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 116,000 Canadians at 15 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, 2016
Statistics Canada, 2016

- 15 refineries located in 7 provinces
- Total refining capacity, 2015: 1,873 kb/d
- Product demand, 2015: 1,799 kb/d
- GDP contribution, 2015: $5.3 billion
- Refinery employment, 2015: 18,700
- Refined product exports, 2015: 27.8 billion litres
- Refined product imports, 2015: 13.9 billion litres
- Total annual investments, 2015: $1.9 billion

* 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.
Production

Canadians pump over 203 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 15 refineries operate 24/7 to produce over 108 billion litres of road, jet, rail and marine fuels, heating oil, lubricants and petro-chemicals.

Canadian supply and demand, 2015


Domestic demand of refined products

- Refined products exports
  - Gasoline: 104 billion l
  - Diesel: 28 billion l
  - Aviation fuels: 14 billion l

Refined products imports

- Refinery production
  - Gasoline: 90 billion l
  - Diesel: 108 billion l

Crude oil intake at Canadian refineries


Domestic sales by product (billions of litres), 2015

- 43% Gasoline – 44.7 billion l
- 28% Diesel – 29.4 billion l
- 7% Aviation fuels – 7.2 billion l
- 3% Heavy fuel oil – 2.7 billion l
- 2% Heating oil – 1.9 billion l
- 17% Other* – 18.5 billion l

*Other includes propane, butane, petro-chemical feedstocks, lubricating oils, petroleum coke, asphalt, etc. | Data: Statistics Canada, 2016. | Numbers may not add up due to rounding.

Canadian exports and imports of refined petroleum products


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 73%. The work doesn't stop here – we believe no one should ever get hurt, on or off the site.

Refinery employees – Total recordable injury frequencies

Our member companies are leaders in industrial safety management, and have among the best safety records of any manufacturing industry in Canada.
Environmental performance

Canadian Fuels members’ total environmental expenditures

Canadian Fuels members are working to get greener every year. Since 2000, our members have invested close to $11 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.

Surplus site remediation

Canadian Fuels and its members work closely with communities to help give surplus sites a second life. Since 2009, our members have remediated 1265 surplus sites, making them available for industrial, recreational, residential, or commercial use.
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 11% since 1990 – all while the refining process has become increasingly intensified to meet stringent fuel quality standards (see page 8).

CO₂ (Megatonnes)

Source: Canadian Industrial Energy End-Use Data and Analysis Centre (CIEEDAC), Simon Fraser University, 2016.

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 22% 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$_x$) ▼55%

![Graph showing the reduction in sulphur oxides emissions from 2002 to 2015.](image)

Nitrogen oxides (NO$_x$) ▼41%

![Graph showing the reduction in nitrogen oxides emissions from 2002 to 2015.](image)

Volatile organic compounds (VOCs) ▼46%

![Graph showing the reduction in volatile organic compounds emissions from 2002 to 2015.](image)

Total particulate matter (TPM) ▼43%

![Graph showing the reduction in total particulate matter emissions from 2002 to 2015.](image)

Benzene (C$_6$H$_6$) ▼37%

![Graph showing the reduction in benzene emissions from 2002 to 2015.](image)

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), 2016.
Water

Years of commitment to continuous improvement in how we use water have 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**

Cubic metres (m³)

<table>
<thead>
<tr>
<th>Year</th>
<th>Intake</th>
<th>Discharge</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>350,000,000</td>
<td>300,000,000</td>
</tr>
<tr>
<td>2006</td>
<td>300,000,000</td>
<td>250,000,000</td>
</tr>
<tr>
<td>2007</td>
<td>250,000,000</td>
<td>200,000,000</td>
</tr>
<tr>
<td>2008</td>
<td>200,000,000</td>
<td>150,000,000</td>
</tr>
<tr>
<td>2009</td>
<td>150,000,000</td>
<td>100,000,000</td>
</tr>
<tr>
<td>2010</td>
<td>100,000,000</td>
<td>50,000,000</td>
</tr>
<tr>
<td>2011</td>
<td>50,000,000</td>
<td>0</td>
</tr>
<tr>
<td>2012</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2013</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2014</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2015</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Water intake is down 33% since 2005.

**Refinery effluent quality**

% of allowable limits

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil and grease</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Sulphide</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Ammonia nitrogen</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Phenol</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>T.S.S.*</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Effluent deposits from refineries are well below federal maximum allowable limits.

---

*Total suspended solids. | Canadian Fuels Association members only. | 2015 data.
**Fuel quality**

**Sulphur in gasoline**

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 beginning in 2017 will further reduce sulphur in gasoline to 10 ppm.

**Sulphur in diesel**

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

---

*Canadian Fuels Association members only (excluding Husky Energy Inc.) | Data includes imports. Quarterly volume-weighted averages are shown.

**Benzene in gasoline**

Benzene content is far below the maximum allowable.

---

Canadian Fuels Association members only (excluding Husky Energy Inc.) | Data includes imports. Volume-weighted averages are shown.
Downstream sector employment

Canada’s fuel refining and distribution sector employs over 116,000 workers, including over 18,000 at refineries, more than 16,400 at fuel distribution terminals and over 81,000 at retail sites.


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 nearly $24 billion in structures, machinery and equipment since 1991. That’s an average of more than $2.1 billion a year over the last 10 years.

Members

- Chevron
- CO-OP
- Husky Energy
- Imperial
- IRVING
- North Atlantic
- NWR
- Parkland
- Shell
- Suncor