

# IEA-Advanced Motor Fuels ANNUAL REPORT 2019

Canada



## Canada

### *Drivers and Policies*

#### **Clean Fuel Standard (CFS)<sup>1</sup>**

Canada is developing a federal Clean Fuel Standard (CFS) to make fuels used in buildings, vehicles, and industries cleaner. By setting performance standards for various types of fuels, the CFS will encourage the production of clean fuels, drive innovation in the oil and gas sector, and create an incentive to use less polluting fuels. The objective of the CFS is to reduce GHG emissions by 30 million tons (Mt) per year by 2030, making an important contribution to meeting Canada's Paris Agreement target.

#### **Renewable Fuels Regulations (RFRs)<sup>2</sup>**

The RFRs require fuel producers and importers to have an average renewable content of (1) at least 5% based on the volume of gasoline 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, and also require recordkeeping and reporting to ensure compliance.

#### **Renewable-fuels-related Standards**

The Canadian General Standards Board (CGSB) is responsible for developing fuel and renewable fuel quality standards, via consensus by public and private sectors (see Table 1).

Table 1 CGSB Renewable Fuel-quality-related Standards<sup>3</sup>

Fuel Standards	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

<sup>1</sup> [https://www.canada.ca/en/environment-climate-change/news/2017/12/canada\\_s\\_clean\\_fuelstandardhowitwillwork.html](https://www.canada.ca/en/environment-climate-change/news/2017/12/canada_s_clean_fuelstandardhowitwillwork.html)

<sup>2</sup> <https://pollution-waste.canada.ca/environmental-protection-registry/regulations/view?Id=1031>

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

### Passenger Car and Light Truck GHG Emission Regulations<sup>4</sup>

In 2014, the second phase of action on light-duty vehicles (LDVs) for model years 2017 to 2025, with increasingly stringent GHG standards, were published. Under these regulations, the sales-weighted fuel efficiency of new cars is projected to improve from 8.6 L/100 km in 2010 to 6.4 L/100 km in 2020 and from 12 L/100 km in 2010 to 9.1 L/100 km in 2020 for new passenger light trucks. Canada is currently undertaking a mid-term evaluation of the appropriateness of its standards for model years 2022 to 2025. Improvements beyond 2021 will be determined by the results of this mid-term evaluation.

### Heavy-duty Vehicle (HDV) and Engine GHG Emission Regulations<sup>5</sup>

In 2018, the *Regulations Amending the Heavy-Duty Vehicle and Engine Greenhouse Gas Emission Regulations* were published. The amendments established more stringent GHG emission standards, starting with the 2021 model year. Consideration to the amendments introducing new GHG emission standards that apply to trailers hauled by on-road transport tractors are being assessed. Amendments are estimated to result in cumulative fuel savings of 27.7 billion liters with respect to the portion of the lifetime operation of model years 2020 to 2029 that occurs between 2020 and 2050.

### Advanced Motor Fuels Statistics<sup>6</sup>

Figure 1 shows energy use by fuel type in 2018 for transportation in Canada and Table 2 shows the supply of and demand for ethanol and biodiesel.

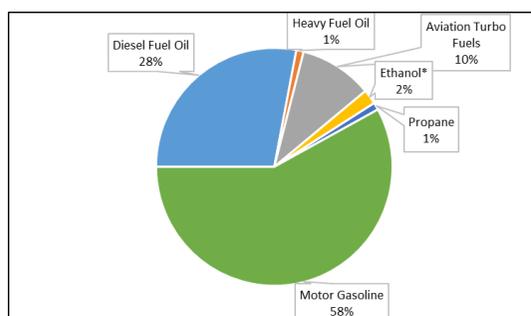


Fig. 1 Fuel Mix of the Canadian Transportation Sector 2018

\* Ethanol proportion is estimated on the basis of production data.

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

<sup>5</sup> <https://pollution-waste.canada.ca/environmental-protection-registry/regulations/view?Id=104>

<sup>6</sup> [https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/energy/pdf/Energy\\_Fact\\_Book\\_2019\\_2020\\_web-resolution.pdf](https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/energy/pdf/Energy_Fact_Book_2019_2020_web-resolution.pdf)

Table 2 Canadian Supply of and Demand for Biofuels in 2018 (in millions of liters)

Parameter	Ethanol	Biodiesel
Canadian production	1,900	400
Imports	1,232	548
Exports	0	301
Domestic use	3,132	647

## Research and Demonstration Focus

### ecoTECHNOLOGY for Vehicles (eTV) Program<sup>7</sup>

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-fueled vehicles, including electric, CNG, and hydrogen fuel cell vehicles.

### Electric Vehicle and Alternative Fuel Infrastructure Deployment Initiative (EVID)<sup>8</sup>

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

### Energy Innovation Program (EIP)<sup>9</sup>

NRCan’s EIP supports clean energy innovation. Accelerating clean technology R&D is a key component of Canada’s approach to promoting sustainable economic growth, reducing emissions including GHGs, and supporting Canada’s transition toward a low-carbon economy.

### Program of Energy Research and Development (PERD)<sup>10</sup>

NRCan’s PERD supports energy R&D conducted by the federal government and is designed to ensure a sustainable energy future for Canada. Key

<sup>7</sup> <https://www.tc.gc.ca/en/programs-policies/programs/ecotechnology-vehicles-program.html>

<sup>8</sup> <https://www.nrcan.gc.ca/climate-change/green-infrastructure-programs/electric-vehicle-infrastructure-demonstration-evid-program/20467>

<sup>9</sup> <https://www.nrcan.gc.ca/energy/funding/icg/18876>

<sup>10</sup> <http://www.nrcan.gc.ca/energy/funding/current-funding-programs/perd/4993>

research areas focus on knowledge and technology that will help reduce the carbon footprint of fuels and emissions from transportation sources.

#### **Vehicle Propulsion Technologies (VPT) Program<sup>11</sup>**

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 Fund<sup>12</sup>**

The Strategic Innovation Fund, managed by Innovation, Science and Economic Development Canada, is provided to support Canadian businesses investing in innovation. The program helps offset costs related to researching and implementing new technologies, including automotive.

#### **Pan-Canadian Framework on Clean Growth and Climate Change<sup>13</sup>**

In 2016, Canada's First Ministers adopted the Pan-Canadian Framework. Along with many other actions to date, the federal *Greenhouse Gas Pollution Pricing Act* was adopted. Also, infrastructure projects including renewable energy projects, electricity interties between provinces, zero emissions vehicle (ZEV) charging and public transit networks are continued.

#### **Clean Transportation System—Research and Development Program (CTS-RD)<sup>14</sup>**

Transport Canada established the CTS-RD to support projects that help improve the environmental performance of Canada's transportation system, specifically in the rail, marine and aviation sectors. The program looks to advance new clean technology innovations, practices or research.

#### **Incentives for Zero Emissions Vehicles Program<sup>15</sup>**

In 2019, Canada set federal ZEV sales targets of 10% of new LDVs by 2025, 30% by 2030, and 100% by 2040. To help achieve these targets, Canada introduced a suite of new policy measures, including a federal purchase incentive program for eligible ZEVs. Between May 1, 2019, when

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<sup>11</sup> <https://nrc.canada.ca/en/research-development/research-collaboration/programs/vehicle-propulsion-technologies-program>

<sup>12</sup> <https://www.canada.ca/en/innovation-science-economic-development/programs/strategic-innovation-fund.html>

<sup>13</sup> <https://www.canada.ca/en/environment-climate-change/services/climate-change/pan-canadian-framework-reports/complete-text-for-second-annual-report.html>

<sup>14</sup> [https://www.tc.gc.ca/en/programs-policies/programs/clean-transportation-system-research-development/apply-funding/applicants-guide.html#Program\\_description](https://www.tc.gc.ca/en/programs-policies/programs/clean-transportation-system-research-development/apply-funding/applicants-guide.html#Program_description)

<sup>15</sup> <https://www.tc.gc.ca/en/services/road/innovative-technologies/zero-emission-vehicles.html>

the incentive program launched, and December 31, 2019, more than 33,000 Canadians benefitted from the program. Sales of all ZEVs during this period were up 30%, compared with the same timeframe in 2018. ZEV market share in 2019 reached 3% of all new LDV sales, compared with 2% in 2018.

### **Memorandum of understanding between the California Air Resources Board and Environment and Climate Change Canada<sup>16</sup>**

In 2019, California (the most populous U.S. state) and Canada signed a cooperation agreement to advance clean transportation. The agreement commits to working together on respective regulations to reduce GHG pollution from vehicles, promote the uptake of cleaner vehicles, and share best practices related to cleaner fuels.

## **Outlook**

As depicted in Table 3, the Canadian transportation sector comprises several distinct subsectors. Each subsector exhibits different trends during the projected period. GHG emissions from cars, trucks, and motorcycles are projected to decrease by 21 Mt between 2005 and 2030, while those for heavy-duty trucks and rail are projected to increase by 11 Mt.

Table 3 Transportation: GHG Emissions (Mt CO<sub>2</sub> equivalent)<sup>17</sup>

Transportation Subsector	2005	2020	2030	Δ 2005 to 2030
Passenger Transport	90	88	70	-20
Cars, trucks, and motorcycles	82	79	61*	-21
Bus, rail, and domestic aviation	8	9	9	1
Freight Transport	62	73	73	11
Heavy-duty trucks, rail	54	68	68	14
Domestic aviation and marine	8	5	5	-3
Other: recreational, commercial, and residential	10	9	10	0
<b>Total</b>	<b>162</b>	<b>170</b>	<b>153</b>	<b>-9</b>

\* These projections are based upon the current emissions standards which are in place for model years 2017 to 2025.

<sup>16</sup> <https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/reduce-emissions/memorandum-understanding-california.html>

<sup>17</sup> <https://unfccc.int/sites/default/files/resource/Canada%E2%80%99s%20Fourth%20Biennial%20Report%20on%20Climate%20Change%202019.pdf>