

# Canada's Refining Industry 2019 Sector Performance Report



Canadian Fuels  
ASSOCIATION

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canadienne des carburants



Welcome to the 2019 Sector Performance Report for Canada's refining industry.

The Canadian Fuels Association is our nation's leading industry voice on transportation energy – our members are responsible for producing, distributing and marketing 95 percent of the transportation fuels that Canadians rely on every day. We drive Canada forward by promoting policies that improve industry environmental performance, protect industry competitiveness, strengthen Canada's critical energy infrastructure, and ensure dependable, safe, and environmentally responsible transportation energy is accessible to all Canadians.

The following Report outlines our sector's on-going commitment to supporting a strong Canadian economy while reducing the environmental footprint of our products and operations. For more than 30 years, the Canadian Fuels Association has been working in collaboration with governments and industry partners and is recognized as the 'go to' source of industry information and technical expertise.

This Report is being published at an unprecedented time for our country and our industry. As part of Canada's critical infrastructure, we have supported the response to the COVID-19 pandemic by continuing the supply of transportation fuels and specialty lubricants across Canada and maintaining the health and safety of the workers that have kept our national fuels network operating during this challenging time.

While the track record of our industry is impressive, we know that we need to keep improving. As we look ahead, we know that transportation fuels can continue to play an important role in Canada's energy future while achieving the economic and environmental goals of Canadians.



Peter Boag  
President & CEO  
Canadian Fuels Association





# Canada's refining sector at a glance



## Canada

Refining Capacity:  
1,964 kb/d  
Product Demand:  
1,891 kb/d

## British Columbia

Capacity: 67 kb/d  
Demand: 232 kb/d

## Prairies

Capacity: 639 kb/d  
Demand: 576 kb/d

## Ontario

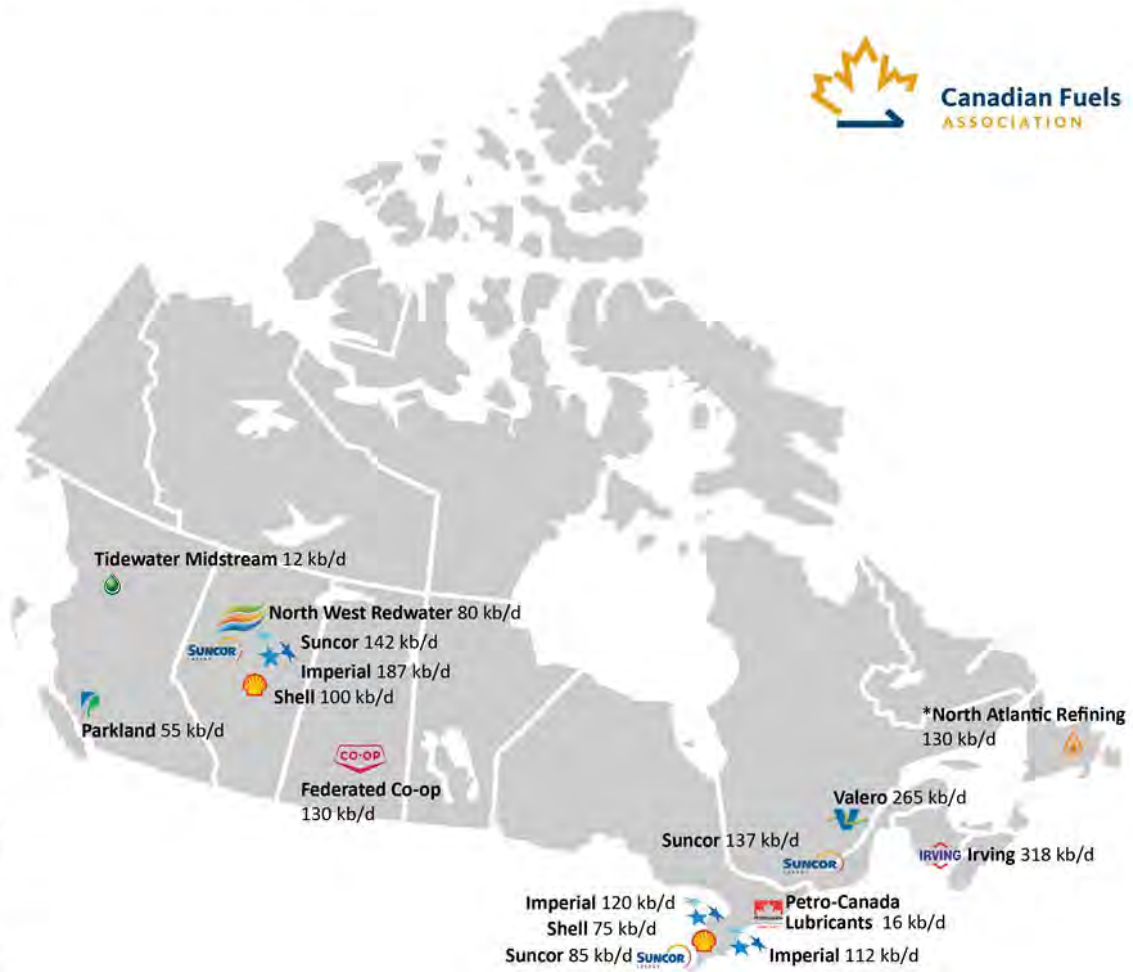
Capacity: 408 kb/d  
Demand: 558 kb/d

## Quebec

Capacity: 402 kb/d  
Demand: 365 kb/d

## Atlantic

Capacity: 448 kb/d  
Demand: 160 kb/d



Data sourced from respective companies' published figures and Statistics Canada as of 2019. Due to confidentiality issues, refining capacity numbers were used instead of total production numbers. Domestic sales by reporting companies, exclusive of export and sales to other reporting companies, are adjusted for exports and imports by non-reporting companies. Numbers may not add up due to rounding. \*Non-member refinery.

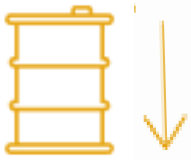
Canadian Fuels Association 2020

- 16 refineries located in 7 provinces
- Total refining capacity, 2018: 1,964 kb/d
- Product demand, 2018: 1,891 kb/d
- GDP contribution, 2018: \$10.1 billion
- Refinery employment, 2018: 17,791 employees
- Refined product exports, 2018: 25.8 billion litres
- Refined product imports, 2018: 17.4 billion litres
- Total annual investments, 2018: \$2 billion



**42% of the total energy consumed by Canadians are refined petroleum products**

(NRCan - Energy Fact Book 2019 - 2020)



**23% of petroleum products produced in Canada are exported to the U.S.**

(NRCan - Energy Fact Book 2019 - 2020)



**\$12 billion in trade value from exports of refined petroleum products**

(Statistics Canada, 2020)



**\$10 billion a year to Canada's GDP by petroleum refineries**

(Statistics Canada, 2020)



**117 000 employees in the petroleum refining, distribution and retail sites**

(Statistics Canada, 2020)



**\$22 billion a year in tax revenue from transportation fuel sales in Canada**

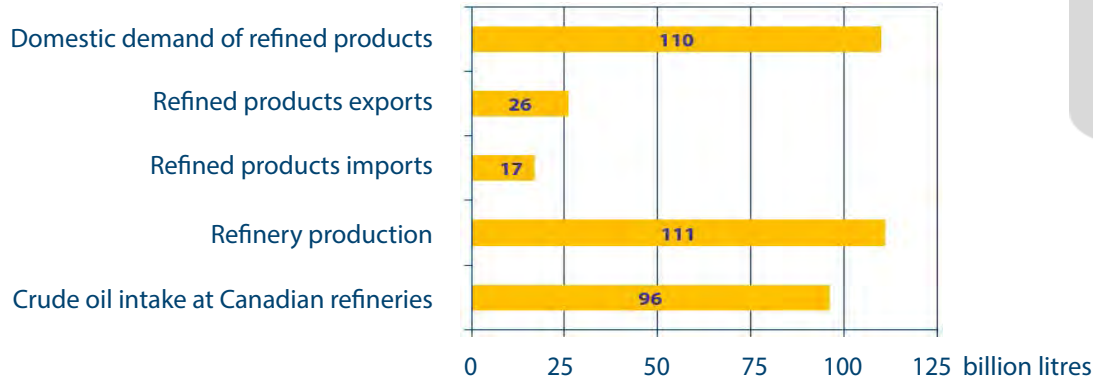
(Kent Group Ltd., 2019)

# Production

Canadians pump over 218 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 111 billion litres of road, jet, rail and marine fuels, heating oil, lubricants and petro-chemicals.



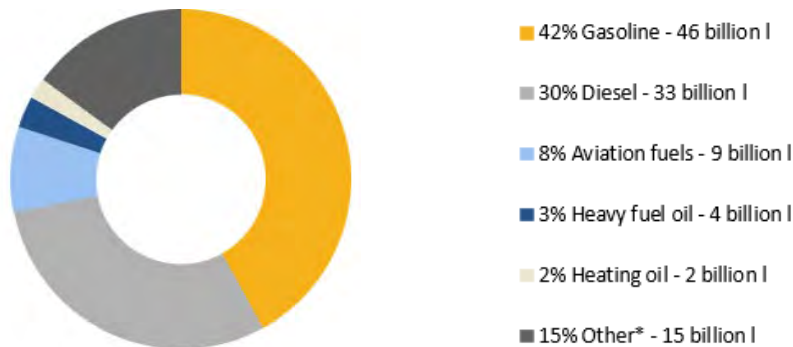
## Canadian supply and demand, 2018



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

Data: Statistics Canada, 2019.

## Domestic sales by product (billions of litres), 2018



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

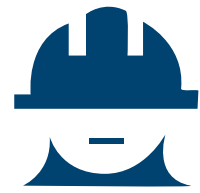
\*Other includes propane, butane, petro-chemical feedstocks, lubricating oils, petroleum coke, asphalt, etc. | Data: Statistics Canada, 2019. | Numbers may not add up due to rounding.

## Canadian exports and imports of refined petroleum products



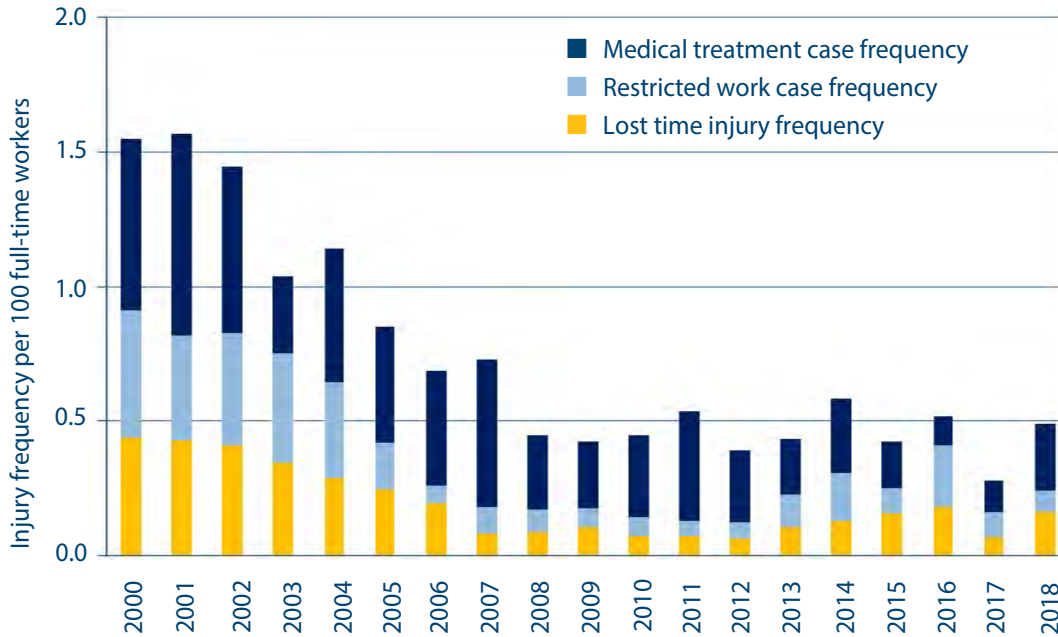
Refined petroleum products flow across both sides of the Canada – U.S. border, adjusting to demand and market conditions.

Data: Statistics Canada, 2019.



## 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.



Since 2000, total recordable injuries for refinery employees have decreased by 68%. The work doesn't stop here – we believe no one should ever get hurt, on or off the site.

Canadian Fuels Association members only.

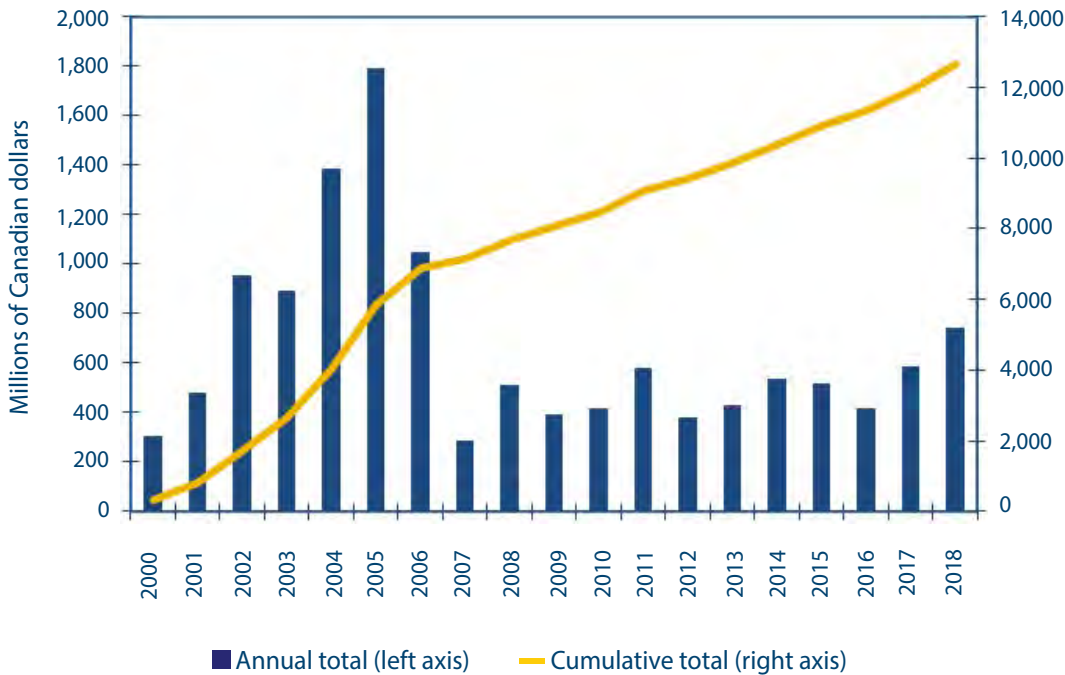




# Environmental performance



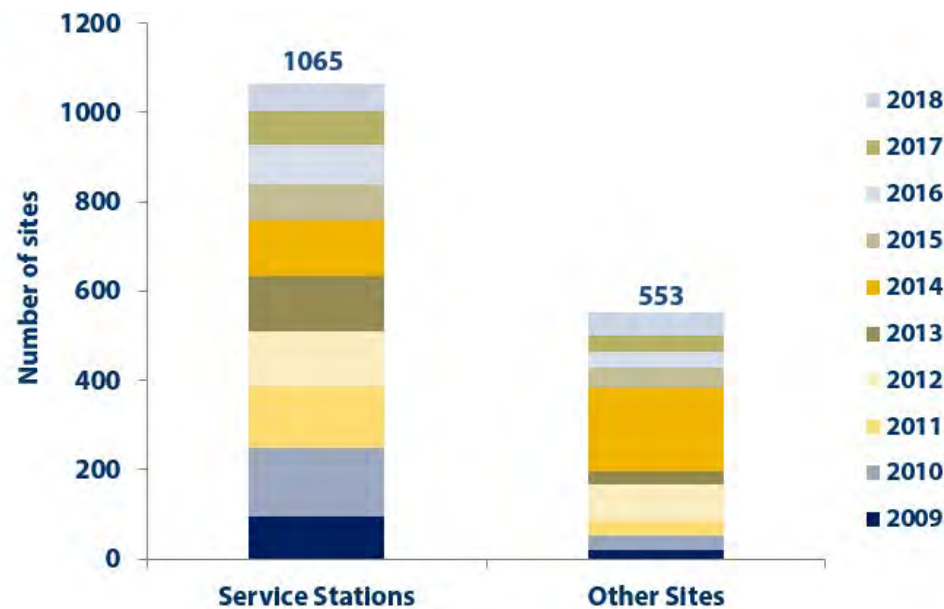
## Canadian Fuels members' total environmental expenditures



Canadian Fuels members continue to make investments that reduce the environmental footprint of their operations. Since 2000, our members have invested over \$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 Association members only.

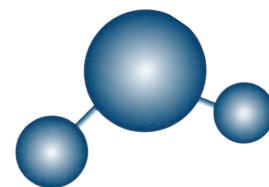
## Surplus site remediation



Canadian Fuels and its members work closely with communities to help give surplus sites a second life. Since 2009, our members have remediated 1618 surplus sites, making them available for industrial, recreational, residential or commercial use.

Canadian Fuels Association members only.

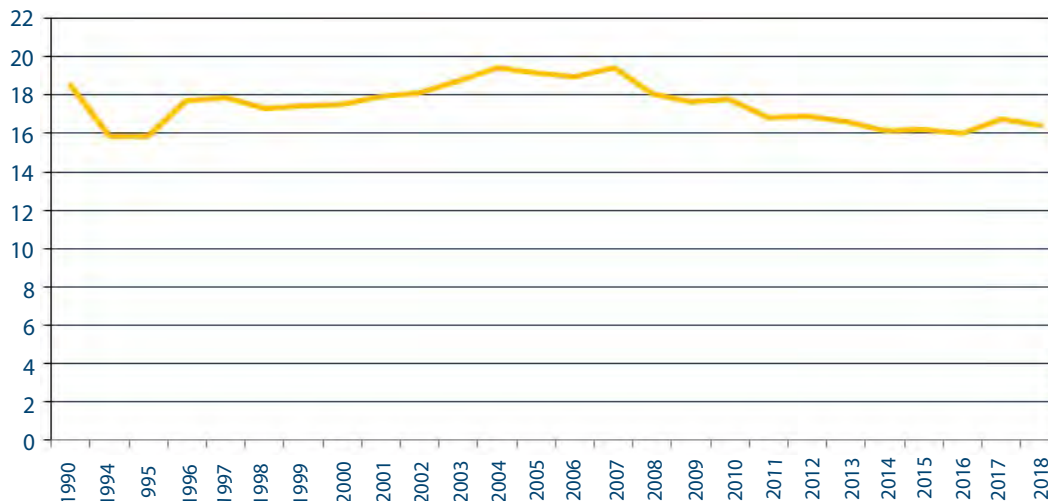
# Greenhouse gas emissions



## Total CO<sub>2</sub> 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.

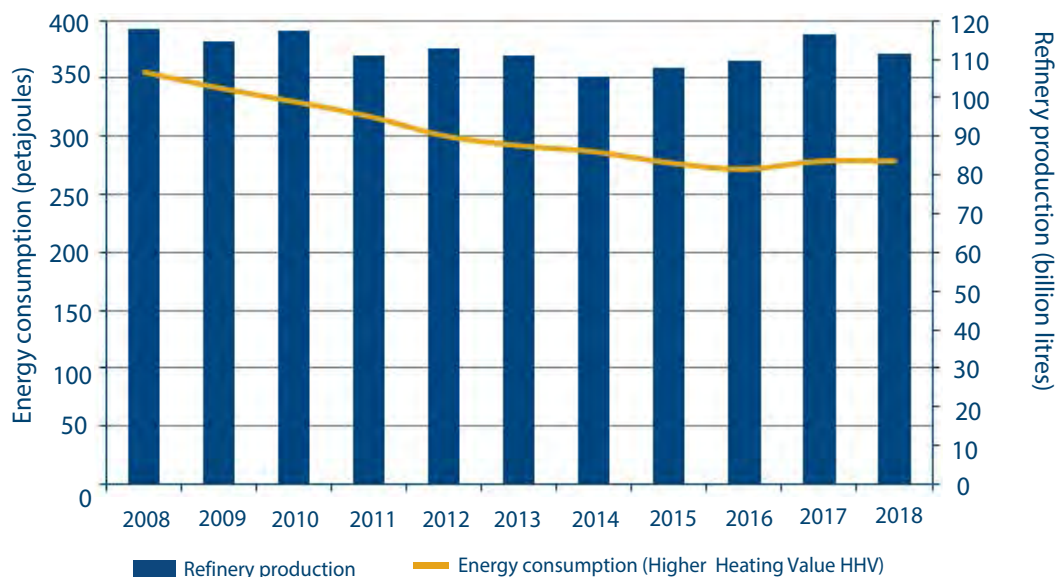
CO<sub>2</sub> (Megatonnes)



Source: Canadian Energy and Emissions Data Centre (CEEDC), Simon Fraser University, 2019.

Our sector's carbon dioxide (CO<sub>2</sub>) emissions have decreased by 11% since 1990 – all while the refining process has become increasingly intensified to meet stringent fuel quality standards (see page 9), and also while producing 9% more products.

## Energy consumption of petroleum refineries



Data: Statistics Canada, 2019.

One way to reduce GHG emissions is to decrease energy use. Energy 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. 9).

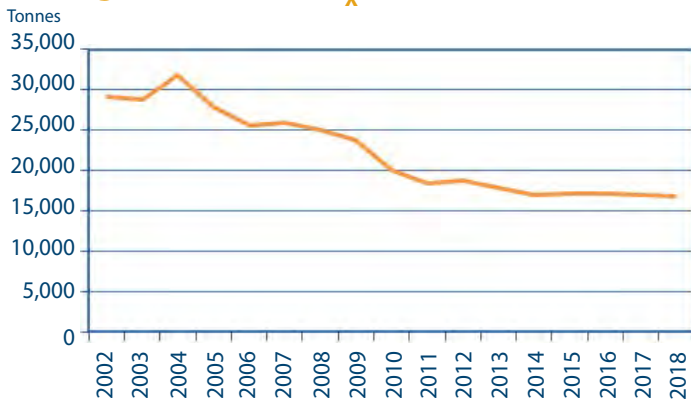


## Sulphur oxides (SO<sub>x</sub>) ▼46%



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

## Nitrogen oxides (NO<sub>x</sub>) ▼42%



## Volatile organic compounds (VOCs) ▼47%



## Total particulate matter (TPM) ▼39%



## Benzene (C<sub>6</sub>H<sub>6</sub>) ▼43%

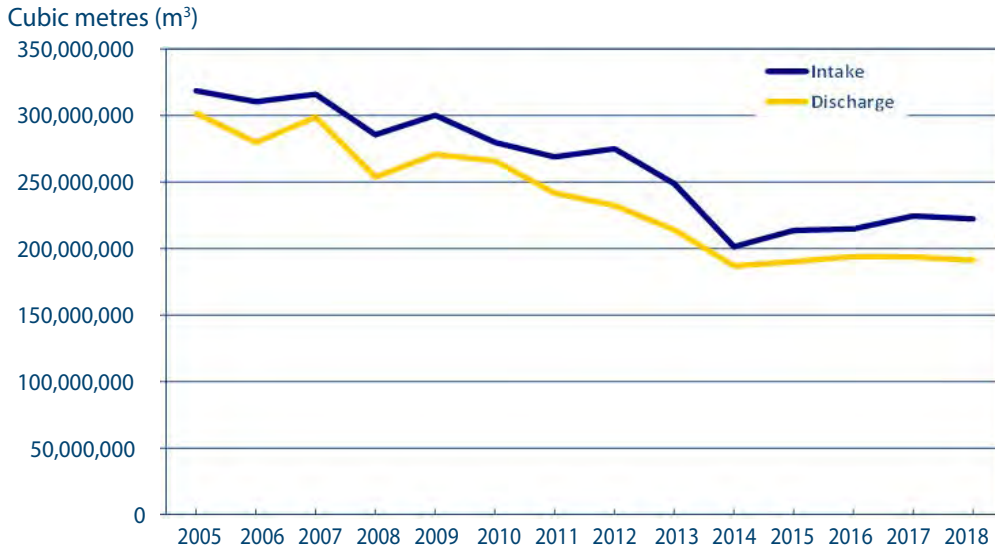


Data: Environment and Climate Change Canada National Pollutant Release Inventory (NPRI), 2019.

# 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.

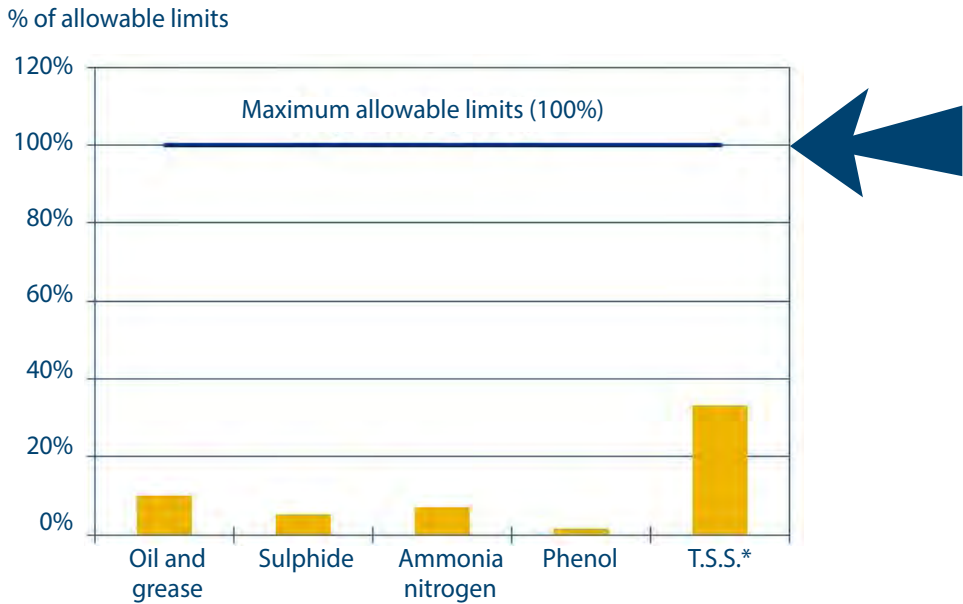
## Refinery water usage



Water intake is down 30% since 2005.

Canadian Fuels Association member refineries only.

## Refinery effluent quality



The quality of the water discharged by our members' refineries is significantly better than the standards set by federal maximum allowable limits.

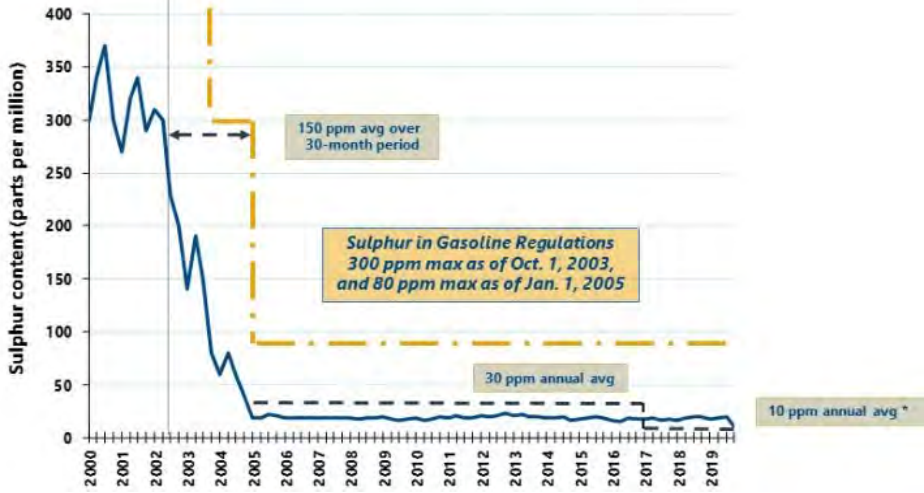
\*Total suspended solids. | Canadian Fuels Association members only. | 2017 data.



# Fuel quality

## Sulphur in gasoline\*

CGSB Standard 1000 ppm



\*10 ppm annual average with use of sulphur credits. | Canadian Fuels Association members only. | Data includes imports. Quarterly volume-weighted averages are shown.



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.

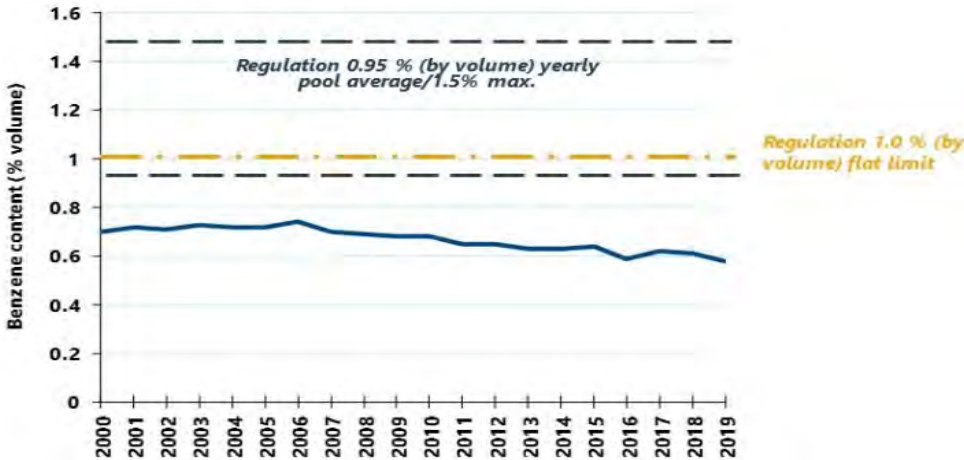
## Sulphur in diesel\*



\*Canadian Fuels Association members only. | Data includes imports. Quarterly volume-weighted averages are shown.

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

## Benzene in gasoline\*



\*Canadian Fuels Association members only. | Data includes imports. Volume-weighted averages are shown.

Benzene in gasoline content is far below the maximum allowable.

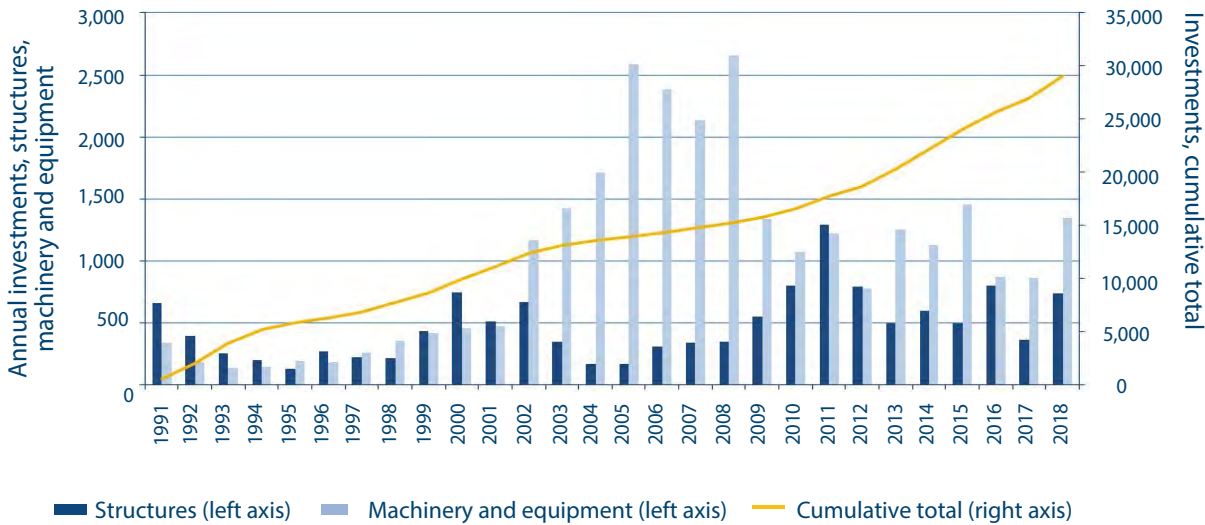


# Refining sector economic indicators

A competitive refining sector is a key contributor to a strong Canadian economy, adding over \$10 billion to the country's GDP each year.



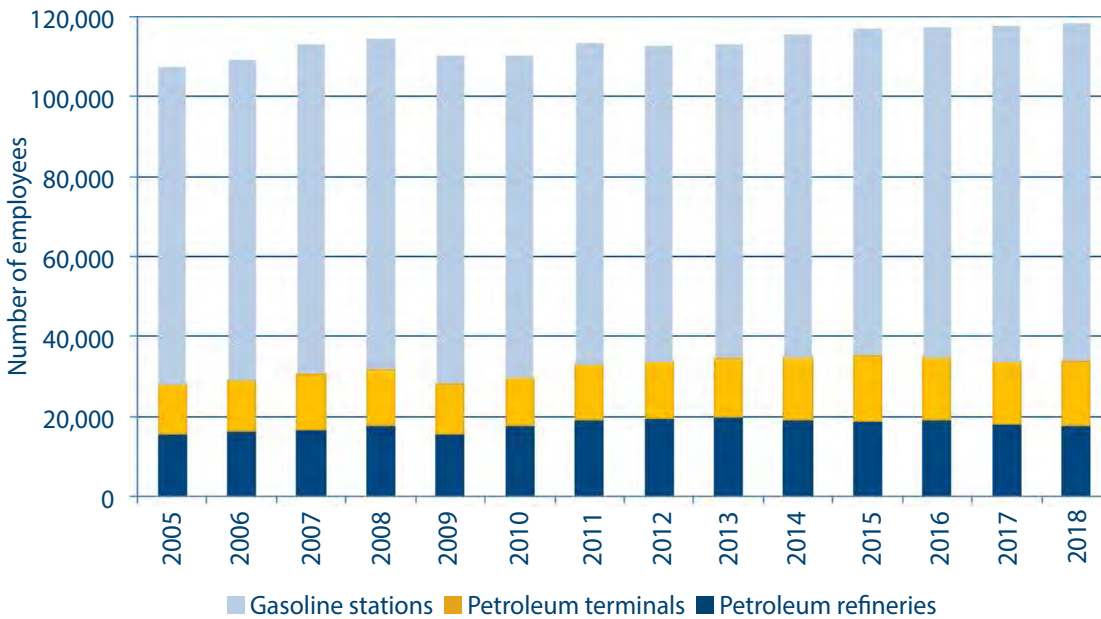
## Refining sector investments (millions of Canadian dollars)



Canadian refiners have invested close to \$30 billion in structures, machinery and equipment since 1991. That's an average of close to \$3 billion a year in the last 10 years.

Data: Statistics Canada 2019, The Conference Board of Canada.

## Downstream sector employment



Canada's fuel refining, distribution and retailing sector employs over 117,000 workers, including over 17,000 at refineries, more than 15,000 at fuel distribution terminals and over 84,000 at retail sites.

Data: Statistics Canada, 2019. Table 14-10-0202-01 Employment by Industry, NAICS [324, 3241, 412, 4121, 447, 4471]



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