Canadian Refining Industry

January 2026

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Updates From Last Publication on Oct. 17, 2025

- **Slide 10**: Updated to reflect the latest monthly Canadian refinery throughput data from Statistics Canada (Oct. 2025)
- **Slides 14-16**: Updated to reflect the latest monthly Canadian refinery throughput data from Statistics Canada (Oct. 2025)
- **Slides 18-19**: Updated to reflect the latest monthly data for Canadian refined petroleum product exports/imports (Oct. 2025)
- **Slides 21-22**: Updated to reflect the latest monthly data for Canadian crude oil imports (Oct. 2025)

Summary of the Canadian Refining Industry

Introduction to the Canadian Refining Industry

- Refineries are a critical piece of Canada's energy story. Crude oil is the second largest type of energy consumed in the country, and refineries are the key step in turning the raw commodity into high-value final products. They also represent a key part of the Canadian economy. In 2024, Canada exported roughly $20 billion worth of refined petroleum products abroad.

Industry Overview

- Across the country, Canada has 16 operating refineries (including two asphalt refineries) with a total refining capacity of 1.9 MMB/d, not including upgraders. Canada's refinery capacity is primarily located in Eastern Canada, near large population centers, and in Alberta, near major oil-producing regions.
- There is a co-dependency between Canada and the U.S. with regard to refineries. In Canada, refineries in the east are configured to handle lighter conventional crude oil, typical of that produced in the U.S. The U.S. now makes up nearly three-quarters of oil imports needed for Canadian refineries. In the U.S., many refineries have been configured with coking capabilities to handle the heavy sour crudes typical of those produced in Western Canada. Canadian refineries have limited heavy oil refining capacity, making Canada heavily dependent on the U.S. for refining these barrels.

Energy Security

- Over the past decade, Canada has strengthened its continental energy security by reducing reliance on overseas oil and increasing the share of imports from the U.S. The only refinery still importing meaningful overseas oil is the Irving Oil refinery in New Brunswick.
- Refineries in Eastern Canada depend on production from Canada and the U.S., and any curtailment of production would cause an energy shortage. Over the past several years, the Michigan State Government threatened to stop the operation of a key Enbridge pipeline segment (Line 5) that would have resulted in an energy shortage in Eastern Canada. In December 2023, however, state officials approved a tunnel under the Straits of Mackinac. A final approval from the U.S. Army Corps of Engineers would allow Enbridge to proceed in building the tunnel and ultimately continue operating the pipeline.

Sustainability

- Several policies have been enacted to lower greenhouse gas (GHG) emissions at Canadian refineries and in the fuels. In Canada, the Clean Fuel Regulations, which came into force in the summer of 2023, should increase the adoption of alternative, lower-carbon fuels such as biofuels.

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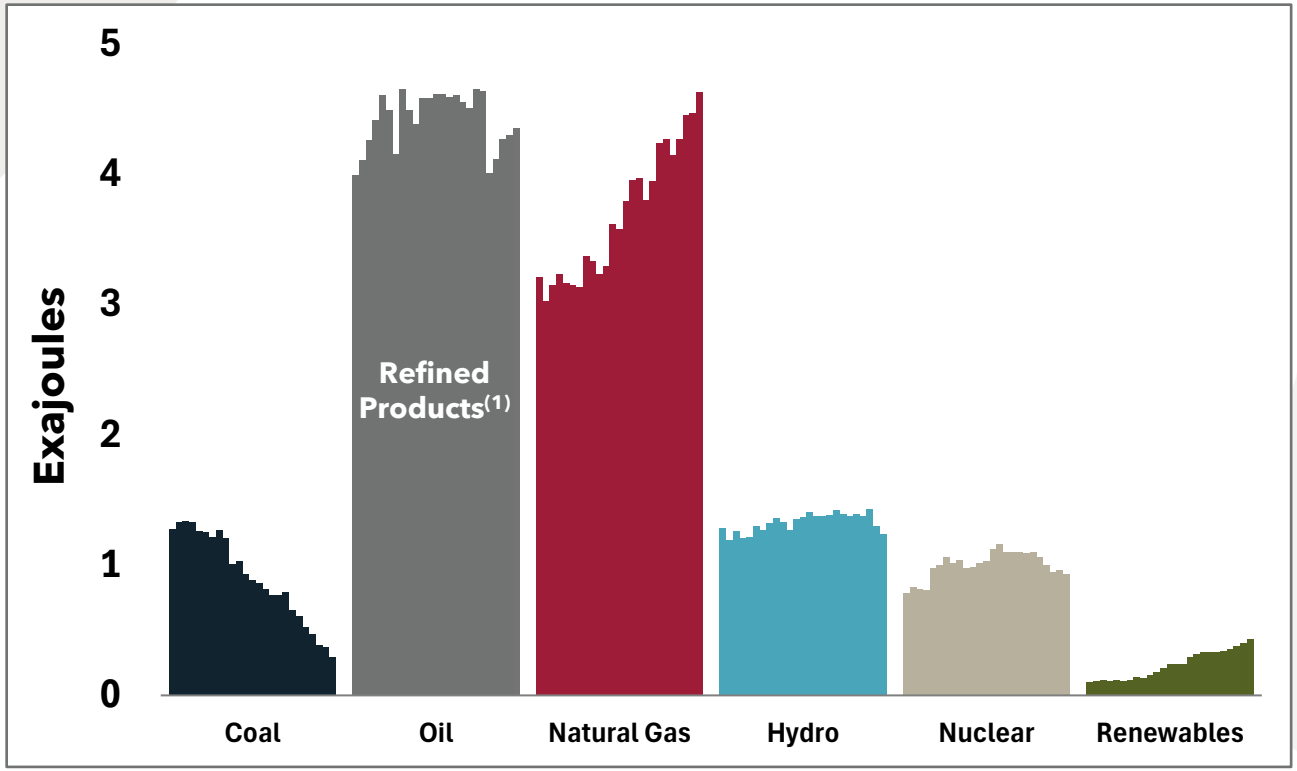
Source: Canada Energy Regulator, Statistics Canada

Introduction to the Canadian Refining Industry

Canada's Energy Consumption by Product

Annual | 2000 to 2024



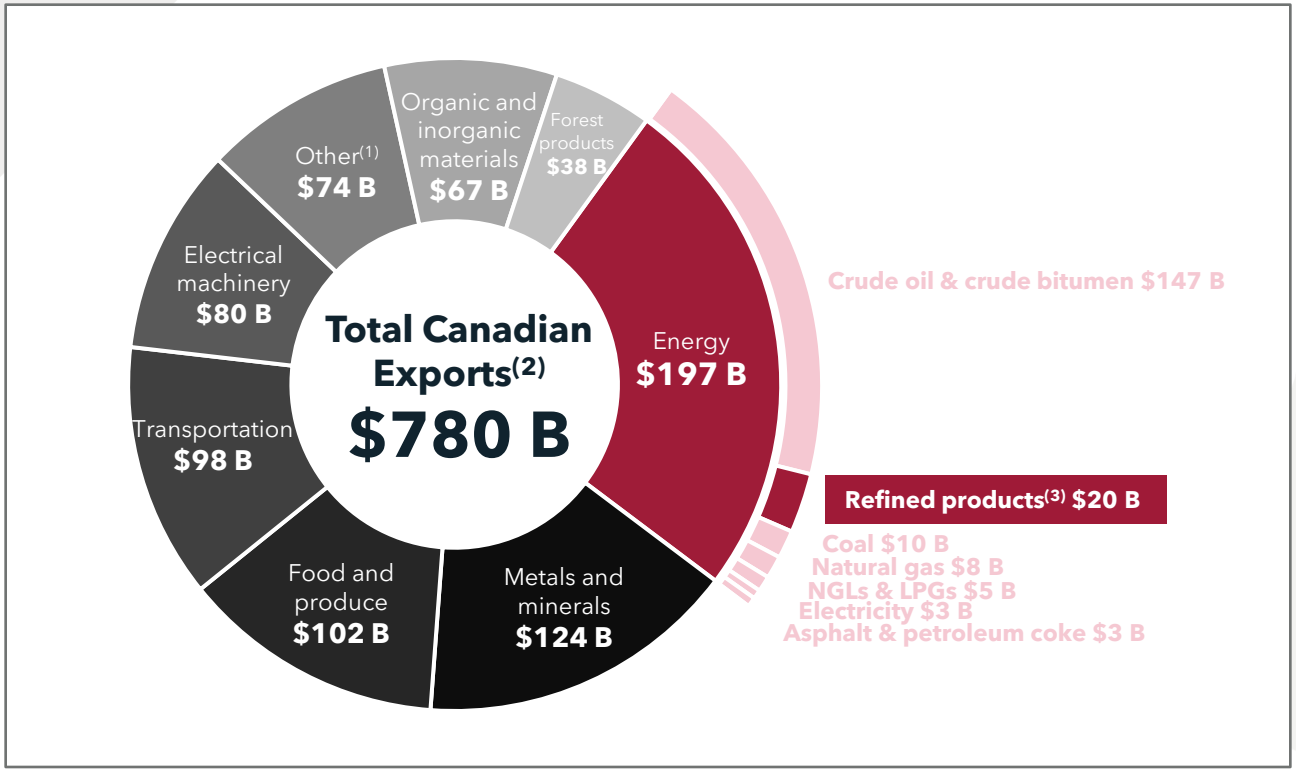
- In 2024, crude oil was the second largest source of primary energy consumed in Canada, accounting for 37% of energy use on an exajoule basis.
- Refineries produce refined products like gasoline, diesel, and jet fuel, transforming raw crude oil into useful fuels and products that are consumed in cars, trucks, airplanes, locomotives, and trains and used for other industries.
- As of 2024, Canada's consumption of refined products from crude oil has not recovered to pre-pandemic levels.

Source: Energy Institute Statistical Review of World Energy (2025), International Energy Agency

(1) Almost all oil consumed is in the form of refined products

Value of Canadian Exports by Category

Annual | 2024



- Roughly $20 billion worth of Canadian refined products from refineries were sold globally in 2024, representing approximately 3% of the total Canadian export market.
- This makes the exports of refined products larger than some other significant industries in Canada, including aircraft & spacecraft ($18 B), pharmaceuticals ($15 B), iron & steel ($12 B), paper & paperboard ($11 B), and fertilizers ($9 B).
- For comparison, refined product exports are about a quarter of Canada's vehicle exports, which totaled $79 billion in 2024.

Source: Statistics Canada. Canadian International Merchandise Trade Web Application

(1) Other includes medicine, medical, textiles, and animal products
(2) Exports include re-exports
(3) Includes gasoline, diesel, fuel oils, kerosene, jet fuel, lubrication oils

Timeline of Refining in Canada

1840s – **Kerosene** – Working out of Saint John, New Brunswick, Canadian Abraham Gesner develops methods to refine liquid fuels into kerosene. His patents were eventually bought by Standard Oil and helped launch the modern refining industry.

1860s – **First Canadian refinery –** James Miller Williams, considered the "Father of the Canadian Oil Industry", first started refining oil and bitumen in Ontario, opening the country's first large refinery in Hamilton in 1860.

1880s – **Imperial Oil** – Formed out of the merger of 16 refiners in Southwestern Ontario, Imperial Oil became Canada's first major oil and gas company to produce and distribute petroleum products.

1914 – **Turner Valley** - Following the discovery of the Turner Valley oil field with the Dingman #1 well, the Turner Valley Gas Plant opened. This was Western Canada's first gas processing facility and oil refinery.

1950s – **Western Canada** - Kickstarted by the discovery of oil from the Leduc #1 well, major oil companies invested in Canadian refining and marketing, significantly expanding capacities in Western Canada.

Imperial Oil's refinery in Sarnia, Ontario (Est. 1910)

Parkland's refinery in Burnaby, British Columbia (Est. 2010s)

1970s – **Oil Crisis** - As a result of the 1973 oil crisis, there was a push to improve vehicle efficiencies and switch from oil to natural gas and electricity. This contributed to a rationalization in refining capacity from 1973 to 1983.

1990s – **Quality mandates** - A second rationalization took place in part because of fuel quality mandates, including the removal of lead from fuels, which made for challenging economics, especially for smaller, less efficient refineries.

2000s – **Blending mandate** - Several provinces introduce blending mandates, requiring ethanol to be blended into gasoline and other renewable content, including biodiesel, to be blended into diesel.

2023 – **Clean Fuel Regulations** – Beginning in 2023, the federal Clean Fuel Regulations came into force to reduce the carbon intensity of transportation fuels across the country, creating demand for alternative fuels and decarbonization.

2020s – **Renewable fuels** - Renewable fuel refineries are operating or proposed by companies including Parkland, Braya Renewables, Varennes Carbon Recycling, Co-op, Tidewater Renewables, and Imperial Oil to produce fuels made from organic feedstocks.

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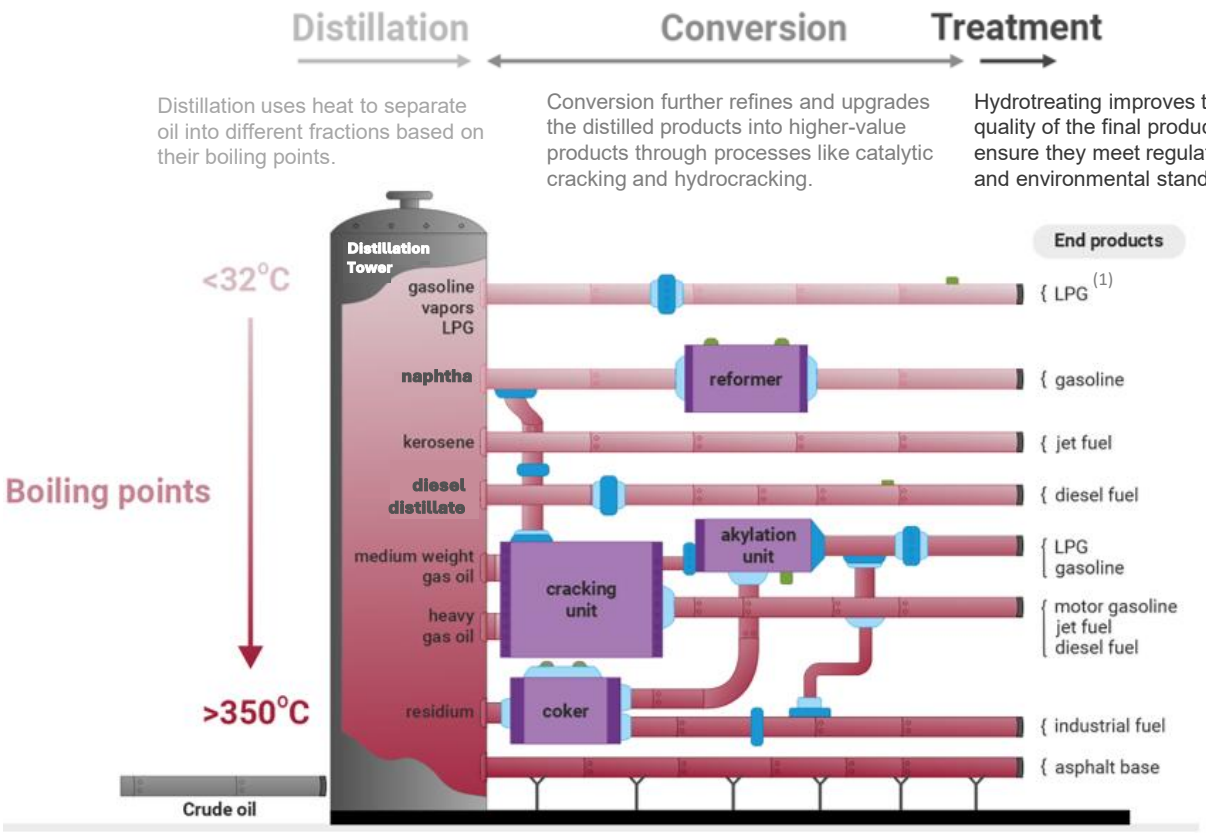
The Refining Process Turns Crude Oil Into High-Value End Products

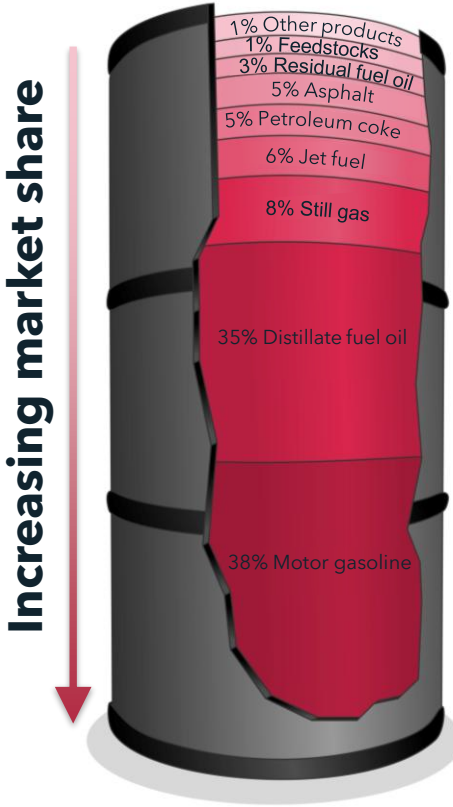


- Various grades of crude oil are utilized in the refining process to yield a diverse mix of refined products. The physical and chemical properties of crude oil will dictate the amount of refining that is required.
- For example, lighter crude oil with high API gravity(2) is generally easier to process and yield products such as gasoline and jet fuel, while heavier crude oil with lighter API gravity requires additional refining and yield products such as asphalt and heavy fuel oils.
- Refineries typically operate with a varied crude slate to produce a diverse mix of products and is often dependent on market dynamics.

(1) LPG – Liquefied Petroleum Gas
(2) API Gravity – a measure of how heavy or light a petroleum liquid is relative to water

Refined Product Output of Canadian Refineries and End Uses

Annual | 2025*



Other products: Includes lubricants, waxes, naphtha, kerosene, and more

Feedstocks: Used to make ethylene, propylene, and others

Fuel oil: For power generation and large ocean-going ships as bunker fuel

Petroleum coke: Used to make aluminum, steel, cement, glass, and more

Asphalt: Material for paving roads and other building materials

Jet fuel: Fuel for jet aircraft

Still gas: For fuel in refineries or as petrochemical feedstocks

Distillate fuel oil: Diesel fuel for trains, heavy-duty trucks, and heavy equipment

Motor gasoline: Fuel for passenger cars and light trucks

- Refineries produce many diverse products used in modern society.
- Transportation fuels including gasoline, diesel, jet fuel, and fuel oil are essential for enabling transportation and mobility.
- Petrochemical feedstocks like naphtha, propylene, and benzene are produced by refineries and later transformed into plastics, synthetic fibers, medicine, and more, used in everyday products.
- Petroleum coke, still gas, lubricants, and waxes are all used for various industrial and consumer products.

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Source: Government of Canada

*Percentages reflect 2025 YTD average for Jan.-Oct.

Canadian Industry Overview

Major Crude Oil Refineries Operating in Canada

			Crude Refining Capacity[1] *(MB/d)*
PARKLAND	1	Burnaby Refinery	55
TIDEWATER	2	Prince George Refinery	12
Imperial	3	Strathcona Refinery	197
	4	Scotford Refinery	100
SUNCOR	5	Edmonton Refinery	146
	6	Sturgeon Refinery	79
cenovus	7	Lloydminster Refinery[2]	29
	8	Moose Jaw Refinery[2]	22
CO-OP	9	Co-op Refinery	130
	10	Corunna Refinery	85
Imperial	11	Sarnia Refinery	123
SUNCOR	12	Sarnia Refinery	85
Imperial	13	Nanticoke Refinery	113
SUNCOR	14	Montreal Refinery	137
VALERO	15	Jean-Gaulin Refinery	230
IRVING	16	Irving Oil Refinery	320

- There are 16 active refineries in Canada (excluding upgraders), spanning the country from coast to coast, with a cumulative refining capacity of roughly 1.9 MMB/d.
- In Eastern Canada, refineries help service the large population centers of Toronto, Ottawa, and Montreal. Some of the country's first refineries were built in Sarnia, which still hosts three operating facilities today.
- In Western Canada, the large refineries are found near Edmonton and Alberta's Industrial Heartland. Some of these refineries have been configured to increase the consumption of synthetic crude oil (SCO) produced from the oil sands.

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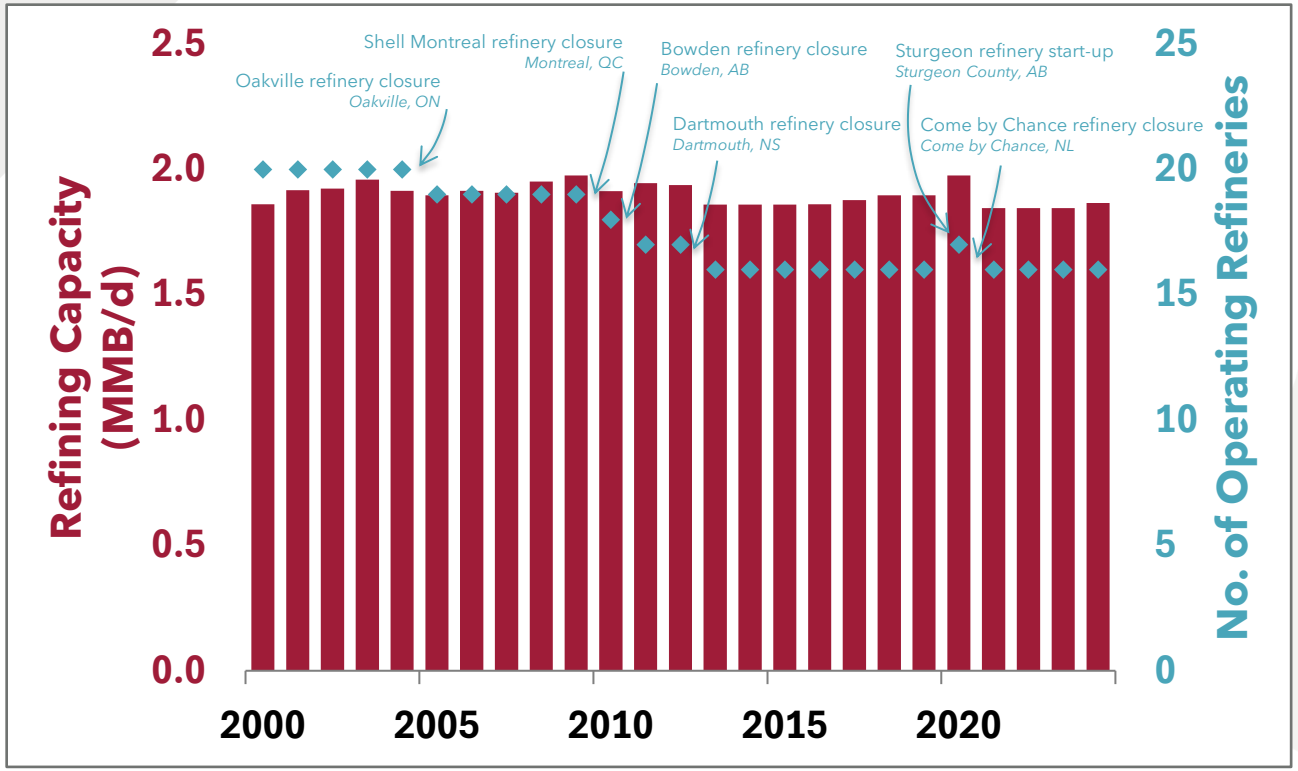
Source: Canada Energy Regulator, Company Reports

(1) Refinery capacities are current as of Jan. 2026
(2) Asphalt refinery

Canada's Operating Refineries and Total Capacity

Annual | 2000 to 2024

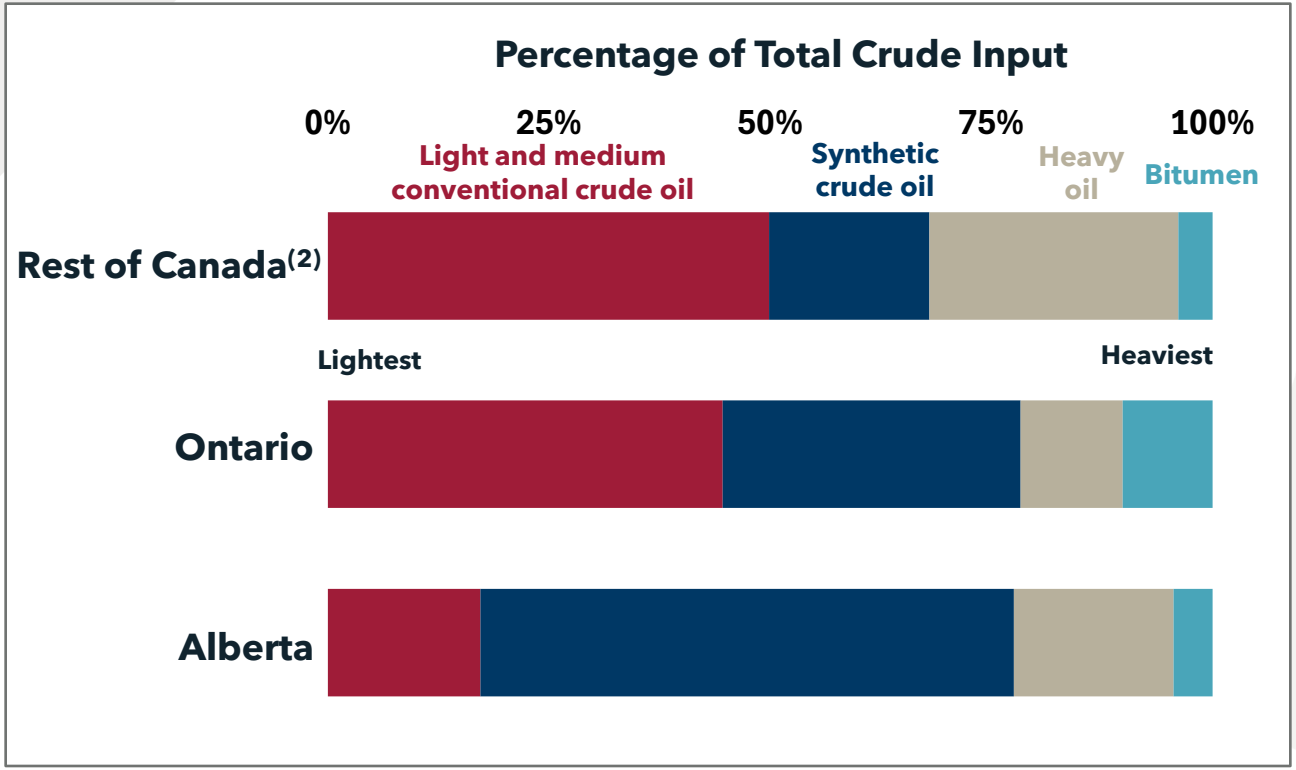


- Canada's refining capacity has stayed relatively flat since 2000 despite a net reduction in the total number of operating refineries from 20 to 16.
- Several refineries have shut down in Quebec and Eastern Canada, with the Come by Chance refinery being the latest closure.
- The Sturgeon refinery in Alberta was the first refinery built in Canada in over 30 years and began refining bitumen into diesel in 2020.
- Irving Oil Ltd., owner of Canada's largest refinery, will remain a stand-alone company after ruling out a sale of the family-owned operation.

Source: Canada Energy Regulator, North West Refining

Canadian Refining Configurations by Region

Annual | 2025(1)



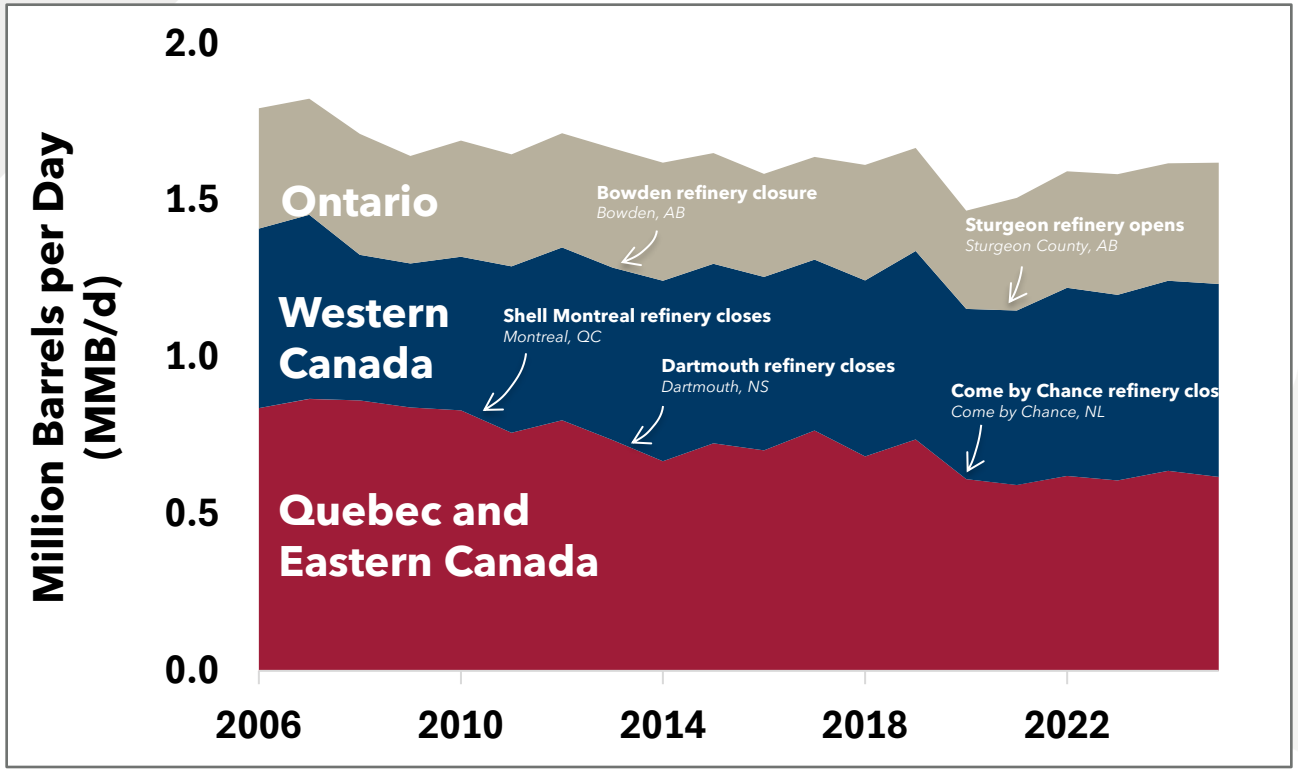
- Refineries are configured to handle specific blends of crude oil. Most of Canada's refinery capacity is less complex and, therefore, cannot convert heavy crude oils into refined products.
- Refineries in Ontario, Quebec, and Eastern Canada were designed to handle more light conventional oil, typical of Eastern Canadian production, synthetic crude oil (SCO), and U.S. imports.
- Western Canadian refineries have been designed to handle conventional light and SCO (a very light oil produced by upgraders in the oil sands). A relatively small amount of heavy oil and bitumen can be refined.

Source: Statistics Canada. Table 25-10-0063-01, CrudeMonitor

Note: Approximate APIs – Light oil > 30°API ; SCO 30-35°API; medium oil 22-30°API; and heavy oil < 22°API
(1) 2025 YTD average is for Jan.-Oct.
(2) Aggregate data for refineries in Quebec, New Brunswick, Saskatchewan, and BC has been accounted for in the 'Rest of Canada' category.

Average Canadian Refinery Crude Oil Runs

Annual | 2006 to 2025*

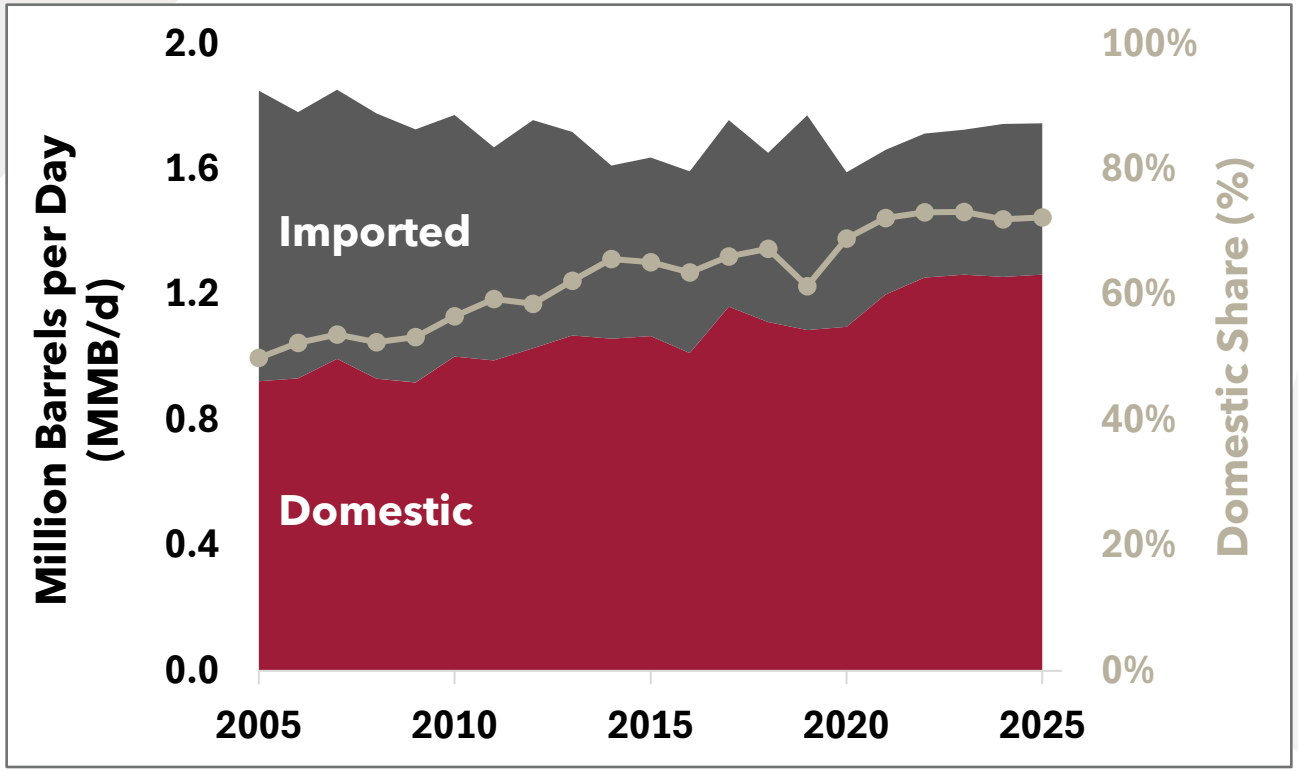


- Over the past two decades, Canada has reduced the amount of crude oil it refines domestically, down 10% since 2006.
- The drop has predominantly come from Quebec and Eastern Canada, which has seen the closure of three major refineries since 2006.
- Western Canadian refining has been slightly up since 2006. Although the Bowden refinery was closed (6,700 B/d), the opening of the Sturgeon refinery (50,000 B/d) more than offset the loss.

Source: Canada Energy Regulator; *2025 YTD average is for Jan. - Oct.

Canadian Refinery Throughput by Origin of Crude

Annual | 2005 to 2025*

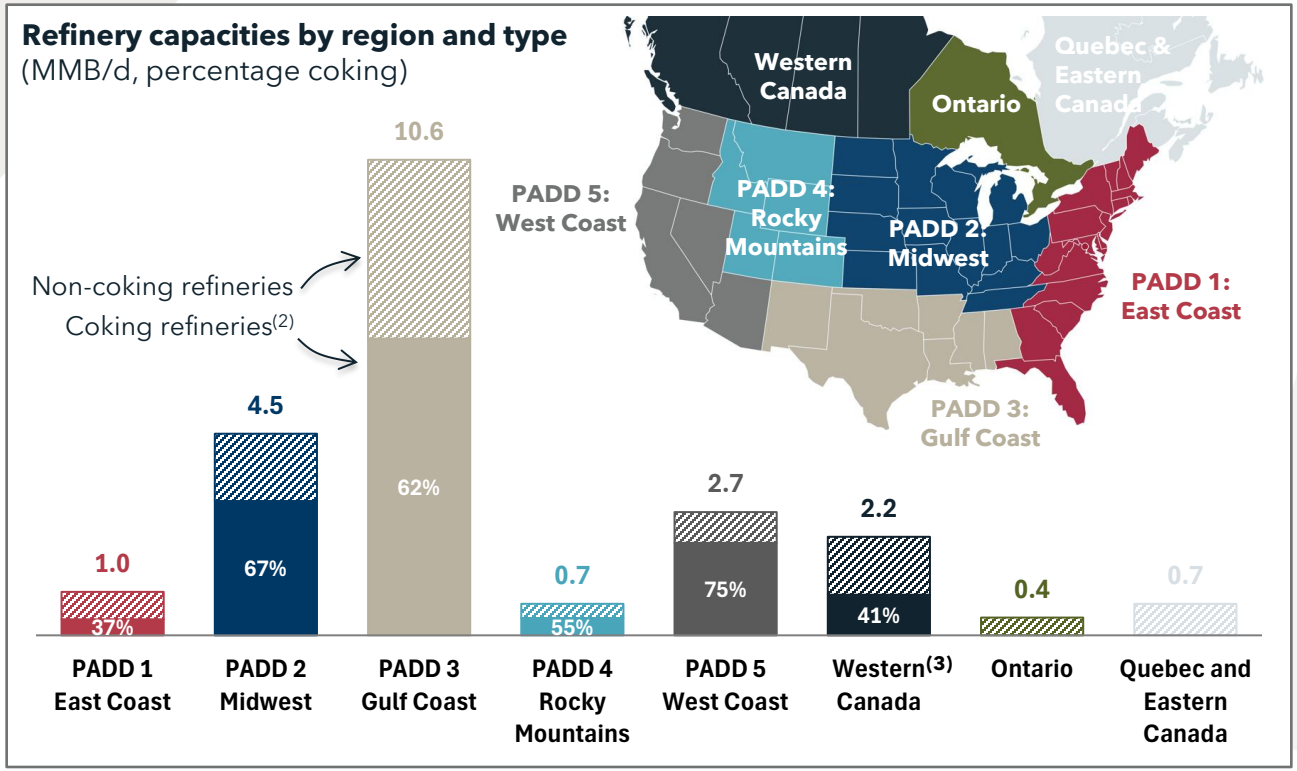


- Canada has increasingly supplied its refineries with domestically produced oil, accounting for nearly three-quarters of refinery throughput in 2025*.
- Crude oil imports have reduced because of the closing of several refineries in Eastern Canada, which had relied on foreign oil.
- Additionally, the opening of the Sturgeon refinery in Alberta allowed Western Canada to refine more of its own domestically produced crude oil.

Source: Statistics Canada. Table 25-10-0063-01; *2025 YTD average is for Jan. – Oct.

North American Refining Capacities(1)

By Region and Complexity



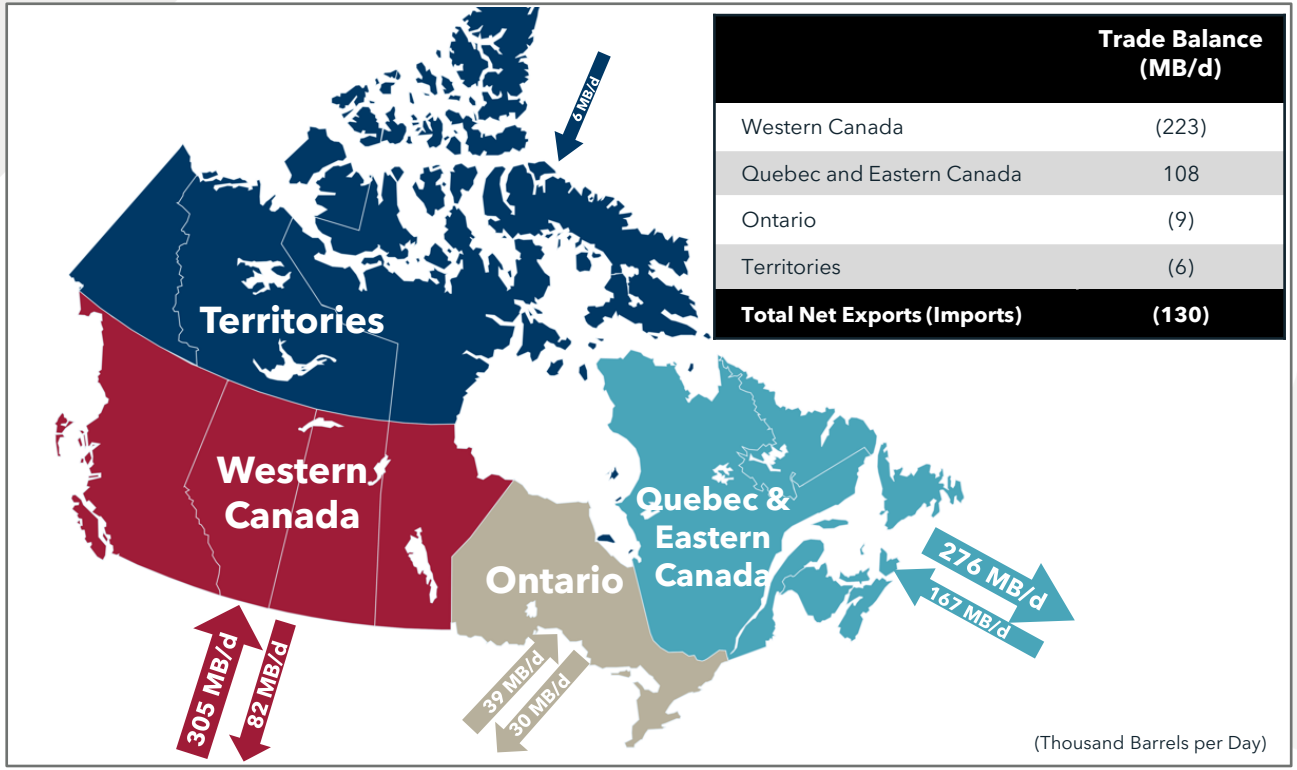
- The regions with high amounts of 'coking' refineries can convert larger amounts of heavy oils into light refined products.
- Many of the U.S. refineries in PADD 2 (Midwest) and PADD 3 (USGC) were designed specifically to handle heavy oils, originally to process Mexican and Venezuelan crude oils that have been gradually substituted for more Canadian heavy oil.
- PADD 5 (West Coast) can also process heavier oils. Canada has expanded its market access to this region due to the Trans Mountain Expansion Project.
- The U.S. depends on Canadian heavy oil for its refinery feedstock, given its complex refineries, pipeline connectivity, and few alternatives.

(1) Refinery capacities are current as of January 1, 2026
(2) Assumes any refinery with a coker that is more than 10% of the crude unit capacity can consume some amount of heavy oil
(3) Western Canada data includes five Upgraders with aggregate processing capacity of ~1.4 MMB/d

Source: North American Cooperation on Energy Information, U.S. Energy Information Administration

Regional Refined Petroleum Product Trade Balance

*Annual | 2025**



	Trade Balance (MB/d)
Western Canada	(223)
Quebec and Eastern Canada	108
Ontario	(9)
Territories	(6)
Total Net Exports (Imports)	**(130)**

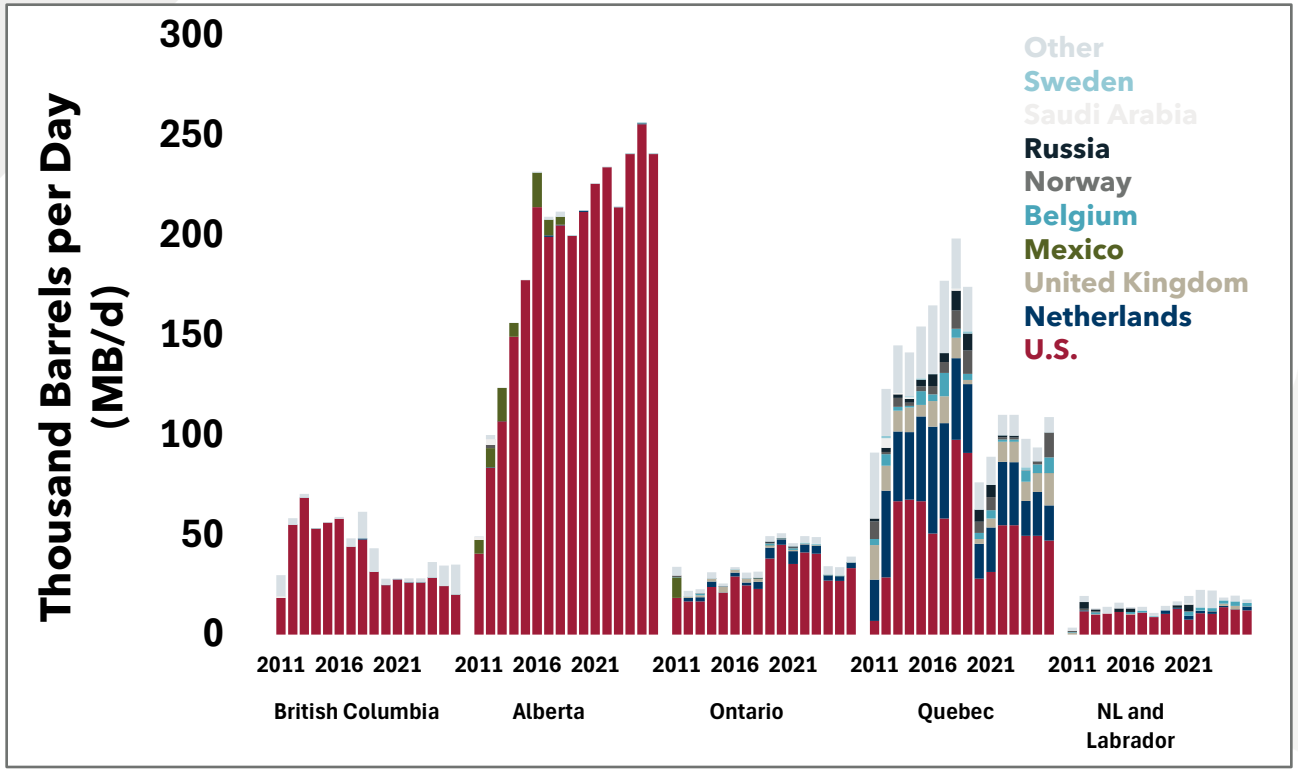
- Canada and the U.S. are highly integrated and interdependent in our refined product trade.
- 2025* YTD, Canada was a net importer of approximately 130 MB/d of refined petroleum products, predominantly out of Western Canada. Alberta imports are mostly condensate(1), which is used to blend with heavy bitumen to transport the blended bitumen by pipeline.

Source: Canadian International Merchandise Trade Database
*2025 YTD average is for Jan.-Oct.

(1) Per Canadian International Merchandise Trade Web Application classification:
2710.12.90.99 - Light oils and prep,o/t alkylenes/lubricating oils put up pack f retail sale,nes

Canadian Refined Petroleum Product Imports by Province

Annual | 2011 to 2025*



- The trade dynamic on refined petroleum product (RPP) imports in Canada changes considerably from west to east.
- In Western Canada, almost all RPPs come from the U.S. By contrast, both Quebec and Newfoundland and Labrador are highly dependent on foreign, overseas RPP imports.
- Alberta imports are mostly condensate(1), which is used to blend with heavy bitumen to transport the blended bitumen by pipeline.

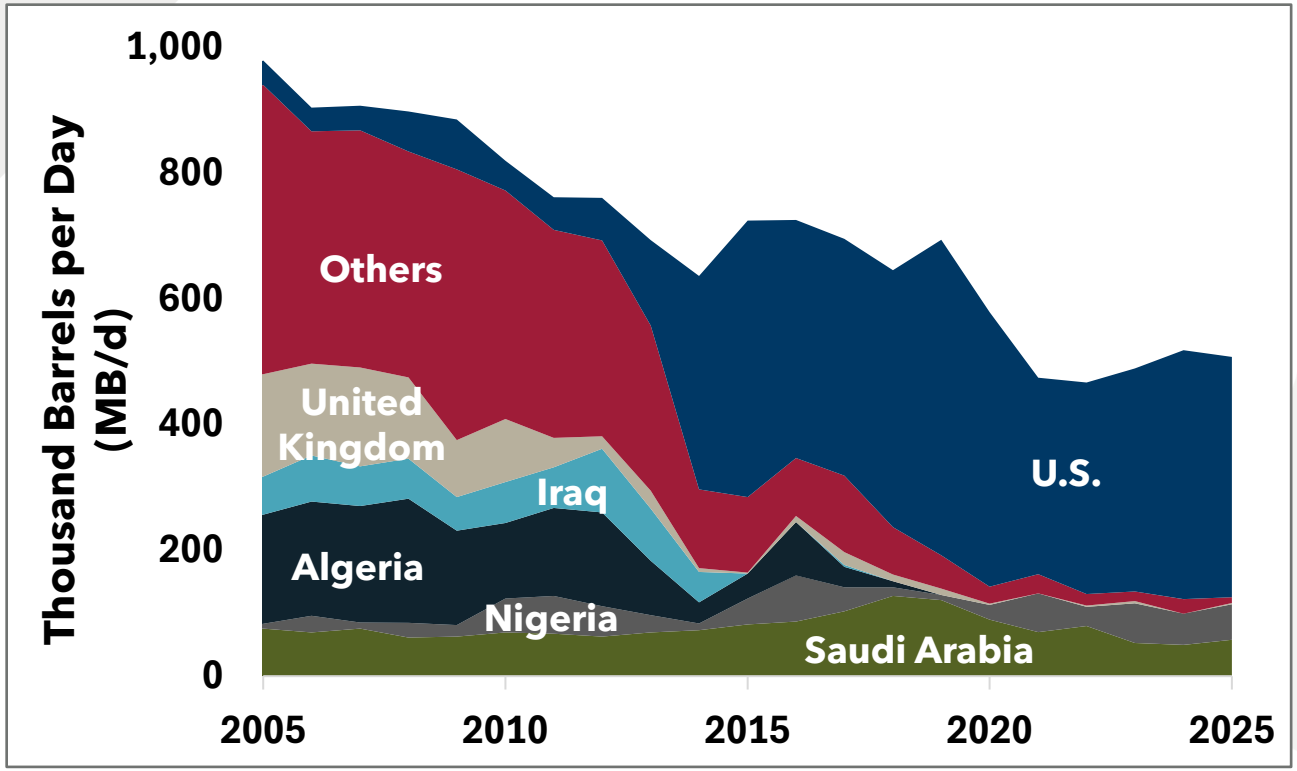
Source: Canadian International Merchandise Trade database, Canada Energy Regulator
*2025 YTD average is for Jan.-Oct.

(1) Per Canadian International Merchandise Trade Web Application classification: *2710.12.90.99 - Light oils and prep,o/t alkylenes/lubricating oils put up pack f retail sale,nes*

Energy Security

Total Canadian Foreign Oil Imports by Country

Annual | 2005 to 2025*

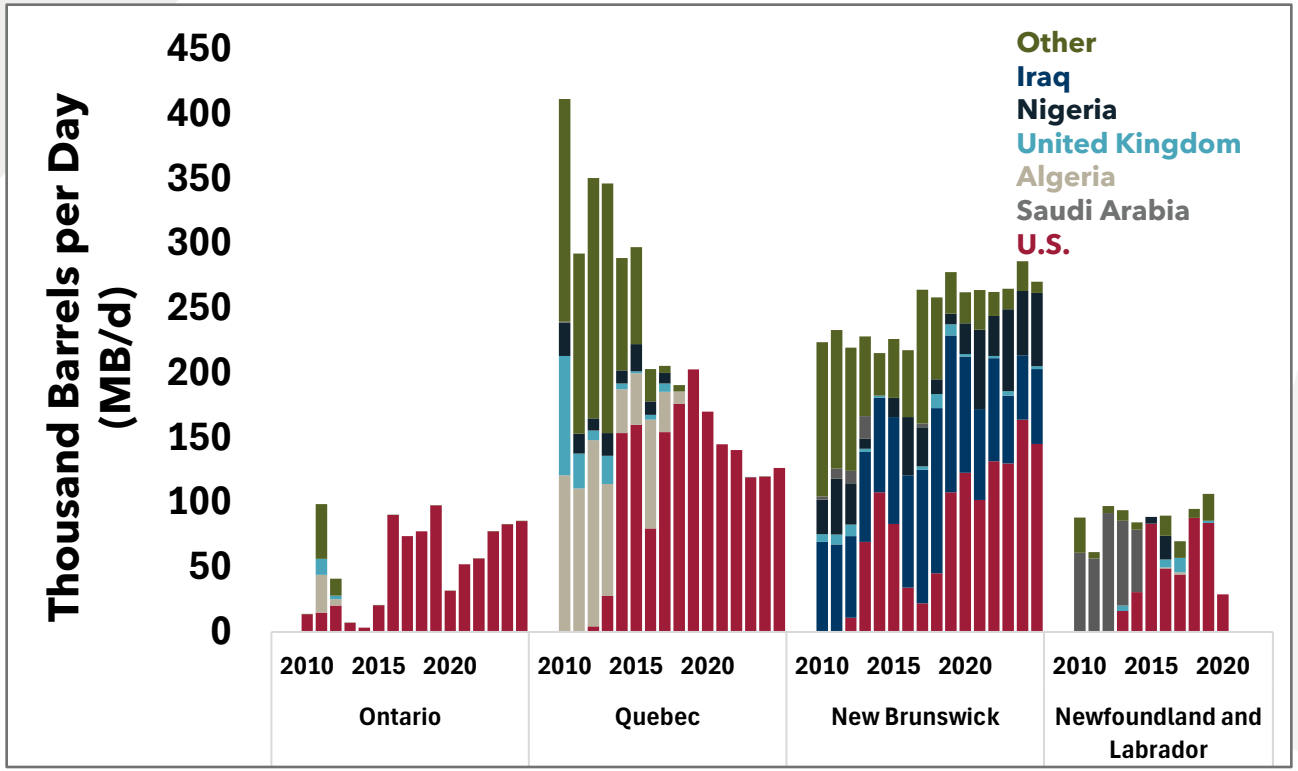


- Canada has increased its energy security by reducing overall reliance on foreign oil imports. Since 2005, oil imports have been reduced by roughly 50%.
- Further, the share of imports coming from the U.S. has grown more than seven times since 2010.
- Most provinces import nearly exclusively from the U.S. The only Canadian refinery that still relies heavily on overseas imports is the Irving Oil refinery in New Brunswick.

Source: Canadian International Merchandise Trade Database; *2025 YTD average is for Jan.-Oct.

Canadian Crude Oil Imports by Province

*Annual | 2010 to 2025**



- Canada still imports significant volumes of crude oil. In 2025*, over 500,000 B/d of foreign oil was imported, with roughly 25% still coming from overseas imports.
- With the closure of the Come by Chance refinery, New Brunswick now receives almost all of the overseas imports.
- Quebec and Ontario are highly dependent on the oil delivered from the Enbridge Mainline. This presents an energy security risk to the region, which would be exposed if pipeline flows from the Mainline were curtailed. For example, Ontario would have suffered a crude oil shortage if the state of Michigan stopped the operation of a key part of the Mainline (Line 5).

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Source: Canadian International Merchandise Trade Database; *2025 YTD average is for Jan.-Oct.

Enbridge Mainline Pipeline

Critical Energy Infrastructure for Canada

Originating in Edmonton, Alberta, the Enbridge Mainline moves crude oil, refined products, and natural gas liquids through a connected pipeline system. At Superior, Wisconsin, the system splits into Line 5, going north of Lake Michigan, and Lines 6, 14, and 61, going around the southern tip of the lake. The two routes then coalesce and terminate in Sarnia, Ontario, where it is interconnected with Line 9, which is terminated in Montreal, Quebec.

- The Enbridge Mainline is Canada's largest transporter of crude oil, accounting for roughly 70% of all Western Canadian Sedimentary Basin exports to Eastern Canada and the U.S. Midwest markets.
- The original pipeline was built in 1950, connecting Edmonton, Alberta to Superior, Wisconsin. The line was then extended in 1953 to connect to Sarnia, Ontario. There have since been many offshoots and other lines that go south or east, connecting to refineries across Eastern Canada and the U.S. Midwest.
- Prior to constructing the Enbridge Mainline, several politicians, including C.D. Howe, pushed for an all-Canadian route north of the Great Lakes to increase Canadian energy security by linking Western Canada's supply with refineries in Ontario and Montreal. However, the routes through the U.S. were chosen because of lower project costs and faster timelines.
- After the initial line connecting Edmonton to Superior was completed, C.D. Howe said of its energy security role, the pipeline was "an essential factor in our preparedness program for the defense of Canada."

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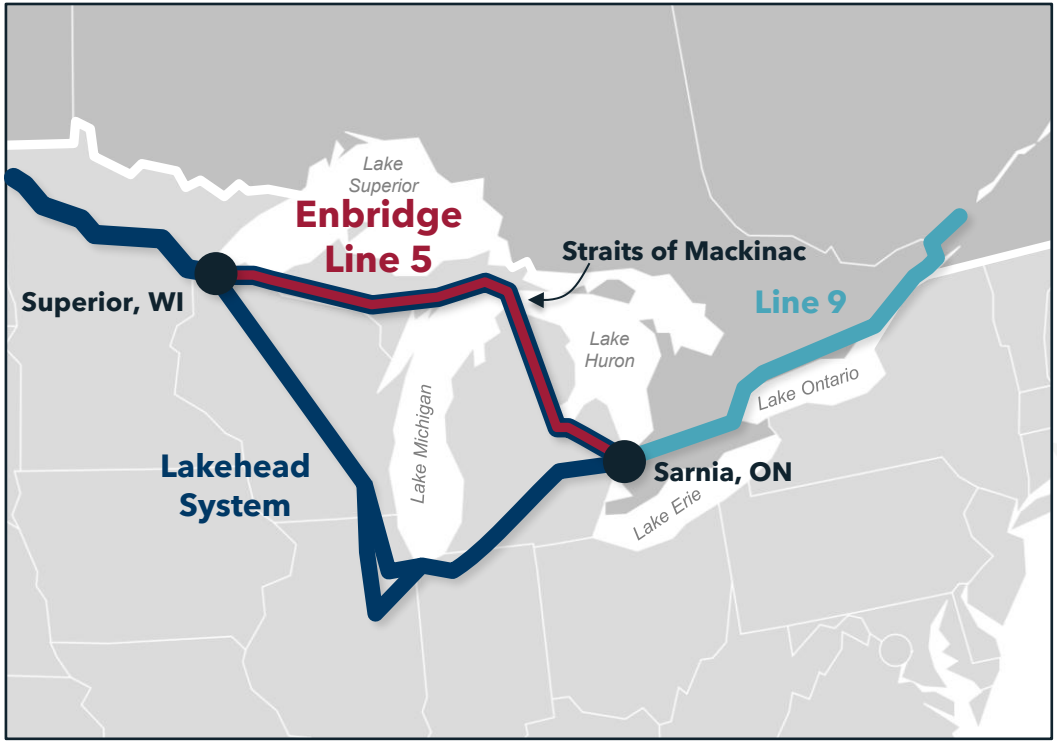
Source: Canada Energy Regulator, Enbridge

Enbridge Line 5 Pipeline

Illustrating Canada's Energy Security Risk



The Enbridge Line 5 pipeline is a strategic piece of Canadian infrastructure, delivering crude oil to key refineries in eastern provinces and states. The future operations of the pipeline were challenged by the State of Michigan in 2021.

- The Enbridge Line 5 pipeline is a critical link for Ontario and Quebec to receive crude oil. In 2021, Michigan's governor ordered a shutdown of the pipeline, which would have caused energy shortages in Eastern Canada. This situation illustrates the risk of Canada's key infrastructure transiting the U.S.
- Line 5 is part of the Enbridge Mainline system and one of the offshoots of the Lakehead System. The pipeline transports up to 540,000 B/d of crude oil and natural gas liquids. It moves more than half of the crude oil used in Ontario and 66% of what gets consumed in Quebec. It's also critical for Ohio and Michigan to provide heating oil and propane.
- In 2021, Michigan Governor Gretchen Whitmer ordered a shutdown of Line 5 due to concerns about a pipeline leak and potential oil spill under the Straits of Mackinac that could affect the Great Lakes.
- In December 2023, Michigan regulators approved a key permit that would protect the Great Lakes by encasing the pipeline in a concrete tunnel under the Straits of Mackinac. This would allow the pipeline to continue operating and delivering crude oil to Eastern Canada.

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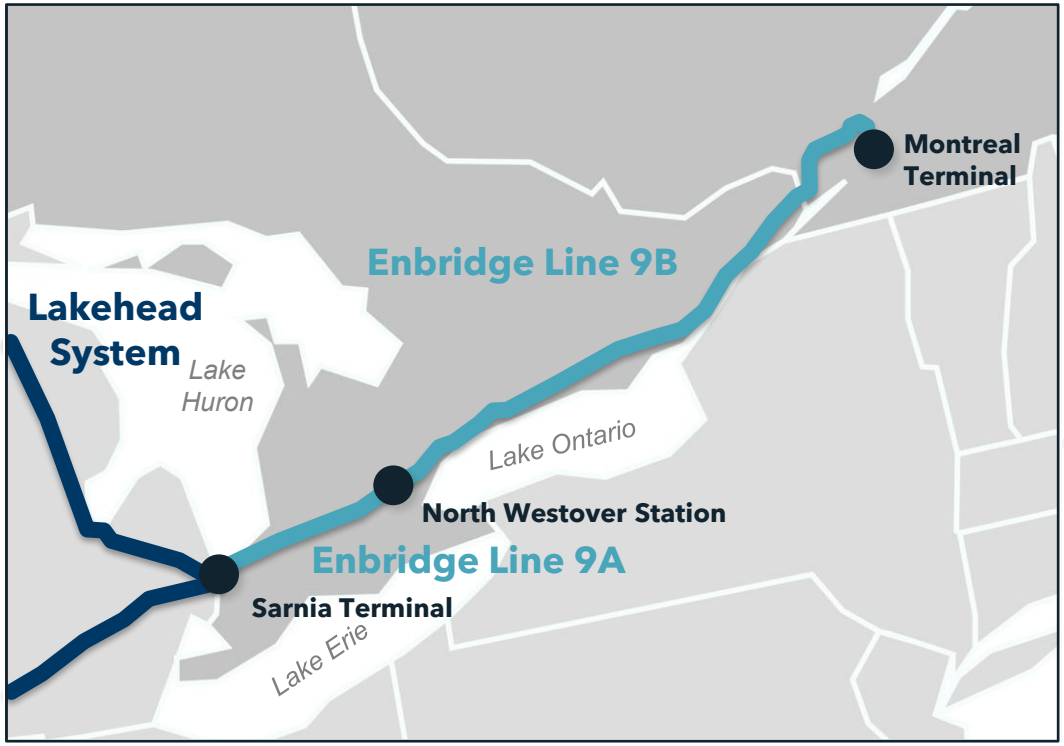
Source: Canada Energy Regulator, Reuters

Enbridge Line 9 Pipeline

A Lesson About Canadian Energy Security



The Enbridge's Line 9 pipeline connects refineries in Sarnia to Montreal. The flow of oil through the pipeline has been reversed multiple times.

- **1976**: Line 9 opens, built for energy security purposes and to carry Western Canadian and U.S. crude oil to refineries in Quebec.
- **1999**: By the 1990s, there was a lack of crude oil from Western Canada (before the growth from the oil sands) and oil delivered by the pipeline could not compete with overseas supply, being economically more attractive. Therefore, the flow of Line 9 was reversed by Enbridge to transport crude oil from Montreal to refineries in Sarnia. This made Ontario more dependent on overseas oil but also provided optionality for the region versus Canada and the U.S. only.
- **2012-2015**: When crude oil from Canada and the U.S. became abundant following the growth of the oil sands and shale plays, the flow was reversed again. The reversal happened in two phases, starting with Line 9A and then 9B. This allowed crude oil from Western Canada and the U.S. to once again feed refineries in Quebec and displace overseas oil.

These reversals teach an important lesson: projects built for energy security won't work if the economics and supply availability aren't supportive.

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Source: Canada Energy Regulator

Biorefineries in Canada

Key Sustainability Policies Affecting Canadian Refineries

Clean Fuel Regulations

In the summer of 2023, the federal government enacted the *Clean Fuel Regulations* (CFR), rules that are meant to reduce the carbon intensity of fuels used in Canada.

- The regulation requires that the carbon intensity for gasoline and diesel are reduced by approximately 15% (below 2016 levels) between 2023 and 2030.
- To comply with the CFR, primary suppliers have options for compliance including reducing GHG emissions in liquid fossil fuel facilities (including upstream producers who take eligible actions), supplying or importing low carbon intensity fuels (including biofuels), or end-use fuel switching (e.g., EV chargers). Biofuels are expected to play a significant role in compliance.
- The Parliamentary Budget Officer expects the CFR to increase the cost of gasoline by up to 17 cents per litre and diesel up to 16 cents per litre by 2030.

Large-emitter policies

In 2018, the federal government enacted the *Greenhouse Gas Pollution Price Act* (GGPPA), often referred to as the carbon tax.

- The GGPPA contains two parts: a consumer fuel charge, and a large-emitter regulation affecting industrial emissions, including refineries.
- The policy allows provinces to write and enact their own alternative policies, many of which have done so.
- The large-emitter policy is based on an Output Based Pricing System, where facilities have emissions limits based on their product output and a set benchmark. The GHG benchmark intensity stringency is increased over time.
- The fuel charge under the GGPPA was removed effective April 1, 2025.

Biofuel blending mandates

Several provinces and the federal government have set biofuel blending mandates for both gasoline and diesel with the goal of reducing fuel emissions. The Federal CFR requires a minimum of 5% for gasoline and 2% for diesel.

- The primary biofuel blended into gasoline is ethanol, while biodiesel is the predominant diesel replacement.
- Mandatory alternative fuel blends into gasoline across the country include British Columbia (5%), Alberta (5%), Saskatchewan (7.5%), Manitoba (10%), Ontario (10%)(1), and Quebec (10%)[1].
- For diesel, the alternative fuel blend rates for different provinces includes British Columbia (4%), Alberta (2%), Saskatchewan (2%), Manitoba (5%), Ontario (4%)[1], and Quebec (3%).(1)

- The biofuels blending mandates and CFR promote the development of biofuels and other low-carbon fuels for blending and replacement.
- The large-emitter GHG reduction policies and CFR encourage a reduction in direct emissions from refineries, through electrification, carbon capture and storage, or other means of reducing site emissions.
- The GGPPA and CFR are designed to ramp up in stringency over time for increasingly strict emission targets.

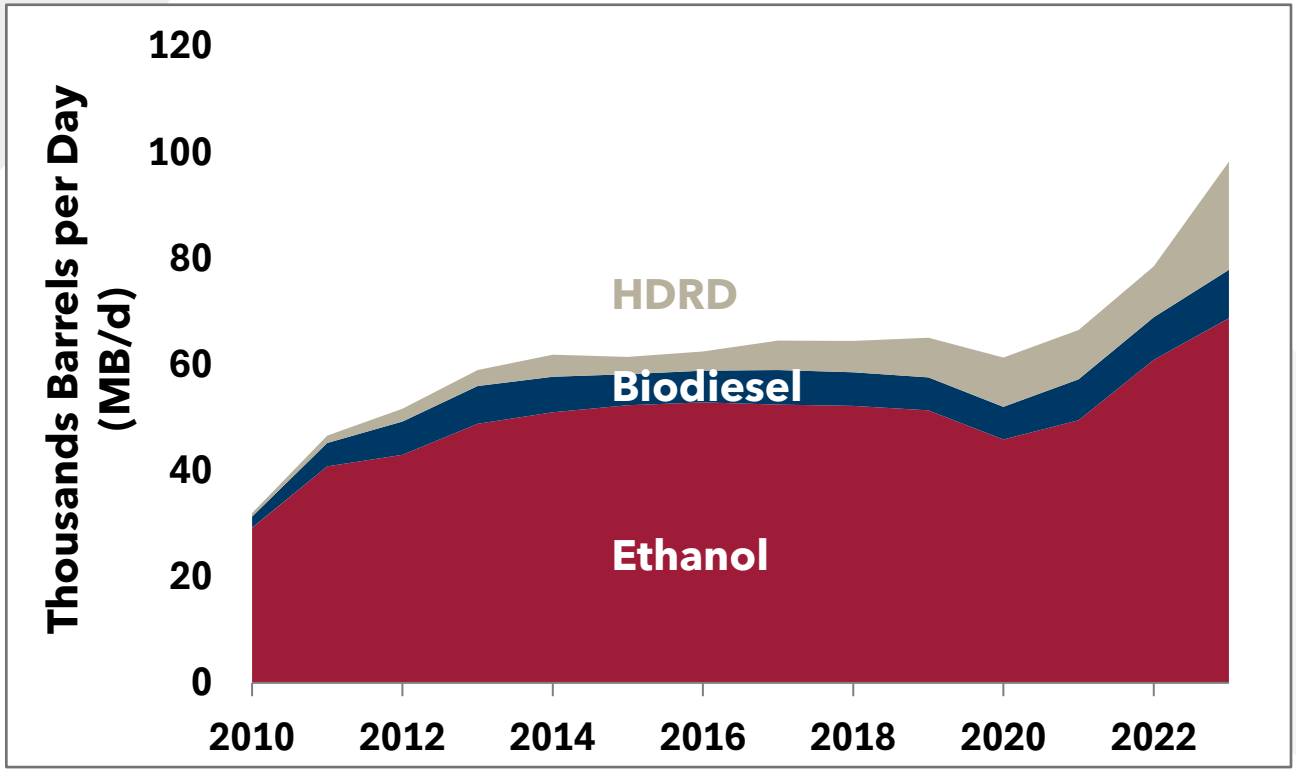
CAPP

Source: Government of Canada, Canada Energy Regulator

(1) Ontario and Quebec both increase their blending requirements over time

Canada Biofuel Consumption

Annual | 2010 to 2023e(1)



- Federal and provincial governments have enacted biofuel blending mandates.
- For gasoline, they range from 5% to 10% across the country. Ethanol is typically the fuel of choice for gasoline blending.
- For diesel, the mandates range from 2% to 5%. Biodiesel can be blended at lower rates, while hydrogenation-derived renewable diesel (HDRD) is chemically identical to diesel refined from crude oil and, as such, has no blending limit.
- The *Clean Fuel Regulations* (came into force in 2023) are expected to increase the consumption of biofuels in Canada.

Source: Advanced Biofuels Canada – National Summary Report 2024

(1) 2023 values are estimates