



July 8, 2019

**Subject:** British Columbia Utilities Commission inquiry into gasoline and diesel prices in BC

**Attn:** Ian Jarvis, CPA, CA, Chief Operating Officer,  
British Columbia Utilities Commission

Dear Mr. Jarvis,

On behalf of the Canadian Independent Petroleum Marketers Association (CIPMA) and the Canadian Fuels Association (CFA), kindly find attached, our jointly commissioned report, conducted by Kent Group Ltd, a Kalibrate Company, on the British Columbia fuels market.

The report examines pricing fluctuations specific to British Columbia. The independent, third-party results indicate that pricing fluctuations are due to a number of factors, including:

- Demand for petroleum products in the province of British Columbia exceeds supply, and that demand for petroleum products has increased while capacity to produce petroleum products has remained stable. As a result, the province has increasingly relied on product transfers into the province (from Alberta) or imports to meet growing demand.
- A number of prolonged and extensive refinery shutdowns (since 2015) along the U.S. West Coast have led to increased competition for imports, pushing wholesale prices higher.
- In addition, policies such as the Low Carbon Fuel Standard (LCFS) and renewable fuels blending regulations have led to differences in product specifications between British Columbia and elsewhere along the U.S. West Coast. This has increased costs and presented supply-related challenges for both producers and importers, and has been a primary driver of the growing (exchange-adjusted) differential in wholesale product prices between British Columbia and the U.S.
- Supply into the region relies heavily on shipments of refined products from Alberta via the Trans-Mountain pipeline. This pipeline that has had little or no spare capacity in recent years, and there has been a corresponding increase in refined product imports to make up the difference between rising demand and relatively flat domestic supply. This means that refined product prices in BC have increasingly followed import pricing as opposed to following domestic wholesale markets like the rest of western Canada. Many of these imports have also had to move by more expensive modes of transportation, such as rail or tanker truck, pushing

prices up further.

- Geographical isolation from the rest of Canada limits options when there are unplanned supply issues, leading to higher levels of volatility in the region's wholesale prices.
- Retailers of petroleum products in the region have not benefited from increased prices. Retail margins as a percentage of the pump price have decreased over the last quarter century, and when adjusted for inflation, have not kept pace with the rising costs associated with fuel retailing.
- Pump prices in British Columbia have been affected by rising fuel taxes, most notably in the Lower Mainland. The fixed portion of tax burden in the Vancouver area has increased roughly 20 cents per litre for both gasoline and diesel in the last twenty years.
- Similar to other regions in Canada, pump prices in British Columbia have been affected by exchange rate differences between Canada and the U.S. The added costs associated with a weakened Canadian dollar would be made worse by British Columbia's higher average wholesale prices.

While many factors are at play, as the report concludes, pricing fluctuations are not a result of ill practice or competitive concerns.

Should you wish to further discuss the report, please do not hesitate to contact us.

Best,



**Jennifer Stewart**  
*President and CEO*  
**CIPMA**



**Peter Boag**  
*President and CEO*  
**Canadian Fuels Association**

## CIPMA MEMBERS



## CFA MEMBERS





 **KENT**  
A Kalibrate company



## An Overview of the BC Fuels Market

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June 28, 2019

Project/File: 2019-0430

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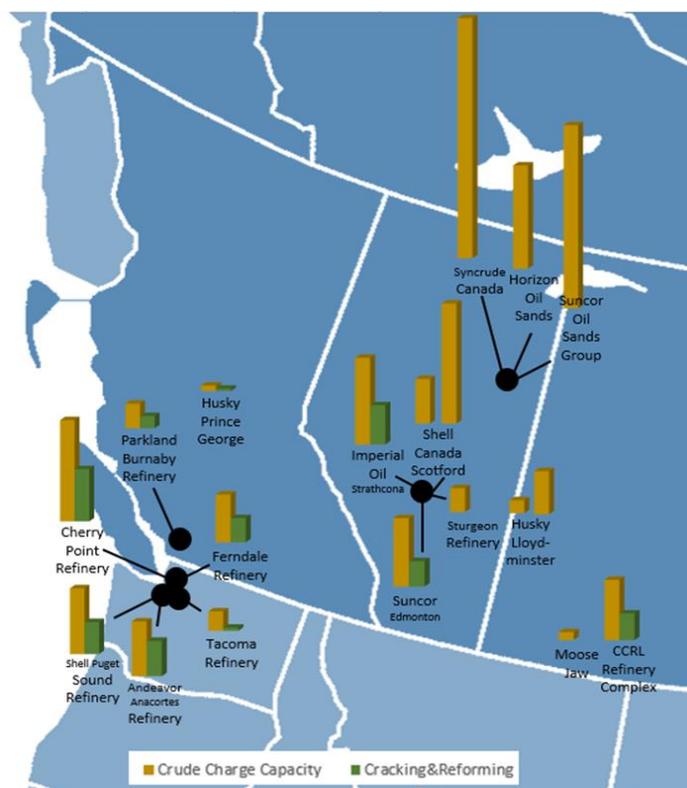
## Overview of the Downstream Petroleum Industry

The downstream petroleum sector is the part of the oil industry that is most familiar to consumers, since it includes petroleum refining, supply, and retail marketing. The upstream sector relates to the production of crude oil, the raw material used by refineries to make gasoline and other petroleum products.

### Refining

Refining is the manufacturing process of turning crude oil into marketable petroleum products such as gasoline, diesel, heating fuels, and aviation fuels. In British Columbia there are two refineries: One is owned by Husky Oil Operations Ltd. and is located in Prince George with a refining capacity of 12,000 barrels a day. The other is owned by Parkland Fuel Corporation, located in Burnaby with a refining capacity of 55,000 barrels a day. **Figure 1** shows the relative refining capacity of refineries in British Columbia as well as surrounding regions including cracking and reforming capabilities.

Figure 1: Location and Capacity of British Columbia, Alberta and Washington State Refineries



Source: CAPP Statistical Handbook, EIA, NEB

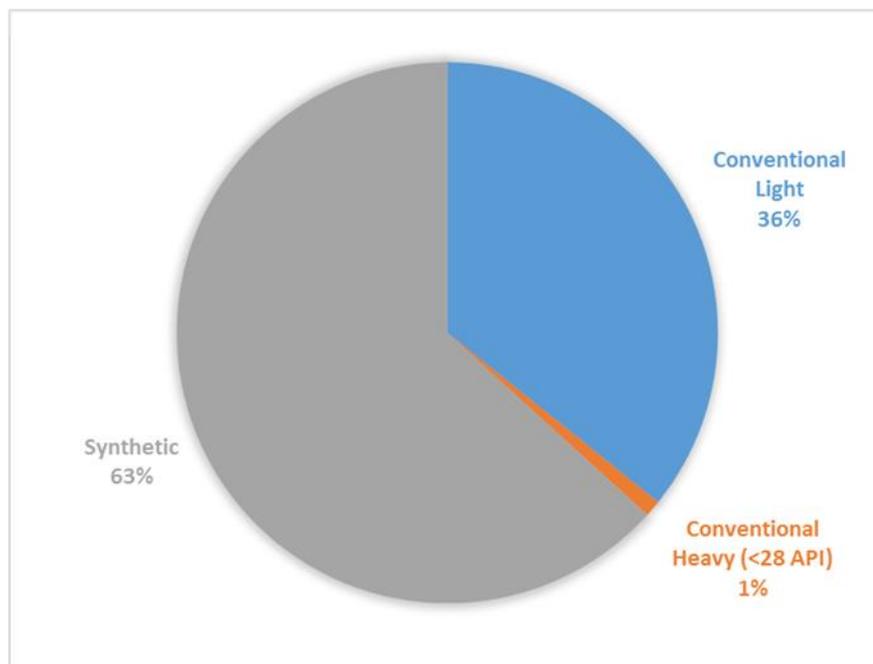
British Columbia's refining capacity is much less than its provincial demand, making it a net importer of refined petroleum products. Similarly, British Columbia's infrastructure to transport, store and distribute petroleum products is extensive but has less flexibility to

respond to unanticipated refining or transportation disruptions due to its geographical isolation from the rest of the country.

The types of crude oils used as feedstocks can range from light to heavy; these generally reflect each refinery's complexity in terms of specialized processing capabilities. Less complex refineries are only able to process lighter, more expensive crude oils. More complex refineries are able to process heavier and less expensive crude oils such as "oil sands" bitumen, but require significantly more investment in processing facilities.

The two refineries in British Columbia generally process lighter blends of crude oil<sup>1</sup>: roughly two thirds is synthetic crude, about one third is conventional light, and roughly one percent is heavy conventional crude oil. **(Figure 2)**

Figure 2: Type of Crude Input at British Columbia Refineries, 2017



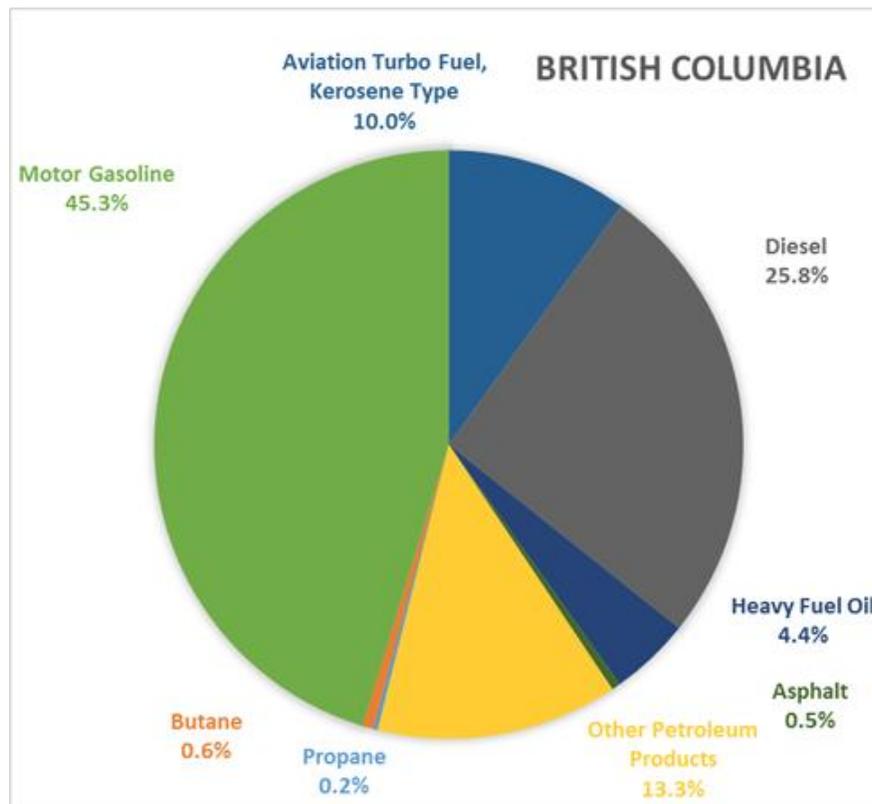
Source: Statistics Canada Table 25-10-0041-01

Approximately 45 percent of the products produced in British Columbia's two refineries is gasoline, 26 percent is diesel fuel, 10 percent is aviation fuel, and the remaining comprises other petroleum products such as heavy fuel oil, asphalt, propane, butane, among others<sup>2</sup>. **(Figure 3)**

<sup>1</sup> Based on partial data available from Statistics Canada in 2017 in Table 25-10-0041-01; data suppressed for 2018

<sup>2</sup> Based on partial data available from Statistics Canada in 2017 in Table 25-10-0044-01; data suppressed for 2018

Figure 3: Refinery Product Yields in British Columbia, 2017



Source: Statistics Canada Table 25-10-0044-01

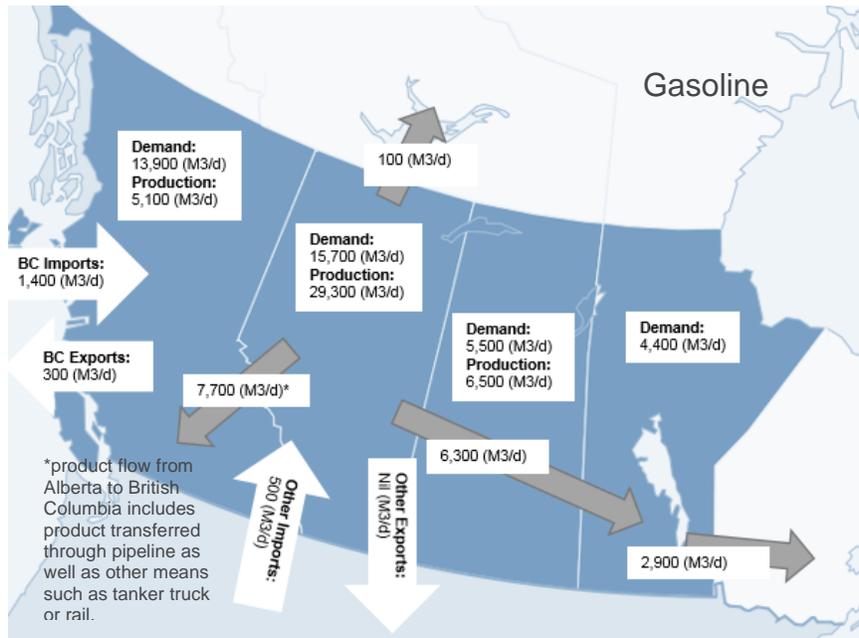
Total refinery production in the province is not enough to meet provincial demand for refined products, creating a reliance on imports to balance supply. Even if British Columbia's two refineries ran at full capacity, they would only produce enough petroleum products to meet 29 percent of total refined product demand in the province<sup>3</sup>. British Columbia's refined product imports come from Alberta<sup>4</sup> as well as from outside of Canada – much from Washington State<sup>5</sup>. **Figure 4 and Figure 5** illustrate the product flow in Western Canada for gasoline and diesel. Detailed methodologies and data resources used in these maps are explained in **Appendix A**.

<sup>3</sup> Based on Statistics Canada, Table 25-10-0044-01, total refined product demand was 36,936 cubic metres per day in 2018.

<sup>4</sup> NEB reports Trans Mountain Pipeline movements of refined petroleum products from Edmonton, AB to Burnaby, BC was 4419 cubic metres per day or nearly 12 percent of BC's total demand for refined petroleum products.

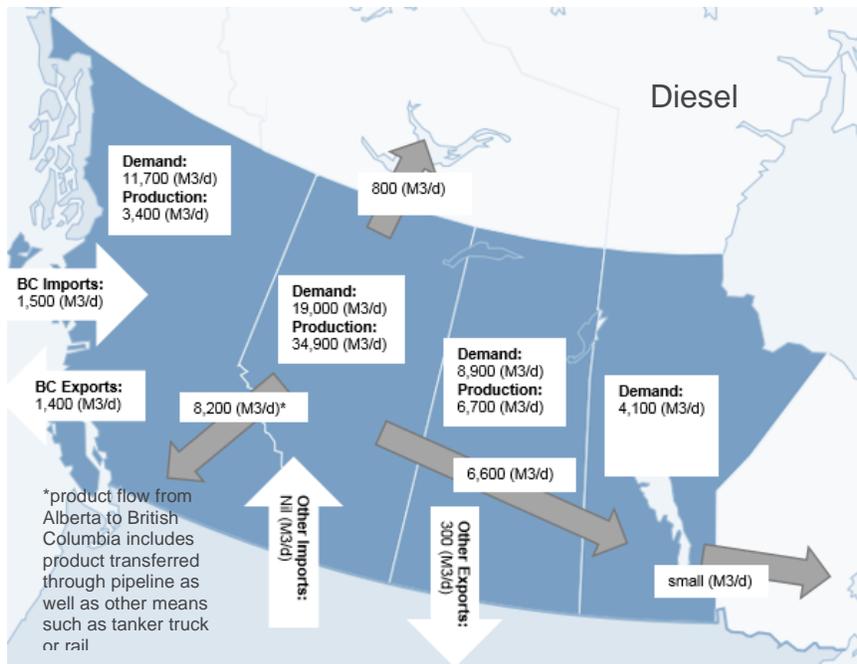
<sup>5</sup> EIA reports PADD 5 exports of total products to Canada in 2018 was 9049 cubic metres per day or 24 percent of BC's demand for refined petroleum products.

Figure 4: Western Canadian Gasoline Product Flow, 2017



Source: Based on assumptions using Statistics Canada Table 25-10-0044-01, EIA, ECCC open data, and the Canadian International Merchandise Trade Database

Figure 5: Western Canadian Diesel Product Flow, 2017

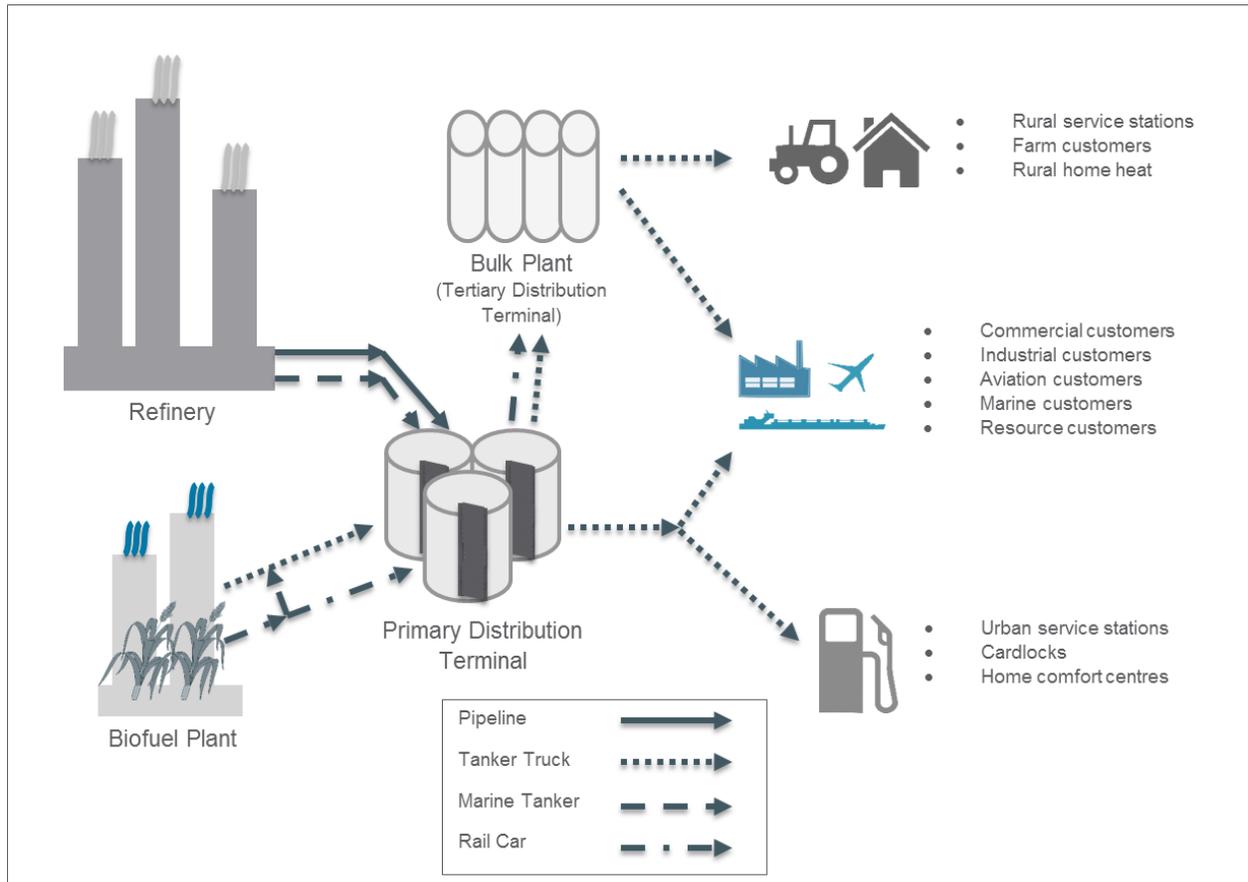


Source: Based on assumptions using Statistics Canada Table 25-10-0044-01, EIA, ECCC open data, and the Canadian International Merchandise Trade Database

## Supply and Distribution

Once refined, fuel products such as gasoline are transported to storage and distribution terminals by pipeline or marine tanker, then on to end-use consumers by various modes of transportation as shown in **Figure 6**.

Figure 6: Refined Product Movement within the Downstream Petroleum Industry Supply Chain



In Canada, the movement of refined petroleum products generally occurs within distinct supply regions. In British Columbia, the decision as to what price to set at the pump is increasingly made by the local retailer (48 percent of all outlets), or by non-integrated, “independent” marketers (19 percent). Thirty-four percent – or about one third of all gas stations in British Columbia – are priced-controlled by marketers who are integrated with a refinery or upstream producer. This is above the Canada average of 23 percent<sup>6</sup>.

The West Coast supply region is geographically isolated from the rest of Canada by the Rocky Mountains, connected only by the Trans Mountain Pipeline, which transports crude oil as well as refined products from Alberta to British Columbia.

<sup>6</sup> Sourced from Kent Group Ltd.’s 2018 National Retail Site Census Report

Supply “orbits” are defined by their transportation infrastructure such as pipelines; while there is a great deal of product movement within a supply orbit, there is typically little refined product shipped between them. Consequently, wholesale “rack” prices within a region generally do not differ much, while there can be fairly large differences between regions. Due to the West Coast’s isolation from other Canadian markets, BC’s wholesale fuel prices often differ from those of the rest of Canada.

Distribution terminals receive refined petroleum products via pipeline, ship, or rail, then hold those products in inventory, and finally deliver fuel primarily via tanker-truck, to end-use customers such as retail gas stations. Two types of terminal facilities perform this role:

- **Primary terminals** handle larger volumes, are typically the first point of inventory after the refinery, and typically are located close to more populated areas. Marketers generally utilize shared terminals in order to reduce overall operating costs: the terminal operator receives a fee from marketers lifting product from their terminal.
- **Bulk plants** handle smaller volumes, generally receiving product from a primary terminal rather than a refinery. They are smaller versions of primary terminals and typically serve more remote and less populated areas.

As of 2016, there were 15 primary product terminals and 54 bulk plant terminals in British Columbia.<sup>7</sup> The initial transportation of petroleum products from a refinery typically occurs by pipeline, due to its low-cost relative to other transportation modes. Marine transportation is the next most effective means to transport large volumes of refined petroleum products; it is largely employed in coastal areas not served by pipelines.

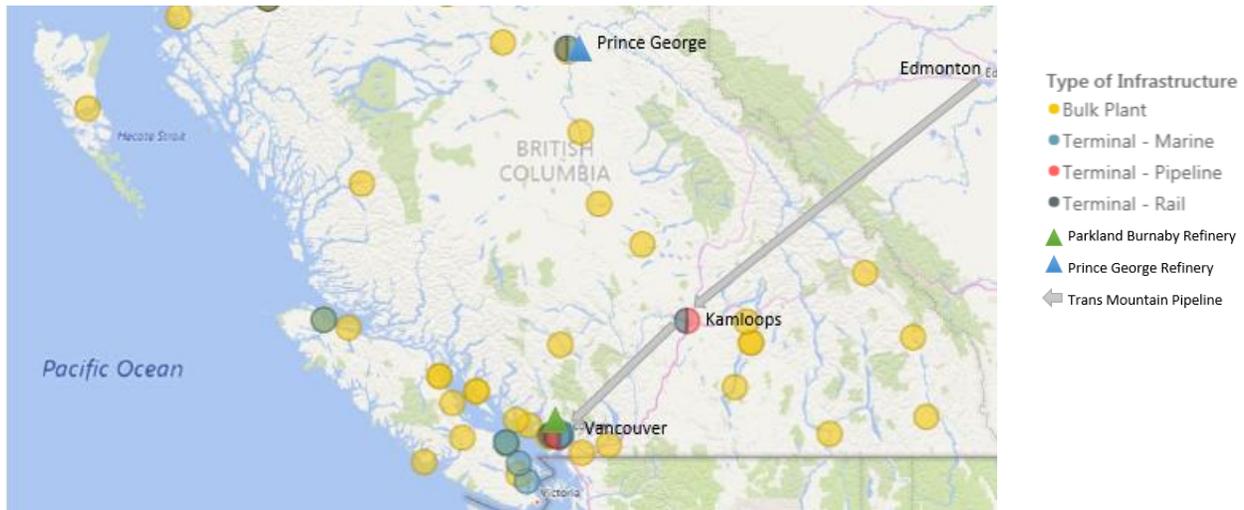
Rail is an important link for a number of terminals with no or limited access to pipeline or marine supply. It is generally a more expensive mode of transportation than marine or pipeline however, which can therefore add to the wholesale price of fuel. The vast majority of petroleum products are delivered to their end-use customer by means of tanker trucks, typically through third-party common carriers rather than marketer owned fleets. **Figure 7 and Figure 8** illustrate the location of refineries in British Columbia and Lower Mainland, pipeline flow, as well as storage facilities by type.

The range of potential wholesale sources from which a marketer can choose is largely dependent on the proximity of supply terminals: costs rise with the movement of product from a given rack point (primary terminal) to more distant destination markets, and this essentially limits a marketer to a relatively short range for overland truck transport. Where pipeline or marine fuel terminal facilities exist, however, wholesale refined product can be shipped across very large distances, (even overseas), at a relatively small cost.

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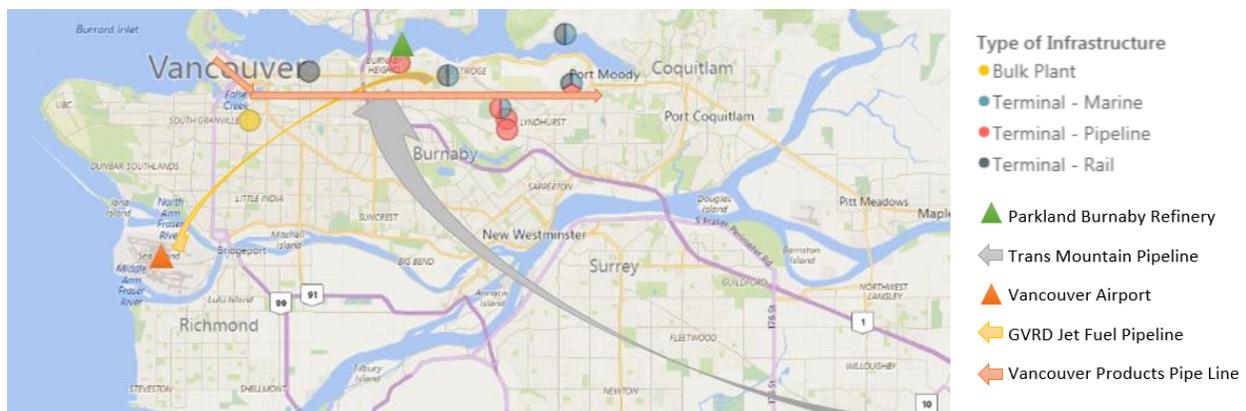
<sup>7</sup> 2017 Kent Downstream Logistical Infrastructure Report

Figure 7: Petroleum Infrastructure in British Columbia



Source: Kent 2017 Downstream Logistical Infrastructure Report

Figure 8: Petroleum Infrastructure in Lower Mainland, British Columbia



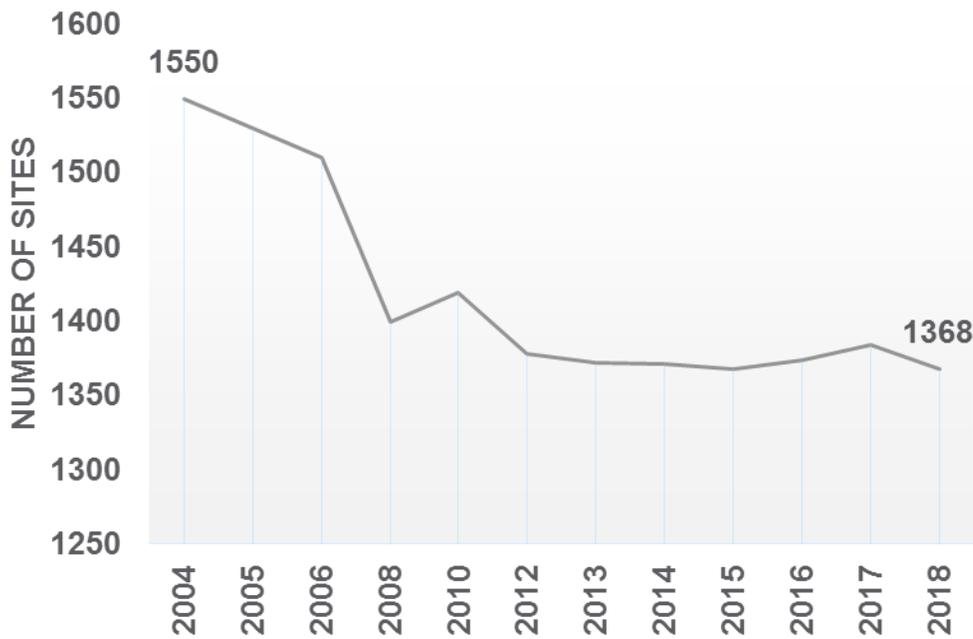
Source: Kent 2017 Downstream Logistical Infrastructure Report

With a large proportion of the Canadian population within a few hundred kilometers of the United States, many US and European refineries are potential sources of wholesale product supply for Canadian marketers. Canadian refiners must therefore be price competitive not only with each other, but with their US and European counterparts on an exchange-adjusted basis.

## Marketing

As of December 31, 2018, there were an estimated 1,368 retail gasoline stations in British Columbia. **Figure 9** shows that the number of retail gas stations has declined in British Columbia over the last decade and a half. This is similar to what has been experienced in the rest of Canada where the number of retail gas stations has declined from about 20,000 in 1989, to its current number of 11,929 in 2018.

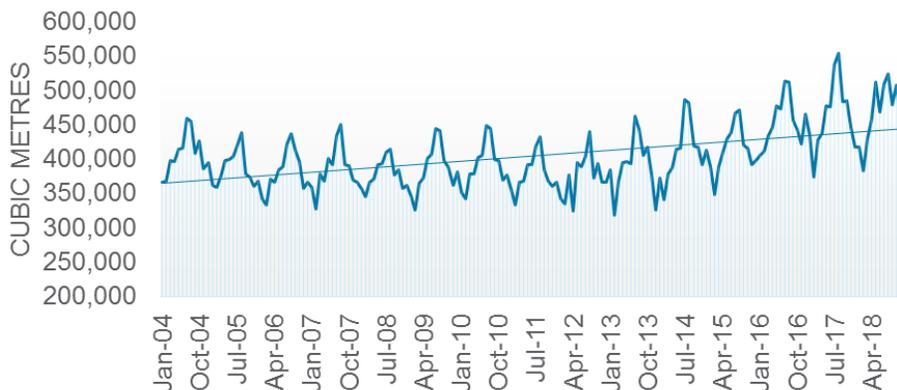
Figure 9: Number of Gasoline Stations in British Columbia, 2004-2018



Source: Kent 2018 National Retail Petroleum Site Census

The decline in retail outlets has had a positive impact on the average outlet’s sales volumes (throughputs) as provincial product demand has increased over the last decade and a half (**Figure 10**). The average site throughput in 2018 in British Columbia is 4.03 million litres per year, up from 2.84 million litres in 2004 and above the Canadian average of 3.73 million litres per year.

Figure 10: British Columbia Monthly Domestic Sales of Gasoline, 2004-2018



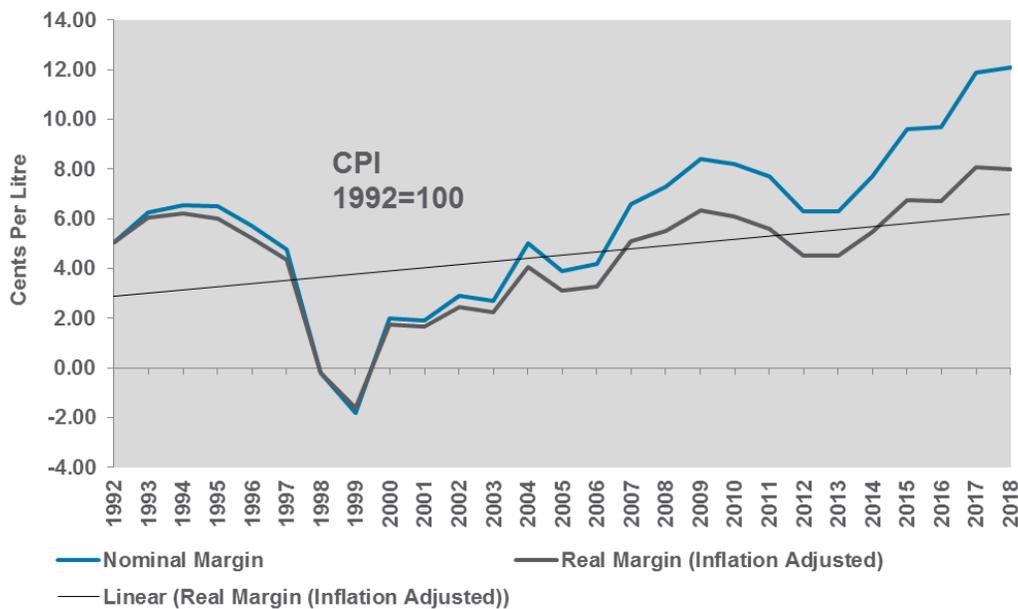
Source: Statistics Canada, Table 25-10-0044-01

Consumers have benefited from this decline in outlets: the retail mark-up on gasoline as a percentage of the pump price has declined over the last quarter century as a result of

dealer cost-efficiencies<sup>8</sup> (on a per litre basis, the mark-up has been relatively stagnant, and when adjusted for inflation has increased minimally<sup>9</sup>).

A retail outlet’s fuel revenue is the product of its sales volume times its margin: if a retailer sells more fuel, less margin is needed to generate the same amount of revenue. Sites with high sales volumes are thus in a better position to be more price-competitive. Retail margins in Vancouver have been relatively flat over the last 25 years when accounted for inflation, rising an average annual increase of just 0.1 cents per litre (**Figure 11**). As a percentage of the pump price, retail margins in Vancouver have shrunk from 9.5 percent in 1992 (reaching 11.9% in 1994) to 8.1 percent in 2018.

Figure 11: Vancouver Annual Gasoline Retail Margin, Real and Nominal, 1992-2018



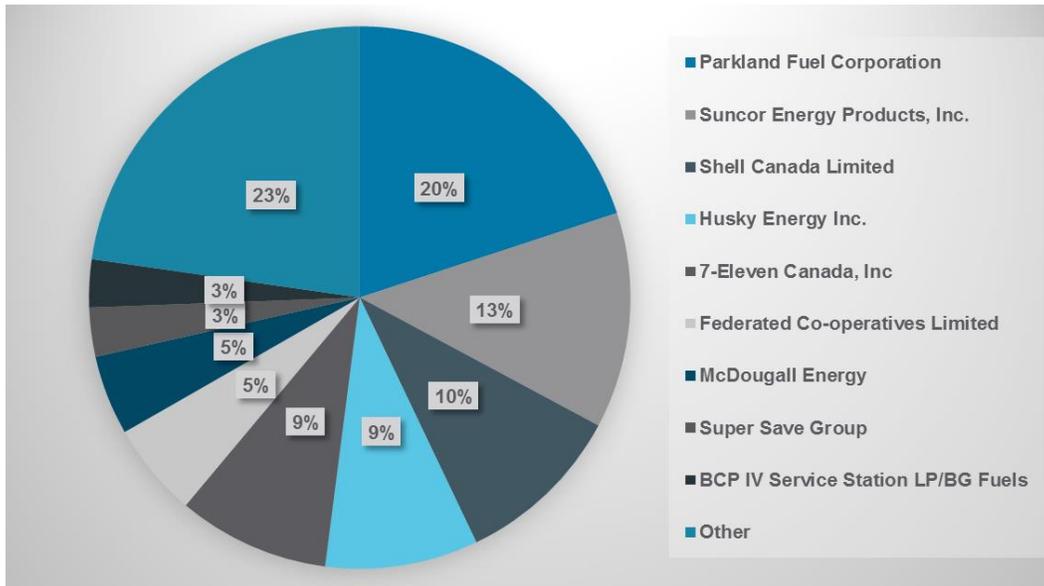
Source: Kent Group, Statistics Canada CPI

The three largest retail petroleum fuel marketers in the area are Parkland Fuel Corporation, Suncor Energy Products, and Shell Canada Limited, accounting for 43 percent of all the area’s stations. The three most common brands in the area are Petro-Canada, Esso, and Chevron, appearing at 44 percent of the area’s gasoline stations. **Figure 12 and Figure 13** show the top ten fuel marketers and top ten fuel brands in British Columbia in 2018.

<sup>8</sup> 1992-1995, Vancouver’s retail gasoline margin as a percentage of the retail price averaged 11.0 percent, and 2010-2018 averaged 6.7 percent, sourced from Kent Group Ltd.’s Pump Price Survey.

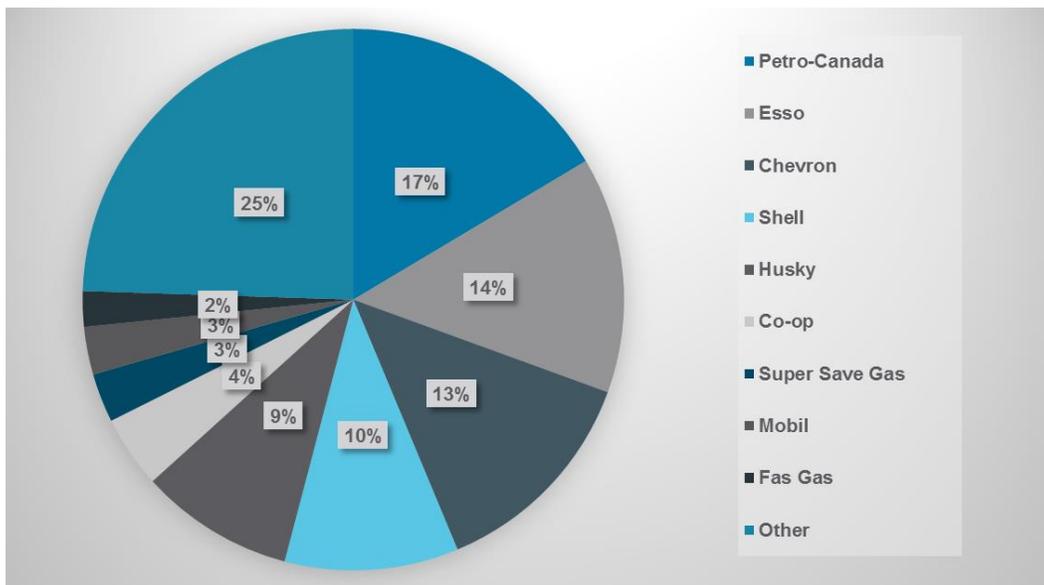
<sup>9</sup> The average annual cent per litre increase to Vancouver’s retail margin was 0.1 cents per litre when adjusted for inflation 1992-2018, sourced from Kent Group Ltd.’s Pump Price Survey.

Figure 12: 2018 Distribution of Gasoline Stations in British Columbia by Fuel Marketer



Source: Kent 2018 National Retail Petroleum Site Census

Figure 13: 2018 Distribution of Gasoline Stations in British Columbia by Brand



Source: Kent 2018 National Retail Petroleum Site Census

Cardlock facilities are the principal means by which commercial trucking operations obtain their fuel: they are a specialized version of a retail gas station. Diesel is therefore the main offering, although many cardlocks also offer gasoline. Across British Columbia there are approximately 183 cardlock facilities<sup>10</sup>, which tend to be situated along major highways and in urban industrial parks.

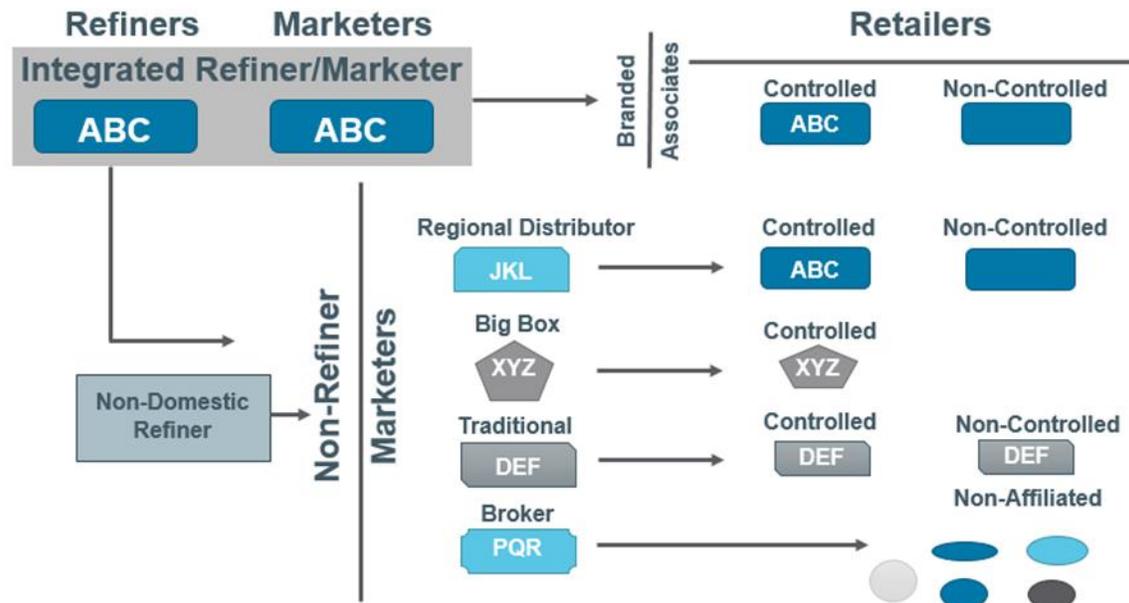
<sup>10</sup> 2017 Kent Downstream Logistical Infrastructure Report

## Refiner-Marketer-Dealer Relationships

To many consumers, a gas station selling a given brand of gas may seem to be a straightforward thing: whomever owns the pump brand also “owns” the station and sets the pump price. This is very often not the case, however.

The marketing of petroleum products typically depends upon an infrastructure and business relationships between a marketer and an operator (dealer) of a motorist retail fuel site. The nature of these relationships in the downstream petroleum sector spans a broad range of operating modes, generically referred to as "controlled" at one end, and "non-controlled" at the other. In fact, there exists a myriad of types of dealer-marketer relationships, and a variety of types of brand marketers (**Figure 14**), which fall into one of two broad categories: integrated refiner-marketer and non-refiner marketer.

Figure 14: Refiner-Marketer - Retailer Relationships



- **Integrated Refiner-Marketers** are marketers who share a corporate parent with one or more refineries. Examples include Suncor (Petro-Canada) and Shell.
- **Non-refiner Marketers** are marketers who deal “at arms’ length” from refineries. Examples include Canadian Tire, Costco and Sobeys.

Integrated refiner-marketers have divested a large percentage of their retail operations over the last few decades, including in British Columbia<sup>11</sup>. Although the Canadian retail gasoline landscape still includes many outlets that display refiner-owned brands (such as Esso and Shell), many of these outlets' supplier/marketer relationships are not with those brand owners, but with fuel marketers that are independent of refining and crude oil operations. In British Columbia this includes fuel marketers such as 7-Eleven Canada, Couche-Tard, and McDougall Energy.

In British Columbia, the number of sites falling under the category of sites integrated with a refiner-marketer is 58 percent, above the Canada average of 43 percent. The remaining 42 percent of sites in British Columbia are not associated with an integrated refiner-marketer.<sup>12</sup>

Non-refiner marketers can generally be classified as a:

- **Regional Distributors** operate retail outlets which carry a well-known brand under a supply and licensing arrangement. Examples include Couche-Tard and Global Fuels operating under the Esso brand.
- **Big Box Marketers** primary offerings are non-petroleum in nature, and whose fuel sites are often anchored by a large chain-store, such as Costco.
- **Traditional non-refiner Marketers** primary offerings are petroleum in nature, operating a chain of traditional gas stations under their own brand, of which a number of typically regionally-focused marketers and associated brands exist.
- **Wholesale Brokers** buy fuels from a refiner to then sell to independent dealers who are typically not affiliated with a recognized brand.

## Who Controls the Pump Price?

At the site level, the operating mode under the marketer can fall into one of two broad categories:

- **Controlled:** where the marketer has control of fuel prices; or
- **Non-controlled:** where the retailer has control of fuel prices

In past decades, refiners maintained integrated retail networks in order to ensure high refinery utilization. There has been a recent and significant shift towards less refiner control of their branded sites or to divestment of their retail operations. Refiner-marketers are increasingly maintaining a brand presence by simply allowing other organizations to

<sup>11</sup> From 2004 to 2018, integrated refiner marketers share of the market dropped from 56% to 43% in Canada, and 67% to 58% in British Columbia, sourced from Kent Group Ltd.'s National Retail Site Census Reports.

<sup>12</sup> Kent Group Ltd.'s 2018 National Retail Petroleum Site Census

assume the marketing relationship with their branded retail outlets. There are a number of reasons for this de-integration trend:

- **Focus on Upstream:** Refining companies may be more interested in focusing assets and operations on the upstream industry;
- **Stagnant Rack-To-Retail Margins:** Until recently retail margins generally showed little growth and therefore little potential for profit development; and
- **Increased focus on the Back-Court:** The average retail gasoline station has become more complicated as back-court offerings have grown in presence. This requires more attention in areas refining companies may be ill-equipped or not interested in managing.

The effect of this de-integration trend is fewer refining companies having control over pump prices. In Canada, 39 percent of gas stations operate under the banner of the top three brands (Shell, Petro-Canada and Esso), but only 11 percent are directly associated with those same three brand owners. This compares to 41 percent of sites in British Columbia carrying one of the top three brands, with 23 percent directly associated with those same three brand owners, indicating de-integration in the province of British Columbia has been less pronounced than in other provinces.<sup>13</sup>

In British Columbia, the decision as to what price to set at the pump is increasingly made by the local retailer (48 percent of all outlets), or by non-integrated, “independent” marketers (19 percent). Thirty-four percent – or about one third of all gas stations in British Columbia – are priced-controlled by marketers who are integrated with a refinery or upstream producer. This is above the Canada average of 23 percent<sup>14</sup>.

## The Pump Price “Value Chain”

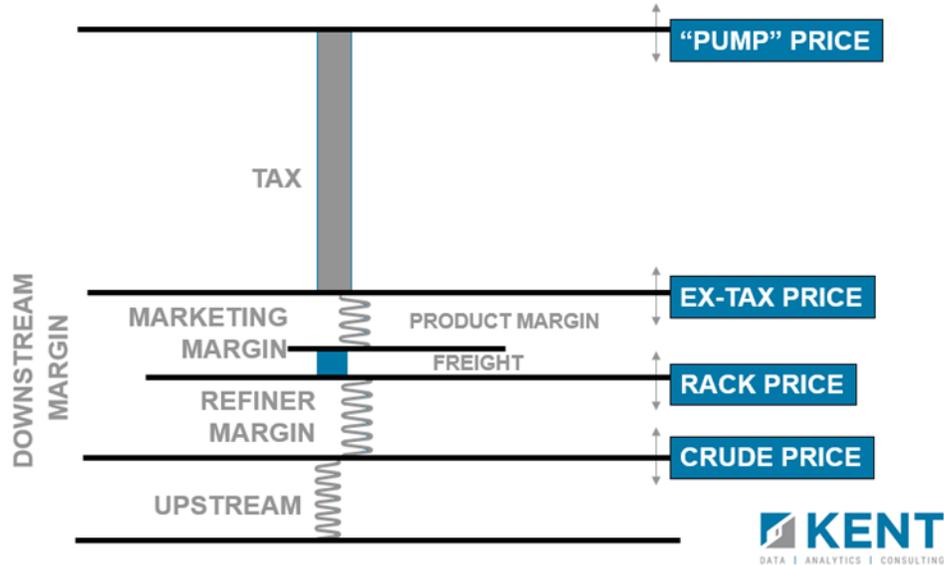
Retail “pump” prices can be best understood as consisting of four elements (**Figure 15**):

- The price of crude oil related to the upstream oil industry
- Refiner margin, the gross refinery revenue, also known as “crack spread”;
- Retail (or marketing) margin, the gross revenue generated by the retailer; and
- Taxes levied at the federal, provincial, and sometimes municipal level.

<sup>13</sup> Kent Group Ltd.’s 2018 National Retail Petroleum Site Census

<sup>14</sup> Sourced from Kent Group Ltd.’s 2018 National Retail Site Census Report

Figure 15: Components of the Pump Price / Margin Model



Pump prices are thus a function of the interrelationships between the principal stakeholders who ultimately share the revenue from the sale of a litre of gasoline. The interface between the stakeholders is defined by the price at which product is transferred from one sector of the industry to the next.

It is important to note that “margin” as expressed here, refers not to profit margin, but to gross margin, which in the case of marketing margin is the difference between the wholesale (rack) price and the retail ex-tax price. The marketing margin encompasses the operating costs and overhead of a site, plus whatever residual profit margin exists.

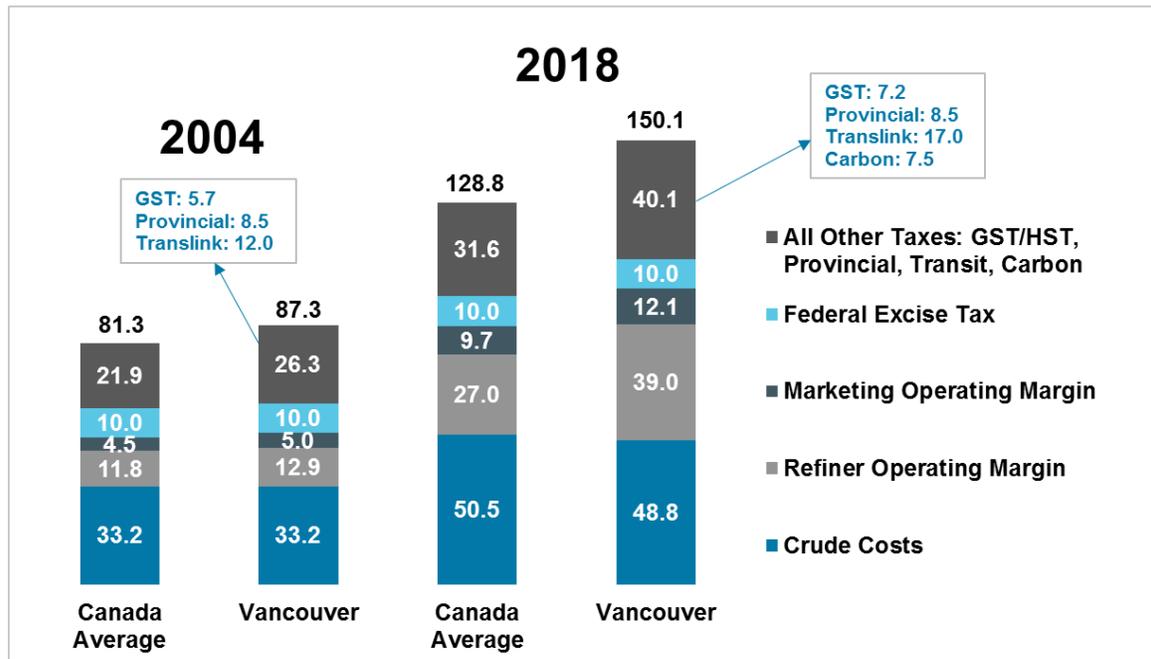
**Figure 16** shows the change in the pump price components since 2004 in the province of British Columbia compared to the Canada average. Although the crude component of the price of gasoline in Vancouver has not grown as fast as the Canada average crude component price since 2004, other pump price components have shown considerable growth compared to the Canada average over that last fourteen years.

## Crude Component

In 2004, Edmonton Par was a good proxy for the price of Canadian crude inputs; it represents a benchmark price for a light sweet blend of crude, which was the primary refinery inputs at the time. Since 2004, there has been considerable expansion in Western Canadian heavy crude extraction and the use of heavier grades in Canadian refineries.

A number of Canadian refiners have made investments into their facilities to process heavier crude blends and a number of crude upgrading facilities have appeared in Western Canada. Upgrading facilities are able to input heavy crude like bitumen and

Figure 16: Comparison of Canada Average and Vancouver Gasoline Pump Prices in 2004 and 2018



Source: Kent Group Pump Price Survey

convert that into a synthetic light crude, similar in quality to other light crude blends like Canadian Par.

Refineries located in Western Canada have more access to heavier crude blends and upgraded synthetic crude blends. Refineries on the East Coast, for example, are more reliant on international crude imports, and as such their crude inputs are priced similar to international crude benchmarks like Brent. Refineries in the western interior provinces have the greatest access to heavier and cheaper crude blends and their crude input costs tend to be lower than the rest of Canada.

Crude input costs in British Columbia are heavily influenced by light synthetic benchmarks like SCO which tend to be priced above the weighted-average input crude costs for other western refineries (that are influenced more by the markets for heavier crude), but below those input costs from eastern Canadian refiners that are influenced by the markets for Brent crude.

## Taxation of Petroleum Products in British Columbia

In Canada, most fuel taxes are calculated on a cent per litre basis and differ by product and region. We have provided a breakdown of fuel taxes in Canada, as well as a comparison to fuel taxation in British Columbia.

### Current Gasoline Taxes

Gasoline in Canada is subject to a ten cent per litre federal tax that is applied in all provinces and territories. Beyond federal taxes, all provinces have their own provincial gasoline taxes that vary from as low as 6.2 cents per litre in the Yukon to as high as 19.2 cents per litre in Quebec.

In British Columbia provincial gasoline taxes outside of the Vancouver Area (SCTA – South Coast British Columbia transportation service region) total 14.5 cents per litre, 6.75 cents per litre as a dedicated motor fuel tax and 7.75 cents per litre as a provincial tax. Within SCTA, provincial gasoline taxes are reduced to 1.75 cents per litre. However, SCTA is subject to an additional dedicated motor fuel tax of 17.0 cents per litre and the Victoria regional transit service area (VRTA), is subject to an additional 5.5 cents per litre.

A number of provinces are subject to carbon taxes on petroleum products including gasoline. Taxes of this nature can be established at the provincial or federal level, and currently British Columbia is the only province to have a carbon tax under provincial jurisdiction. Their provincial carbon tax is currently set at 8.89 cents per litre. Saskatchewan, Manitoba, Ontario, New Brunswick, Prince Edward Island and Newfoundland have a federally imposed carbon tax at 4.42 cents per litre. The territories will soon follow, beginning July 1<sup>st</sup>, 2019 at 4.42 cents per litre in the Yukon and 4.7 cents per litre in the Northwest Territories. Nova Scotia and Quebec are not subject to federal carbon taxes due but are involved in cap and trade plans. Up until May 2019, Alberta had a provincial carbon tax rate of 6.73 cents per litre. The newly elected government removed the tax but starting January 1<sup>st</sup>, 2020, the federal carbon tax rate will apply, set to be 6.63 cents per litre at that time.

### Current Diesel Taxes

Diesel in Canada is subject to a four cent per litre federal tax that is payable in all provinces and territories. Beyond federal taxes, all provinces have provincial diesel taxes that vary from as low as 7.2 cents per litre in the Yukon to as high as 21.5 cents per litre in New Brunswick.

In British Columbia diesel taxes outside of the Vancouver Area (SCTA – South Coast British Columbia transportation service region) total 15 cents per litre, 6.75 cents per litre as a dedicated motor fuel tax and 8.25 cents per litre as a provincial tax. Within SCTA, provincial gasoline taxes are reduced to 2.25 cents per litre. However similar to gasoline, SCTA is subject to an additional dedicated motor fuel tax of 17.0 cents per litre and the Victoria regional transit service area (VRTA), is subject to an additional 5.5 cents per litre.

Currently, British Columbia is the only province to have a provincially imposed carbon tax and it is currently set at 10.23 cents per litre. The provinces of Saskatchewan, Manitoba, Ontario, New Brunswick, Prince Edward Island and Newfoundland have a carbon tax rate of 5.37 cents per litre, which is set federally. The territories will follow beginning July 1<sup>st</sup>, 2019, at 5.37 cents per litre in the Yukon and 5.5 cents per litre in the Northwest Territories. Nova Scotia and Quebec are not subject to federal carbon taxes due to their cap and trade programs. Up until the end of May 2019, Alberta had a provincial carbon tax rate of 8.03 cents per litre. The newly elected government removed the tax but starting January 1<sup>st</sup>, 2020 the federal carbon tax rate will apply, and is set to be 8.05 cents per litre at that time.

### Percentage Based Taxes

Beyond the fixed portion of federal and provincial gasoline and diesel taxes, petroleum is subject to a Goods and Services Tax (GST), Harmonized Sales Tax (HST), or Quebec Sales Tax (QST) depending on the province. Taxes of this nature are determined on a percentage basis and are applied after federal and provincial taxes are added. Consequently, the amount of GST/HST/QST expand and contract based on the the price of gasoline and the abovementioned fuel taxes. In Canada GST/HST/QST ranges from as low as 5% (British Columbia, Alberta, Saskatchewan, Manitoba, Territories) to as high as 15% (Atlantic provinces).

### Historical Petroleum Taxes in British Columbia

Fuel taxes in British Columbia have changed significantly since 2003. At that time, taxes on gasoline and diesel increased 3.5 cents per litre from the rates which had been in place since the 1990s. The transit taxes in Vancouver were set to 10.0 cents per litre in the 1990s, increasing to 12.0 cents per litre in 2002, 15.0 cents per litre in 2015 and 17.0 cents per litre in 2017. Victoria's transit tax was 2.5 cents per litre in the 1990s increasing to 3.5 cents per litre in 2008 before increasing to its current level of 5.5 cents per litre in 2018.

Carbon taxes in the province were first introduced in 2008 at 2.23 cents per litre for gasoline and 2.55 cents per litre for diesel. Carbon taxes increased 1.1 cents per litre for gasoline and 1.3 cents per litre for diesel in each of: 2009, 2010, 2011, 2012, 2018, and 2019 to its current levels.

GST/HST in the province was at 7 percent in the 1990s before decreasing to 6 percent in 2006 and again to 5 percent in 2008, its current level. Current federal rates of ten cents per litre for gasoline and four cents per litre for diesel have been in place since 1995. **Table 1** provides a summary of total taxes paid in the province for gasoline and diesel since 1998.

Table 1: Historical Gasoline and Diesel Taxes in British Columbia

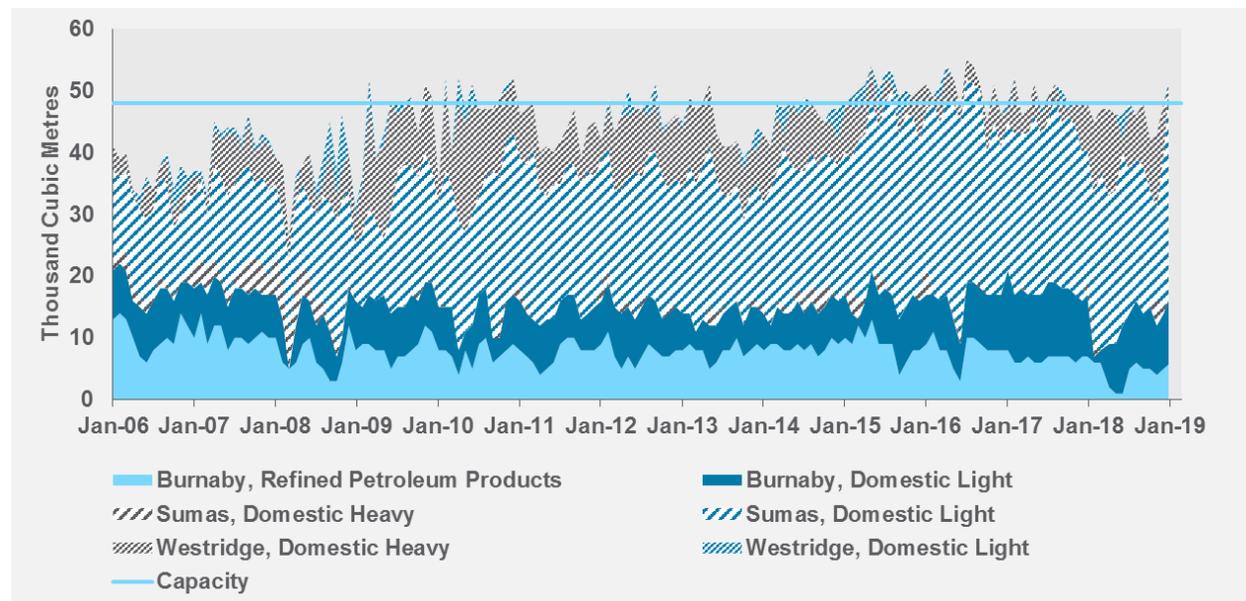
		1998	2003	2006	2008	2009	2010	2011	2012	2018	2019
Gasoline	Provincial	21.0	24.5	24.5	26.7	27.8	29.0	30.1	31.2	32.3	33.4
	Vancouver	25.0	30.5	30.5	32.7	33.8	38.0	39.1	42.2	43.3	44.4
	Victoria	23.5	27.0	27.0	30.2	31.3	32.5	33.6	34.7	37.8	38.9
Diesel	Provincial	15.5	19.0	19.0	21.6	22.8	24.1	25.4	26.7	28.0	29.2
	Vancouver	20.5	25.0	25.0	27.6	28.8	33.1	34.4	37.7	39.0	40.2
	Victoria	18.0	21.5	21.5	25.1	26.3	27.6	28.9	30.2	33.5	34.7
	GST/HST	7%	7%	6%	5%	5%	5%	5%	5%	5%	5%

\*Includes total taxes paid – federal, provincial and municipal in cents per litre Provincial number includes carbon tax as of 2008.

## Supply of Petroleum Products into the BC Market

This region’s supply is made up of domestic production (primarily via the Burnaby refinery), refined products shipped into the region via the Trans-Mountain pipeline from Edmonton, and imports into the coastal Lower Mainland. Over the last couple of years, wholesale pricing in this region has been heavily influenced by the price of imports from the U.S. West Coast; this is primarily a result of limited production capacity at BC refineries, rising demand, and the pipeline from Edmonton being consistently oversubscribed (Meaning that the pipeline is effectively full - it has more nominations for shipments than it has capacity to ship). (**Figure 17**)

Figure 17: Trans- Mountain Pipeline Product Movements, 2006-2019



Source: NEB

As a region’s supply approaches its capacity to produce and import, there is little or no ability to increase production without building additional capacity - which can involve significant time and capital expenditures. When demand approaches the limit of production/import capacity, the market (buyers and sellers alike) will bid-up the price of

that finite supply, as is the case with any finite commodity. When refineries are operating at or near capacity, unexpected refinery outages can result in local supply disruptions and temporary wholesale price spikes as has been the experience in British Columbia whose gasoline wholesale price has consistently averaged above the rest of Canada in recent years. **(Figure 18)**

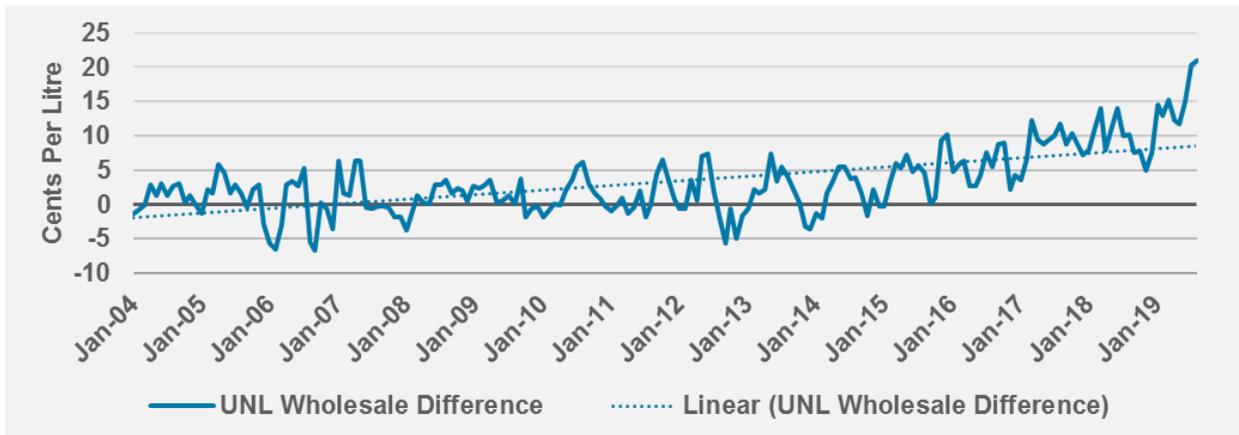
Figure 18: Comparison of Vancouver and the Canada Average Gasoline Wholesale Price, 2004 to 2018



Source: Kent Group Pump Price Survey

In May 2019, wholesale gasoline prices in Vancouver averaged 21 cents per litre higher than the rest of Canada. Typically, when two markets are connected by supply infrastructure, as Vancouver and Edmonton are via the Trans Mountain pipeline, their wholesale refined product prices are relatively close and they tend to move similarly from day-to-day. This phenomenon was present between Vancouver and western Canada historically, but since late-2014, there was a distinct separation between the prices in these markets, causing the average price difference between them to expand **(Figure 19)**.

Figure 19: Difference between Vancouver and the Canada Average Gasoline Wholesale Price, 2004 to 2018



Source: Kent Group Pump Price Survey

Supply issues in a specific region can cause wholesale prices to rise temporarily, this helps to attract more product into the area where it's needed, but arbitrage opportunities

often limit the size of price gaps, and return them to equilibrium fairly quickly. In order to sustain the type of long-term and substantial wholesale price differences observed between Vancouver and the rest of western Canada, there must be larger systemic issues in the region.

The increased reliance on imported gasoline into Vancouver would also mean reliance on more expensive forms of transportation (rail and barge), and generally these imports are from the U.S. West Coast, a market that has had elevated refined product prices relative to the rest of North America over the last few years.

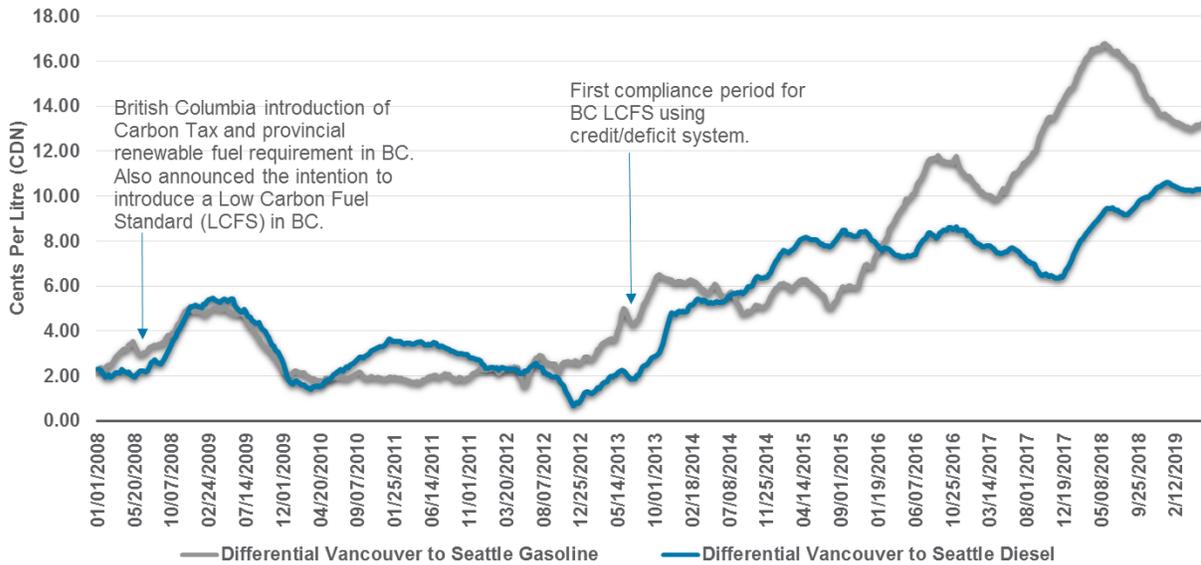
The Vancouver region has also had to compete with the U.S. West Coast (PADD 5) for gasoline imports. The unexpected and prolonged closure of the Torrance Refinery in California in 2015 put undue stress on refined petroleum markets along the West Coast. Although the refinery has been back online since May 2016, PADD 5 has continued to experience a number of refinery issues that have further constrained supply in the region, most recently in the early part of 2019. Consequently, PADD 5 wholesale prices have been well above the rest of the U.S. since 2015 and has driven up the price that the Vancouver-area pays for imported gasoline.

Furthermore, supply issues in the Lower Mainland can be further complicated by the differences in the renewable fuels regulations between the U.S. and Canada. Strict Federal U.S. renewable fuels regulations force ethanol blending of nearly 100% of their gasoline pool, and nearly eliminates the production and sale of conventional finished gasoline (without ethanol). In contrast, Canadian renewable fuel regulations are far less stringent and allow for discretionary blending; their differences can create segregation between markets that can result in exchange-adjusted rack price disparity.

Similarly, British Columbia's introduction of a low carbon fuel standard (LCFS) has pushed its rack prices higher relative to those in nearby U.S. markets on an exchange-adjusted basis. A low carbon fuel standard is a system which incentivizes the use of lower carbon fuels by effectively establishing a limit on the carbon intensity of fuels, and a system whereby a producer or importer generates credits or deficits through the relative carbon intensity of their products.

Pathways to compliance for LCFS are varied – an obligated party can produce or supply lower carbon fuels and trade excess credits with other suppliers, or an obligated party can acquire credits in the secondary market to offset deficits – but in either case there is a cost for the supplier that is likely being passed through to the wholesale price. **Figure 20** illustrates growth in the difference between Vancouver, British Columbia wholesale gasoline and diesel prices and Seattle, Washington following the implementation of the LCFS. While this trend cannot be fully attributable to the introduction of LCFS, it has been a significant factor.

Figure 20: Difference Between Vancouver and Seattle Gasoline and Diesel Wholesale Prices, 2008 to 2019



Source: Kent Group Pump Price Survey, Bloomberg and Convenience Store Decisions

## Factors Affecting Pump Prices

### Crude Costs

Crude prices are largely determined by international crude markets and commodities exchanges. The cost of crude purchased by refiners is generally based on an agreed upon (contract) price that is established against exchange-based crude benchmark prices. This price can vary however, by the quality of crude (e.g. light vs heavy crudes), and the cost of transporting the crude from the seller's point of storage to the refinery.

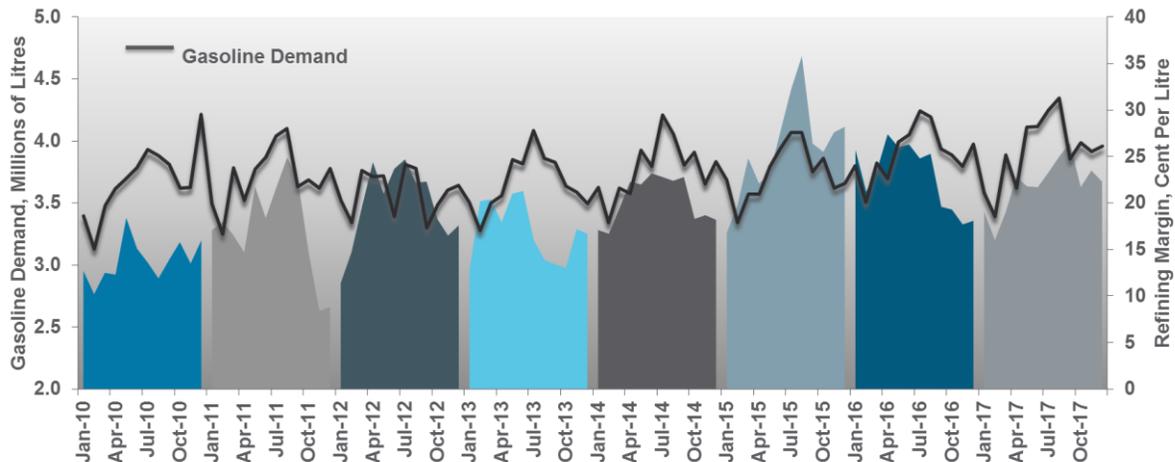
### Refiner Margin Volatility

The volatility of the refiner margin, (or "crack spread") is affected by factors such as seasonality of demand, refinery utilization, and exchange rates.

There is a distinct seasonality to Canadian gasoline demand, increasing in the spring and summer months, and falling in the winter months. Pump prices, driven largely by the underlying changes in wholesale gasoline prices, exhibit a similar pattern - rising and falling concurrent with demand.

Since crude prices do not show a seasonality, the seasonality in wholesale gasoline prices is therefore generally attributable to the refiner's margin. **Figure 21** shows Canadian gasoline demand from 2010 to 2017, compared to the average Canadian gasoline refining margin for the same period.

Figure 21: Gasoline Demand versus Gasoline Refining Margin, 2010-2017



Source: Statistics Canada Table 25-10-0044-01, Kent Group Pump Price Survey

Whether in the spring or fall, price fluctuations at the rack (and consequently at the pump) are a reflection of competition among buyers' and sellers' positions alike. Seasonal fluctuations in pump prices are then linked to the supply and demand of refined products and wholesale product inventory levels, a common feature of most market-based wholesale commerce.

Refinery utilization is a measure of crude inputs into a refinery as a percentage of its maximum processing capacity.

As a refinery's processing output approaches its capacity, there are no real short-term options to increase production beyond that point – building additional processing capacity involves significant time and capital. If demand exceeds the capacity to supply a product, as with any commodity, purchasers will bid-up the price of that finite supply. This leads to a rise in the rack price (and consequently the crack spread).

High refinery utilization rates have been consistently shown to have a strong correlation with higher and more volatile refining margins.

### Impact of the Canada-US Dollar Exchange Rate on Pump Prices

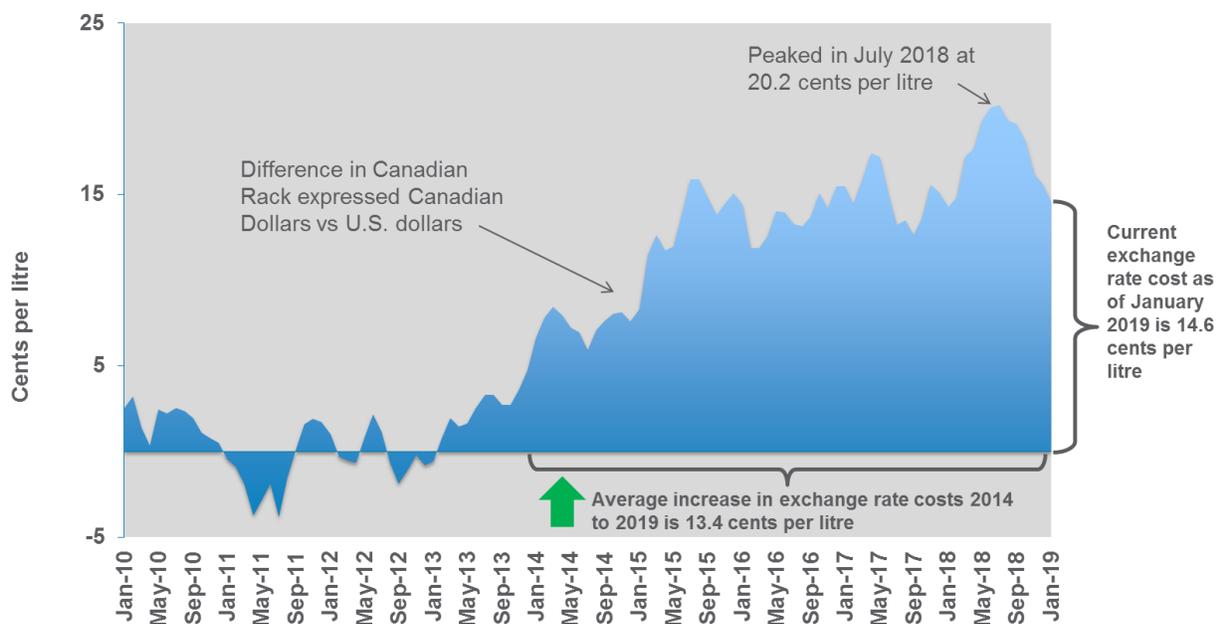
Free-trade between the U.S. and Canada ensures that refined products can move easily across the border, and typically, this results in competitive (exchange-adjusted) wholesale gasoline prices between proximate U.S. and Canadian markets.

If the Canadian dollar weakens relative to the U.S. dollar, Canadian crude and wholesale prices rise to maintain a comparable value to the U.S. dollar-priced commodities. If a

Canadian seller were to not adjust their price, U.S. buyers could take advantage of the relatively low price in Canadian markets by purchasing available supply and re-selling at a higher relative price in U.S. markets. To maintain security of supply and to prevent a potential loss of revenue, Canadian wholesalers can adjust their prices to be similar to U.S. wholesalers on an exchange-adjusted basis.

This adjustment in the wholesale price has the effect of increasing or decreasing Canadian refining margins. **Figure 22** illustrates this effect that exchange rates can have on Canadian refiner margins. This means that since 2014 Canadians have paid (on average) 13.4 cents per litre more for gasoline than they likely would have if the Canadian dollar had remained at par with the U.S. dollar over that time.

Figure 22: Effects of Exchange Rate Fluctuations on Canadian Gasoline Margins



Source: Bank of Canada, Kent Group Pump Price Survey

## Retail Margin Volatility

Pump price differences between markets within a province are largely explained by differences in retail margins, which in turn are affected by several factors, including:

- **Freight and distribution costs:** typically, the greater the distance from rack point to the retail location, the greater the distribution cost;
- **Volume of sales at a site:** higher volume sites have lower operating costs per litre enabling them to be more profitable and more price competitive;
- **Back-court revenue:** sites with strong convenience store (and other non-petroleum) sales can more effectively meet operating costs, creating more opportunity to be more price-competitive at the gas pump; and

- **Big box marketers:** similarly, these operators have an operating cost advantage which they use to price more competitively or even forgo the marketing margin to increase traffic into the on-site store.

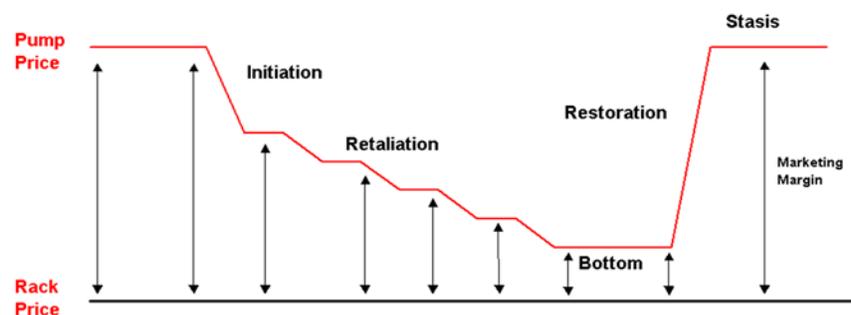
One of the most reliable indicators of retail margin levels is price volatility. Despite the negative connotations that some consumers attach to pump price volatility, it is indicative of competitive price behavior, and markets that exhibit more volatility generally have lower relative retail margins and pump prices.

### Intra-Day Volatility

Volatility, which refers to the degree which prices rise or fall over a period of time. When market prices change frequently, the market is said to have high volatility, and when relatively stable prices prevail, the market is said to have low volatility.

Volatility often takes the form of a “price war” (**Figure 23**). After a competitor first lowers their price (initiation) in an attempt to gain market share, other competitors often respond by lowering their price and potentially undercutting the other competitors to maintain market share (retaliation). The effect of this upon the retail margin is obvious: it is squeezed, possibly to a point of being insufficient to cover operating costs. If retail margins shrink to a point that is not viable for most competitors (bottom), one or more of those competitors may be forced to make a difficult decision: to be the first to raise pump prices and restore viable margins (restoration).

Figure 23: Common Competitive Price War Behaviour: "Rockets and Feathers"



If the resulting retail price increase is too high, competitors may not follow, in an attempt to gain market share. But if the pump price increase is a reasonable reflection of the underlying retail margin need, competitors will likely match this price, since they too may be eager to restore their margins to sustainable levels.

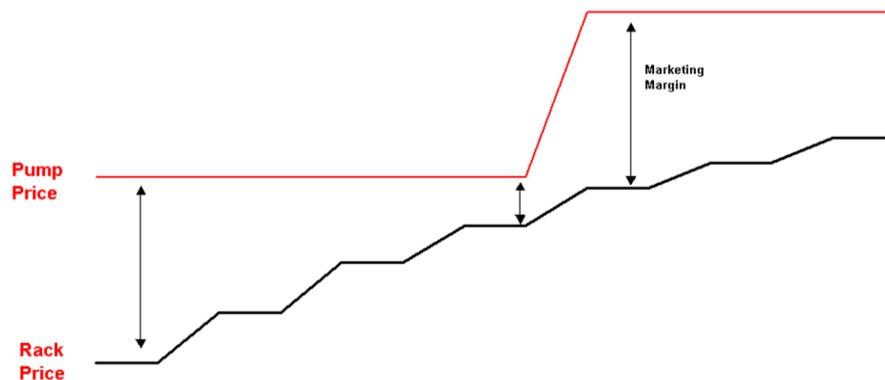
Some consumers view volatility as a negative pricing trait, often conflating it with price manipulation, yet volatile markets are often associated with lower relative prices and retail margins.

Similar to price volatility, price uniformity between competitors is often perceived as anti-competitive, sometimes cited as evidence that marketers engage in direct communication to “fix” prices at an agreed-to level. This is also a misconception.

To understand the phenomenon of uniform pump prices, one must adopt the perspectives of both consumers and competing, adjacent retailers. If one retailer decides to reduce pump prices (by two cents, for example), the effect on many consumers is immediate: they will drive into that station, bypassing the higher-priced outlet. The other retailer has little choice but to quickly match the competitor’s price in order to maintain market share. Pump prices therefore often move uniformly within a very short time.

This same concept of price uniformity is a factor in another common form of price war behavior: one where rack prices are rising, squeezing retail margins, and yet retailers may be reluctant to raise their prices in order to avoid losing market share to competitors. To the consumer, this behavior (shown in **Figure 24**) may not have the appearance of a price war, yet this can be an example of price competition between market participants.

*Figure 24: Common Competitive Price War Behaviour: Rising Rack Prices*



Both of these types of price war activity can be seen in the day-to-day price.

Ultimately, average retail price movement in a market is a function of the competitive interaction of pricing strategies for all market participants. Variations between pricing strategies is often related to the range of “margin need” among market participants. When there are large differences in the margin need of competitors in a market, this often leads to increased volatility in pricing, as diverse pricing strategies interact with one another.

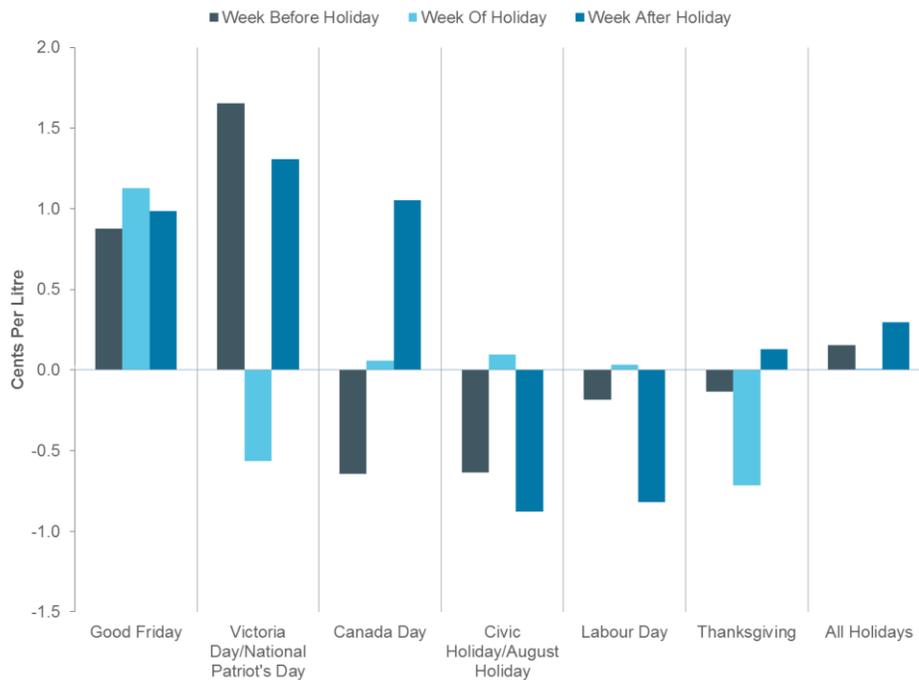
Each retail market can exhibit unique patterns of retail price movement, a direct result of a distinctive mix of market participants and their respective price strategies. This is why two similar and proximate markets can exhibit very different retail price movement and margin behavior.

## Long Weekend Price Increases: Fact or Myth?

There is a popular myth that pump prices generally rise just before a long weekend; however, objective analysis of pump prices throughout Canada has shown that this is not the case. A study conducted by Kent in 2014 reviewed price movements in 9 major Canadian cities over an 8 year period and definitively showed that prices were no more likely to rise during a holiday weekend than they were during non-holiday weekends.

Wholesale gasoline prices tend to rise in the late spring and early summer, as refiners complete their “turn-arounds” in preparation for the high demand summertime. Retailers simply pass along those increases in order to maintain a sustainable mark-up, which may (but not always) coincide with a holiday weekend. Conversely, when demand declines in the autumn, wholesale and retail prices generally decline, which may (but not always) coincide with a holiday weekend.

Figure 25: Average Price Changes (cents per litre) by Holiday



Source: Kent, Select Markets, 2006-2014

## Summary of Findings

Retail petroleum prices in British Columbia, and in particular, the Lower Mainland, average much higher than other provinces in Canada and this difference has increased in recent years. There are a number of market factors that explain virtually all of this phenomenon, as summarized below:

- Demand for petroleum products in the province of British Columbia exceeds supply, and that demand for petroleum products has increased while capacity to produce petroleum products has remained stable. As a result, the province has increasingly relied on product transfers into the province (from Alberta) or imports to meet growing demand.
- A number of prolonged and extensive refinery shutdowns (since 2015) along the U.S. West Coast have led to increased competition for imports, pushing wholesale prices higher.
- In addition, policies such as the Low Carbon Fuel Standard (LCFS) and renewable fuels blending regulations have led to differences in product specifications between British Columbia and elsewhere along the U.S. West Coast. This has increased costs and presented supply-related challenges for both producers and importers, and has been a primary driver of the growing (exchange-adjusted) differential in wholesale product prices between British Columbia and the U.S.
- Supply into the region relies heavily on shipments of refined products from Alberta via the Trans-Mountain pipeline. This pipeline that has had little or no spare capacity in recent years, and there has been a corresponding increase in refined product imports to make up the difference between rising demand and relatively flat domestic supply. This means that refined product prices in BC have increasingly followed import pricing as opposed to following domestic wholesale markets like the rest of western Canada. Many of these imports have also had to move by more expensive modes of transportation, such as rail or tanker truck, pushing prices up further.
- Geographical isolation from the rest of Canada limits options when there are unplanned supply issues, leading to higher levels of volatility in the region's wholesale prices.
- Retailers of petroleum products in the region have not benefited from increased prices. Retail margins as a percentage of the pump price have decreased over the last quarter century, and when adjusted for inflation, have not kept pace with the rising costs associated with fuel retailing.

- Pump prices in British Columbia have been affected by rising fuel taxes, most notably in the Lower Mainland. The fixed portion of tax burden in the Vancouver area has increased roughly 20 cents per litre for both gasoline and diesel in the last twenty years.
- Similar to other regions in Canada, pump prices in British Columbia have been affected by exchange rate differences between Canada and the U.S. The added costs associated with a weakened Canadian dollar would be made worse by British Columbia's higher average wholesale prices.

## Appendix A – Western Canada Product Flow Data Resources and Methodology

### Production

#### Gasoline

- Used Statistics Canada Table, 25-10-0044-01, Motor Gasoline, Refinery Production monthly data for 2017.
- Used the average of known months to estimate provincial data that was missing from the Statistics Canada Table.
- Western Canada production levels calculated according to Statistics Canada Table 25-10-0044-01 and Renewable Fuels Regulations (2017 Fuel Production And Import Combustibles). Used production ratios (by province ratio of total production) from Statistics Canada Table (25-10-0044-01) to derive production estimates by province.

#### Diesel

- Used Statistics Canada Table, 25-10-0044-01, Diesel Fuel Oil, Refinery Production monthly data for 2017.
- Used the average of known months to estimate provincial data that was missing from the Statistics Canada Table.
- Western Canada production levels calculated according to Statistics Canada Table 25-10-0044-01 and Renewable Fuels Regulations (2017 Fuel Production And Import Combustibles). Used production ratios (by province ratio of total production) from Statistics Canada Table (25-10-0044-01) to derive production estimates by province.

### Consumption

#### Gasoline

- Used Statistics Canada Table, 25-10-0044-01, Motor Gasoline, Retail Sales of Motor Gasoline monthly data for 2017.

#### Diesel

- Used Statistics Canada Table, 25-10-0044-01, Diesel Fuel Oil, Domestic Sales monthly data for 2017.

## Imports

### Gasoline and Diesel

- Used Statistics Canada Table, 25-10-0044-01, Motor Gasoline, Imports-monthly data for 2017, U.S. Energy Information Administration (EIA) export data, and Environment Canada's open data sets collected through Renewable Fuels Regulations, 2017 Fuel Production And Import Combustibles.

## Exports

### Gasoline and Diesel

- Used the Canadian International Merchandise Trade Database, liquefied petroleum, Canada, 2017, Domestic Exports along with Statistics Canada Table 25-10-0044-01 and EIA imports from Canada.