



Gasoline Prices Reached a Ten-Month Low, While Diesel Prices Reached a Six-Month High by the End of the Fourth Quarter

Following typical seasonal patterns, gasoline prices fell in the fourth quarter as refining margins contracted upon lower demand, while diesel refining margins expanded upon stronger demand, pushing diesel prices higher.

Global crude prices moved higher throughout the fourth quarter of 2019. Geopolitically-driven supply threats pressured global crude benchmarks higher early in the quarter, while an OPEC announcement in December of further production cuts beginning in 2020 pressured prices in the latter part of the quarter. Additionally, improvements in global economic indicators also pushed crude prices higher.

Despite climbing global crude prices, Canadian gasoline prices fell in the fourth quarter. Strong North American gasoline demand early in the quarter challenged inventories, contrary to typical seasonal patterns. Consequently, gasoline prices remained level in the first part of the fourth quarter before falling in December as demand waned and inventories expanded.

Diesel refining margins expanded early in the fourth quarter as demand picked up, causing inventories to contract at the start of the fall agricultural harvest season, all while the fall refinery maintenance season was in full swing. As refinery utilization picked in the second half of the quarter, however, and aided by a mild start to winter, distillate inventories expanded, and diesel margins began to shrink. Higher crude prices negated a shrinking diesel refining margin; however: retail diesel prices remained unchanged to finish the quarter. **Figures 1 & 2** show the historical movement of retail gasoline and diesel prices in Canada, along with their component prices.

The price of Brent crude (an international global benchmark) steadily climbed throughout the quarter, reaching 68.54 \$US/BBL by late December, an 11.8 percent gain from the start of the quarter. The key North American WTI benchmark saw similar movement, peaking at 61.74 \$US/BBL near the end of December, rising a total of 13.5 percent during the fourth quarter. Brent's premium to WTI remained fairly stable as both benchmarks moved in parallel most of the fourth quarter, averaging 5.9 \$US/BBL, 0.4 \$US/BBL above last quarter's average.

The spread between WTI and the Western Canadian Select (WCS) heavy crude benchmark saw significant growth during the fourth quarter as heavy crude inventories expanded, initially as a result of an unexpected shutdown of the Keystone pipeline following a leak in October. The pipeline moves Canadian crude to U.S. markets for export. In November, a CN Rail strike further exacerbated inventory levels. Consequently, the heavy/light crude differential expanded over 10 \$US/BBL in the fourth quarter, ending at 22.91 \$US/BBL.

Figure 1: Canadian Average Regular Gasoline and Component Prices

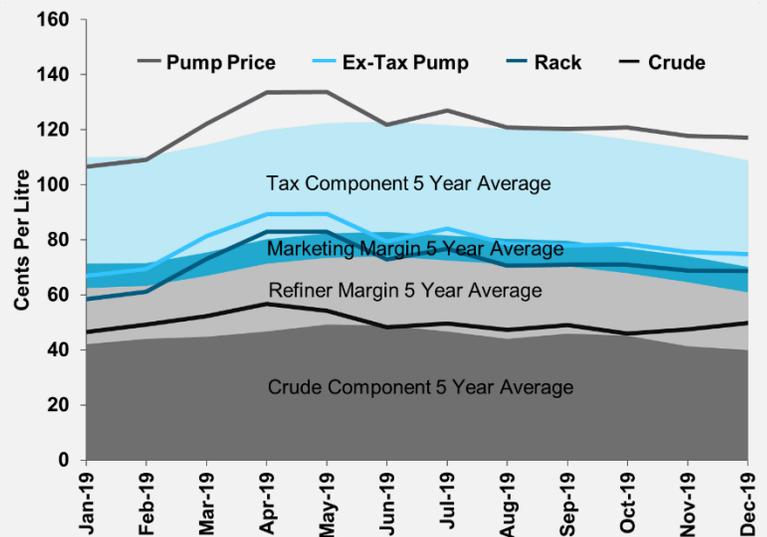
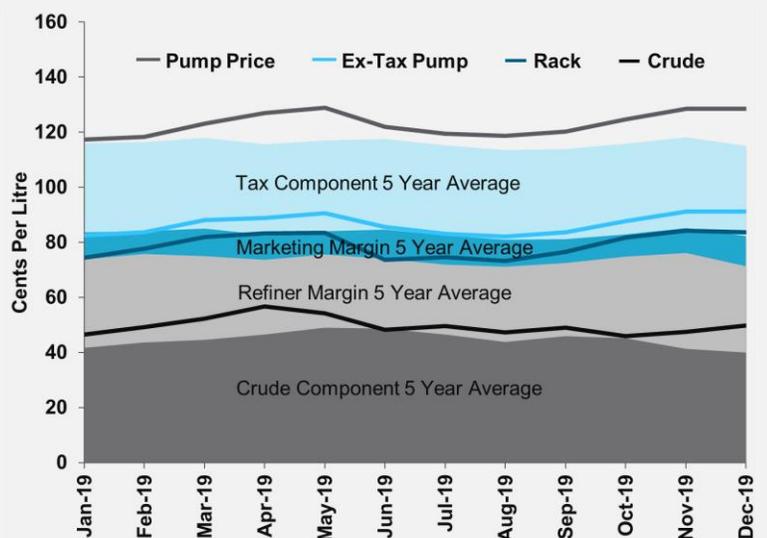


Figure 2: Canadian Average Diesel and Component Prices



Gasoline and Diesel Market Overview

Gasoline refining margins expanded early in the fourth quarter as wholesale prices were pushed higher on robust North American demand. As demand waned over the quarter, wholesale gasoline prices fell and refining margins contracted, as is typical when demand drops in winter months. Despite rising crude prices over the quarter, gasoline prices reached a ten-month low by the quarter's end.

Figure 3: Canadian Average Gasoline and Diesel Price Components for 4th Quarter 2019



The regional disparity between West Coast wholesale gasoline prices and the rest of Canada reached over twenty-five cents per litre in October before falling below twelve cents per litre by the quarter's end. West Coast gasoline prices, driven higher early in the quarter with U.S. west coast refinery issues, found relief later in the quarter as refineries came back online, causing prices to fall over twenty cents per litre. The West Coast has limited alternate supply options due to geographical isolation from the rest of the country and is consequently prone to price spikes.

Rising wholesale diesel prices early in the quarter expanded diesel refining margins to a twelve-month high by November, as fall agricultural sector demand challenged inventories. A mild December reduced demand for heating oil (a product similar to diesel fuel), causing distillate inventories to expand. Consequently, December's diesel refining margin contracted, but rising crude prices kept diesel prices level in December.

The West Coast wholesale diesel price premium to the rest of Canada expanded early in the quarter, pushed higher by refinery issues south of the border. The differential expanded by as high as nine cents per litre in October, before retreating by the quarter's end. Prairie province diesel wholesale prices experienced the greatest expansion over the quarter, rising nearly thirteen cents per litre from the end of the previous quarter. (Figure 3)

Next Quarter Market Outlook

Lower seasonal demand and ample supplies will likely keep winter gasoline prices at or below current levels in the next quarter. As spring approaches, however, producers will begin to build inventories in anticipation of the summer driving season and preparation for the spring refinery maintenance period. Therefore we could see gasoline prices begin to rise as we move closer to the end of the next quarter and into the second quarter.

Diesel prices are closely tied to heating oil demand due to their similar product specifications. With a mild winter start helping diesel inventories to build, we may see some downward movement in diesel prices in the next quarter. However, low East Coast production south of the border (due to an unanticipated refinery closure early last summer) will make Canadian East Coast diesel prices more susceptible to volatility due to the need for greater imports. Further into 2020, however, economic growth is expected to expand in western provinces in comparison to other parts of the country. Diesel demand is closely tied to economic growth, so we will likely see regionally higher prices in Prairie and West Coast provinces further into 2020.

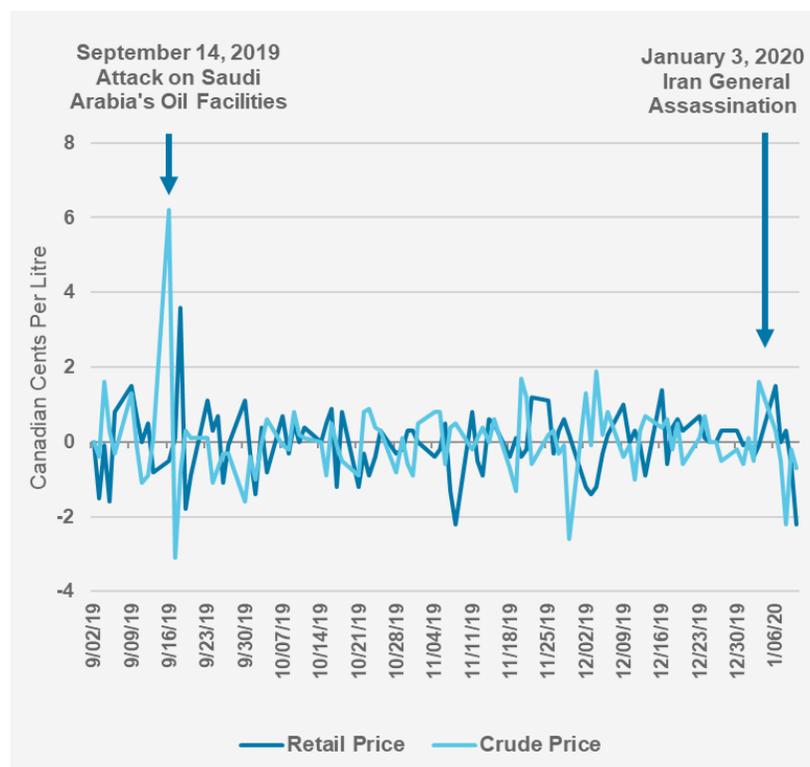
Geopolitical Risk Factors and the Effect on Gas Prices

Pump prices can be volatile, especially when there are greater geopolitical risk factors. Threats of war, times of political unrest, particularly in regions involved in the production of crude oil, or other actions such as terrorist attacks or sanctions, can dramatically affect crude prices, and ultimately the price consumers pay at the pump. In this section, we will explore the effect of geopolitical risk factors on pump prices over time and whether the effect of these concerns have lessened.

Figure 4 shows the daily change in Canada’s average crude and retail gasoline prices since September 2019, when there occurred two significant geopolitical events. The first that occurred was on September 14th when drones attacked a Saudi Arabian oil facility, affecting roughly five percent of total global crude oil production. Immediately, crude prices spiked, with the average Canadian crude oil price jumping 6.2 cents per litre on the first of trading day following the attack: it remained elevated for about two weeks before returning to the pre-bombing price. The effect on retail gasoline prices was delayed, rising just 3.6 cents per litre five days after the initial attack.

The second event that occurred was the January 3rd U.S. assassination of a prominent Iranian general. The effect on crude prices was to initially climb 1.6 cents per litre on the day of the assassination; however, prices soon fell below pre-assassination levels just a few days later. The effect on gasoline prices was similar, rising 1.5 cents per litre one day after crude prices rose, then falling back one week later. In other words, the effect of this geopolitical event was minimal and short-lived.

Figure 4: Canadian Average Daily Regular Unleaded Retail Price and Crude Price Change from Previous Day, September 2019 to Present



So how does this compare to geopolitical events that occurred in the previous decade, or within the last two or three decades? **Table 1** shows the number of one-day price spikes to Brent, a global crude benchmark, during the last three decades. Many of these steep increases to crude prices can be attributable to geopolitical events.

Table 1: Brent Crude Price Volatility 1990-Present

	# Instances One-Day Price Change Was Above 5%	# Instances One-Day Price Change Was Above 10%	Average Price Change (Percentage) (of those above 5%)	Average Price Change (Percentage) (of those above 10%)	Average \$US Dollars Per Barrel Price
1990s	50	9	7.72%	13.26%	\$18.35
2000s	69	7	6.83%	12.68%	\$49.46
2010s	33	3	6.84%	10.82%	\$79.35

Although the 2000s experienced the greatest number of steep price increases, the average price change was lower than in the 1990s. It would appear that the 1990s had more severe one-day crude price changes (as a percentage), but that the 2000s had less severe but more frequent steep price changes. The decade with the fewest and least severe changes was the most recent, indicating that geopolitical events have had less of an impact on petroleum prices than in previous decades. There have only been four events that caused the Brent crude price to climb in one day above five percent in the last three years. And most of the one-day steep increases during the last decade occurred in 2015 and 2016 (26 events above five percent), most likely a result of crude price volatility resulting from the crude price crash of 2015, as opposed to geopolitical events.

The largest one-day increase to Brent during the last three decades occurred on January 2, 2009, when the price jumped 19.88 percent in one day, attributable to tensions in the Gaza Strip at that time. Crude oil prices continued to rise in the days following, climbing over 33 percent before retreating; however, crude prices never did return to prior levels once tensions eased. Another significant event included the

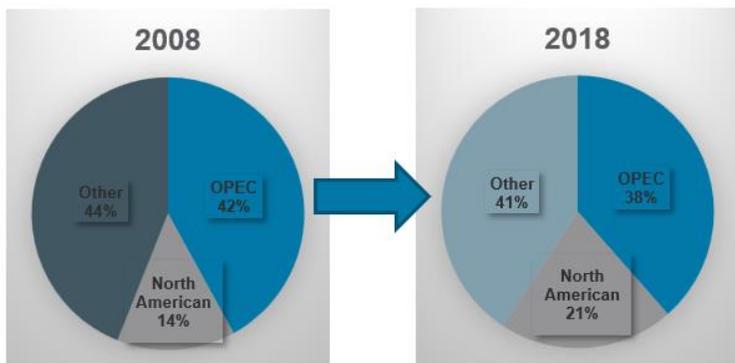
August 2, 1990 invasion of Kuwait, when crude prices rose 33 percent over five days. Prices did not return to pre-invasion levels until January 1991, a month of extreme volatility with the launch of Operation Desert Storm. During January 1991, crude prices climbed 18.93 percent in one single day, followed by another climb in crude prices two days later of 13.44 percent before falling 30.32 percent one week after the initial jump. The September 14, 2019 bombing in Saudi Arabia resulted in the ninth-largest one day increase in Brent crude prices in the last three decades at 11.71 percent, but as discussed earlier, crude prices returned to pre-attack levels within two weeks following.

Figure 5 shows that for most of the last decade, total world petroleum production had exceeded total world petroleum consumption, particularly from 2015 onwards: world production outpaced consumption by an average of 0.5 million barrels a day. Between 1994 to 2014, world production exceeded consumption by less, an average of 0.1 million barrels per day. Looking ahead to 2020, the U.S. Energy Information Agency (EIA) predicts total world petroleum production will continue to outpace consumption by 0.26 million barrels a day.

Much of this additional crude oil production came from North America. In 2008, the year the global financial crisis occurred, U.S. crude oil production averaged just 5.01 million barrels a day. Since then, U.S. crude oil production has more than doubled (**Figure 6**), attributable to the development of shale crude oil. Additionally, Canadian crude oil production has increased due to the expansion of crude oil extraction from oil sands in Alberta. Canadian crude production grew from 1.6 million barrels a day in 1990 to 4.7 million barrels a day in 2019.

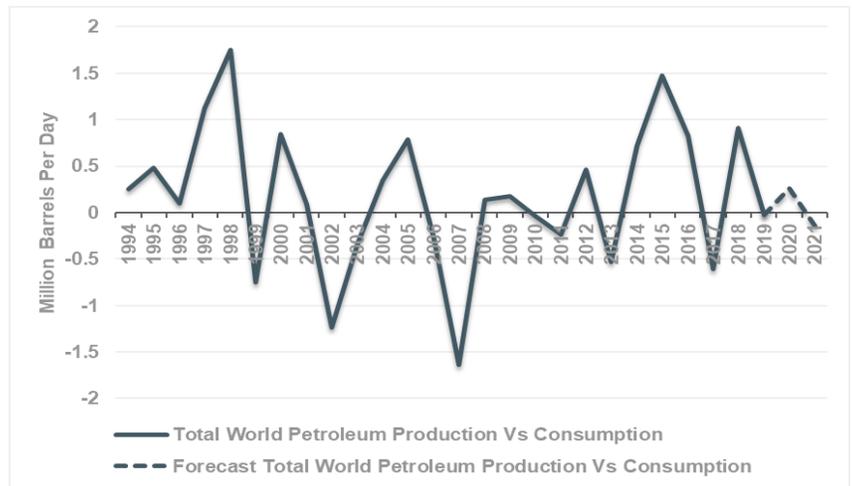
Additional North American crude oil production has resulted in less oil production required by the Organization of Petroleum Exporting Countries (OPEC) to meet world demand and keep markets balanced. **Figure 7** shows that since 2008, the North American share of total global crude oil supplied has grown roughly seven percent, while OPEC's share has shrunk by nearly four percent. The OPEC group was formed in 1960 to stabilize oil prices by setting production quotas. Recent increased production from non-OPEC regions, particularly North America, has led OPEC to further tighten production quotas.

Figure 7: Global Crude Oil Supplied, 2008 & 2018



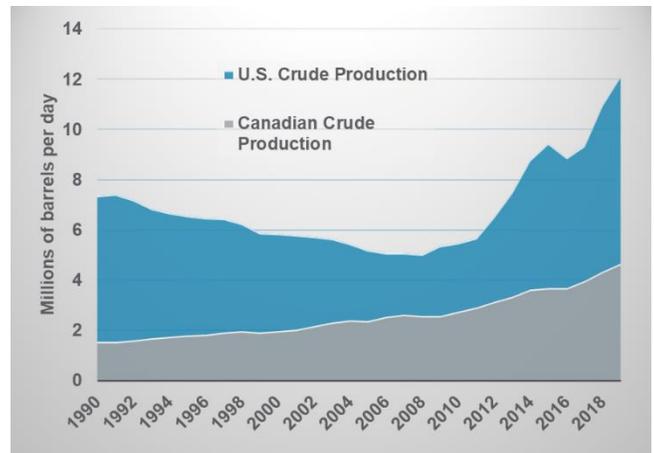
Source: EIA

Figure 5: Total World Petroleum Production Vs Consumption, 1994-2021



Source: EIA (STEO)

Figure 6: U.S. Crude Oil Production, 1990 - 2019



Source: EIA, CER (estimated partially in 2019)

These OPEC quota cuts have increased spare production capacity in global crude oil markets. During geopolitical upsets, crude prices typically can react dramatically, based on the perceived threat to crude oil supply. When there is spare capacity, the threat is mitigated, and the effect on crude prices is reduced.

North American crude oil production is expected to continue to expand in the next decade. To avoid a significant crude price drop like that experienced in 2015, OPEC will likely continue with crude oil production limits and world crude oil spare production capacity will remain high. Consequently, geopolitical threats to world crude oil supply will likely continue to have a lessened effect on crude oil prices, and ultimately retail gasoline prices, than in past decades.