Kalibrate

Fourth Quarter 2022
October - December

Duality of Refining Margins Emerged in the Fourth Quarter as Gasoline and Diesel Prices Diverged; Prices Setting Records.

Although crude prices declined in the fourth quarter, retail gasoline prices decreased by 11.7 cents per litre compared to the third quarter, while retail diesel prices increased by 26.2 cents per litre.

Canadian retail gasoline prices declined in the fourth quarter as crude prices weakened and refining margins contracted. Conversely, retail diesel prices increased in the same period as refining margins widened upon distillate shortages across the planet. Crude prices declined from the previous quarter as recession fears grew. Ongoing high inflation into the fourth quarter led many central banks to raise prime lending rates, further contributing to fears of an impending global recession. Unplanned refinery outages in the U.S. and labour strikes at French refineries also supported falling crude oil prices. Likewise, Chinese demand for crude declined as the government implemented severe lockdowns to reduce COVID-19 infections. Although in response to the Organization of Petroleum Exporting Countries and its allies (OPEC+) instituting a production cut to raise crude prices, the U.S. government countered by releasing crude oil from its Strategic Petroleum Reserves, the effect on crude prices was negligible. Record high refined product margins in part due to falling crude prices, especially for distillate fuels, incentivized refineries in the U.S. to run at a robust average of 91.1 percent utilization rate in the fourth quarter, while in Canada, refineries ran at a 90.6 percent utilization rate. However, refining capacity constraints and strong diesel export demand, particularly to Europe, hindered refiners from building product inventories, which remained unseasonably low. Consequently, Canadian diesel prices remained high in the fourth quarter.

Figure 1: Canadian Average Regular Gasoline and Component Prices

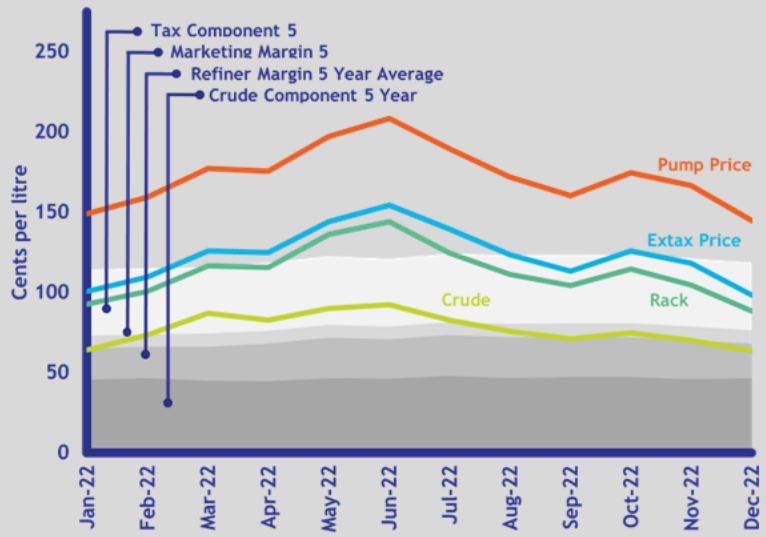
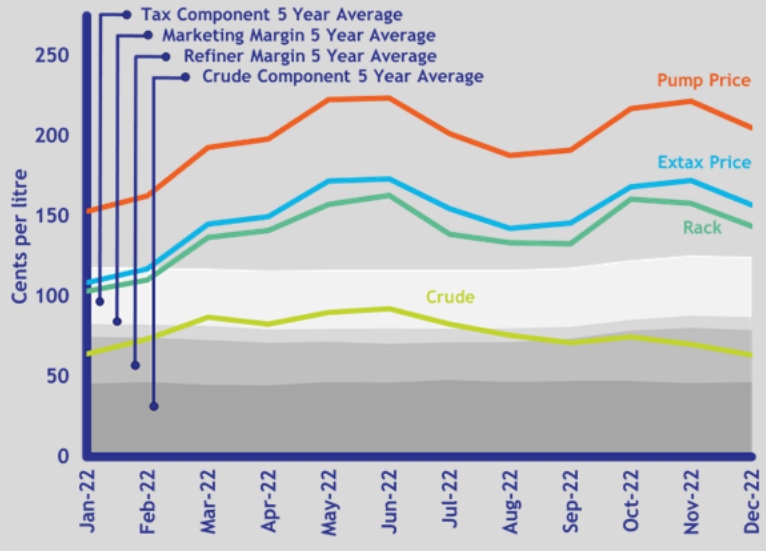


Figure 2: Canadian Average Diesel and Component Prices



Gasoline inventories in North America were 2.1 percent lower than in the same quarter last year (EIA). North American gasoline demand averaged 7.3 percent lower in the fourth quarter than the previous year. Gasoline inventories remained low as refiners favoured diesel production. Gasoline refining margins marginally declined in the fourth quarter, falling nearly four cents per litre (cpl) from the previous quarter. However, lower gasoline inventories have kept gasoline refining margins elevated, averaging 9.6 cpl higher than the previous five-year average for the quarter. Consequently, Canadians experienced higher fourth quarter pump prices compared to a year ago by an average of 16.4 cpl.

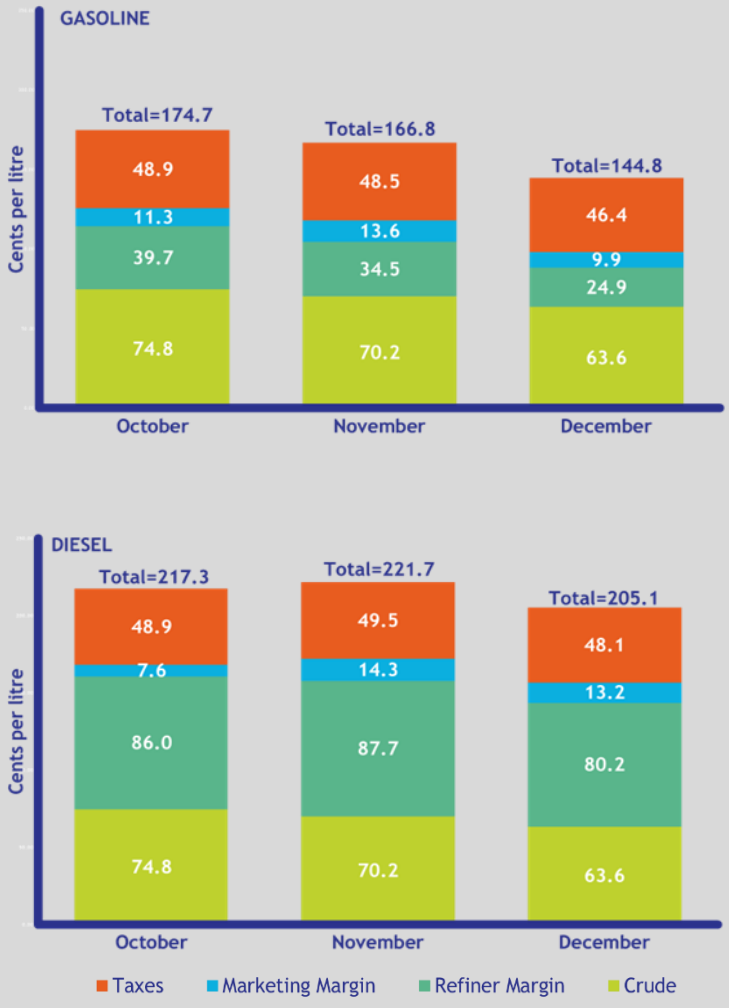
North American distillate inventories showed signs of balancing towards the end of the quarter due to lower continental demand but remained unseasonably low due to rising exports. Diesel demand was 6.1 percent lower this past quarter than the previous year. Diesel stocks were 4.2 percent lower in the fourth quarter year-over-year (EIA). As a result of ongoing shortages, Canadian diesel refining margins were a record 51.9 cpl above the previous five-year average for the quarter, and retail diesel prices averaged $2.14 per litre for the quarter. **Figures 1 & 2** show the historical movement of retail gasoline and diesel prices in Canada and their component prices.

Although volatility in crude prices was common in the fourth quarter as recession fears, production cuts, refinery outages, and demand drop-offs weighed against supply concerns, overall crude prices declined throughout the fourth quarter. The price of Brent crude (a global benchmark) began the quarter at 93.33 $US/BBL before falling and ending at 80.92 $US/BBL, a 13.3 percent decline. Similarly, the North American benchmark, WTI, began the quarter at 87.55 $US/BBL before declining, ending at 76.44 $US/BBL, a 12.7 percent decline. Brent's premium to WTI averaged 5.93 $US/BBL, down 0.21 $US/BBL from the previous quarter, after reaching as high as 9.31 $US/BBL in mid-November. A strong U.S. dollar due to rising interest rates made oil priced in U.S. dollars more expensive, increasing the demand for Brent.

Gasoline and Diesel Market Overview

Canadians found some relief from high inflation at the pumps this past quarter as gasoline prices decreased, largely upon lower crude prices. By December, the crude component had fallen 7.7 cpl lower than at the end of the last quarter. Refining margins also declined, down 8.1 cpl upon lower seasonal demand for gasoline. Overall, retail gasoline prices fell 15.4 cpl over the quarter and ended the year just 2.7 cpl higher than a year ago.

Figure 3: Canadian Average Gasoline and Diesel Price Components for 4th Quarter 2022



Regional retail gasoline prices varied substantially in the fourth quarter, particularly along the West Coast of Canada, as wholesale rack prices declined by 41.5 cpl from the end of October to the end of December. Increased refinery output along the North American West Coast and falling crude oil prices led to a steep decline in price disparity compared to the rest of Canada.

Although crude prices declined in Canada in the fourth quarter, diesel refining margins remained elevated. Ongoing inventory shortages in North America and increased demand from European markets incentivized refiners to produce distillate fuels. As a result, refiner margins in the fourth quarter averaged 26.2 cpl higher than the previous quarter. Refiner margins contracted in December, indicating that supplies could begin to balance.

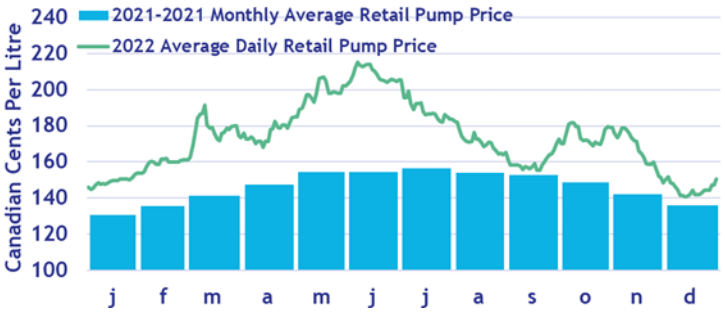
In addition to lower refinery capacity along the North American East Coast coupled with increased seasonal demand for distillate fuels used for heating during winter months, higher volumes of distillate exports to European markets have caused diesel pump prices across Eastern Canada to average 36.2 cpl higher than Western Canada at the end of December. Severe winter storms across much of North America and a pipeline outage in mid-December limited production, resulting in limited inventory builds along the East Coast, contributing to higher refining margins. (**Figure 3**)

Next Quarter Market Outlook

Crude oil prices will likely decline heading into 2023 as global crude oil inventories are expected to build upon lower demand from a probable economic recession due to constrictive monetary policies as governments attempt to curb high global inflation. With crude oil prices declining and lower seasonal demand, gasoline prices will trend lower. Refining margins for diesel fuel could continue to contract upon lower demand as the need for heating fuel declines as spring approaches. Additionally, distillate fuel consumption is an indicator of economic activity; with a recession on the near-term horizon, a drop in economic activity will cause a decline in demand and, therefore, prices. However, any reductions in diesel refining margins and prices could be partially offset by continued European demand due to upcoming economic sanctions on Russian refined petroleum products coming into effect in February 2023.

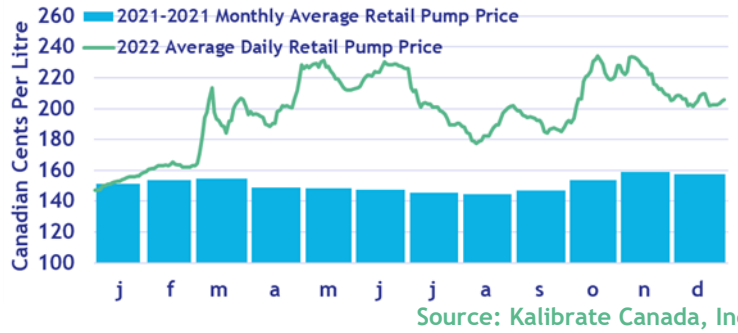
2022 Fuel Prices: Records are Meant to be Broken?

Figure 4: 2022 Canada Average Retail Gasoline Daily Price vs. Previous 10-Year Average Monthly Price



Source: Kalibrate Canada, Inc.

Figure 5: 2022 Canada Average Retail Diesel Daily Price vs. Previous 10-Year Average Monthly Price



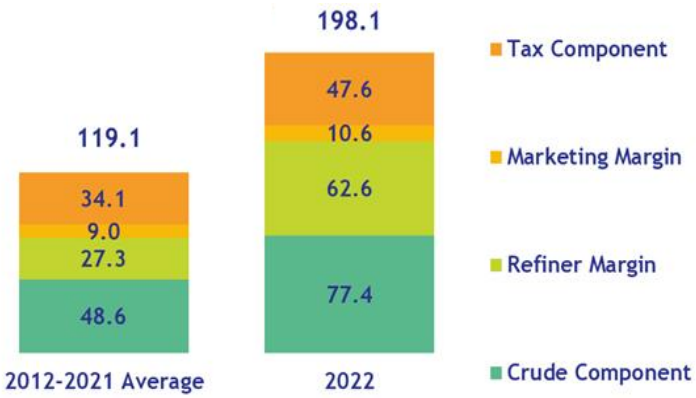
Source: Kalibrate Canada, Inc.

Fuel prices such as gasoline and diesel have long been a part of the news cycle as well as topics of discussion between people, particularly when comparing regional prices. 2022 was no exception as retail gasoline prices were incredibly high, outpacing the previous ten-year monthly average and setting price records **(Figure 4)**. Diesel prices were even higher than their ten-year monthly average, mainly due to widening refining margins **(Figure 5).** In 2022, the average Canadian low point for retail gasoline prices occurred in mid-December at 140.7 cpl, while the highest price occurred in early June at 215.1 cpl, a difference of 74.4 cpl, or 52.9 percent. For diesel prices, the average Canadian low point occurred at the beginning of January at 147.1 cpl, while the highest price occurred in mid-October at 234.2 cpl. This was a difference of 87.1 cpl, or 59.2 percent. Fuel prices have recovered from price levels seen during the COVID-19 pandemic, but price hikes far outpaced expectations as fuel demand returned. Rising crude oil prices throughout 2022 and global distillate shortages were the main culprits in driving up diesel prices, while rising demand as society returned to somewhat normal consumption patterns were the main factors in high gasoline prices experienced earlier in the year.

As **Figure 4** also demonstrates, gasoline prices usually follow a seasonal pattern of rising in the spring and summer and declining in the fall and winter months. This is because people travel more in the warmer months of spring and summer and stay closer to home in the fall and winter. What's interesting to note in 2022 is uncharacteristic spikes in March and October. Crude oil costs are components in fuel pricing; however, with crude oil being a globally traded commodity, it is subject to macroeconomic events. In March, as a result of the Russian invasion of Ukraine, Canada and the U.S. announced a ban on Russian oil and energy imports, while other countries, such as the U.K., committed to phasing out Russian oil by year-end. In October, OPEC+ announced aggregate crude oil production cuts of two million barrels per day in a strategic policy to prop up global crude oil prices. As the fall and winter months approached, gasoline prices began to decline in step with typical seasonal demand, but this trend was also supported by declining crude oil prices.

For diesel fuel, prices are also seasonal, as **Figure 5** depicts, but follow a different pattern than gasoline. As seen in the ten-year monthly average retail pump price, diesel prices rise in the fall and winter when diesel use increases to assist with crop drying following the fall harvest season and for use as residential heating oil. However, diesel prices in 2022 had months that diverged from these historical trends, with elevated prices occurring in spring and early summer. Similar to gasoline prices, rising crude oil prices due to economic sanctions and production cuts impacted diesel pump prices. However, unlike gasoline, diesel prices were further impacted by historically low inventories for distillates (which include diesel fuels) due to lower North American refinery capacity and increased exports, particularly to Europe, due to sanctions against Russia. As **Figure 6** highlights, the main influencing components to higher diesel pricing in 2022 were higher crude oil prices and refiner margins, prompting refiners to respond to low supply and increased crack spreads. Crude oil input costs in 2022 were 28.8 cpl higher than the previous ten-year average, or 59.2 percent. Refiner margins in 2022 were 35.3 cpl higher than the previous ten-year average, or 129.3 percent.

Figure 6: Canadian Average Diesel Pump Price Components, 2022 versus Previous Ten-Year Average



Source: Kalibrate Canada, Inc.

Figure 7: 2022 Weekly Distillate Stocks vs. Previous Five-Year Average Monthly Stocks

Source: U.S. Energy Information Administration (EIA).

In **Figure 7,** the 2022 average weekly distillate stock levels across the U.S. are compared to the previous five-year monthly average distillate stock level. On average, weekly distillate stocks in 2022 were 19.0 percent below the previous five-year monthly averages, with distillate stocks typically ebbing and flowing along historical patterns. Distillate stock levels typically decline in spring and fall as the agricultural activity ramps up, along with inventory building of heating fuel oil in anticipation of winter. Refiners also choose to conduct maintenance operations each year during the spring and fall as the weather allows operations to occur more smoothly. With slightly increased demand from the agricultural industry and refinery utilization at decreased levels, it is normal to see distillate stocks decrease during the spring and fall seasons. However, these two recurring events cannot explain the unseasonably low levels of distillate stocks seen in 2022.

A factor that has contributed more to falling distillate stocks is the decline in North American refining capacity. As seen in **Table 1**, U.S. refining capacity has fallen in the past several years as several unprofitable refineries were closed. Similarly, in Canada, 2020 saw the closure of the Newfoundland Come By Chance Refinery, reducing Canada's refining capacity by 6.2 percent. U.S. atmospheric crude oil distillation capacity declined by 5.4 percent in 2022 compared to 2020 levels. It is unlikely to increase again as no new refineries are expected to be built in the U.S. or Canada.

Table 1: U.S Refining Capacity	2017	2018	2019	2020	2021	2022
Total Number of Operable Refineries	141	135	135	135	129	130
Operating	137	135	132	131	124	125
Idle	4	0	3	4	5	5
Atmospheric Crude Distillation Capacity (thousand barrels per day)	18,617	18,598	18,802	18,976	18,128	17,944
Operating	18,314	18,567	18,692	18,549	17,720	17,789
Idle	303	32	110	427	408	155
Source: U.S. Energy Information Administration (EIA)						

However, the primary factor for distillate stocks to be below average is the Russian invasion of Ukraine and the resulting cutoff of Russian imports. Before the war began, the U.S. was importing approximately 700,000 barrels per day of Russian crude oil and petroleum products, and along with its own production, it would consume domestically or export to markets such as Canada. The loss of Russian imports added to the growing vacuum that was difficult for refineries to fill. As 2022 progressed, refiner margins increased to incentivize refiners to produce more distillate fuels and boost stock levels. However, as the war in Ukraine progressed and European nations and others implemented sanctions against Russia, many countries began seeking refined petroleum products ahead of the bans. This led to increased exports from North America, further contributing to lower distillate stocks, higher refiner margins, and higher diesel pump prices.

In summary, 2022 saw retail gasoline and diesel prices climb to record levels, with diesel refiner margins reaching extreme levels. The effect of macroeconomic events on crude prices (Russian oil import ban and OPEC+ production cuts) were the main contributing factors to higher retail prices. In particular, lower refining capacity and increased exports to Europe propped up refiner margins and prices for distillate fuels, including diesel. However, there were signs of distillate supply balancing towards the end of 2022 as demand declined amid fears of an economic recession. Looking ahead to 2023, global economic growth will likely slow in 2023, and thus, gasoline and diesel prices will likely decline as the recession kicks in. Rising interest rates will strengthen the U.S. dollar, making the acquisition of crude oil by other nations more costly, adding to recession woes. Upcoming European sanctions on Russian refined petroleum products will take effect in February 2023, which may provide an offset to falling prices in the first few months of the year. China's economic restart after exiting severe COVID-19 lockdowns should have a negligible impact on crude oil prices, as China is expected to continue purchasing discounted Russian crude oil for their needs. In short, near-term volatility is expected due to lower refining capacity across North America and increased export demand; however, we'll likely not experience the same supply constraints in 2023 as experienced in 2022, and therefore temper further record retail prices.

We welcome media enquiries

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About Kalibrate

Kalibrate's decision-making software empowers fuel and convenience retailers across the globe with the market intelligence, micro-local data, and precision pricing and planning tools they need to gain real competitive advantage. For over 25 years, Kalibrate has been the chosen decision-making partner of 300+ fuel and convenience retailers in over 70 countries. The firm is headquartered in Manchester UK, with local offices in the USA, Canada, India, China, Australia, and Japan.

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Guide and glossary

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