

Do Tariffs Threaten Energy Reliability?

Canadian Energy Reliability Council

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1 Introduction

Tariffs on Canada-U.S. cross-border transactions may have significant economic implications for both countries. This is particularly true when it comes to energy. In perhaps a nod to this reality, in the February 1, 2025 Trump Administration Executive Order, the U.S. imposed a lower tariff on energy than other goods. In response, Canada imposed no tariff at all on energy, although it did impose tariffs on other items.

While there has been much coverage of these economic implications in the media on both sides of the border, little has been said about the consequences for energy reliability. Do tariffs affect energy reliability? If so, how do they affect it?

Prior to these announcements we tended to think not of a Canadian energy system or a U.S. energy system so much as a highly interdependent North American system. The threat of tariffs has called that interdependence into question.

The energy system that serves both Canada and the US has evolved in a cooperative fashion. In many cases companies that extract and transport energy operate in both countries and they rationalize their operations based on where the source is, where the customers are and the logistical and geographical challenges of transportation distribution.

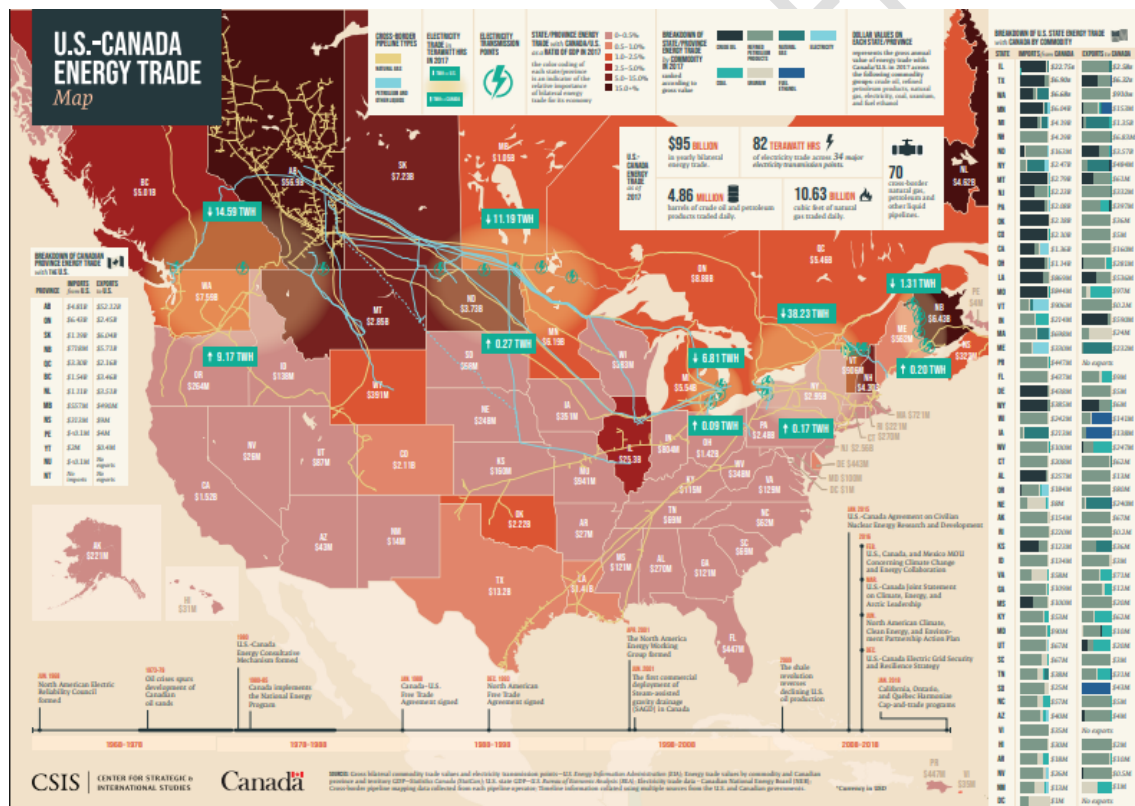
For example, Enbridge's main pipeline control room is located at in Edmonton, Alberta, Canada. This control room monitors and manages the operations of the Enbridge pipeline network, which spans across Canada and the United States. In this article we will see other examples of how the two countries depend on each other for the production and provision of reliable energy.

However, it is not only private-sector companies that have built this integrated energy network. Energy cooperation also has deep roots in the political systems of both countries. One example is the Columbia River Treaty. Although the initial motivation was to provide flood control for communities near the mouth of the river, through the cooperative efforts of the two federal governments, the Columbia River and its tributaries now generate significant electricity in both Canada and the United States, with numerous hydroelectric dams on the river system. The total installed capacity across the Columbia River Basin is approximately 36,000 megawatts (MW), making it one of the largest hydroelectric systems in the world.

The imposition of tariffs threatens to not only disrupt energy flows as the system reconfigures to avoid price disruptions, but also to significantly undermine the trust and cooperation necessary to maintain a shared, reliable energy infrastructure.

2 How much energy crosses the US-Canadian border?

the U.S. are each consumed (uranium). Our two-
 ters a year-on-year
 energy exports comp
 while the precise p
 and 15% of the total

US-Canada Energy Trade²

¹ <https://www.international.gc.ca/country-pays/us-eu/relations.aspx?lang=eng>, 2025.

² US-Canada Energy Trade, Centre for Strategic International Studies, https://csis-website-prod.s3.amazonaws.com/s3fs-public/publication/180507_us_canada_energy_trade.pdf

Overall, estimates are that about 5–10% of the total energy consumed in Canada is imported from the United States, with Refined Petroleum Products (RPP) being the largest imported energy category at around 20% of total Canadian consumption of RPP.

The overall percentage of U.S. energy consumption sourced from Canada is estimated at approximately 10-15%. Figures for 2023 show that Canada supplies 24% of the total crude oil processed in U.S. refineries, about 9% of the U.S. natural gas consumption and less than 1% of U.S. annual electricity consumption.³

These are enormous amounts of energy that both countries would need to find to serve its own needs if supply was either too highly priced or otherwise unavailable

2.1 Electricity

For the better part of two decades, Canada has exported significantly more electricity to the United States than it imported. However, in the fall of 2023, electricity trade between the two countries became more balanced. Total electricity exports to the U.S. decreased from 42 TWh in 2022 to 15 TWh in 2023. Imports from the U.S. increased by 70% to an average of 1,809 GWh per month in 2023.^{4,5}

The shift was due partly to Canada's reduced hydropower generation, the country's primary source of electricity, as drought conditions reduced inflow to reservoirs in western Canada and lower precipitation in Quebec. In addition, lower natural gas prices in the United States reduced power prices, making U.S. electricity more competitive.^{7,8}

³ U.S. Petroleum Trade: Crude Oil Imports from Canada and Mexico and Potential Tariffs, Congressional Research Service, February 2025,

https://crsreports.congress.gov/product/pdf/IN/IN12488?utm_source=chatgpt.com

⁴

https://www.cer-rec.gc.ca/en/data-analysis/energy-markets/market-snapshots/2024/market-snapshot-electricity-trade-trends-affected-by-recent-low-precipitation.html?utm_source=chatgpt.com

⁵ Canada-U.S. Energy Trade: Top 10 Facts, Canada Action,

https://www.canadaaction.ca/canada-united-states-energy-trade-facts?utm_source=chatgpt.com,

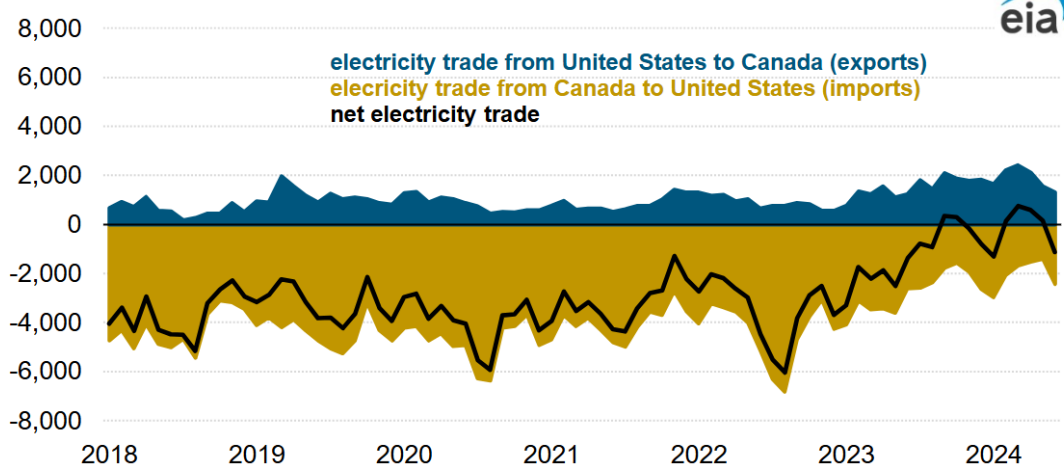
⁶ Market Snapshot: Overview of Canada-U.S. Energy Trade, Canada Energy Regulator,

https://www.cer-rec.gc.ca/en/data-analysis/energy-markets/market-snapshots/2025/market-snapshot-overview-of-canada-us-energy-trade.html?utm_source=chatgpt.com

⁷ US Energy Information Administration, <https://www.eia.gov/todayinenergy/detail.php?id=63684>

⁸ <https://www.eia.gov/todayinenergy/detail.php?id=63684>

Monthly electricity trade between the United States and Canada (Jan 2018–Jun 2024)
gigawatthours



Data source: U.S. Energy Information Administration, Form EIA-111, *Quarterly Electricity Imports and Exports Report*

Imports and exports vary by province.^{9 10}

Province	Exports (TWh)	Imports (TWh)	Notes
Quebec	13.3	1.3	Exports decreased due to lower precipitation impacting hydroelectric generation.
Ontario	13.9	<1	Stable trade dynamics with significant exports.
British Columbia	6.6	16.8	Imports increased due to lower hydroelectric generation caused by reduced precipitation.
Manitoba	7.2	2.0	Consistent exports and moderate imports.
New Brunswick	5.5	<1	Minimal imports with stable exports.
Newfoundland & Labrador	1.6	<1	Limited imports with modest exports.
Alberta	<1	0.9	Small-scale imports and exports.
Saskatchewan	<1	<1	Limited electricity trade activity.
Nova Scotia	<1	<1	Minimal trade activity overall.

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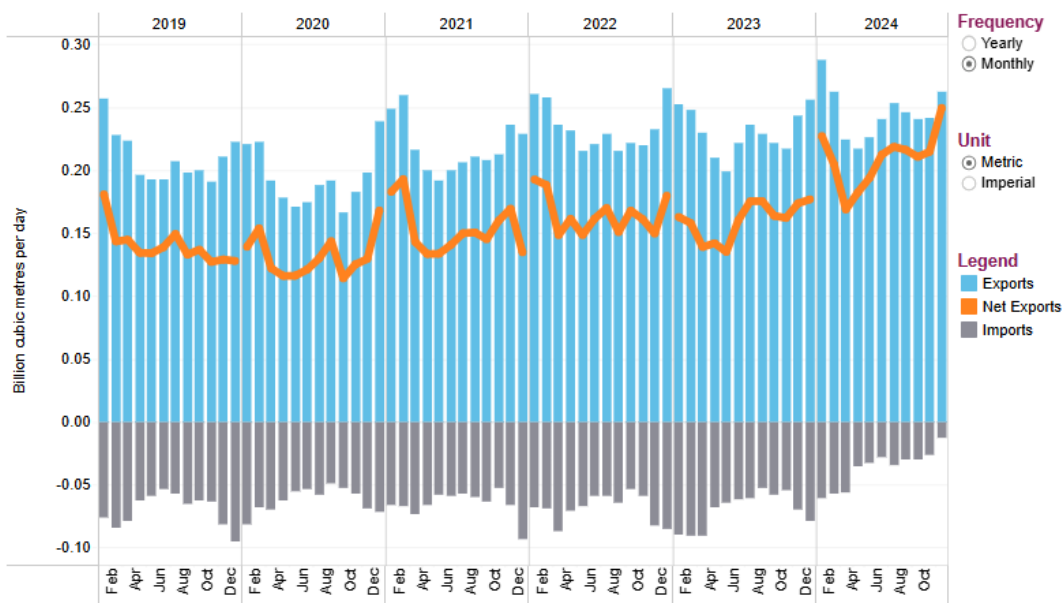
<https://www.cer-rec.gc.ca/en/data-analysis/energy-markets/market-snapshots/2024/market-snapshot-electricity-trade-trends-affected-by-recent-low-precipitation.html>

¹⁰ <https://www.eia.gov/todayinenergy/detail.php?id=63684>

Although imports and exports fill important needs for customers on both sides of the border, the net effect is that both countries import less than 1% of their overall electricity consumption. However, the 1% number belies the importance of cross border electricity transactions to support reliability and integrate growing amounts of renewables on the grid. We will look further at this in section 3 of this article.

2.2 Natural Gas

Net Natural Gas exports from Canada to the US are significantly larger than imports as the figure below illustrates.¹¹

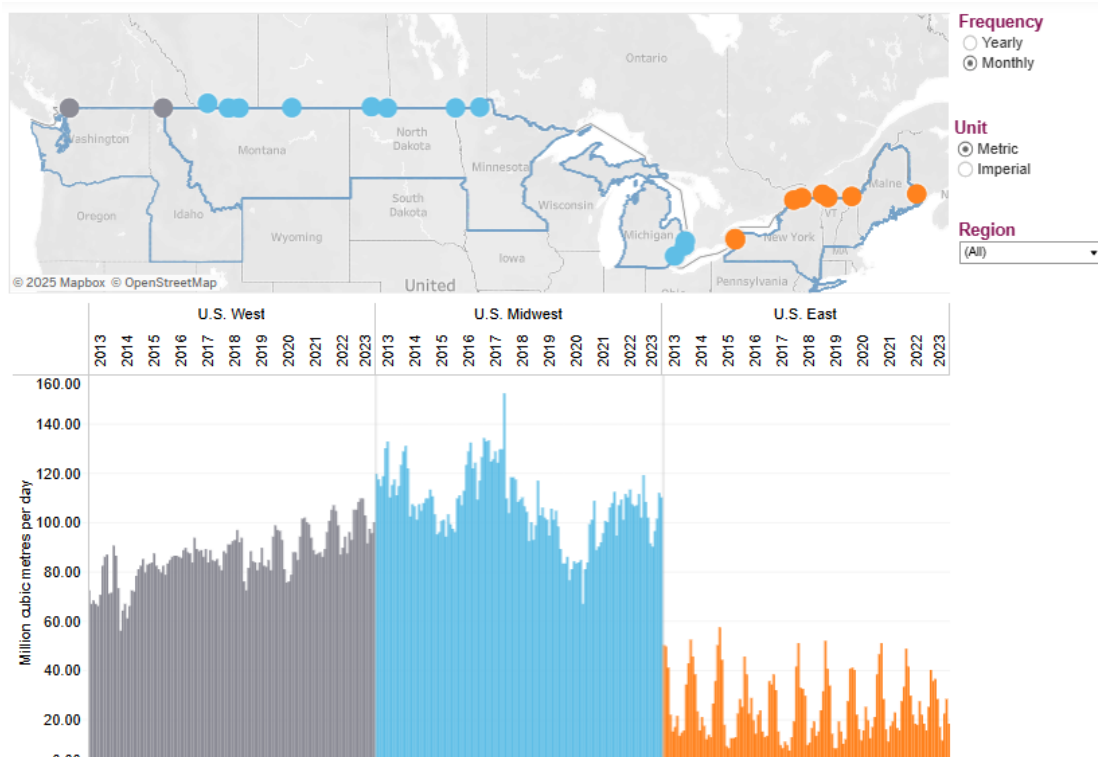


Most exports go to the US West and Midwest as shown below.¹² This reflects pipeline constraints and the proximity of these regions to major production regions in the Western Canada Sedimentary Basin (WCSB). The WCSB, located in Alberta and British Columbia, is the largest natural gas-producing region in Canada.¹³

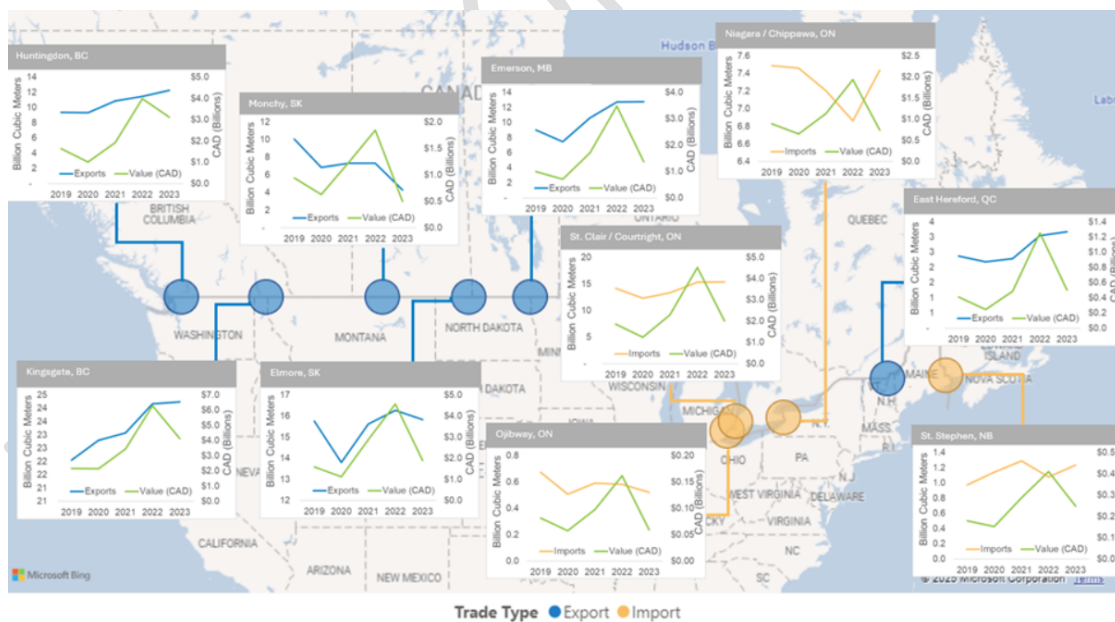
¹¹ Natural Gas Trade Summary, 2024 Canadian Energy Regulator
<https://www.cer-rec.gc.ca/en/data-analysis/energy-commodities/natural-gas/statistics/natural-gas-trade-summary/index.html>

¹² Natural Gas Trade Summary, 2024 Canadian Energy Regulator
<https://www.cer-rec.gc.ca/en/data-analysis/energy-commodities/natural-gas/statistics/natural-gas-trade-summary/index.html>

¹³ Natural Gas Trade Summary, December 2024, Canadian Energy Regulator,
<https://www.cer-rec.gc.ca/en/data-analysis/energy-commodities/natural-gas/statistics/natural-gas-trade-summary/index.html>



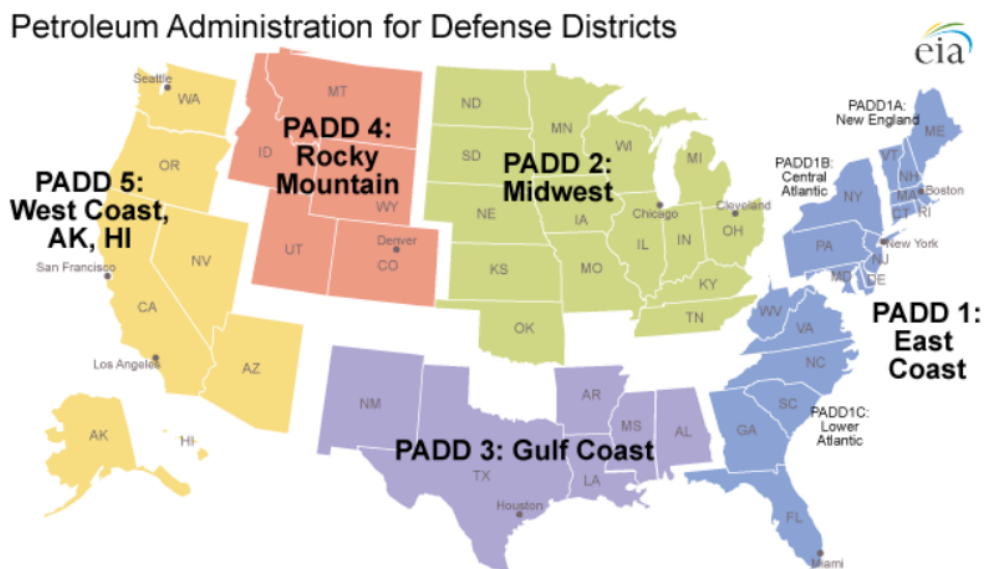
However, Canada also imports natural gas, particularly in the east as the chart below shows.



We will look at the reliability issues of this cross border flow in Section 3 of this article.

2.3 Crude Oil

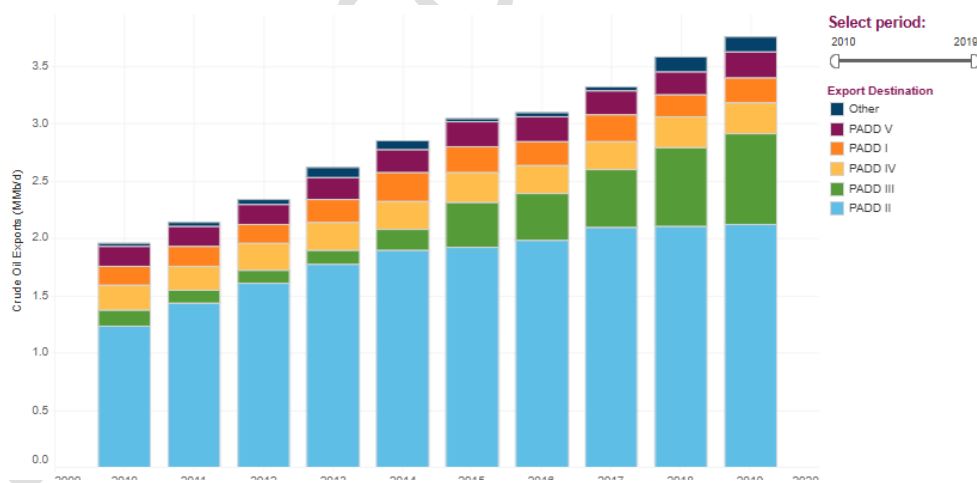
Turning to crude oil, the figure below shows refinery capacity in the US by Petroleum Administration for Defense Districts (PADD) district. PADDs are geographic aggregations of the 50 States and the District of Columbia into five districts.¹⁴



Source: U.S. Energy Information Administration.

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The figure below shows the volume of crude oil exported from Canada to the US.¹⁶



¹⁴Today in Energy, US Energy Information Administration, <https://www.eia.gov/todayinenergy/detail.php?id=4890>

¹⁵ Market Snapshot, 2019, Canadian Energy Regulator, <https://www.cer-rec.gc.ca/en/data-analysis/energy-markets/market-snapshots/2019/market-snapshot-canadian-crude-oil-is-mainly-exported-two-regions-in-united-states.html>

¹⁶

<https://www.cer-rec.gc.ca/en/data-analysis/energy-markets/market-snapshots/2019/market-snapshot-canadian-crude-oil-is-mainly-exported-two-regions-in-united-states.html>

Over three quarters of Canada's crude oil exports go to PADDs II and III (the U.S. Midwest and Gulf Coast) (Figure 1). PADD II has 25 refineries, as well as access to multiple pipelines transporting crude oil from the Western Canada Sedimentary Basin (WCSB). Canadian exports to PADD III—which has 53 refineries—have continued to grow despite lack of available pipeline capacity from the WCSB.

PADD V mainly receives Canadian crude oil that is transported from British Columbia to Washington refineries. PADD I, being further away from western Canada has limited access to Canadian crude oil, except by tankers from offshore Newfoundland and Labrador. PADD IV has less refining capacity and is partially supplied by some small pipelines exporting crude oil from western Canada.

Although Canada is significant net exporter of crude oil, it also imports around 20% of its total crude oil consumed. Data from January through November 2025 indicate that of total Canadian crude imports of approximately 508 MB/d, the US supplied approximately 375 MB/d, or 74%, of these imports.^{1718 19} We will look further at the implications of these imports in section 3 of this article.

2.4 Refined Petroleum Products (RPPs)

Canada imports RPPs because some parts of the country lack the infrastructure to refine all the oil it produces. Canada's refineries produce more than the country can consume, but regional variations in refining capacity are significant, as the figure below shows.²⁰ In addition, seasonal demand for RPPs can exceed production capacity, also driving imports.

¹⁷ Statistics Canada – Canadian International Merchandise Trade Application

¹⁸

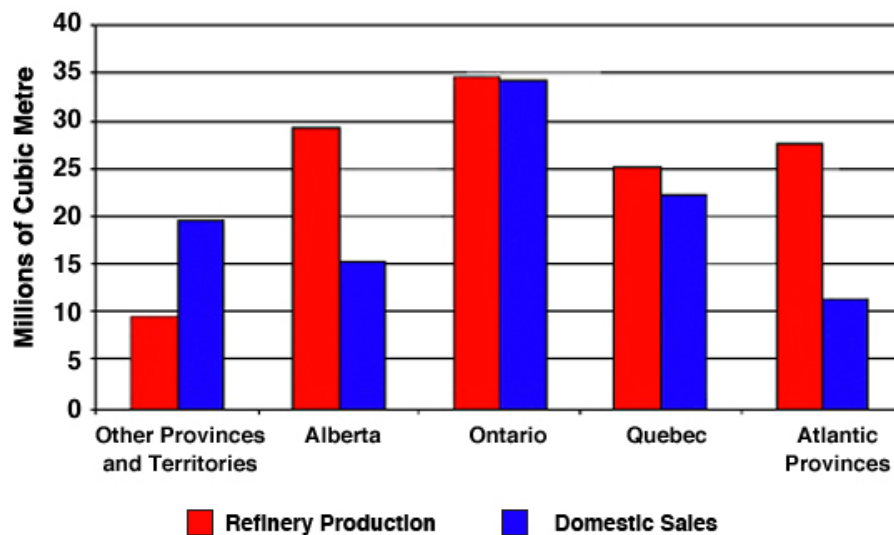
https://www.statista.com/statistics/566837/crude-oil-imports-to-canada-by-region-of-origin/?utm_source=chatgpt.com

¹⁹ Canadian Energy Regulator, Market Snapshot: Crude oil imports rose slightly in 2023, for the first time since 2019 , June 2024,

<https://www.cer-rec.gc.ca/en/data-analysis/energy-markets/market-snapshots/2024/market-snapshot-crude-oil-imports-rose-slightly-2023-first-time-since-2019.html>

²⁰ Statistics Canada 45-004, 2004.

<https://natural-resources.canada.ca/energy-sources/fossil-fuels/refining-sector-canada>



2.5 Propane

Propane, while a smaller part of the energy mix, is an important part. Canadians and Americans rely on it for a variety of purposes, from home heating and cooking to agricultural crop drying and fueling vehicles. In particular, it is a common source of heating fuel for residences and businesses that are not served by natural gas pipelines.

According to the Canadian Propane Association, about 50 per cent of propane produced in Canada is consumed in Canada, the rest is exported. Export markets include the US and overseas. Some sources estimate that Canada provides about 4 percent of U.S. propane supply.²¹

3 How do energy trades support energy reliability?

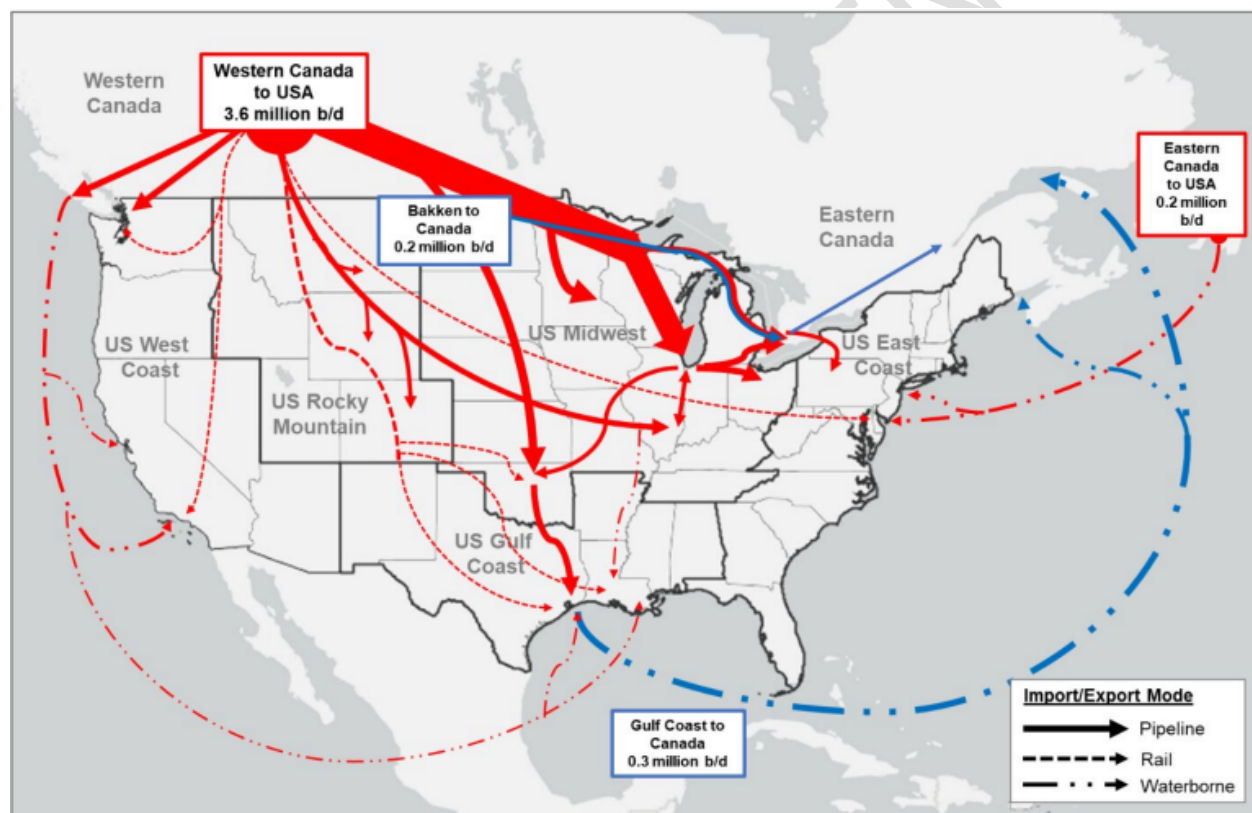
Transboundary infrastructure plays a critical role in what could be characterized as a "shared" energy system that has evolved to enable Canada and the U.S. to lean on each other to provide for delivery of reliable energy of all kinds.

Over 100 oil and natural gas pipelines and electricity transmission lines, move massive amounts of energy back and forth reliably, supporting investment, industry, jobs and consumers. About 94% of Canada's crude oil exports to the U.S. are carried in transboundary pipelines (about 4 million barrels per day in 2023) to refineries in the US, traditionally the mid-west and the gulf coast, which are optimized to refine Alberta crude.

²¹ Rail strike, big propane export numbers explained, LP Gas, August 26, 2024.
<https://www.lpgasmagazine.com/rail-strike-big-propane-export-numbers-explained/>

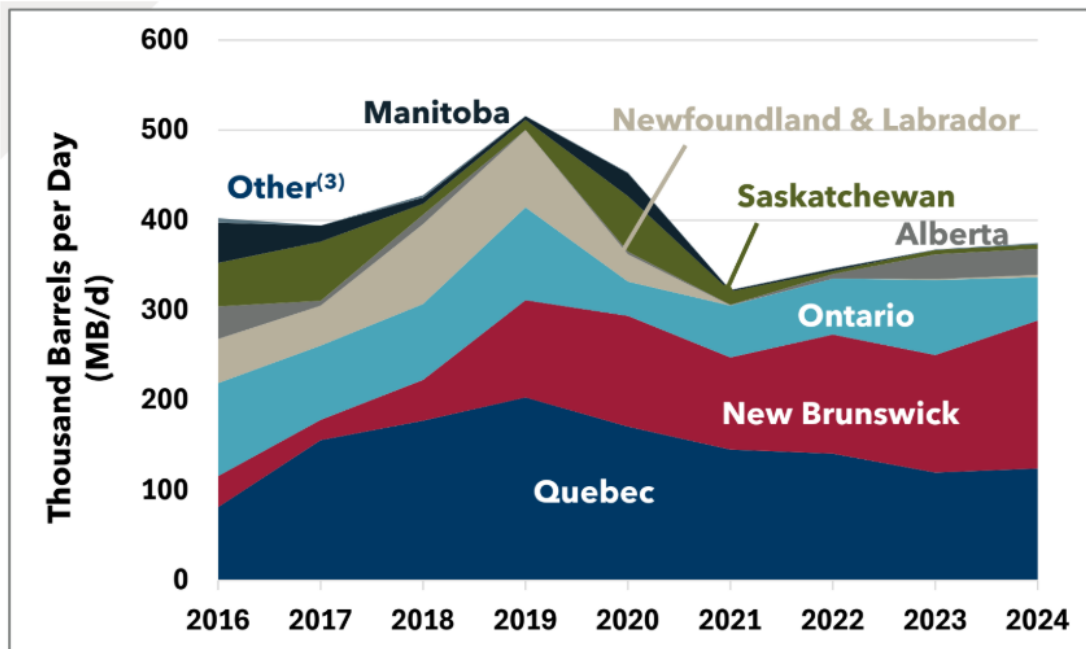
However, since the Trans Mountain pipeline expansion between the Alberta oilfields and the port of Vancouver recently opened, increasingly US west coast refineries are also refining Alberta crude. The TMX expansion tripled the original pipeline capacity between Alberta and west coast ports – with more than half that increase going to U.S. west coast refineries. As of July 2024, there was a year-to-year 115% increase of Canadian crude oil refined by U.S. west coast refiners to 498,000 barrels per day.

Further illustrating the integration of Canadian and US petroleum infrastructure, the American Petroleum states that “the U.S. and Canadian crude oil and refining markets have become increasingly integrated as Canadian crude oil from Western and Eastern Canada has flowed south to refining markets in every region of the United States, and as U.S. crude oil from the Gulf Coast and Bakken regions have flowed north and east, respectively, to the refining markets in Eastern Canada”.



of Canada rely on US crude. New Brunswick, Quebec, and Ontario account for most of the US crude oil imports New Brunswick, 165 MB/d (44%) Quebec, 124 MB/d (33%) Ontario, 48 MB/d (13%) The reversal of Line 9 in the 2010s has made Ontario and part of Quebec completely dependent on crude oil transited through the US and has made Eastern Canada completely reliant on US imports.²²

²² Statistics Canada – Canadian International Merchandise Trade Application



Further, as pointed out above, some 20% of RPP are imported from the U.S. – arising from a lack of sufficient refinery capacity in Canada.

In 2023, Canada exported nearly 3.0 trillion cubic feet of natural gas to the US - enough gas to supply 58% of the total gas consumed in the residential sector in the US. This is also equivalent to about 40% of our total gas production. There are at least 13 US States in which 30% of their gas supply originates from Canada; Idaho, Montana, Washington, and Vermont rely on Canada for over 90% of their natural gas supply.

Canada also benefits from imports from the US - in 2023, almost 1 trillion cubic feet of gas was imported, equivalent to 70% of the total gas consumed in Canada's residential and commercial sectors. Eastern Canada is highly reliant on US imports; 55-60% of gas into the region come from the US.

Despite growing to be the largest LNG exporter, the US continues to be a net-importer of Canadian natural gas. Imports from Canada are equal to 80% of the export capacity of all US LNG terminals - the flow of Canadian gas to northern states enables much of the US domestic production to flow south to LNG terminals on the Gulf Coast,

The electricity system is also tightly integrated. Its development has largely supported electricity trade between Canada and the US and, as a result, most electricity in Canada flows north-south and not east-west.

Electricity trade is important to take advantage of temporal differences in the differences between demand and supply. Electricity exchanges remain relatively small, representing less than 1% of each country's total generation. However, the trade is important to grid balancing—constantly matching electricity consumption to electricity production—and helping to shore up electricity supply during low hydropower production periods.²³

Matching electricity production to consumption is particularly important with the increasing proportion of intermittent renewable generation on the grid. With wind for example, geographical dispersion is a critical factor to ensure a reliable supply. As long as Canada's electricity grid remains aligned north-south and not east-west, the United States is the beneficiary of the geographic dispersion Canada provides and Canada benefits from firm electricity from the US.

Diversity of supply also helps to mitigate the intermittency of solar generated electricity. For example, hydroelectric utilities in the Pacific North West - including British Columbia - buy solar generated electricity from the US desert southwest during the day, when prices are typically low and even sometimes negative. They sell it back at night after the sun goes down when solar generators are no longer producing, and prices are higher. Throughout, these hydroelectric utilities' reservoirs act as a big battery.

Most natural gas flows north-south. Increasingly, as coal generators are retired, they are replaced by natural gas. In addition, gas prices have been favourable and combined-cycle generation technology has improved the efficiency of natural gas generation plants. Canadian natural gas powers a lot of this new generation.

It also couples the natural gas and the electric system even more tightly than it was before. This was illustrated a few years ago when an incident on the main north-south natural gas pipeline in Western Canada significantly reduced flows. Electricity prices immediately spiked in the western US and Canada.

Losing the mutual reliability provided by our integrated energy system would be enormously expensive to both countries, both in terms of the cost to replace the energy needed and the cost of any energy shortages and lost load. Increasing energy costs in turn creates another threat to reliability – energy that one can't afford can hardly be described as reliable energy. In addition, increased energy costs can lead to the postponement of needed spending on infrastructure maintenance and replacement.

²³ US Energy Information Administration, <https://www.eia.gov/todayinenergy/detail.php?id=63684>

4 Do tariffs threaten energy reliability?

As Electricity Canada points out, the whole electricity system has been built around tariff-free trade of electricity, and introducing tariffs will be hugely disruptive. Business decisions have been made based on the affordability and availability of electricity, and not just for our sector, but also in the U.S., for industries that a lot of energy as well. If tariffs are introduced, that has a ripple effect.²⁴ The same can be said for the entire energy system.

The imposition of tariffs would in all likelihood result in changes to our shared energy system, raising the potential for the two markets to disconnect and raising the need to retool either country to be less dependent on policy acts which are hostile to this seamless cooperation. It is fair to assume that the larger the tariffs the more the change.

However, even if tariffs are avoided, the threat of tariffs may undermine the long-standing cooperative approach that is taken by both countries. Already Canadian premiers and the federal government are talking about developing alternative markets. While it is unclear what exactly this means, for energy it could demand more pipeline infrastructure and port facilities to export crude oil. It may also accelerate the construction of east-west transmission in Canada.

It will all have huge implications. And not just for the flows of energy, but for the supply chains necessary to build energy infrastructure and deliver it. If China and Mexico retaliate with tariffs, as Canada already has, they could drive prices up along the whole supply chain also causing significant disruption to the energy system as it is critically dependent on parts manufactured from copper, steel, electronics and many other components.

5 Conclusion

Our energy system will likely eventually recover from any reconfiguration driven by a tariff dispute. Depending upon the length, the breadth and severity of that dispute recovery time could be long or short. And during the dispute, each side can potentially take escalating retaliatory measures that could include ever increasing tariffs all the way up to embargoes.

Fundamentally reconfiguring any complex system - building new pipelines to the west or east coast for example - would take many years even under the most optimistic scenario. Much is unknown about what happens in the short run. For example, will

²⁴ Manager of U.S. Affairs, Robin Yee. Electricity Canada, <https://www.electricity.ca/knowledge-centre/journal/electricity-trade-in-north-america/>

crude oil flowing from western Canada through Michigan to Sarnia continue as is or will it be taxed. If so, what impact would that have? Would power exchanges in the west be physically disrupted or simply become more expensive?

These are just two of many, many questions. Another important question arises from the reality that reconfiguring a complex system can have unintended consequences. How can we tell what they could be?

Unless these questions can be answered, the recovery period will likely result in an energy system that will be strained to deliver the reliability we all take for granted. And that will be a pain point for us all.

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