Report: Petroleum Product Margin Review Matter PMC21-01

Docket: PMC21-01; Order: PC19-003

PRINCE EDWARD ISLAND
Regulatory & Appeals Commission
Commission de réglementation et d'appels
ÎLE-DU-PRINCE-ÉDOUARD

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Table of contents

List of Figures and Tables

Introduction

The province of Prince Edward Island is home to 82 retail gasoline stations as of December 31, 2021 (IRAC) and four cardlock locations supplied by four bulk fuel plants and one primary fuel terminal (Kent Group Ltd 2017 Downstream Logistical Infrastructure Report). As of 2020, the province consumed just over 214 million litres of gasoline, 85 million litres of diesel fuel for transportation use, and about 129 million litres of light fuel oil - heating fuel for residential use (IRAC).

Since the late 1990s and under the authority for price regulation in the Petroleum Products Act, the Island Regulatory & Appeals Commission of Prince Edward Island (Commission or IRAC) has regulated the price of gasoline, diesel, furnace oil, and propane sold in Prince Edward Island. A minimum and maximum price are set for gasoline and diesel fuels, while a maximum price is set for furnace oil and propane fuels. As stated in the Act, "The purpose of this Act is to regulate the distribution and sale of petroleum products within the province of Prince Edward Island for use within the province, and the type, location, and operation of facilities and equipment associated therewith, and to ensure at all times a just and reasonable price for heating fuel and motor fuel to consumers and licensees within the province."

The Commission's pricing decisions have a discretionary component to the formula that are different from other provinces' regulations. Generally, the Commission monitors petroleum markets, and any price adjustments are considered against price fluctuations for refined products in these markets. The Commission may also consider the volumetric impact of any proposed change, as well as regional market conditions.

In summary, the retail price is set by adding the calculated benchmark price as determined by the Charlottetown rack price to previously approved wholesale and retail margins plus all applicable taxes (federal, provincial, carbon, and HST) to determine retail prices in the province.

Applications relating to the regulations can be filed with the IRAC (Commission) by a retailer, wholesaler, or wholesaler-retailer, firms, or corporations. The IRAC may hold a formal review and hearing into any matters to determine whether they are just and reasonable.

As part of Commission Order PC19-003 issued on December 19, 2019, the Commission advised that it intended to undertake a margin review (retail and wholesale) for all petroleum products prior to December 31, 2021; due to a delay in data submissions, the deadline has been extended until the end of first quarter 2022. The IRAC engaged Kalibrate (Kent Group), an independent industry consultant, to review all information provided by wholesalers and retailers to prepare a report providing guidance on the Prince Edward Island wholesale and retail margins for petroleum products as related to Docket: PMC21-01. The purpose of this report is to assist the IRAC in understanding and evaluating the evidence presented by Prince Edward Island wholesalers and retailers, and by providing impartial, objective analysis, enabling the IRAC to make the best decision possible under the law.

On June 22, 2021, Cheryl Mosher, Senior Financial Advisor, IRAC sent a statement of work stating that the Commission seeks Kalibrate's expertise to determine an appropriate formula for establishing a benchmark price for each petroleum product regulated and determine an appropriate wholesale and retail margin for the province of Prince Edward Island. Kalibrate (formerly Kent Group) is uniquely qualified to undertake this review: we are Canada's foremost consultancy relating to the fuels marketing sector. We have significant data and analytics resources of direct relevance to this project, and we have a well-earned reputation for impartiality from our clients across the spectrum of industry, government, and other stakeholders who have engaged our services.

In preparation for the hearing, and under the IRAC authority under section 52 of the Petroleum Products Act, the Board requested information from wholesalers and retailers in the province of Prince Edward Island related to wholesale and retail motor fuels (gasoline and diesel), and heating oil fuels in the province between the years 2011 and 2021.

Overview of Fuel Prices and Margins

Unregulated Markets – Fuel Price Elements

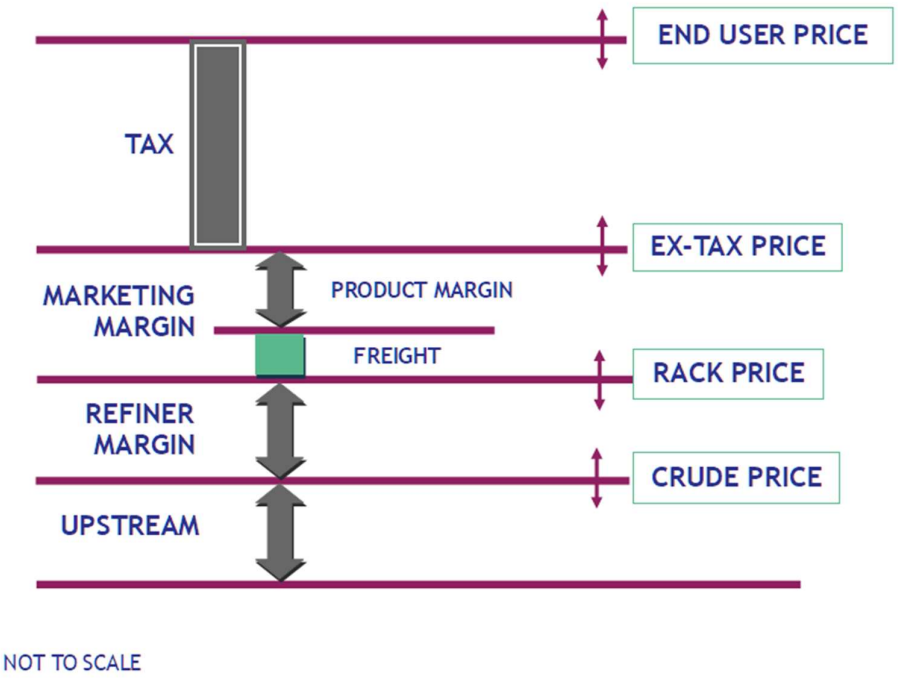
Understanding pump prices - and differentiating how they are set in regulated versus unregulated jurisdictions - requires an understanding of the interrelationships between the principal stakeholders who ultimately share the revenue from the sale of a litre of gasoline.

For an unregulated market, these relationships are illustrated in (Figure 1). The interface between each of the stakeholders is defined primarily in terms of the price at which the product is transferred from each stakeholder along the "value chain" to the next.

The revenue from the consumer purchase of a petroleum product (such as gasoline) is thus distributed among four key sectors, each essentially taking a share - or margin - from the total pump revenue. Each margin is quantified by its defining prices.

In an unregulated jurisdiction, these transaction prices between stakeholders are determined by market-driven forces: every market (retail, wholesale, and crude product markets) is subject to distinct supply, demand, and competitive dynamics that cause prices, and consequently margins, to vary, often daily.

Figure 1 Pump Price/Margin in an Unregulated Market



This report's use of the term "margin" relates to gross margin, therefore representing revenue generated on the sale of refined petroleum products. It is simply the difference between its two defining price points. For example, the gasoline marketing (or retail) margin is often defined as the ex-tax pump price less the product's purchase price, for which the "rack" wholesale price is often used as a proxy. Most Canadian wholesale transactions involving refined products, however, are set at a price based on the posted rack price (for example, at an agreed discount or an agreed premium to the posted rack price).

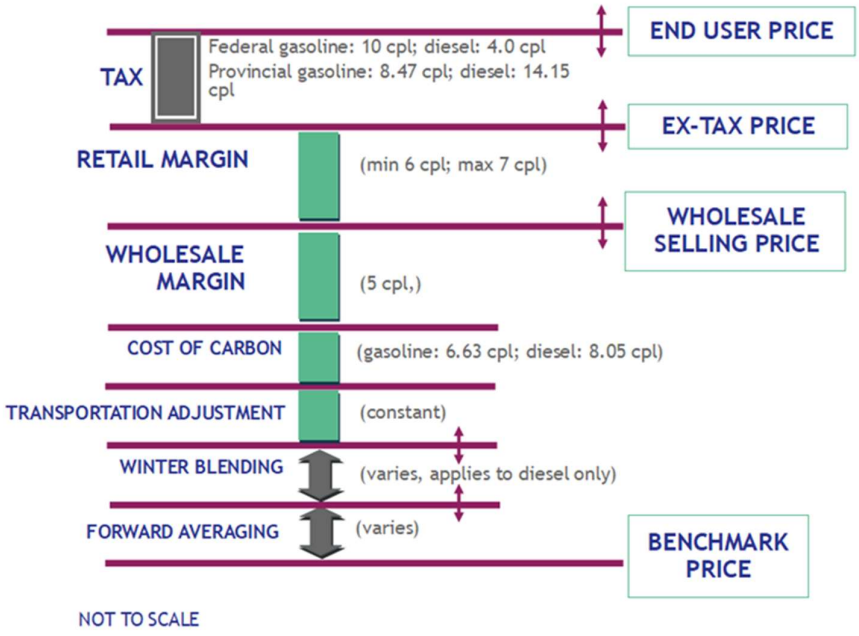
Regulated Retail Margin/Price Elements in Prince Edward Island

The purpose of the Petroleum Products Act is to ensure just and reasonable prices for all motor fuel (gasoline and diesel) and reasonable prices for heating oil to consumers and licensees within the province of Prince Edward Island, taking into consideration all the following objectives:

- Stability in prices for all specified petroleum products,
- preserving the availability of specified petroleum products; and
- minimizing the volatility in the pricing of specified petroleum products across the province.

The province aims to meet these objectives by regulating the motor fuel and heating oil margin and other cost components of the pump price, as represented in Figure 2.

Figure 2 Current Price/Margin under the IRAC Regulatory Framework (Based on IRAC data on February 18, 2022)

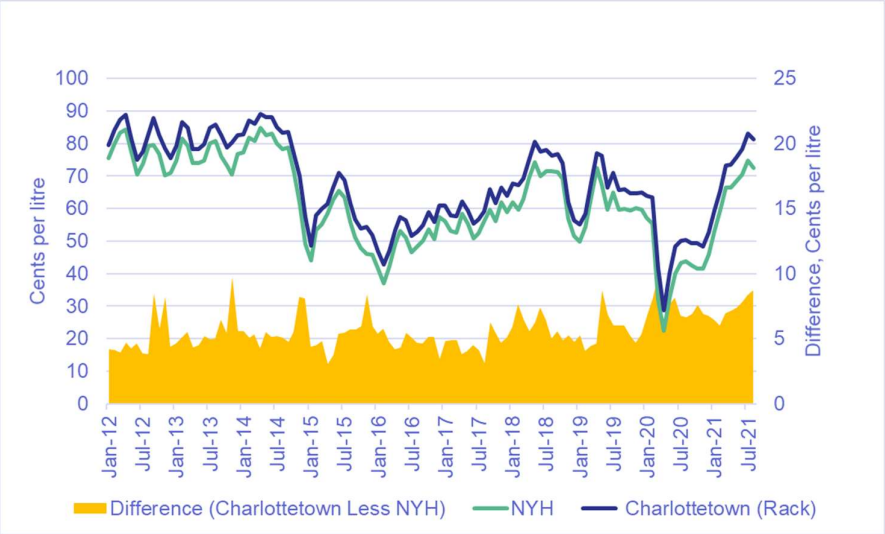


Benchmark Price

The Commission's pricing sets the minimum and maximum retail prices for petroleum products. It currently sets the retail margin based on adjustments to petroleum product prices based on Charlottetown rack prices. In other regulated jurisdictions which employ similar regulations, the price margins are established based on a formula that uses a benchmark price calculated from an average of the previous week's (running Thursday to the following Wednesday) New York Harbor (NYH) barge price (for gasoline and diesel). As the price is based in the United States, benchmark prices for each grade of fuel are adjusted for the currency exchange based on posted Bank of Canada daily exchange rates. The Commission (IRAC) provided Kalibrate with all benchmark prices between 2012 and September 2021.

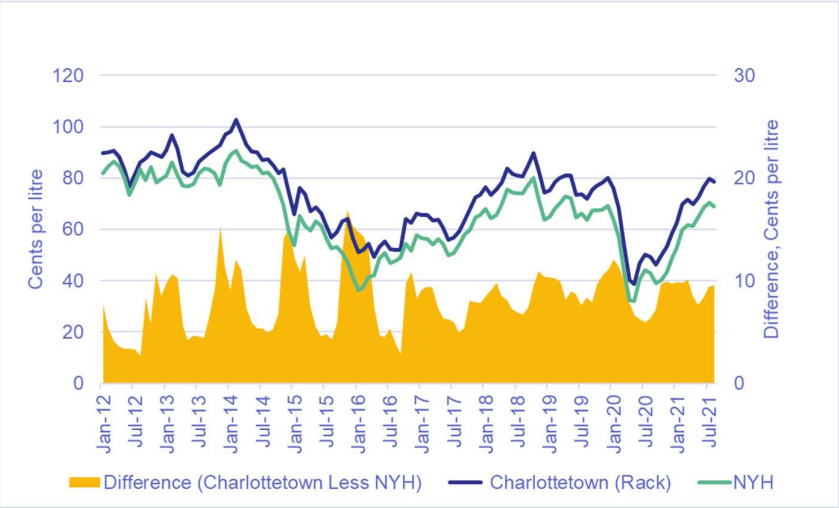
The NYH benchmark price is commonly viewed as a more reliable benchmark for wholesale refined product prices, especially in Eastern Canada and US, as it is a market-based rate based on high volumetric transactions. However, the Charlottetown rack prices are highly correlated to NYH benchmark price and have historically followed the NYH benchmarks quite closely **(**Figure 3**, Figure 4,** and Figure 5**)**. This is likely due to the relative geographic proximity between markets and the relative ease in transporting refined products along the Atlantic coast.

Figure 3 New York Harbor versus Charlottetown Wholesale Gasoline Price



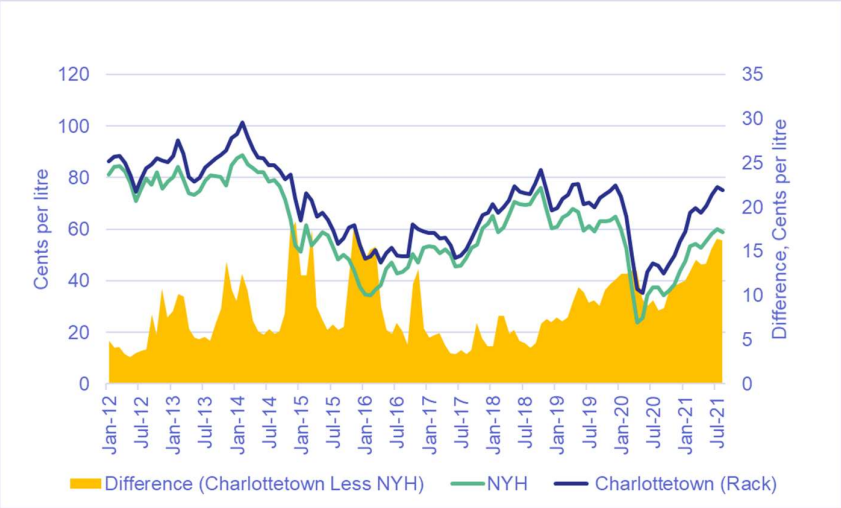
Source: IRAC and Kalibrate

Figure 4 New York Harbor versus Charlottetown Wholesale Diesel Price



Source: IRAC and Kalibrate

Figure 5 New York Harbor versus Charlottetown Wholesale Heating Oil Price



Source: IRAC and Kalibrate

Winter Blending

The Regulations permit an additional allowance to be given when deemed appropriate, for the winter blending of ultra-low sulfur diesel.

Transportation Adjustment

Currently, the regulations do not have an adjustment to retailers for the transportation of petroleum products. According to the Act (Section 29(1) of the Prince Edward Island Petroleum Products Act) "the price charged by wholesalers is to be "common and universal" to "all retailers throughout the province".

Cost of Carbon

On April 1, 2019, the province of Prince Edward Island introduced a carbon price (levy) on 26 fuels, including gasoline and diesel, but exempting both furnace oil and propane. The NYH and Charlottetown benchmark petroleum prices would not include carbon costs, while the retail prices of gasoline and diesel currently have a carbon cost component already embedded. For gasoline, the regulation's cost of carbon was 4.42 cents per litre as of April 1, 2019, and was increased by 2.21 cents to 6.63 cents per litre on April 1, 2020 and now sits at 11.05 cents per litre as of May 9, 2022. Similarly for diesel, the carbon levy was increased by 2.68 cents per litre from 2019 and currently sits at 13.41 cents per litre on diesel as of May 9, 2022. A carbon levy is similar to sales tax or HST as it is generally passed on to the final consumers. Therefore, has no impact on both retail and wholesale fuel margins.

Wholesale Margin and Retail Margins

Wholesale and retail margins that are applied to the regulated prices in the province of PRINCE EDWARD ISLAND are determined by the Commission at public hearings based on the evidence presented by participants in those hearings. The regulated levels for these margins should provide sufficient revenue to meet all operating costs and provide a suitable level of return on capital for both wholesalers and retailers.

Supply contracts between fuel wholesalers and fuel retailers in Prince Edward Island typically use location-specific rack prices (Charlottetown) as the transactional price basis in their wholesale and retail supply agreements. In some cases, the rack price may be used as the actual transaction price and in other cases, it is typically calculated as a delta to rack (either discount or premium), based on the specific commercial arrangement between the parties. As such, the differentiation of wholesale and retail margins, as provided under the Act is, in effect, theoretical.

In Prince Edward Island, retailers may negotiate a pricing arrangement with their wholesalers, such that, in practice, this function operates similarly to an unregulated model, provided that the retailer does not exceed the maximum retail price (or allowable margin) as set out by the Commission. It is our understanding that most supply agreements between wholesalers and retailers in Prince Edward Island are structured in this way.

In Prince Edward Island, wholesale margins were set at 5 cents per litre over 18 years ago and have since not seen a change despite the Commission conducting a full margin review in March 2012.

However, retail margins were set at 5.5 cents per litre (minimum) and 6.5 cents per litre (maximum) during a full review in March 2012 for self-serve motor fuel (gasoline and diesel) and

6 cents per litre (minimum) and 10.5 cents per litre (maximum) for full service. Following a request submitted by retailers to increase the allowable margins, a review was undertaken in 2019 using data and information gathered in 2018 from the retailers. Based on the data submitted, the Commission approved to increase the minimum and maximum retail price for both gasoline and diesel fuel by 0.5 cents a litre starting January 1, 2020. Following this increase, as per order PC19-003 the current retail margin for gasoline and diesel are at 6 cents per litre (minimum) and 7.0 cents per litre (maximum) for self-serve, but the retail margins for full service have not been changed from March 2012 levels.

Tax

Taxes on fuel in Prince Edward Island are based on both a per litre charge (fixed) and a percentage basis (variable). Taxes include provincial excise taxes, calculated as a fixed rate of 8.47 cents per litre for gasoline and 14.15 cents per litre for diesel fuel. Federal excise taxes are also calculated as a fixed rate - 10.0 cents per litre for gasoline and 4.0 cents per litre for diesel fuel. Petroleum taxes also include the harmonized sales tax (HST), calculated on a percentage basis at a rate of 15 percent for both products and is applied after fixed taxes are added. As discussed earlier, carbon tax or levy is also treated as a tax component.

All fuel tax rates in Prince Edward Island have been unchanged for a few years. Provincial gasoline and diesel fuel taxes last changed on January 1, 2020, while the federal excise taxes for gasoline and diesel fuel have remained unchanged since before 1998. The HST rate was changed in October 2016 after being amended in April 2013. The provincial component of the HST increased by 1 percent from 14 percent in October 2016.

A summary of the current price Regulation components are shown in Table 1, as applied to a recently published IRAC price schedule (February 18, 2022).

Table 1 Actual Price Schedule – Prince Edward Island Petroleum Product Pricing Breakdown (February 18, 2022)

	Regular Gasoline		Mid-Grade Gasoline		Premium Gasoline		Diesel	
	Min	Max	Min	Max	Min	Max	Min	Max
Benchmark price	101.1	101.1	104.6	104.6	108	108	113.5	113.5
Wholesale Margin	5	5	5	5	5	5	5	5
Dealer Base Price	106.1	106.1	109.6	109.6	113	113	118.5	118.5
Federal Excise Tax	10	10	10	10	10	10	4	4
P.E.I Provincial Tax	8.47	8.47	8.47	8.47	8.47	8.47	14.15	14.15
Carbon Levy	6.63	6.63	6.63	6.63	6.63	6.63	8.05	8.05
Wholesale price	131.2	131.2	134.7	134.7	138.1	138.1	144.7	144.7
Retail								
Retail Margin (Self Serve)	6	7	6	7	6	7	6	7
HST (15%)	20.6	20.7	21.1	21.3	21.6	21.8	22.6	22.8
Pump Prices (Self Serve)	157.8	158.9	161.8	163	165.7	166.9	173.3	174.5
Retail Margin (Full Serve)	6	10.5	6	10.5	6	10.5	6	10.5
HST (15%)	20.6	21.3	21.1	21.8	21.6	22.3	22.6	23.3
Pump Prices (Full Serve)	157.8	163	161.8	167	165.7	170.9	173.3	178.5

Source: IRAC

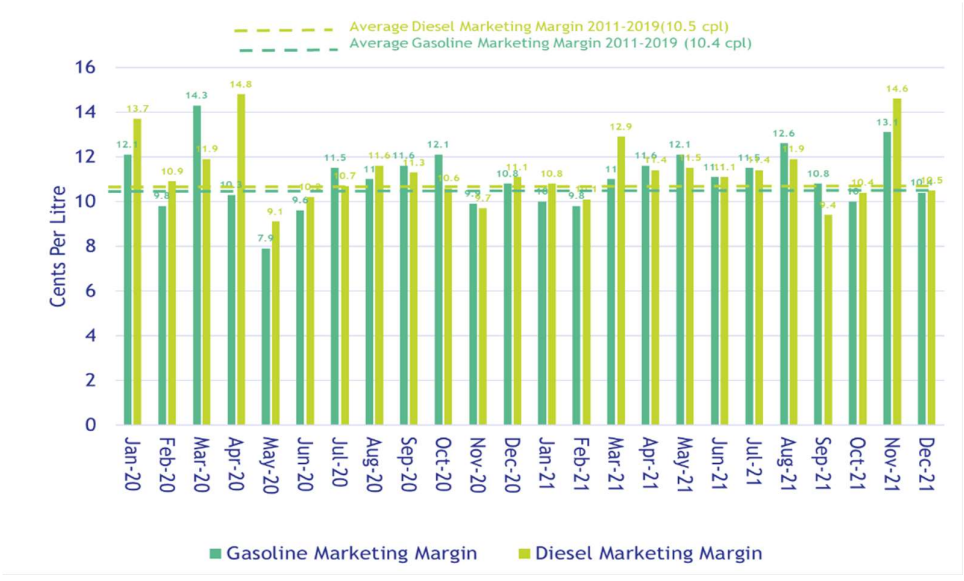
The Impact of COVID-19

The impact of the COVID-19 pandemic on petroleum markets since early-2020 has been substantial. During the peak shutdown phase in April 2020 gasoline demand in Canada declined 43.1 percent compared to the same month in the previous year, while diesel fuel demand was down 20.3 percent (Statistics Canada, Table 25-10-0076-01). This amounted to an unprecedented decrease in demand and had a significant impact on refinery activity and petroleum inventory levels. Consequently, prices for petroleum products dropped sharply, particularly during the early months of the pandemic, which had a corresponding impact on product margins (refiner, wholesale, and retail margins).

Although in 2021, both gasoline and diesel demand in Canada and Prince Edward Island have subsequently recovered since the second quarter of 2020, it is still estimated to be below 2019 levels (A barometer for pre-COVID-19). Kalibrate estimates that in 2021, Canadian demand for gasoline to be about 13 to 15 percent below 2019 levels, and for diesel, about 4 to 5 percent below 2019 levels. However, both gasoline and diesel demand in the province of Prince Edward Island saw a much stronger recovery relative to the Canadian average in 2021 and is estimated to be about 5 percent and 1 percent respectively, below 2019 levels.

On March 24, 2020, the Charlottetown gasoline rack price fell to 23.40 cents per litre (Source: Kalibrate), the lowest on record based on Kalibrate data since 2005. Similarly, the Charlottetown diesel rack price fell to 29.40 cents per litre on April 28, 2020, a price level not seen before. Since then both gasoline and diesel rack prices have recovered and are currently over 132 and 140 cents a litre respectively.

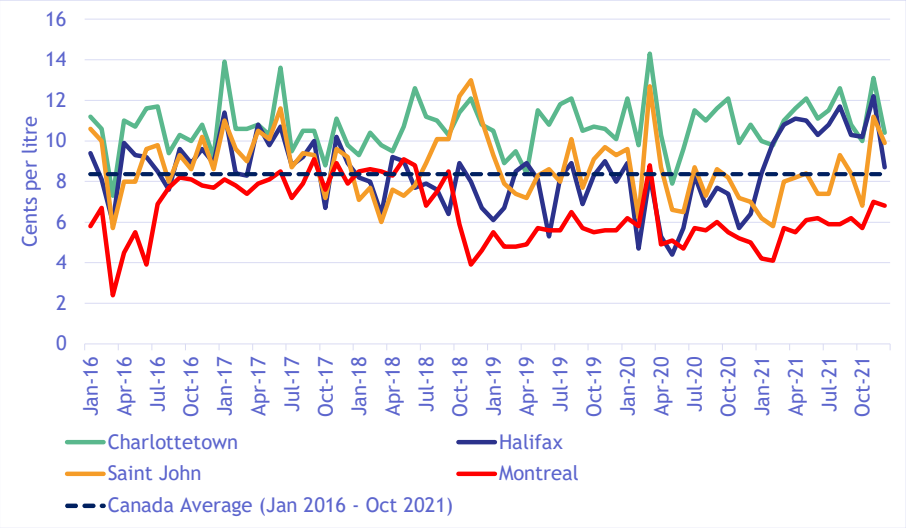
Figure 6 Average Monthly Marketing Margin, Charlottetown in 2020, 2021



Source: Kalibrate

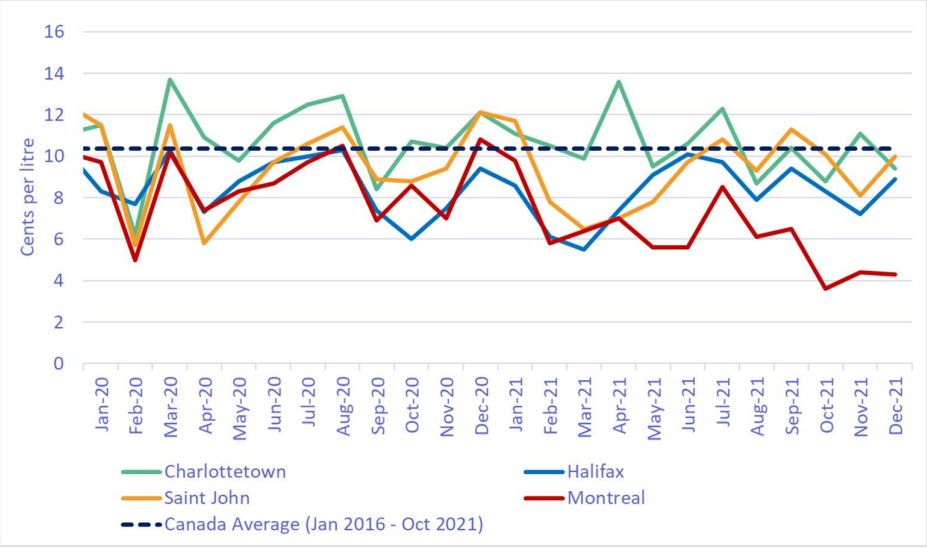
Figure 6 shows that the rack-to-retail margin in Charlottetown was well below annual averages in the months following the demand impacts from the pandemic (May-June). This was a period marked by a significant fall in demand for refined products and related shifts in prices and margins, not just in Prince Edward Island, but in other regional regulated and non-regulated markets (Figure 7, and Figure 8).

Figure 7 Monthly Gasoline Rack-to-Retail Margin Averages for Select Markets



Source: Kalibrate

Figure 8 Monthly Diesel Rack-to-Retail Margin Averages for Select Markets



Source: Kalibrate

The second half of 2020 and most parts of 2021 exhibited a large upward shift in demand for refined products in Prince Edward Island. Kalibrate estimates that gasoline consumption has recovered swiftly since the pandemic, albeit slightly lesser than 2019 levels. This could be due to the lingering impact of the COVID-19 pandemic on personal transportation, including shelter in place orders, remote working shifts, and other impacts. However, the demand for diesel, although lower from 2019 levels, did not fall as severely as gasoline consumption as transportation demand for goods was sustained despite the pandemic. The rack-to-retail trend for both gasoline and diesel, a good representation of retail and marketing margin, was much higher during the low point of the pandemic and periods after that when compared to other regulated and unregulated markets as shown in Figure 7 and Figure 8.

Although the pandemic impacted the demand for motor fuels and furnace oil in some months of 2020 in Prince Edward Island, the demand and price for these products improved during the second part of 2020. The annual average figures for 2020 trended at similar levels to 2021 despite being slightly lower than 2019. It is our opinion that evaluating the need for fundamental and structural changes to the regulations based primarily on 2020 or 2021 data (conditional on data availability) would be reasonable despite the abnormal behaviour of market conditions for a few months in 2020. Although 2019 may appear to be a more representative point of comparison, the COVID-19 pandemic changed market conditions, which affected the conventional market environment (the entire value chain – consumer, retail, wholesale, and refinery behaviour). Hence, the preferred alternative is using 2020 or 2021 data (conditional on availability) to compare with base periods and provide margin adjustment recommendations.

Basis for Analysis

This study will analyze and provide recommendations on appropriate wholesale and retail margins for each petroleum product (gasoline, diesel, and Furnace/heating oil). Before presenting the evidence provided by wholesalers and retailers, it is critical to understand the status quo and what is the basis of this analysis. This section will discuss the methodology behind both the wholesale and retail margin analysis for petroleum products in the province of Prince Edward Island.

Wholesale margins for gasoline and diesel were set at 5 cents per litre over 18 years ago and did not change during a comprehensive margin review in March 2012 (IRAC). Therefore, the basis of our analysis of data will include a comparison to 2012 (i.e., The changes between 2012 and either 2020 or 2021) to examine what has changed. While the wholesale margins for motor fuels have not changed for a while, the retail margins have. The only change since 2012 (+0.5 cents a litre) came into effect on January 1, 2020, based on 2018 data gathered from retailers. This resulted in the retail margin in the province to increase to 6 cents (minimum) and 7.0 cents (maximum) per litre for self-serve gasoline and diesel. Hence, this analysis will compare the changes between 2018 and 2021 for the retail margin analysis for motor fuels.

Margin reviews for furnace /heating oil is done differently than motor fuels as the Commission sets a maximum margin only (excluding taxes). For furnace oil, the maximum margin includes both wholesale and retail margins. The combined margin for furnace oil was increased from 19.5

cents a litre to 21 cents a litre in July 2017 using information gathered in 2016. The analysis will compare the changes between 2016 and 2020 or 2021 (depending on the availability of data) for furnace oil.

Two main factors are considered in our analysis of wholesale and retail margins in Prince Edward Island. The first is an examination of operating costs using data submitted by wholesalers and retailers. Any changes to operating costs between 2012 and 2020 or 2021 (for wholesalers) and between 2018 and 2021 (for retailers) would lessen a market participant's ability to maintain or generate a return.

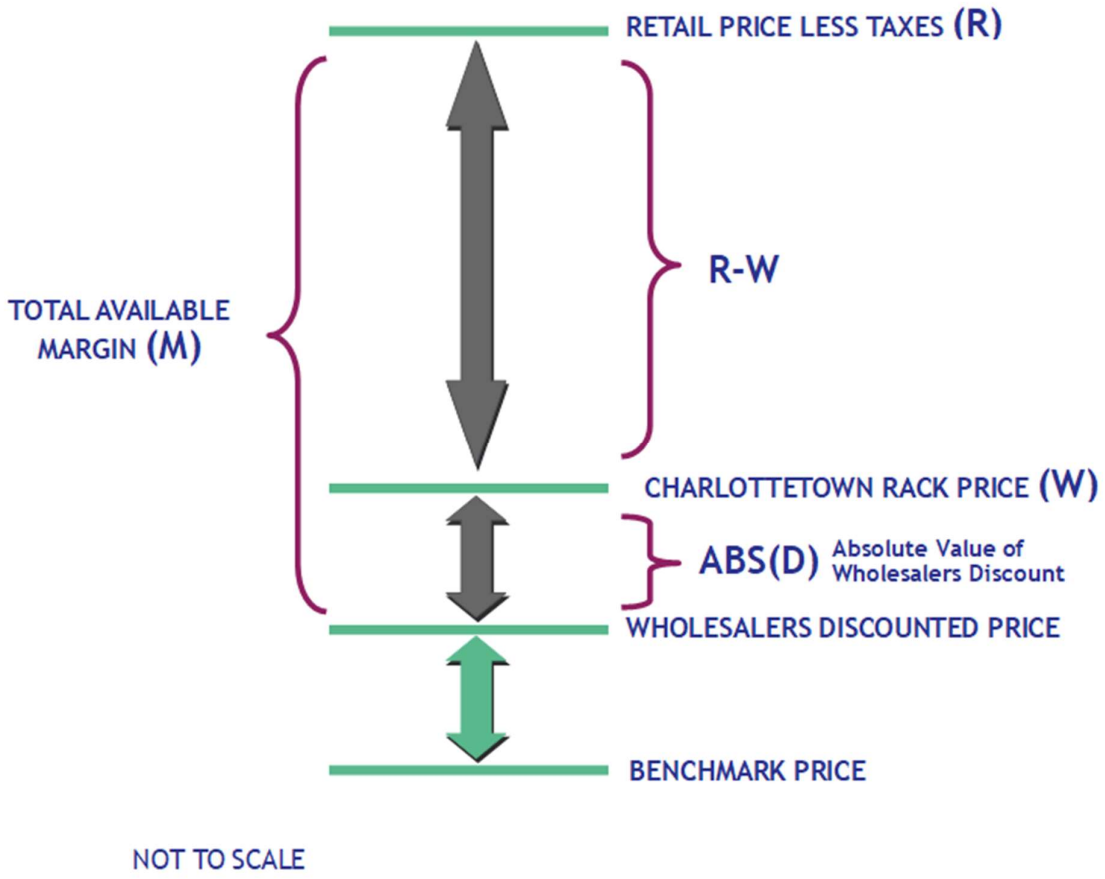
The second factor looks at the relationship between the wholesaler's acquisition cost of fuel and the benchmark price used in the regulatory build-up of retail prices (excluding taxes), as changes in the differential between these prices affect the total available margin for wholesalers. The fundamentals of available margin for fuel wholesalers are retailers in Prince Edward Island, and the factors that can impact it are illustrated in Figure 9.

Although the Commission sets wholesale and retail margins separately, the actual (realized) wholesale and retail margins in Prince Edward Island would be determined by individual stakeholder agreements. Typically, a wholesaler buys the product from a primary supplier (such as a refiner) at a contracted discount to the locally posted rack price. In this scenario, the total available margin for both wholesalers and retailers could be represented by the following equation:

$$M = (R - W) + ABS(D)$$

where M represents the total available margin, R represents the retail price less taxes, W represents the rack price for that product at a given location (source: Kalibrate), and ABS(D) represents the absolute value of the wholesalers' discount or premium to the rack price. In other scenarios, such as with integrated or primary suppliers, this same ABS(D) concept simply represents the difference between the rack and their actual/realized acquisition cost of the fuel.

Figure 9 Illustration of the Total Available Margin



Between 2012 and 2021, there has been a single change to the regulated price component build-up for both gasoline and diesel. The retail margins were adjusted once in 2020 by 0.5 cents per litre (Order PC19-003). This would imply that the total available margin (M) between 2011 and 2021 would have increased for gasoline and diesel by about 0.5 cents per litre, but that those increases are effectively offset for rising cost-related items.

The total available margin (M) is the summation of two key pieces, retail prices less wholesale prices (R-W) and ABS(D) – the absolute value of the wholesaler's discount to rack or the difference between rack and their actual/realized acquisition cost. There is some evidence to suggest that the first piece, "R-W," has marginally fluctuated for both fuels since the last wholesale margin was set in 2012. However, the standard deviation, a good measure of volatility (fluctuation), for both gasoline and diesel were both modest at 0.28 and 0.39 cents per litre between 2012 and 2021. As Figure 100 and Figure 111 illustrates for Charlottetown, "R-W" for gasoline and diesel have fluctuated between years but have an increasing trend between 2012 and 2021.

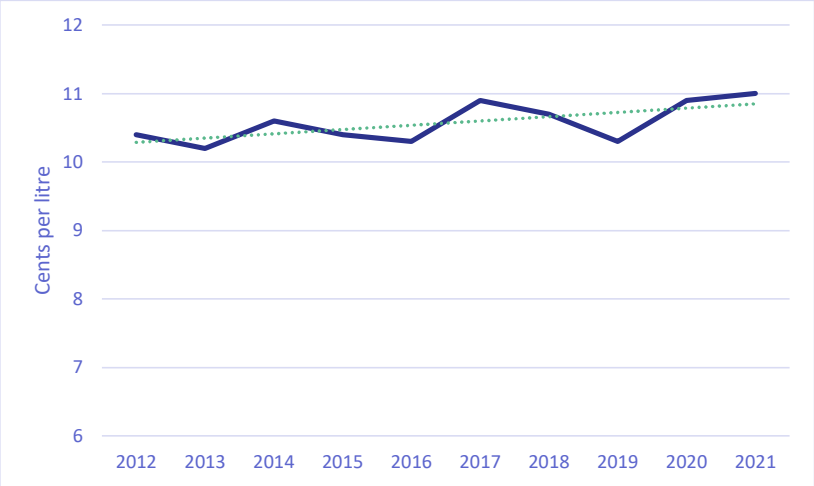
Table 2 Marketing Margin (R-W) for both Gasoline and Diesel – Charlottetown

Charlottetown	Gasoline (R-W)	Diesel (R-W)
2011 (Annual Average)	9.8	9.7
2012 (Annual Average)	10.4	10.2
2013 (Annual Average)	10.2	10.0
2014 (Annual Average)	10.6	10.6
2015 (Annual Average)	10.4	11.0
2016 (Annual Average)	10.3	10.5
2017 (Annual Average)	10.9	10.8
2018 (Annual Average)	10.7	10.9
2019 (Annual Average)	10.3	10.6
2020 (Annual Average)	10.9	11.3
2021 (Annual Average)	11.0	11.2

Source: Kalibrate

Overall, the net change between 2012 and 2021 in the "R-W" component for gasoline and diesel saw an increase of 0.60 and 1.00 cents per litre respectively.

Figure 100 Regulated Retail Gasoline Price (Excluding Taxes) less Charlottetown Rack Price, Rolling Annual

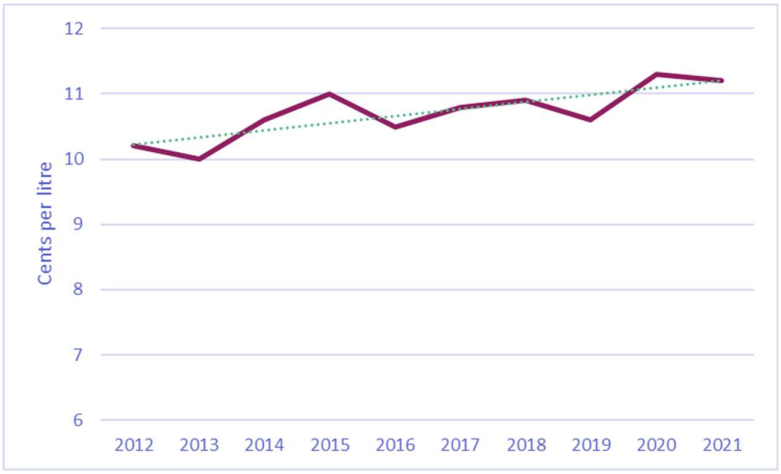


Source: Kalibrate

Given the equation, M = (R-W) + ABS(D), changes to any one variable in the equation must be considered alongside the other variables to determine the net impact on the available margin. For gasoline, we know that the "R-W" variable increased by 0.60 cents per litre. However, this does not consider changes to the ABS(D) portion of the formula and how that has impacted the available margin over that time. In our examination of the evidence supplied by wholesalers, we will evaluate how changes to the wholesalers' discount or the difference between rack and

acquisition cost changed over the evaluation period and its true impact on available margin over that time.

Figure 111 Regulated Retail Diesel Price (Excluding Taxes) less Charlottetown Rack Price, Rolling Annual



Source: Kalibrate

Evidence Presented by Wholesalers

Wholesale margins for motor fuels (gasoline and diesel) were set at 5 cents per litre over 18 years ago and have continued to be at the same level despite a complete margin review undertaken by the Commission in March 2012 (based on data submitted up to and including 2011). Consequently, regarding Docket: PMC21-01, wholesalers were asked to provide data from 2011 through to 2021 inclusive relating to the wholesaling of gasoline and diesel fuel in Prince Edward Island. Specifically, wholesalers were asked to provide:

1. Sales volumes, by year;
2. Acquisition costs (a price discount to rack price or a price premium to rack price), by year; and
3. Any/all other costs, by year (broken down to components that would allow the consultant to categorize costs like storage, capital costs, or operation & maintenance, if possible).

In all, three major wholesalers provided data to Kalibrate, which included a broadly representative mix of wholesale market participants. The combined volume sold for gasoline and diesel among the aggregated submitted data in the province of Prince Edward Island represents

the vast majority[1] of such transactions in the province and, in our view, is a strong representative sample.

In our analysis of submitted data, we looked at two primary factors in evaluating the need for changes to the current permanent wholesale margins:

1. Operating cost factors - how the costs associated with the wholesaling of fuel have changed since 2011 (the basis for the prior decision on wholesale margins).

2. Acquisition cost relative to the benchmark price – The acquisition cost described here is the cost incurred by wholesalers to acquire or purchase the petroleum product. The price they pay is usually an agreed price differential (premium or discount) to the benchmark price. For example, if the price discount is 2 cents a litre and the benchmark price is 100 cents a litre, then the acquisition cost of the product is 98 cents a litre. This analysis will see if the acquisition costs of regulated products have changed for wholesalers of regulated fuel products relative to the Commission's chosen benchmark price since 2012.

The primary assumption underpinning our chosen approach in the analysis of wholesaler submitted data was that the decision on wholesale margins rendered in 2012 (based on 2011 data) was "correct" and "fair", and that we should then focus on what has changed for both above-listed factors.

Changes in either factor have the effect of raising/lowering the available margin for wholesalers operating in Prince Edward Island. For example, a rise in operating costs could squeeze existing margins and lower (or eliminate) a wholesaler's ability to generate a reasonable return on their business. Therefore, it would be appropriate to say that if such a scenario is shown to exist in the broader wholesale market in Prince Edward Island, it could warrant an adjustment to the wholesale margin to restore wholesalers' ability to generate a reasonable return.

In addition, if wholesalers' acquisition costs rise relative to the benchmark price used in the regulatory formula (this would show up as a widening gap between the benchmark price and the wholesaler acquisition cost), this lowers the margin available to wholesalers. This means wholesalers would be buying the product at a relatively higher price but are also constrained in their ability to pass through this increase because the regulated retail price is fixed to the benchmark price. It would also be fair in this scenario to adjust wholesale margins to restore the available margin.

Our methodology is to evaluate and make recommendations for margin adjustments based on available data for both operating cost factors and the gap between the acquisition cost and benchmark prices. It should be noted that these factors are considered independent of one

[1] It is difficult to provide a precise percentage given that wholesale volumes from one party can be re-sold by another. However, based on our understanding of the market, the supply relationships in the province, and our understanding of the operations of each of the participants, we estimate that the parties providing data account for greater than 90 percent of wholesale transactions (by volume) in PRINCE EDWARD ISLAND.

another, meaning the recommendations resulting from our analysis of each should be considered additive. Therefore, the recommended adjustments that result from our analysis of each factor are summed together to form the basis for our final recommendation.

Analysis of Operating Costs

We asked wholesalers in Prince Edward Island to provide a breakdown of costs incurred in the wholesaling of fuel between 2011 and 2021, and asked that these costs be broken down into components to allow costs to be categorized into standard items such as storage, capital costs, etc.

Three major companies in the province of Prince Edward Island submitted the data on this matter. On a volumetric basis, the submitted data covered well over two-thirds of total motor fuel retail consumption in the province of Prince Edward Island. (Based on IRAC Data). Most of the wholesalers provided all the cost data for the years between 2013 and 2020, but collectively failed to provide information for the years 2011, 2012, and 2021. It should be noted that two out of the three companies who submitted the data provided information on the product acquisition cost (either price differential to rack or absolute price) between 2016 and 2020. Only one participant submitted information for all requested categories for all years. The data provided includes:

- More than two-thirds of the submissions provided all cost data covering 2013 to 2020, but only one participant provided information on all the evaluation period (2011 to 2020). One participant failed to provide any information on costs for all the evaluation periods. Kalibrate estimates that the cost submissions for the periods between 2013 and 2020 by the participants are a good representation of the product consumption in the province. Hence, the recommendations deduced from using this data will project an accurate reflection of the wholesale market.

- Those wholesale survey participants who submitted the cost data provided a detailed breakdown of cost information into categories, however, in some cases, categories and their definition and make-up seemed to vary from company to company.

Our process in assessing and analyzing the cost data began with a thorough analysis of data quality, identifying any data anomalies, then following up with any parties for clarification or explanation of any issues detected. We leveraged our understanding of the wholesale business and the various forms that it can take, and our market knowledge to determine the reasonability and applicable nature of the costs submitted. In the case of the cost data submitted, no significant data quality issues were detected, and all the data submissions were deemed suitable for use in further analysis.

Our process and further analysis consisted of the following steps, findings, and assumptions:

1. We validated all the cost items submitted by the participants for the wholesale margin review. All the cost data submitted by the participants did fall under the correct cost categories.

2. Some of the participants submitted data in a different format than what was requested. This required Kalibrate to perform some calculations to make data to be uniform and consistent across all submissions. For example, Kalibrate requested cost in thousands of dollars per item, but in some cases, it was a dollar per litre or not in correct units. Hence, Kalibrate had to convert the numbers into a single common metric that is consistent for all participants.

3. We checked for consistency of cost items across time. An example would be the inclusion of a specific cost in one year and the exclusion of that same cost in subsequent years. This was meant to ensure that the determination of how these costs changed over time was truly an "apples-to-apples" comparison[2].

4. The cost categories varied significantly in terms of granularity and definition between the submissions and so we consolidated each parties' costs into a single cost figure for each year.

5. We converted all costs to a dollar per litre figure using the volume data provided by the parties. We did this in a combined manner, adding all gasoline and diesel volumes together[3] and then pro-rated costs (where necessary) to apportion the costs for the handling of regulated vs non-regulated fuels[4].

6. We reviewed the subsequent dollar per litre figures by company to evaluate the reasonability based on each companies' size and level of involvement in the wholesale business in the province. There is obviously a range of sizes among the parties, and they can have differing levels of involvement in fuel wholesaling, so there would be an expected range in terms of reasonable per litre cost levels. All data at this stage was deemed to be reasonable and no other adjustments were made.

7. It was noted that while cost levels varied between companies in any given year, the movement of each company per litre costs tended to be very consistent, meaning it didn't fluctuate much from year to year and tended to follow a consistent trend (either decreasing or increasing) over the evaluation period.

8. Based on the above findings, and given that we did not have cost data for all years for all parties, we decided to use the data for the years submitted by the participants, which was for the years between 2013 and 2020. The data submitted for these years were assessed to be of good quality, reliable, and captured a good portion of the wholesale market. We observed that between 2013 and 2020 all the companies showed an increase in their per litre costs (Figure 12).

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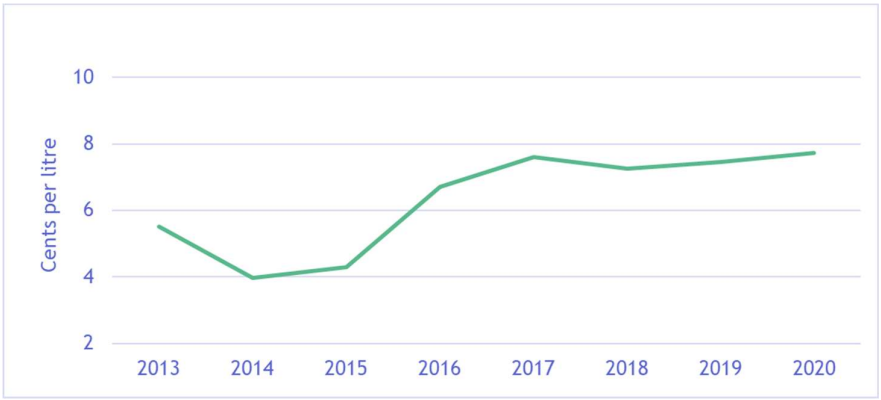
[2] This would not apply to legitimately new costs that arose over the evaluation period.
[3] The assumption is that most costs do not differ materially between handling of different fuels.
[4] For example, if 80% of the fuel sold was regulated (gasoline, diesel) and 20% was non-regulated (jet or kerosene or some other non-regulated fuel), then we considered 80% of the costs in our calculation.

9. We then calculated the change in cost (volume-weighted average[5]) between the years 2013 and 2020 for all the regulated products (Gasoline and diesel). The findings of our analysis are presented in Table 3, which illustrates the increase in the cost of motor fuels (gasoline and diesel) to wholesalers between 2013 and 2020.

Table 3 Wholesalers Average (Volume Weighted) Annual Change in Costs on a Cents Per-Litre Basis, 2013-2020

	Change (Cents per Litre)
Annual Average Volume Weighted Cost Change (2013-2020)	**2.01**

Figure 12 Distribution of Aggregate Weighted Average Wholesale Cost



Source: Kalibrate

Based on submitted data from wholesalers and our analysis described above, we find that total operating costs related to wholesaling of fuel in Prince Edward Island have increased, on average, 2.01 cents per litre between 2013 and 2020. We recommend an equivalent increase in the regulations' wholesale margin component be considered for gasoline and diesel.

Analysis of Acquisition Costs Relative to Benchmark Prices

We asked wholesalers in Prince Edward Island to provide their acquisition costs for gasoline and diesel over the evaluation period. The actual acquisition costs considered here are the contracted rack discounts or premiums relative to the Charlottetown rack price.

[5] Volume weights were calculated using relative total (regulated product) volumes between 2013 and 2020 (the only years with overlapping volumes for all parties) for those relevant to this analysis.

Similar to our analysis of operating costs, our process in assessing and analyzing acquisition cost data began with a thorough analysis of data quality, identification of any data anomalies, and followed up with any of the parties for clarification or explanation of any issues detected.

Out of all the different submissions from major wholesalers, only two provided acquisition cost information. Of this, only one provided the acquisition cost information for all products for the entire evaluation period (2011 to 2021). A summary of data provided includes:

1. Only one company provided acquisition costs for all products for the entire period of evaluation (2011 -2021).

2. There were other submissions of the acquisition cost, but the data provided were not continuous and were missing for most years of the evaluation period. The collective data acquired from these two participants despite being incomplete did suggest that the acquisition cost for both motor fuels more than doubled over the evaluation period (2011-2021). However, using this information would not be feasible in our analysis given the lack of adequate data.

3. A possible outcome would be to use data by a single participant, but that would not represent the majority of market conditions and hence would bias the overall results and wholesale margin recommendation.

4. Hence, we are unable to recommend a change or a value in the volume-weighted acquisition cost portion of the overall wholesale margin equation.

Summary of Wholesale Margin Recommendation Based on Cost

Based on the information submitted (data) by major wholesalers in the province of Prince Edward Island, we looked at two parts of the margin equation to see if there is a material change in costs for wholesalers that would negatively affect their margins. After analyzing the data, we recommend that the cost portion of the wholesale margin equation be considered while the acquisition cost portion is omitted due to the lack of representative data, despite the data showing an increasing trend over the evaluation period. Although, omitting the acquisition cost component is not ideal, given the lack of adequate submissions and data inconsistency, it is the optimal choice. Both these components are additive. Given the lack of adequate data for the acquisition cost, we recommend using the data for the cost component for the wholesale margin analysis. Therefore, we recommend that the wholesale margin for motor fuels (gasoline and diesel) be increased by 2.01 cents a litre to account for the increase in costs between 2013 and 2020 for motor fuel wholesalers in the province of Prince Edward Island.

Evidence Presented by Retailers

Similar to the analysis undertaken to determine wholesale margin changes in the previous section, we will use a similar methodology to recommend changes to the retail margin for motor fuels (gasoline and diesel) for the province of Prince Edward Island. Retail margins for gasoline and diesel were last set at 6 (Minimum) and 7 (maximum) cents per litre starting January 1, 2020 (based on data submitted up to and including 2018, based on Docket: PM903). Consequently, regarding Docket: PMC21-01, retailers were asked to provide data from 2018 through to 2021 inclusive relating to the retailing of gasoline and diesel fuel in Prince Edward Island. Specifically, retailers were asked to provide:

1. Sales volumes, by year;
2. Acquisition costs (A price discount to rack price or a price premium to rack price), by year; and
3. Any/all other costs, by year (broken down to components that would allow the consultant to categorize costs like storage, capital costs, or operation & maintenance, if possible).

In all, six retailers representing 39 gas stations out of a maximum of 85 submitted data to Kalibrate. On a volumetric basis, this roughly translates into just over fifty percent of the total retail consumption of gasoline in the province of Prince Edward Island. (IRAC data). The combined volume sold for gasoline and diesel among the aggregated submitted data in the province of Prince Edward Island represents a reasonable majority of such transactions in the province and, in our view, is an acceptable representative sample.

Like the wholesale margin analysis, we looked at two primary factors in evaluating the need for changes to the current permanent (not inclusive of interim changes) retail margins:

1. Operating cost factors - how the costs associated with the retailing of fuel (gasoline and diesel) have changed since 2018 (the basis for the prior decision on retail margins).

2. Acquisition cost relative to the benchmark price - – The acquisition cost described here is the cost incurred by the retailers to acquire or purchase petroleum products from wholesalers. The price is usually an agreed price differential (premium or discount) to the wholesale (rack) price. For example, if the price discount is 2 cents a litre and the wholesale price is 100 cents a litre, then the acquisition cost of the product is 98 cents a litre. This analysis will examine if the acquisition costs of regulated products have changed for retailers of these fuel products relative to the benchmark rack price (i.e., whether the premium price paid by the retailers to acquire the products has changed since 2018).

The primary assumption underpinning our chosen approach to the analysis of retailer submitted data was that the decision on retail margins rendered in 2020 (based on 2018 data) was “correct” and “fair”, and that we should then focus on what has changed for both above-listed factors.

Changes in either factor raise or lower the available margin for retailers operating in Prince Edward Island. For example, a rise in operating costs could pressure existing margins and lower (or eliminate) a retailer's ability to generate a reasonable return on their business. Therefore, it would be appropriate to say that if such a scenario is shown to exist in a broader retail market in Prince Edward Island, it could warrant an adjustment to the retail margin to restore the retailer's ability to generate a reasonable return.

In addition, if retailers' acquisition costs rise relative to the benchmark price used, that is, the premium paid on wholesale/rack price in the margin formula, this would result in an increased cost for the retailers, thereby lowering their margin. This means that the retailer would be buying the product at a relatively higher price than before but are also constrained in their ability to pass through this increase because the regulated margin on the retail price is fixed. In this scenario, it would also be fair to adjust retail margins to restore the available margin to the retailer.

Our methodology evaluated and made recommendations for margin adjustments based on available data on both the operating cost factors and the gap between the acquisition cost and wholesale prices. It should be noted that these factors are considered independent of each other, meaning the recommendations resulting from our analysis of each should be considered additive. Therefore, the recommended adjustments that result from our analysis of each factor are summed together to form the basis for our final recommendation.

Analysis of Operating Costs

Given that the last retail review was done using 2018 data, we asked retailers in Prince Edward Island to provide a breakdown of costs incurred in the retailing of motor fuels between 2018 and 2021. Further, we asked that these costs be broken down into components to allow costs to be categorized into standard items such as storage, capital costs, etc.

Out of a total of 82 retail gas stations in the province Prince Edward Island, 39 retail gas stations submitted data on this matter. On a volumetric basis, the submitted data covered just over half of total gasoline fuel retail consumption in the province of Prince Edward Island. (Based on IRAC data). All the retailers who submitted data provided all the cost information for the entire evaluation period (i.e., between 2018 and 2021). A summary of data provided includes:

1. All the retailers who submitted the data provided information on all cost items covering 2018 to 2021. Kalibrate estimates that the data submitted is a good representation of the product consumption in the province of Prince Edward Island as it covers a wide variety of retail stations (retailer and independent owned) in the province, despite covering only about 58 percent of total volumetric consumption in the province. Hence, the recommendations deduced from this data will reflect the retail market relatively accurately.

2. All retail survey participants who submitted the cost data provided information as requested by Kalibrate on the survey.

3. A similar approach to the wholesale margin was applied to check for data quality on the information submitted by the retailers. Based on our experience, knowledge, and understanding of the retail business, no significant data quality issues were detected, and all the data submissions were deemed suitable for further analysis.

Our process and further analysis consisted of the following steps, findings, and assumptions:

4. We validated all the cost items submitted by the participants for the retail margin review. All the cost data submitted by the participants did fall under the correct cost categories.

5. All data submitted by the participants were in the correct format, and no additional work was necessary.

6. All the cost items were consistent across time. An example would be the inclusion of a specific cost in one year and the exclusion of that same cost in subsequent years. This was meant to ensure that determining how these costs changed over time was truly an "apples-to-apples" comparison[6].

7. Like with the wholesale margin analysis, we converted all costs to a dollar per litre figure using the volume data provided by the parties. We did this in a combined manner, adding all gasoline and diesel volumes together.

8. We reviewed the subsequent dollar per litre figures at the company level to evaluate the reasonability based on each company's size and level of involvement in the retail business in the province. All data at this stage was deemed reasonable, and no other adjustments were made.

9. While cost levels varied between companies in any given year, the movement of each company's per litre costs tended to be consistent, meaning it didn't fluctuate much from year to year and tended to follow a consistent trend (either decreasing or increasing) over the evaluation period.

10. We then calculated the change in cost (volume-weighted average) between 2018 and 2021 for all the regulated products (gasoline and diesel). The findings of our analysis are presented in Table 4, illustrating the cost of motor fuels (gasoline and diesel) increased by 1.93 cents a litre between 2018 and 2021.

[6] This would not apply to legitimately new costs that arose over the evaluation period.

Table 4 Retailers Average (Volume Weighted) Annual Change in Costs on a Cents Per-Litre Basis, 2018-2021

	Change (Cents per Litre)
Annual Average Volume Weighted Cost Change (2018-2021)	**1.93**

Figure 13 Distribution of Aggregate Weighted Average Retail Cost

Source: Kalibrate

Based on submitted data from retailers and our analysis described above, it is our finding that total operating costs related to the retailing of fuel in Prince Edward Island increased, on average, 1.93 cents per litre between 2018 and 2021. We recommend an equivalent increase in the regulations' retail margin component be considered for gasoline and diesel.

Analysis of Acquisition Costs Relative to Benchmark Prices

The second component in the retail margin equation that warrants attention is the change to the acquisition cost between 2018 and 2021 for gasoline and diesel. As alluded to earlier, an increase in the acquisition cost over time has a negative impact on retailers; therefore, in this section, we will analyze the change in this cost component between 2018 and 2021 based on data submitted by retailers. Only 14 retail gasoline sites provided data on the acquisition cost over the entire evaluation period (2018-2021) out of 39 submissions. On a volumetric basis, this represents about one-third of the total submissions and less than one-sixth of the total gasoline consumption in the province of Prince Edward Island in 2020 (IRAC data).

A summary of data provided includes:

1. Similar to our analysis of operating costs, our process in assessing and analyzing the acquisition cost data began with a thorough analysis of data quality and identification of any data anomalies, followed up for clarification or explanation of any issues detected.

2. Out of all the submissions from retailers, only 14 provided the acquisition cost information. Of this, only the gasoline acquisition price was provided for by all for the entire period of valuation (2018 and 2021). All participants did not provide the diesel acquisition price for the year 2021. As a result, the change in acquisition cost for diesel in this analysis will be between 2018 and 2020. Also, to be consistent in our analysis, the gasoline acquisition cost change was measured between 2018 and 2020.

3. Based on the 14 submissions, the volume-weighted average acquisition cost for gasoline fell 0.08 cents a litre and by 0.56 cents a litre for diesel between 2018 and 2020 (Table 5 and Figure 14).

4. However, the findings regarding the increase in the acquisition cost for the 14 retailer stations do not accurately reflect the broader market, given the magnitude of missing information from other retailers. The result would be a biased recommendation as it does not represent the majority of the market.

5. Hence, similar to the wholesale margin analysis, we cannot recommend a change or a value in the volume-weighted acquisition cost portion to the overall retail margin equation.

Figure 14 Weighted Average Acquisition Cost for Gasoline and Diesel

Source: Kalibrate

Table 5 Average Acquisition Cost (Volume Weighted) change for Gasoline and Diesel between 2018 and 2020

	Change (Cents per Litre)
Gasoline Acquisition Cost differential Change (2018-2020)	**-0.08**
Diesel Acquisition Cost differential Change (2018-2020)	**-0.56**

Summary of Retail Margin Recommendation

For data submitted by major retailers in the province of Prince Edward Island, we looked at two parts of the margin equation (operating cost and acquisition cost) to see if there is a material change in overall costs for the retailers that would affect margins. After analyzing the data, we recommend that the operating cost portion of the wholesale margin equation be considered, while the acquisition cost portion be omitted due to the lack of representative data. Therefore, we recommend that the retail margin for motor fuels (gasoline and diesel) increase by 1.93 cents a litre, accounting for the increase in costs between 2018 and 2021 for all motor fuel retailers in the province of Prince Edward Island.

Furnace Oil Evidence Presented by Retailers

The margin for furnace oil is set differently from motor fuels. Instead of a minimum and maximum price for wholesale and retail, a wholesale and retail combined maximum margin is set for furnace oil in the province of Prince Edward Island. Currently, the maximum wholesale and retail margin for furnace oil is 21 cents a litre. It last changed from 19.5 cents to 21 cents a litre in July 2017 based on data from 2016 (IRAC). Therefore, like the wholesale and retail margin review for motor fuels, the evaluation for furnace oil will look at the change in the cost components (operating costs and acquisition or purchase price) of furnace oil between 2016 and 2021.

Wholesalers/retailers of furnace oil were asked to provide information regarding the following:

1. Sales volumes, by year;
2. Acquisition costs (A price discount to rack price or a price premium to rack price), by year; and
3. Any/all other costs, by year (broken down to components that would allow the consultant to categorize costs like storage, capital costs, or operation & maintenance, if possible).

In all, we received four submissions regarding the heating oil margin review. Based on IRAC data, we estimate that the submissions for furnace oil represent well over two-thirds of the total consumption in the province of Prince Edward Island. Submissions included all the requested cost items for the evaluation period (2016 to 2020); however, 2021 was not complete. Although there were submissions for cost items for the year 2021, we believe it was not representative of the wider furnace oil market in the province of Prince Edward Island on a volume-weighted basis. Submissions for 2021 were estimated to represent less than 50 percent of the total provincial consumption. Accordingly, this analysis measured the change in cost between 2016 and 2020.

Like the wholesale and retail margin analysis, there are two primary factors in evaluating the need for changes to the current permanent margin for furnace oil:

1. Operating cost factors - how the costs associated with the retailing of furnace oil changed since 2016 (the basis for the prior decision on margin).

2. Acquisition cost relative to the benchmark price - the acquisition cost described is the cost incurred by the wholesalers to acquire or purchase petroleum products. The price is usually an agreed price differential (premium or discount) to the benchmark price. For example, if the price discount is 2 cents a litre and the benchmark price is 100 cents a litre, then the acquisition cost of the product is 98 cents a litre. We examined how the acquisition costs of furnace oil changed relative to the benchmark rack price (i.e., whether the premium price paid by the wholesaler-retailers to acquire the product changed since 2016).

The primary assumption underpinning our chosen approach to the analysis of submitted data was the decision on furnace oil margins rendered in 2017 (based on 2016 data) was “correct” and “fair”, and that we should then focus on what has changed for both the above-listed factors.

Changes in either factor raise or lower the available margin for wholesalers/retailers operating in Prince Edward Island. An increase in operating costs could pressure existing margins and lower (or eliminate) the ability to generate a reasonable return on business. If such a scenario exists in Prince Edward Island's broader furnace oil market, it will warrant an adjustment to the wholesale and retail margin to restore service providers’ ability to generate a reasonable return.

Our methodology evaluated and made recommendations for margin adjustments based on available data on both the operating cost factors and the gap between the acquisition cost and wholesale price (benchmark price). These factors are considered independently of each other, meaning the recommendations from our analysis of each should be considered additive. Therefore, the recommended adjustments from our analysis of each factor were summed together to form the basis for our final recommendation.

Analysis of Operating Costs

Given that the last margin review for furnace oil was analyzed using 2016 data, survey participants (providers of furnace oil excluding propane) were asked to provide a breakdown of costs incurred between 2016 and 2021. Furthermore, we asked that these costs be broken down into components to allow costs to be categorized into standard items such as storage, capital costs, etc.

All the participants who submitted data provided cost information between 2016 and 2021. A summary of the data provided is below:

1. All the retailers who submitted the data provided information on all cost items covering 2016 to 2020. Some submissions did contain information on 2021, but on a volume-weighted basis it did not represent the majority of consumption in Prince Edward Island; therefore, the data for 2021 was not considered in this analysis.

2. All survey participants who submitted cost data provided information as requested by Kalibrate on the survey.

3. A similar approach to the margin analysis on motor fuels was applied to check for data quality on the information submitted by the retailers. Based on our experience, knowledge, and understanding of the retail business, no significant data quality issues were detected, and all the data submissions were deemed suitable for further analysis.

Our process and further analysis consisted of the following steps, findings, and assumptions:

4. We validated all the cost items submitted by the participants for the margin review. All the cost data submitted by the participants did fall under the correct cost categories.

5. All data submitted by the participants were in the correct format, and no additional work was necessary.

6. All the cost items were consistent across time.

7. Similar to the motor fuels margin analysis, we converted all costs to a dollar per litre figure by using the volume data provided by the parties.

8. We reviewed each company's dollar per litre figures to evaluate the reasonability based on each company's size and level of involvement in this business in the province. All data at this stage was deemed reasonable, and no other adjustments were made.

9. While cost levels varied between companies in any given year, the movement of each company's per litre costs was consistent with the exception of one submission in 2017, meaning it didn't fluctuate much from year to year apart from 2017 and tended to follow a consistent trend (either decreasing or increasing) over the evaluation period.

10. We then calculated the change in cost (volume-weighted average) between 2016 and 2020 for furnace oil. The findings of our analysis are presented in Table 6, illustrating the cost of furnace oil increased by 0.72 cents a litre between 2016 and 2020.

Table 6 Average (Volume Weighted) Change in Annual Costs on a Cents Per-Litre Basis, 2016-2020

	Change (Cents per Litre)
Annual Average Volume Weighted Cost Change (2016-2020)	**0.72**

Figure 15 Volume Weighted Annual Average Operating Cost for Furnace oil in Prine Edward Island

Source: Kalibrate

Analysis of Acquisition Costs Relative to Benchmark Prices

The second component in the margin equation that warrants attention is the change in the acquisition cost for furnace oil between 2016 and 2020. An increase in the acquisition cost over time has a negative consequence to the providers of the product. In this section, we will analyze the change in the cost component between 2016 and 2020 based on the data submitted by the participants. Out of four submissions, only three provided acquisition cost information between 2016 and 2020. On a volumetric basis, this represented more than two-thirds of the total furnace oil consumption in the province of Prince Edward Island in 2020 (IRAC data).

A summary of data provided includes:

1. Similar to our analysis of operating costs, our process in assessing and analyzing acquisition cost data began with a thorough analysis of data quality and identification of any data anomalies and follow-up with any parties for clarification or explanation of any issues detected.

2. Of all submissions, one participant failed to provide data on this issue. The other three submissions, representing the majority of the consumption in the province, did provide this data for the evaluation period (2016 and 2020).

3. Participants provided their acquisition cost across time as an absolute number and not as a price differential to the benchmark price (New York Harbor or Charlottetown). Hence, we calculated this price differential using the benchmark data provided by IRAC.

4. We believe the findings based on the data submitted by the survey participants are an accurate reflection of the furnace oil market in the province of Prince Edward Island. (the volumes representing the change in acquisition cost price differential (premium) to benchmark price is about two-thirds of the province's consumption).

5. Based on these submissions, we found the volume-weighted average acquisition price differential to Charlottetown rack price for furnace oil increased by 5.69 cents a litre between 2016 and 2020. However, we also noticed that the average acquisition cost price differential to benchmark price was volatile (meaning that it fluctuated up and down between 2016 and 2020 and did not have an increasing or a decreasing trend - Figure 16). The standard deviation (a measure of volatility) between 2016 and 2020 for all the volume-weighted submissions was relatively high at 3.08. This translates to about a 16 percent deviation from the average of all the acquisition costs between 2016 and 2020. Therefore, an approach to correct this volatility was undertaken to provide a more reliable recommendation for the furnace oil margin change.

6. To recommend a reliable change in the margin, we took an average of all volume-weighted acquisition price differentials to benchmark Charlottetown rack price between 2017 and 2020 (four-year average) and compared that number to the 2016 base year average. The average between 2017 and 2020 was calculated at 18.906 cents a litre. Given the average acquisition price differential was 17.992 cents a litre in 2016, the net change to the acquisition cost after correcting for volatility was 0.91 cents a litre (a more valid measure of change between 2016 and 2020).

7. Therefore, we recommend the volume-weighted change in the acquisition cost portion of 0.91 cents per litre be added to the overall margin equation.

Table 7 Average Acquisition Cost (Volume Weighted) change for Furnace oil between 2016 and 2020

	Change (Cents per Litre)
Furnace oil Acquisition Cost differential Change (2016-2020)	**0.91**

Figure 16 Volume Weighted Average Acquisition cost for Furnace oil (2016-2020)

Summary of Furnace Oil Margin Recommendation

Using data submitted by participants from the province of Prince Edward Island, we looked at two parts of the margin equation (operating cost and acquisition cost) to see if there was a material change in costs for providers of furnace oil that would, in turn, negatively affect their margins. After analyzing the data, we recommend both the operating cost and the acquisition cost of the margin equation be considered. It is our recommendation that the furnace oil margin (gasoline and diesel) be increased by 1.63 cents a litre, accounting for the increase in costs between 2016 and 2020 for all the providers of furnace oil in the province of Prince Edward Island.

Summary of Findings and Conclusions

Although the pandemic impacted demand for motor fuels and furnace oil during some months of 2020, demand and price for petroleum products in the province of Prince Edward Island subsequently recovered during the second half of 2020. The annual average estimates of motor fuel and furnace oil demand for 2020 trended at a similar level to 2021. Kalibrate estimates that 2020 demand for motor fuels was only 3 per below 2021 levels. Therefore, it is our opinion that evaluating the need for fundamental and structural changes to the regulations based primarily on 2020 or 2021 data (conditional on data availability) is reasonable despite the abnormal market behaviour during a few months in 2020. Alternatively, using 2019 data for margin review analysis may be outdated as the market conditions have evolved and changed since the pre-COVID-19 period. Consequently, our analysis of retailers' and wholesalers' data compared net changes from the base period (base period varied depending on the product and type of review) to either 2020 or 2021 based on data availability. Based on these two time periods, margin recommendations were made to the Commission, which are expected to come into effect in 2022.

When looking at the data provided, we analyzed two key variables in determining if any changes were necessary to retail and wholesale margins as a part of the IRAC regulations. One included any changes to operating costs between 2011 and 2021 for wholesalers and between 2018 and 2021 for retailers. Any cost change would negatively impact the retailers' and wholesalers' margins and may warrant a change to those margins. And secondly, we examined any changes to the differential between retailers and wholesaler acquisition costs versus the benchmark price in the regulations. Ultimately, our analysis tried to capture the net effect on the total available margin and the ability to generate a reasonable return for wholesalers in Prince Edward Island.

Data was submitted by most wholesalers and a majority of retailers of petroleum products (gasoline, diesel, and furnace oil) in the province of Prince Edward Island, and we deemed the data sample to be a good representation of the aggregate market for the operating cost portion of the data. However, for the acquisition cost portion, the data submitted by the participants in most cases were judged to be under-representative of the wider market. Hence, most of the petroleum products' wholesale and retail margin recommendations were based on the operating cost portion, except for the furnace oil margin analysis. The evidence submitted by Prince Edward Island retailers and wholesalers suggests that the operating costs for motor fuels have increased by 2.01 and 1.93 cents per litre and by 0.72 cents per litre for furnace oil. The price differential between the volume-weighted acquisition cost and the benchmark Charlottetown rack price increased the furnace oil cost by a further 0.91 cents a litre on top of the operating cost component. Consequently, a net increase of 1.63 cents a litre to the furnace oil margin was recommended. These recommendations are intended to replace the current wholesale and retail margins for all petroleum products that are in place since either 2012 or 2017 or 2020.

Appendix A: Project Qualification and Experience

Our project team is uniquely qualified to exceed the expectations of this study:

- We are **downstream petroleum specialists**. All ongoing and project-specific consulting work relates to the petroleum industry. On a day-to-day, year-to-year basis, we keep abreast of the issues, trends, and developments in this industry. Our learning curve is therefore very small – we can get into the essence of the project in a very short time.
- We have **a reputation for unbiased, objective analysis** of the petroleum industry. Our client base spans a wide range of interests: government, consumer groups, large and small petroleum marketers, and major buyers of petroleum products. We are relied on by hundreds of media outlets as a reputable source of independent analysis of petroleum industry issues.
- We have **expertise in petroleum pricing economics**. Kalibrate has been the definitive source of national fuel price and related price data for many years.
- We have a broad range of **petroleum industry contacts** with which we have strong working relationships. These include contacts with major and regional oil companies, independent marketers, industry associations, and key government agencies that deal with the downstream sector. This allows us to quickly go to the right people when government or industry participation is sought, working with contacts who are familiar with our expertise and our integrity.
- We have **extensive in-house petroleum-related data and reference resources** to call upon in the course of our project work, and we are intimately familiar with a wide range of external resources.
- We have considerable **project experience directly related to regulated petroleum markets**, including extensive project experience assisting the Province of Nova Scotia in a study of the economics of their gasoline market. We have also directly participated in two reviews of New Brunswick retail margins. Appendix A contains a full description of some of our relevant project experiences.
- We have a reputation for **clear and insightful communication**. Our reports are written with the audience in mind. We feel that a readable report does not have to compromise on detail or depth. Our key staff members are also very experienced in working with the media, and in public speaking and presentations.

Related Project Experience

Ongoing Fuels Price/Margin Survey and Analysis: For over 15 years, our firm has been the trusted, reliable source of fuels price and margin data and analytics for Canadian crude, wholesale, and retail fuels. We are the contracted source of this data for use by the Government of Canada (Natural Resources Canada) in its monitoring and evaluation of Canadian fuels prices and markets.

Petroleum Pricing Newsletter: Since 2011, we have produced a monthly/quarterly newsletter - "Report of Petroleum Pricing in Canada". It provides a comprehensive overview of petroleum prices and market dynamics. It provides a detailed analysis of crude oil, refined product wholesale prices, retail prices, and the margins associated with each sector. This document is widely distributed within North America and is a useful tool for both industry and non-industry to understand the dynamics of Canadian petroleum pricing.

Report- Analysis of NSUARB Matter M09823: In 2020, the Nova Scotia Utilities and Review Board engaged Kalibrate, an independent industry consultant, to provide guidance relating to M09823. The purpose of this report was to assist the NSUARB in understanding and evaluating the evidence presented by the Applicant, and by providing impartial, objective analysis, permitting the NSUARB to make the best decision possible under the law.

Report- An Overview of the BC Fuels Market: In 2019, Kalibrate was engaged by a national industry association to provide a report on the unique factors in the province of British Columbia that affect fuel pricing. The report included an overview of refining, supply and distribution, and marketing of petroleum products in the province. The report assisted the agency in understanding unique factors affecting the region and aided the agency in providing this information to members as well as government stakeholders.

Brief- Northern Ontario Prices Briefing Note: In 2018, we were engaged by a national industry association to provide a briefing document whose objective was to explain the disparities in gasoline prices within Northern Ontario markets relative to markets in Southern Ontario. Our report assisted this association in its efforts to bring a better understanding of fuel price dynamics to government stakeholders.

Brief – Ontario Pump Prices: In 2018, we were engaged by a national industry association to provide a briefing document. Our briefing provided an overview of price and pricing dynamics, with a particular focus on the Ontario market and included commonly asked questions about the fuel industry.

Report - Understanding Retail Transportation Fuel Pricing in Ontario: In 2017, we were engaged by the Ontario government (Ontario Energy Board) to provide an in-depth analysis of the Ontario fuels pricing structure. Our report provided a broad review of the Ontario petroleum industry that has enabled the public and government to have a better understanding of the dynamics of petroleum prices and markets, the factors that influence retail price-setting, and why retail fuel prices can vary from one retailer to another or from one market/region to another.

Review of Furnace Oil Prices in New Brunswick and other Regulated Provinces: In 2015, the New Brunswick Department of Energy and Mines requested that we conduct a review of province's furnace oil prices relative to other Atlantic provinces. This report assessed changes to the PPPA in 2014, and clearly laid out the reasons for price variances in the region's regulatory jurisdictions.

Briefing Paper – Current Retail Fuel Prices: In 2015, we were engaged by a national industry association to provide them insight into the nature of the relationship between crude and retail gasoline prices. Our report provided a deeper understanding of the component prices of gasoline and the factors affecting each.

Retail Fuels Price Regulatory Analysis/Critique: In 2013, for the New Brunswick Department of Energy, and subsequently for the New Brunswick Attorney General, we conducted a critical assessment and review of proposed changes to the price formula values used by the NB Energy and Utilities Board (EUB) in regularly setting its maximum fuel price values. This review, which included a subsequent appearance at Board hearings on this matter, established critical weaknesses in the original consultant's analysis and recommendations.

Retail Fuels Price Regulatory Consulting: In 2013, for the New Brunswick Regulatory Energy Utilities Board, we were engaged as the principal consultant for a review of the regulated basis for the setting of regulated "price ceilings"; our consultant's report served as the primary basis for the EUB's decision on regulated margin adjustments.

Price Regulatory Analysis/Critique: In 2008, for the New Brunswick Department of Energy, and subsequently in 2011, for the New Brunswick Attorney General, we conducted a critical assessment and review of proposed changes to the price formula values used by the NB Energy and Utilities Board in regularly setting its maximum fuel price values. This review, which included a subsequent appearance at Board hearings on this matter, established critical weaknesses in the original consultant's analysis and recommendations, resulting in the Board's rejection or modification of those proposals.

Gasoline Market Dynamics and Regulatory Options: In 2005, for the Province of Nova Scotia, and in partnership with another consultant, we conducted a comprehensive review of the Nova Scotia retail fuel industry. We documented and analyzed the infrastructure trends in that province, and we identified and assessed the regulatory options for addressing the principal stakeholder issues. We participated in interviews with a variety of industry stakeholders, and we collected, presented, and analyzed a number of price and margin data related to pump prices.

Appendix B: Consultant Resumes

Vijay Muralidharan

Mr. Muralidharan is the Director of Consulting at Kalibrate. and has over 16 years of work experience within the oil and gas consulting business, upstream and downstream oil and gas companies, and central banking. Vijay has a Master's in economics and a Master of Science in Resource Economics from the University of Alberta, Canada. Through these years, he has acquired and evolved extensive knowledge in market fundamentals, strategic planning, and forecasting, country risk analysis, economics, and investment analysis within the oil and gas industry.

Mr. Muralidharan also plays an important role in overseeing Kalibrate's consulting practice. He specializes in economic modelling and forecasting, petroleum marketing economics, fuel price and regulatory economics and consulting work related to petroleum product pricing and demand.

Paul Pasco

Paul Pasco is the Principal Consultant, at Kalibrate. His responsibilities include economic modelling, forecasting, fuel price and regulatory economics and petroleum product pricing and demand analysis.

Mr. Pasco is trained as a petroleum engineer with almost a decade of broad market experience. He is experienced in both the technical execution of oil and gas projects as well as summarizing the market factors that drive the demand and financing of the industry. He has previously advised international oil and gas majors, Canadian junior and intermediates and numerous major investment funds in understanding the Canadian Market.

George Vojvodin

George Vojvodin is the Senior Statistical Modeller, Consulting, at Kalibrate. His responsibilities include site-level analysis and statistical modeling to predict and forecast retail petroleum volumes on consulting projects in the downstream petroleum industry.

Mr. Vojvodin joined Kalibrate in 2014, giving him over seven years of experience in statistical modeling and site-level analysis. His experience is complemented by a bachelor's degree in statistics and is experienced in all aspects of statistical analysis. He assists and advises on many company-wide efforts and initiatives and provides analysis to clients with key insights into industry and market activity, by reporting on pricing, volumes, trends, and forecasting. George has over 36 years of statistical modeling experience.

Suzanne Gray

Suzanne Gray is the Senior Analyst, Consulting, at Kalibrate. Her responsibilities encompass a variety of roles including leading, planning, and conducting data collection, research, and analysis in an array of projects for a wide range of clients pertaining to the downstream petroleum industry.

Ms. Gray joined Kalibrate in 1997, giving her over twenty years of experience in research and analysis in the petroleum industry. This experience is augmented by a degree in Economics, having graduated with distinction. Suzanne's work extends across numerous projects in the areas of data reporting, regulatory analysis and performance benchmarking for the retail petroleum and associated industries. She takes a lead role in the preparation of Kalibrate's annual Retail Site Census for the Canadian Petroleum Industry.

Appendix C: About Kent Group (a Kalibrate company)

Kent Group provides excellence in data analytics and consulting services relating to the downstream petroleum industry. Our predecessor companies are Kent Marketing Services Limited, established in 1970, and MJ Ervin & Associates, established in 1990.

Our project qualifications and experience are extensive and diverse. Our active clients span a spectrum of:

- Governments and regulatory agencies
- Integrated multinational and independent petroleum companies
- Industry associations
- Large institutional petroleum consumers

Our expertise covers all aspects of the downstream petroleum value chain, including:

- Regulatory analysis & consulting
- Industry research & consulting
- Petroleum markets & price analysis
- Margin analysis and reporting
- Strategic analysis & planning
- Performance benchmarking
- Industry seminars and training
- Merger & acquisition consulting
- Expert analysis & testimony