate-change/services/climate-change/publications/emission-trends-2014.html>

¹⁶ <https://www.canada.ca/en/environment-climate-change/services/climate-change/publications/2016-greenhouse-gas-emissions-case/chapter-2.html>

