The Canadian Fuels Association represents the industry that produces, distributes and markets petroleum products in Canada – including 95 percent of the transportation fuels Canadians rely on to remain mobile and globally competitive.

The fuels sector contributes over $5 billion to Canada’s GDP each year and employs more than 117,000 Canadians at 16 refineries, 78 fuel distribution terminals and approximately 12,000 retail and commercial sites throughout Canada.
Canada’s refining sector at a glance

Source: Companies’ websites, 2018
Statistics Canada, 2018

* Due to confidentiality issues, capacity numbers were used instead of production numbers.
** Domestic sales adjusted for exports and imports by non-reporting companies.

Note: Numbers may not add due to rounding.

*** North West Redwater refinery to be fully operational in 2019.

- 16 refineries located in 7 provinces
- Total refining capacity, 2017: 1,884 kb/d
- Product demand, 2017: 1,860 kb/d
- GDP contribution, 2017: $5.9 billion

- Refinery employment, 2017: 18,039
- Refined product exports, 2017: 28.6 billion litres
- Refined product imports, 2017: 16.6 billion litres
- Total annual investments, 2017: $1.1 billion
Production

Canadians pump over 214 million litres of gasoline and diesel into their fuel tanks every day. To meet demand and to keep Canadians on the move, the country’s 16 refineries operate 24/7 to produce around 116 billion litres of road, jet, rail and marine fuels, heating oil, lubricants and petro-chemicals.

Canadian supply and demand, 2017


Domestic demand of refined products

- Refined products exports: 29 billion l
- Refined products imports: 17 billion l
- Refinery production: 116 billion l
- Crude oil intake at Canadian refineries: 102 billion l

Domestic sales by product (billions of litres), 2017

- 43.5% Gasoline – 47 billion l
- 28.8% Diesel – 31 billion l
- 7% Aviation fuels – 8 billion l
- 2.8% Heavy fuel oil – 3 billion l
- 1.8% Heating oil – 1.9 billion l
- 16.4% Other* – 17 billion l

*Other includes propane, butane, petro-chemical feedstocks, lubricating oils, petroleum coke, asphalt, etc. | Data: Statistics Canada, 2018. | Numbers may not add up due to rounding.

Canadian exports and imports of refined petroleum products


Canada is a net exporter of refined products – refinery capacity exceeds domestic demand, notably in Quebec and Atlantic Canada.

An increase in freight transport is driving growth in diesel demand.

Refined petroleum products flow across both sides of the Canada – U.S. border, adjusting to demand and market conditions.
Since 2000, total recordable injuries for refinery employees have decreased by 82%. The work doesn’t stop here – we believe no one should ever get hurt, on or off the site.
Canadian Fuels members are working to get greener every year. Since 2000, our members have invested close to $12 billion to improve the environmental performance of their refineries and the fuels they produce, including $5 billion to significantly reduce sulphur in gasoline and diesel.

Canadian Fuels members’ total environmental expenditures

Canadian Fuels members are working closely with communities to help give surplus sites a second life. Since 2009, our members have remediated 1501 surplus sites, making them available for industrial, recreational, residential, or commercial use.

Surplus site remediation
Greenhouse gas emissions

Total CO₂ emissions, Canadian refining industry

Canadians, as well as governments at all levels, are increasingly concerned by the challenge of mitigating climate change. Canada’s refiners account for 2% of the country’s total GHG emissions and are committed to doing their part to reduce them.

Our sector’s carbon dioxide (CO₂) emissions have been reduced by 9% since 1990 – all while the refining process has become increasingly intensified to meet stringent fuel quality standards (see page 8), and also while producing 7% more products.

CO₂ (Megatonnes)

Source: Canadian Energy and Emissions Data Centre (CEEDC), Simon Fraser University, 2018.

Energy consumption of petroleum refineries


One way to reduce GHG emissions is to decrease energy use. Energy fuel consumption at Canadian refineries has decreased by 20% since 2008.
Air emissions

Canada’s refining sector can help improve air quality on two fronts – decreasing emissions at refineries, and producing cleaner fuels (p. 8).

Sulphur oxides (SO\(_x\)) ▼ 52%

Nitrogen oxides (NO\(_x\)) ▼ 42%

Volatile organic compounds (VOCs) ▼ 47%

Total particulate matter (TPM) ▼ 42%

Benzene (C\(_6\)H\(_6\)) ▼ 42%

Refiners are continuously looking at ways to improve their processes – leading to significant improvements in air emissions at facilities.

Data: Environment and Climate Change Canada National Pollutant Release Inventory (NPRI), 2018.
Water

Years of commitment to continuous improvement in how we use water has paid off: refiners need less water to process a barrel of crude oil, and water is returned to the environment in a cleaner state.

**Refinery water usage**

<table>
<thead>
<tr>
<th>Cubic metres (m³)</th>
<th>350,000,000</th>
<th>300,000,000</th>
<th>250,000,000</th>
<th>200,000,000</th>
<th>150,000,000</th>
<th>100,000,000</th>
<th>50,000,000</th>
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<tbody>
<tr>
<td>2005</td>
<td>INTAKE</td>
<td>DISCHARGE</td>
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<td>INTAKE</td>
<td>DISCHARGE</td>
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<td>2012</td>
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<td>DISCHARGE</td>
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<td>2016</td>
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<td>DISCHARGE</td>
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<tr>
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<td>DISCHARGE</td>
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</tbody>
</table>

Canadian Fuels Association member refineries only.

**Refinery effluent quality**

<table>
<thead>
<tr>
<th>% of allowable limits</th>
<th>120%</th>
<th>100%</th>
<th>80%</th>
<th>60%</th>
<th>40%</th>
<th>20%</th>
<th>0%</th>
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</thead>
<tbody>
<tr>
<td>Oil and grease</td>
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<tr>
<td>Sulphide</td>
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<td>Ammonia nitrogen</td>
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<td>Phenol</td>
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<td>T.S.S.*</td>
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</table>

*Total suspended solids. | Canadian Fuels Association members only. | 2017 data.

Water intake is down 30% since 2005.

Effluent deposits from refineries are well below federal maximum allowable limits.
Fuels have changed significantly in the past decades. Lead was entirely phased out of gasoline and benzene was cut to less than 1% of volume. Refiners have invested over $5 billion to cut sulphur to less than 30 ppm in gasoline and less than 15 ppm in diesel. The new regulation in 2017 further reduced sulphur in gasoline to 10 ppm annual average.

Sulphur in Diesel Fuel Regulations implemented in 2006 cut sulphur in on-road diesel from 500 ppm to 15 ppm.

Benzene content is far below the maximum allowable.
Refining sector economic indicators

A competitive refining sector is a key contributor to a strong Canadian economy, adding over $5 billion to the country’s GDP each year.

Refining sector investments (millions of Canadian dollars)

Canadian refiners have invested more than $25 billion in structures, machinery and equipment since 1991. That’s an average of close to $2 billion a year in the last 10 years.


Downstream sector employment

Canada’s fuel refining, distribution and retailing sector employs over 117,000 workers, including over 18,000 at refineries, more than 15,000 at fuel distribution terminals and over 84,000 at retail sites.

CANADA'S REFINING SECTOR
Trade and Economic Contribution

180 million barrels a year
of refined petroleum product moved between Canada and the U.S. (EIA, 2018)

$9.7 billion in trade value
from refined petroleum product exports (Statistics Canada, 2018)

$5.9 billion to Canada's GDP
from the refining sector (Statistics Canada, 2018)

117,681 jobs
in the refining, distribution and sale of transportation fuels in Canada (Statistics Canada, 2018)

$21.6 billion in tax revenue
from transportation fuel sales in Canada. (Kent Group Ltd., 2018)
Downstream Sector
Refining, Distribution, Marketing

Product movement

Refining (Manufacturing and Product Imports)

Distribution (Transportation / Storage)

Marketing

- Retail Outlets
- Farms
- Commercial Consumers
- Wholesale Distributor
- Licensed Imports

Refinery → Refined Products Storage → Terminal → Refined Products Storage → Retail Outlets

Biofuel Plant → Refined Products Storage → Terminal → Product Pipeline → Terminal

Truck, Rail, Marine

Bulk Plant → Terminal

Product movement
Product trade flow

Refined Petroleum Product Flow

- Interprovincial Trade
- Exports
- Imports

- Husky
- Imperial
- North West Redwater
- Suncor
- Shell
- Federated Co-op
- Petro-Canada
- Lubricants
- Imperial
- North Atlantic Refining
- Chevron
- Valero
- Irving Oil
Fuel Facts

FUEL FACT

In 2017, there were 11,948 retail gasoline stations operating in Canada, or 3.3 outlets for every 10,000 persons.

FUEL FACT

Refiners make work sites safer by benchmarking safety practices and continuously developing programs that proactively identify and eliminate hazards.

FUEL FACT

2017 marked the third year in a row of gasoline station increases in Canada after a 20 percent decrease over the previous 10 years.

FUEL FACT

Since 2000, total recordable injuries for refining employees have decreased by 82 percent.

FUEL FACT

The Canadian Fuels Association’s Driver Certification Program certifies around 5,000 drivers per year and is required by all drivers in Canada to safely handle fuel in various situations.

FUEL FACT

Refiners and local authorities share emergency response resources, and participate in simulated emergency scenarios as part of a coordinated emergency response program.

FUEL FACT

Only 23 percent of gasoline stations in Canada are under price control of refiner-marketers in Canada.

FUEL FACT

Refiners have among the highest safety records of any manufacturing sector in Canada.