2023

Phase II Report – Supply Dynamics, Benchmarking, Wholesale Mark-ups

NEWFOUNDLAND AND LABRADOR, BOARD OF COMMISSIONERS OF PUBLIC UTILITIES

VIJAY MURALIDHARAN, DIRECTOR, R CUBE ECONOMIC CONSULTING INC.

Table of Contents

List of Figures

List of Tables

Introduction

Newfoundland and Labrador enacted the Petroleum Products Act (Act) in 2001, paving the way for motor fuels (gasoline and diesel), furnace oil, stove oil, and propane fuel prices to be regulated. Since then, the regulations were amended in 2004, 2006, 2010, 2015, 2019, 2022, and 2023.

The Act allows the Board of Commissioners of Public Utilities (the Board) to divide the province of Newfoundland and Labrador into regulated zones wherein the maximum wholesale prices for motor fuels (gasoline and diesel), furnace oil, stove oil, and propane are set by zone.

As per the regulations, an application relating to the regulations can be filed with the Board by a retailer, wholesaler, and wholesaler-retailer. The Board may then decide to undertake a review and may hold a hearing on the matter raised by the party concerned to determine whether changes are justified.

On June 7, 2022, the Honourable Sarah Stoodley, Minister of Digital Government and Service NL, requested that the Board complete a review of the following two matters with respect to petroleum products pricing: first, the suitability of the pricing mechanism for benchmark prices; and secondly, the maximum markup between the wholesale price to the retailer and the retail price to the consumer for all regulated fuels (both of which comprise the total allowed markup).

The Board engaged R Cube Economic Consulting Inc. (R Cube) to compile data and information and to provide a report to the Board to assist in the review. This report will focus on the wholesale markup review. It will be a precursor to the Phase III report, which will focus on the retail markups. The wholesale margin analysis will also review the current supply dynamics and infrastructure for the regulated products within Newfoundland and Labrador.

In addition, the review will examine different data sources for the current benchmark prices for motor fuels (gasoline and diesel), furnace oil, stove oil, and propane and whether the choice of a specific source impacts the total available wholesale markup. The review will also consider and provide recommendations with regard to the choice of the benchmark price for the above-specified fuels in the context of the Canadian regulatory changes.

In preparation for the wholesale margin review and a possible hearing, R Cube requested information from the wholesalers of motor fuels, furnace oil, stove oil, and propane in Newfoundland and Labrador between 2019 and 2022. As per the engagement, the Board required R Cube, an independent industry consultant, to review all the information wholesalers provided and submit a report and recommendations related to this matter.

This report aims to supplement the Board's understanding of the issues, evaluate the evidence presented by Newfoundland and Labrador's wholesalers, and provide impartial, objective analysis enabling the Board to make the best decision possible under the law.

R Cube is well qualified to undertake this review. Its Director and primary consultant, Vijay Muralidharan, is one of Canada's leading consultants in the fuel marketing sector. In addition, R Cube Economic Consulting Inc. has extensive experience **with market analysis and regulatory work in petroleum product markets and a well-earned reputation among stakeholders for its impartial and data-based approach.**

Review of Wholesale Markups - Base Zones

An Overview of Fuel Prices and Margins

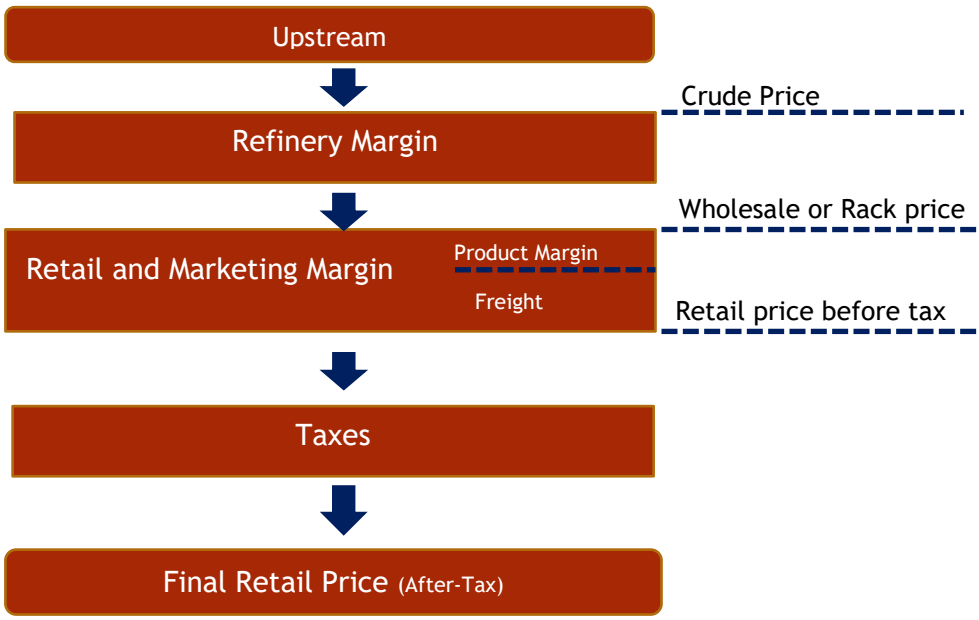
Price and Margins in Unregulated Markets

To clearly understand the analysis and recommendations in this report, it is imperative to know how fuel prices are set in regulated and unregulated markets. This section will illustrate this by outlining the interrelationships between the stakeholders involved and the revenue share from the sale of a litre of fuel.

The basic function of unregulated fuel markets and the relationships between its stakeholders are illustrated in Figure 1. In an unregulated market, the primary interaction between the stakeholders is defined by the price at which the product transfers along the value chain. The revenue generated from a consumer's purchase of a petroleum product, such as gasoline or diesel, is distributed among four key sectors, each essentially taking a share or margin from the total revenue generated. At each stage of the value chain, the product's sale price defines the margin.

In an unregulated market, market forces determine the transaction prices between stakeholders. These market forces (demand, supply, and competition) affect the price of petroleum products (crude oil, as well as both wholesale and retail gasoline and diesel), and the interaction of these forces causes fluctuations in market price and margins.

Figure 1: Fuel Prices / Margin in an Unregulated Market



In this report, the term margin relates to gross margin and therefore represents the revenue generated on the sale of the product. It is defined as the difference between two pricing points. For example, the wholesale gasoline margin is calculated as the difference between the benchmark price (the price at a foreign market) and the domestic rack or wholesale price. The retail margin is determined as the ex-tax pump price less the product's purchase price or acquisition cost from the wholesaler.

Description of Price and Margins in Newfoundland and Labrador

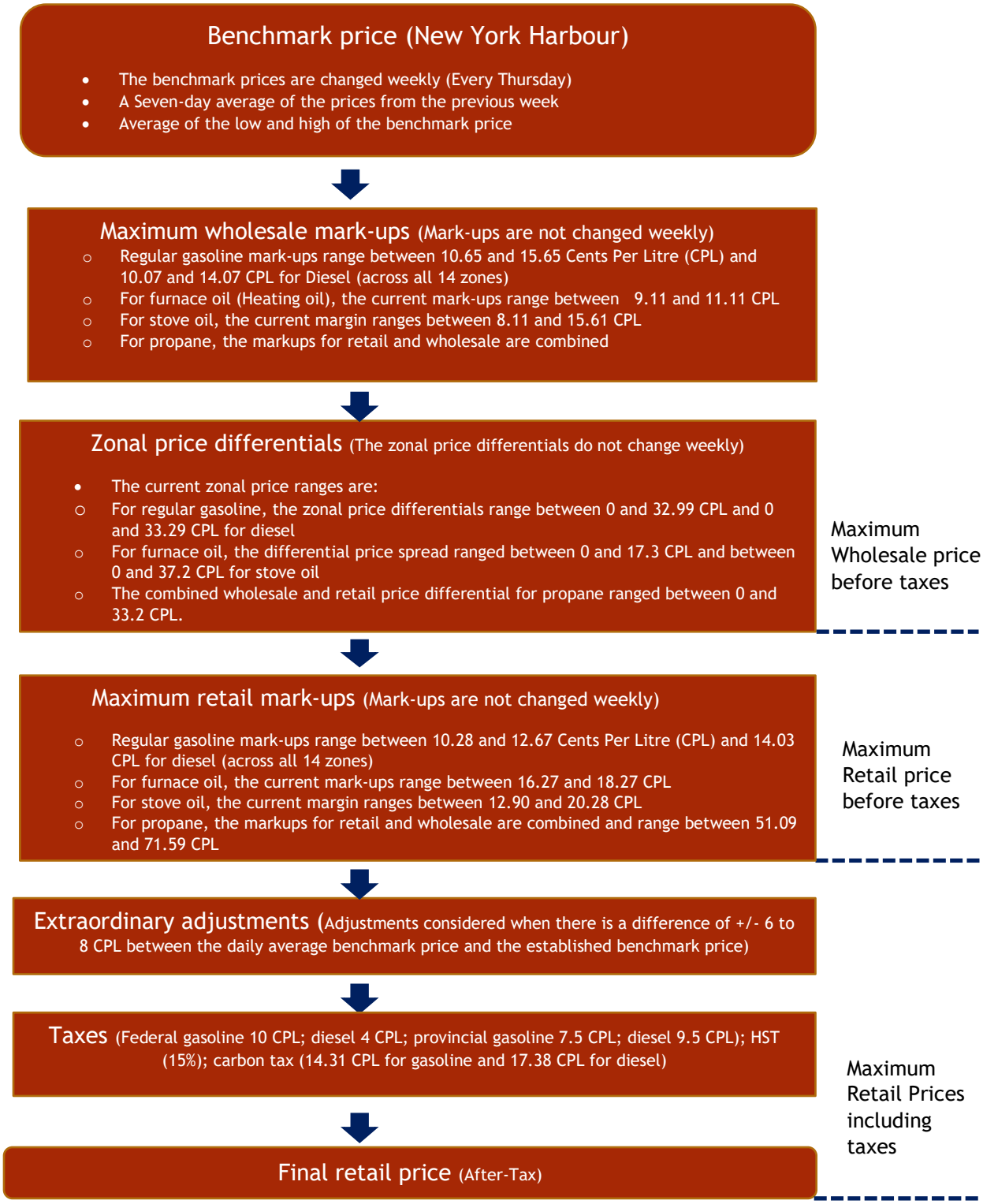
The province of Newfoundland and Labrador has been a regulated market since 2001 with respect to certain petroleum product pricing. Its primary objective for implementing these regulations was to restore consumer confidence and ensure price stability. Since then, the regulations evolved and currently regulate the pricing of motor fuels (gasoline and diesel), furnace oil, stove oil, and propane, considering all the following objectives[1].

- Provide price stability for all the specified petroleum products; and
- Transparency as to how maximum prices are determined for all specified petroleum products across the province.

[1] Study of Storage & Distribution Costs for Petroleum Products - NL (pub.nf.ca)

The province aims to achieve these objectives by regulating the maximum markups of petroleum products, such as motor fuels (gasoline and diesel), furnace oil, stove oil and propane, and the associated cost components of the final pump price, as illustrated in Figure 2. The following section will provide insights into each component used in the Board's regulatory framework that determines the regulated pump price.

Figure 2: Price and Markups under the Newfoundland and Labrador Public Utilities Board Regulatory Framework



Benchmark Price

The first component in the formula used by the Board to set the maximum price for wholesale and retail is based on an established benchmark price. This benchmark price is calculated as an average of the daily low and high prices of the petroleum products from the previous week's New York Harbour (NYH) cargo price for gasoline and barge price for diesel, furnace oil and stove oil. Typically, the benchmark price is a weekly average of the average price of the regulated products over the last seven days; however, under extraordinary circumstances such as high volatility periods, the calculated average of the benchmark price may be a period less than a week. The calculated benchmark price is a critical underlying factor that is used to set weekly maximum wholesale and retail prices for regulated products. However, for propane, the benchmark price is the weekly average of propane prices at Sarnia, Ontario, as reported by OPIS[2]. Given that the identified benchmark price is listed in United States (US) cents per gallon, it is converted back to Canadian cents per litre using the daily currency exchange rate posted by the Bank of Canada. An illustration of how the benchmark prices are calculated and the commodity prices and blending requirements used to determine the respective benchmark prices are presented in the Appendix A (Tables 13 and 14).

The posted rack price from St. John's is a wholesale reference price for refined products sold out of that market. It is a commonly used basis on which most wholesale transactions are contracted in Newfoundland and Labrador[3]. In the current regulations, the rack price cannot be used as the benchmark price, in part because it does not reflect the volume of sales transactions for regional US Benchmarks published by independent price agencies such as Platts, Argus, or OPIS. One such set of benchmarks (NYH) is widely viewed as a more transparent and market-based reference for wholesale refined product prices in Atlantic Canada and the eastern part of the US.

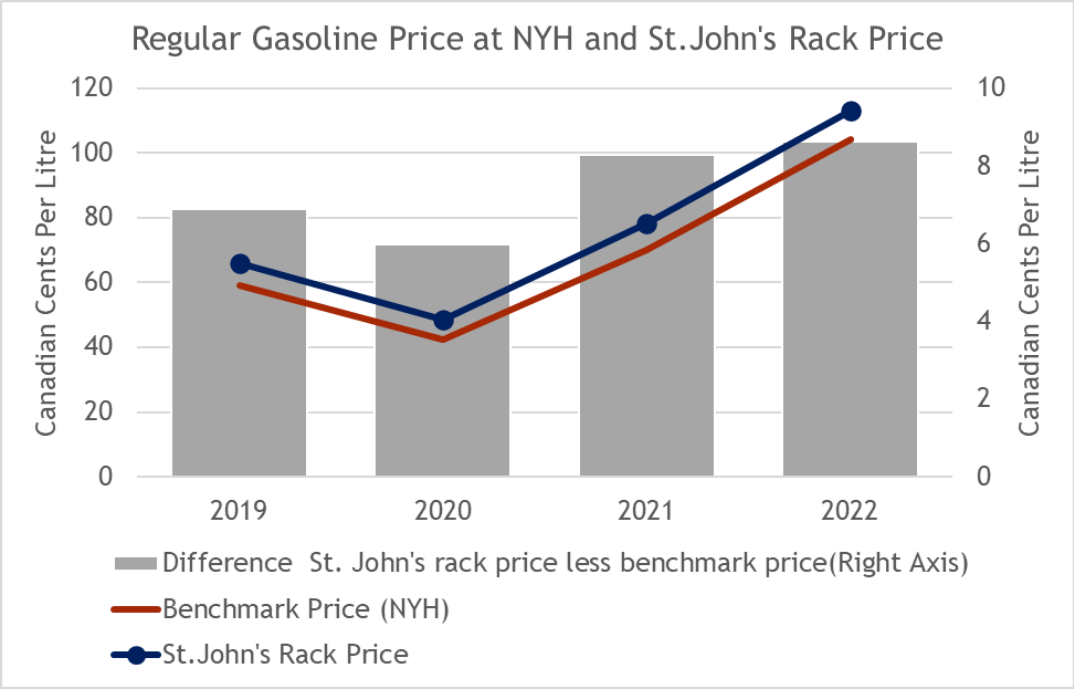
Historically, the posted rack price in St. John's generally follows the trend and direction set by the US benchmark price for all the regulated petroleum products in the province of Newfoundland and Labrador due to the relative proximity and logistical connections between the markets (See Figures 3, 4, and 5).

It should be noted that in 2021 and 2022, the price spread between the St. John's rack and NYH benchmark prices was wider than in previous years. This growing spread is likely attributed to the choice of the price reporting agency that publishes the benchmark price, as there have been differences between prices reported by Platts compared to Argus and OPIS[4]. The variations may arise if the price used by the Board as a benchmark is different from the

[2] The marginal propane barrel is imported from Sarnia, which usually sets the price for the product. Marginal barrel here refers to the last imported barrel that is consumed in the province.
[3] These contracted transactions are often based off a rack price with some adjustment, either a discount or premium to rack, depending on the specifics of that transaction.
[4] NSUARB Wholesale Margin Review Report (Matter M10853) UARB15 (APUARB11) (novascotia.ca)

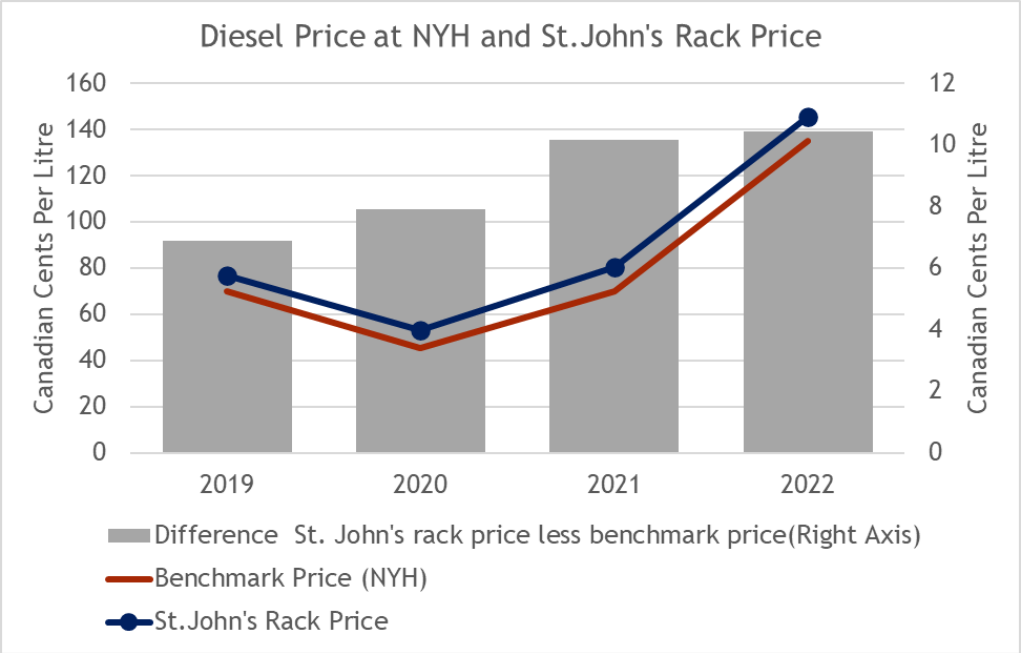
wholesalers operating in the province of Newfoundland and Labrador (the widening of the prices could also be impacted by the Board's methodology to determine benchmark prices versus the price used by the wholesalers to complete the actual deals). The respective price curves for benchmark and local rack prices, along with the differences between the prices, are presented in Figures 3, 4 and 5.

Figure 3: New York Harbour Versus St. John's Wholesale Gasoline Price



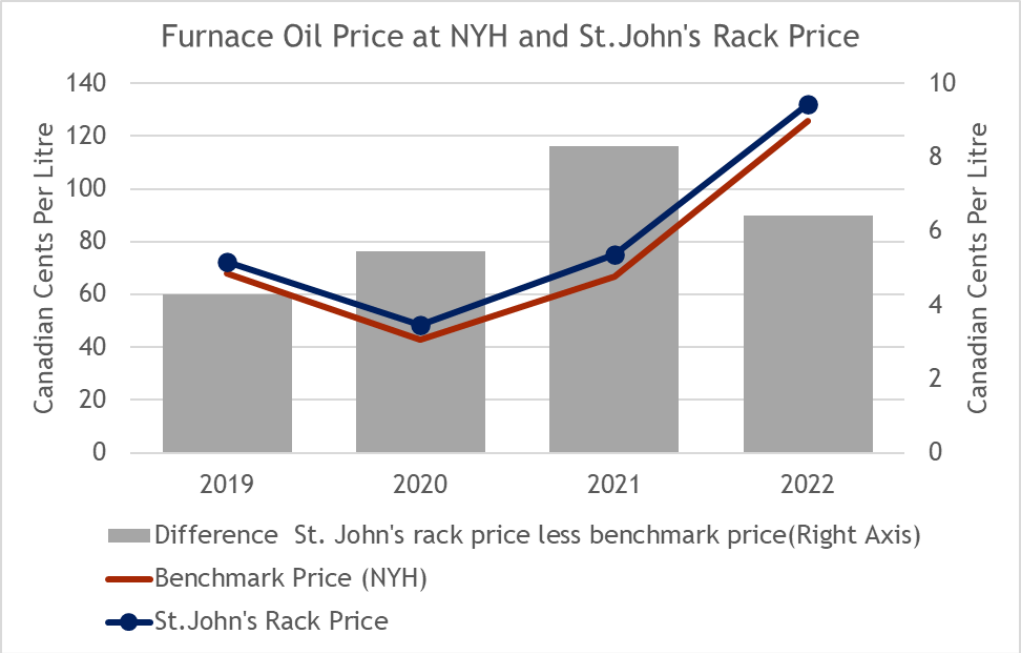
Source: Platts, Newfoundland and Labrador Board of Commissioners of Public Utilities, and Kalibrate Canada.

Figure 4: New York Harbour Versus St. John's Wholesale Diesel Price



Source: Platts, Newfoundland and Labrador Board of Commissioners of Public Utilities, and Kalibrate Canada.

Figure 5: New York Harbour (NYH) Versus St. John's Wholesale Furnace Oil Price



Source: Platts, Newfoundland and Labrador Board of Commissioners of Public Utilities, and Kalibrate Canada.

Zonal Price Differential

The regulations permit wholesalers to adjust for the incremental costs of storage and distribution (transportation cost) of regulated petroleum products from fuel storage terminals or wholesale storage plants. The additional associated costs in the zonal price differentials include marine freight, the operation of marine terminals and bulk storage, and the cost of filling, handling and delivering drums. The transportation adjustment depends on the location of the retail sites within defined provincial zones. The zonal price differentials are added to the benchmark prices. It is also worth noting that the last time an adjustment was made to the price zones in Labrador was in 2021 and for zone 7a (See Tables 1 and 2) in 2015[5]. The geographical border for zone 1 – Avalon Peninsula was also changed in 2015. The zonal price differentials vary for motor fuels (gasoline and diesel) and heating fuels (furnace oil, stove oil, and propane heating fuel). There are fourteen distinct zones across the province of Newfoundland and Labrador, and their associated costs are described in Tables 1 and 2 below.

[5] Microsoft Word - History of Petroleum Products Pricing Regulation (pub.nl.ca)

Table 1: Zone Price Differential - Motor Fuels (Cents Per litre)

Zone Differentials – Motor Fuels (cpl)			
Zone		Type of Product	
		Gasoline	Diesel
1	Avalon Peninsula	0	0
1a	Bell Island	0.48	0.48
2	Burin Peninsula / Bonavista Peninsula	1.61	1.61
3	Central Newfoundland / Notre Dame Ba	2.18	2.18
3a	St. Brendan's (Island)	5.88	5.88
3b	Fogo Island	6.32	6.32
3c	Change Islands	9.6	9.6
4	Connaigre Peninsula	5.12	5.12
4a	Gaultois / McCallum / Rencontre East	8.09	8.09
5	Springdale - Green Bay / Triton / Baie Verte Peninsula	3.42	3.42
5a	Long Island	6.97	6.97
5b	Little Bay Islands	7.16	7.16
6	Deer Lake / Corner Brook / Bay of Islands / Gros Morne	0.62	0.62
7	Stephenville / Port au Port / Codroy Valley / Channel-Port aux Basques / Burgeo	1.39	1.39
7a	Ramea	10.79	3.68
7b	Grey River / François / Grand Bruit / La Poile	12.06	9.6
8	Northern Peninsula - Gros Morne National Park to Bellburns	1.55	1.55
9	Northern Peninsula to Englee and St. Anthony	3.28	3.28
10	Labrador - The Straits to Red Bay	18.2	15.59
11	Labrador South - Lodge Bay / Cartwright	21.55	20.33
11a	Coastal Labrador South - Tanker Supplied	27.81	27.31
11b	Coastal Labrador South - Drum Delivery	32.99	33.29
12	Central Labrador	7.23	6.98
13	Western Labrador	10.73	9.73
13a	Churchill Falls	12.91	11.91
14	Coastal Labrador North	27.81	27.31

Source: Newfoundland and Labrador, Board of Commissioners of Public Utilities.

Table 2: Zone Differentials - Heating Fuels (Cents Per litre)

Zone Differentials – Heating Fuels (cpl)				
Zone		Type of Product		
		Furnace Oil	Stove Oil	Propane
1ANE	Avalon Peninsula Northeast	0	0	2
1ANW	Avalon Peninsula Northwest	3	3	2
1AS	Avalon Peninsula South	4.3	4.3	2
1a	Bell Island	1.3	1.3	3
2	Burin Peninsula / Bonavista Peninsula	4.3	4.3	0
3	Central Newfoundland / Notre Dame Bay East	4	4	2.9
3a	St. Brendan's (Island)	7	7	5
3b	Fogo Island	6.5	6.5	4.5
3c	Change Islands	8.4	8.4	6.4
4	Connaigre Peninsula	7.2	7.2	3.7
4a	Gaultois / McCallum / Rencontre East	17.3	17.3	15.3
5	Springdale - Green Bay / Triton / Baie Verte Peninsula	4.5	4.5	3.5
5a	Long Island	5	5	3
5b	Little Bay Islands	5.4	5.4	3.4
6	Deer Lake / Corner Brook / Bay of Islands / Gros Morne	0.9	0.9	4.6
7W	Stephenville / Port au Port / Codroy Valley / Channel-Port aux Basques	4.3	4.3	5.9
7SE	Burgeo	6.8	6.8	5.9
7a	Ramea	10.4	10.4	8.4
7b	Grey River / François / Grand Bruit / La Poile	16.5	16.5	14.5
8	Northern Peninsula - Gros Morne National Park to Bellburns	1.9	1.9	5.7
9	Northern Peninsula to Englee and St. Anthony	6.5	6.5	7.7
10	Labrador - The Straits to Red Bay	N/A	18.5	6.5
11	Labrador South - Lodge Bay / Cartwright	N/A	19.2	15.2
11a	Coastal Labrador South - Tanker Supplied	N/A	25.4	23.4
11b	Coastal Labrador South - Drum Delivery	N/A	37.2	33.2
12	Central Labrador	N/A	4.2	1.2
13	Western Labrador	N/A	5.2	3.2
13a	Churchill Falls	N/A	7.3	5.3
14	Coastal Labrador North	N/A	25.4	23.4

Source: Newfoundland and Labrador, Board of Commissioners of Public Utilities.

Extraordinary Adjustments

Similar to other regulated jurisdictions in Atlantic Canada, the regulations permit the use of extraordinary adjustments[6]. This approach aims to correct and adjust for price swings that may disrupt price stability. Since the beginning of 2022 there have been numerous extraordinary adjustments as a result of significant volatility in global commodity market prices[7].

There is no precise formula set out in the legislation to calculate the extraordinary adjustments. However, the adjustments are only considered when there is a difference of plus or minus 6 to 8 cents per litre between the daily or running average benchmark price compared to the established benchmark price.

If the variance is greater than (plus or minus) 8 cents per litre, it will more likely lead to an extraordinary adjustment. However, while making this adjustment, the Board will consider the following factors:

- The scale of the change in benchmark prices;
- The variance trends in the data; and
- The timing between the last and the next adjustment.

Wholesale and Retail Markups or Margins

Wholesale and retail markups or margins are applied in Newfoundland and Labrador's build-up of regulated prices, and the Board determines them. Here, the Board has the discretion to determine whether a hearing is desirable in these circumstances. The rationale for regulating these margins is to provide sufficient revenue for both wholesalers and retailers to cover their operating expenses and provide a suitable return on capital. A failure to accurately account for these aspects in the regulations' allowable margins may pose a risk to the supply of petroleum products in Newfoundland and Labrador.

Wholesalers and retailers typically have supply contracts with each other in Newfoundland and Labrador, using a location-specific rack price as a basis for the contracted transaction price. In their wholesale supply agreements, the posted rack price is rarely used as the actual transaction price. This transaction price is typically calculated as a differential to rack, either a premium or discount, based on specific commercial arrangements between the parties. Therefore, the differentiation and apportionment of wholesaler and retailer margins (markups), as provided under the Act, is theoretical.

[6] A detailed description of extraordinary adjustments can be found here (Board of Commissioners of Public Utilities)
[7] Home - Petroleum Products - Extraordinary Adjustments

In Newfoundland and Labrador, similar to an unregulated market, retailers and wholesalers may negotiate a pricing arrangement, provided the wholesaler and retailer does not exceed the maximum price set out by the Board. We understand that most supply agreements between wholesalers and retailers in Newfoundland and Labrador are structured this way.

Currently, the regulated maximum allowable wholesale markups range from 10.65 to 15.65 cents per litre for gasoline (across 14 zones) and between 10.07 and 14.07 cents per litre for diesel. For heating fuels, the wholesale markups range between 9.11 and 11.11 cents per litre for furnace oil and between 8.11 and 15.61 cents per litre for stove oil. The wholesale and retail markups for propane are combined, ranging between 51.09 and 71.59 cents per litre. The current margins for regulated motor fuels (gasoline and diesel) specified above were set in 2019-2020 using publicly available information until 2019. Whereas the wholesale markups were not adjusted in 2019 for heating fuels (Furnace oil and stove oil). However, in October 2020, after receipt and review of an application by North Atlantic Refining Ltd. (NARL), the wholesale mark-ups were adjusted for gasoline, diesel, furnace oil and stove oil[8](Interim markup adjustment).

The maximum allowable retail markups (margins) in Newfoundland and Labrador are currently set between 10.28 and 12.67 cents per litre for gasoline and 14.03 cents per litre for diesel across the fourteen zones. The maximum retail markups for furnace oil range between 16.27 and 18.27 cents per litre and between 12.9 and 20.28 cents per litre for stove oil.

It should be noted that this report is focused on wholesale markups and will not include any analysis of retail margin. A retail margin review will be conducted and published subsequently to this report.

Taxes

Taxes on fuel in Newfoundland and Labrador include fixed (cents per litre) and variable (percentage) taxation rates. The provincial fuel tax is a fixed rate of 7.5 cents per litre for gasoline and 9.5 cents per litre of diesel fuel. Federal excise taxes are also a fixed rate of 10 cents per litre for gasoline and 4 cents per litre for diesel. Petroleum products taxes also include the Harmonized Sales Tax (HST) at a rate of 15% which is applied after all the other tax components have been added.

The federal excise tax on gasoline and diesel fuel has remained unchanged since before 1998; however, the provincial fuel taxes in Newfoundland and Labrador have changed three times since January 1, 2019. The provincial taxes for both gasoline and diesel last decreased on June 2, 2022, and these changes have been extended until 2024. The HST rate was amended on July 1, 2016, increasing from 13% to 15%. A summary of the current price regulation components is shown in the Appendix A section (Tables 15 and 16), as applied to a recently published price schedule. A federal carbon tax of 14.31 and 17.38 cents per litre is applied to

[8] Microsoft Word - History of Petroleum Products Pricing Regulation (pub.nl.ca)

both gasoline and diesel fuels respectively[9]. Please note that the HST tax is also applied to heating fuels at the point of sale, but the Board does not include the tax component when it publishes maximum prices for heating fuels.

[9] Fuel Charge Rates - Canada.ca

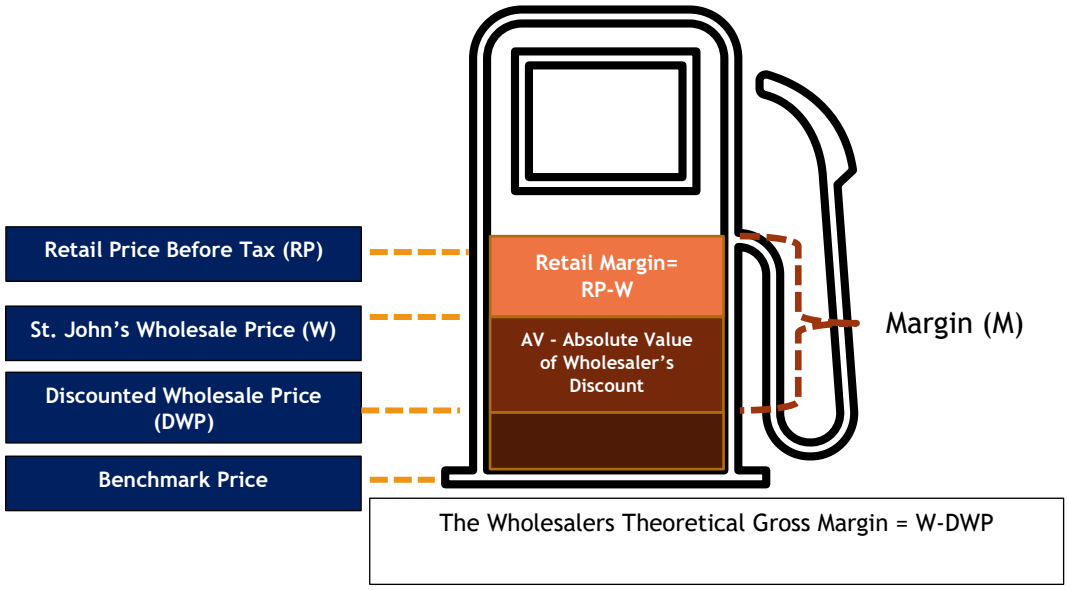
Our Analysis

In Newfoundland and Labrador, the wholesale markups for regulated motor fuels (gasoline and diesel) were last set in 2019-2020 using public information from 2019. However, the wholesale markups for gasoline, diesel, furnace oil and stove oil were adjusted on an interim basis in 2020 following the receipt and review of an application from NARL. Given that the last period of information used to determine the wholesale markup for motor fuels was 2019, the basis of our analysis will include a comparison to 2019 to determine what has changed since then. Additionally, the operating costs incurred to supply furnace oil and stove oil are tied to the supply of motor fuels, and also, given that it would be difficult to apportion the costs associated with heating fuels, the basis of our data analysis will also include a comparison to 2019 to determine what has changed since then.

Two main factors are considered in our analysis of wholesale margins or markups in Newfoundland and Labrador. The first is an assessment of operating costs using data submitted by provincial wholesalers. Any changes to the operating expenses between 2019 and 2022 could affect a wholesaler's ability to cover those costs and generate a reasonable return.

The second factor is the relationship between the wholesaler's acquisition cost of fuel and the benchmark price at New York Harbour (NYH) used in the regulatory build-up of retail prices. This is a critical component because changes in the differential between these prices may affect the total margin available to the wholesalers. The margin fundamentals for fuel wholesalers and retailers in Newfoundland and Labrador are illustrated in Figure 6.

Figure 6: The Margin (Markup) Equation



Although the Board sets wholesale and retail margins separately, the actual realized wholesale and retail margins will be determined by the individual stakeholder agreements[10]. 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 is represented by the following equation:

$$M = (RP-W) + ABS\ (DWP)$$

In this formula, M represents the total available margin, RP represents the retail price less taxes, W represents the rack price for that product at a given location, and ABS (DWP) represents the absolute value of the wholesale discount to the rack price (Source: Kalibrate Canada Ltd.). In some scenarios, such as with an integrated or primary supplier, the same ABS (DWP) notion would be the same as the difference between the rack and their actual realized acquisition costs of fuel.

To review, the total available margin (M) is the summation of two key variables, the retail price less rack (RP-W) and ABS(DWP) – the absolute value of wholesale price discount to the

[10] Based on the description of the report regarding Matter M10853 (Analysis of NSUARB)

rack or the difference between the rack and the actual realized price or acquisition costs. Kalibrate Canada, does not break down its daily pricing margin data as wholesale and retail, but as a combined value (marketing margin).

Table 3 shows that gross marketing margins[11] (Retail and wholesale) has increased since 2019 for both gasoline and diesel. The marketing margins for furnace oil increased between 2019 and 2022, except for 2021. The increase is closely related to the Board's margin decisions and changes to regulated margins. The marketing margins published below are the total allowable markups (Wholesale and retail markups combined). However, the gross marketing margin data below does not include the acquisition cost component for both wholesalers and retailers.

Table 3: Marketing Margin (Wholesale and Retail Margins) for Gasoline, Diesel, and Furnace oil (St. John's, Newfoundland and Labrador Volume-Weighted)

Year	Gasoline	Diesel	Furnace Oil
2019	9.1	13.9	17.6
2020	13.6	15.6	19.2
2021	16.8	17.3	18.3
2022	16.8	17.6	21.0

Source: Kalibrate Canada.

Changes to any variable in the equation M = (RP-W) + ABS (DWP) must be considered in combination with the other variables. The gross marketing margin increased by 7.7 cents per litre for gasoline, about 3.7 cents per litre for diesel, and 3.4 cents per litre for furnace oil; this does not, however, account for changes to the ABS(DWP) part of the equation. In this report, we will examine how the available margin is impacted by this variable ABS(DWP) (using the wholesaler's acquisition cost) between 2019 and 2022, using the evidence submitted by wholesalers in Newfoundland and Labrador.

[11] These are gross margins and not net margins (Margins after accounting for costs)

Adjustments to Wholesale Markups / Zone Differential

Evidence presented by Wholesalers

Wholesale margins in the Province of Newfoundland and Labrador were set between 10.65 and 15.65 cents per litre for gasoline and between 10.07 and 14.07 cents per litre for diesel and were last set in 2019-2020 using public information from 2019. Similarly, the wholesale markup between 9.11 and 11.11 cents per litre was set for furnace oil and between 8.11 and 15.61 cents per litre for stove oil in 2015 [12]. For propane, the wholesale and retail markups are combined, and they range between 51.09 and 71.59 cents per litre. Given that the wholesale and retail mark ups for Propane heating fuel are determined together, an analysis of propane markups will be undertaken in the Phase III report while evaluating the retail markups for regulated petroleum fuels.

Wholesalers of motor fuels (gasoline and diesel) and heating fuels (furnace oil, stove oil, and propane) in the province of Newfoundland and Labrador were asked to provide data from 2019 through 2022, inclusive. Specifically, the wholesalers were requested to provide the following:

1. Sales volume by year;
2. all operating costs by year broken down by components that allowed the consultant to categorize the cost of storage capital and operating and maintenance if possible; and
3. their acquisition costs for fuel, expressed as the actual cost of acquiring the fuel, or their premium or discount to rack, by year.

Six wholesalers provided data to R Cube, representing well over two-thirds of the total motor fuel (gasoline and diesel) and half of the heating fuels (furnace oil and stove oil) throughput in the province of Newfoundland and Labrador [13]. However, the data submission for propane heating fuel was limited to one wholesaler. Apart from propane, the data submissions also had a representative mix of wholesale market participants with respect to size and market position.

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

1. Operating cost factors - how the costs associated with the wholesaling of fuel have changed between 2019 and 2022.

[12] The wholesale markups include the interim changes following the receipt and review of an application from NARL; the wholesale mark-ups were increased for gasoline by 5 cents per litre and by 4 cents per litre for diesel, furnace oil and stove oil.
[13] Based on Statistics Canada sales of fuel used for road transportation (Table: 23-10-0066-01)

2. Acquisition costs relative to the benchmark price - how the acquisition cost of regulated fuel products has changed for the wholesalers relative to the Board's benchmark price since 2019.

A key assumption underpinning our chosen approach of this wholesale margin (markup) analysis was based on the wholesale margin decision in 2019 and 2020 (based on 2019 data) and assuming that it was correct and fair. As a result, this report focuses on what has changed with these two factors (operating costs and acquisition costs) since that time.

Changes in either factor can impact the available margin for wholesalers in Newfoundland and Labrador. For example, an increase in operating costs could reduce or eliminate a wholesaler's ability to generate a reasonable return on their business. Therefore, it would be reasonable to say that if such a scenario existed in a representative sample of the broader wholesale market in Newfoundland and Labrador, it could warrant an adjustment to the allowable wholesale markup to restore their ability to generate a reasonable return.

Additionally, if the wholesaler's acquisition costs rose relative to the benchmark price (NYH price) used in the Board's regulatory framework, this would reduce the available margin. Similar to the previous statement, it would be fair to say that if this were shown to exist in a representative sample of the broader wholesale market in Newfoundland and Labrador, the allowable wholesale markups would need to be adjusted to restore the wholesaler's ability to generate a reasonable return after adjusting for all other cost factors[14].

Our approach herein is to evaluate the available data (submitted by wholesalers) and make reasonable and supported recommendations for markup adjustments based on the operating cost factors and the gap between the acquisition costs and the benchmark price. These two components should be considered independent of each other and additive in nature. This means the recommended adjustments from our analysis of each factor are summed together, forming the basis of our final recommendation.

Data Collection Issues

To collect information on the change to wholesalers' costs and to better understand supply infrastructure for motor and heating fuels, a survey was sent to all wholesalers in Newfoundland and Labrador on March 13th, 2023. The survey included information requests on the zonal distribution costs for all zones as defined by the provincial regulations. The initial request required the survey participants to submit the data by April 13th, 2023. Due to the relatively short timeline and other difficulties faced by wholesalers, we extended the deadline until the third week of May 2023. We had a strong response from wholesalers operating within zones 1 to 9; however, despite several rounds of email follow-ups, we received no survey submissions from wholesalers operating in zones 10 through 14 (Labrador

[14] This refers to adjusting other cost components in the regulatory framework, such as transportation cost.

region). Acknowledging the deficiency in operating expense data for some zones (specifically for zones 10 through to 14) and lack of representative acquisition cost information, the Board sent out a letter to all wholesalers in the province of Newfoundland and Labrador requesting them to submit additional data for the above cost components and further extended the data submission deadline to September 15th, 2023. However, despite the Board's letter, deadline extension, and R Cube's repeated conversations with several wholesalers in the province, only one additional wholesaler operating between zones 1 and 9 submitted their data. Therefore, the analysis in this report does not contain any data from the wholesalers operating between zones 10 and 14.

Analysis of Operating Costs

We requested wholesalers in Newfoundland and Labrador provide a breakdown of costs incurred for wholesaling motor fuels (regular gasoline, mid-grade, premium gasoline, and ultra-low sulphur diesel), furnace oil, stove oil, and propane between 2019 and 2022. Cost submissions were often granular and categorized into standard items such as storage, salaries, and capital costs.

Six parties submitted data on this matter for the entire valuation period. A summary of the data provided includes:

a) All six participants provided cost data for the entire evaluation period (between 2019 and 2022).
b) More than half of the wholesalers who submitted the operating cost data provided information for all regulated petroleum fuels together and not by individual fuel type.
c) Four wholesalers provided detailed commentary on the cost by category for the wholesaling of their fuels.

Our approach to reviewing and analyzing the cost data included thoroughly analyzing data quality and identifying anomalies. This often resulted in a follow-up with the wholesalers to clarify and explain any detected issues. Leveraging our expertise and understanding of wholesale businesses that can take various forms in the market, we determined the reasonableness and applicability of the submitted cost. In this review, except for one submission, no material issues were detected in the cost data, and most of the submitted data was deemed suitable for use in our analysis. The submission with data integrity issues was amended, and the costs were updated and included in this analysis.

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

1. Most companies provided data in sufficient detail, making it reasonably easy to categorize the cost items properly. For most submissions, we detected no material anomalies in the cost data. However, for one submission where data issues were

detected, a follow-up call with the participant regarding the data anomaly was conducted, after which the data was accordingly amended and incorporated into the analysis.

2. All the submitted cost data was converted into cents per litre using the volumetric data provided by the wholesalers. However, the unregulated fuel[15] types were dropped and not considered in this analysis.
3. Although the cost levels varied between submissions, the data was generally consistent, showing an increasing trend between 2019 and 2022.
4. The unit cost numbers by company were evaluated for reasonableness based on each company's size and their general role and involvement in the wholesale business in Newfoundland and Labrador. The range in cost between companies that submitted data was determined to be reasonable.
5. The annual operating cost per litre for all the submissions was calculated using a volume-weighted average, and this would account for any variations caused by differences in the magnitude of cost and volumes by the range of participants in the Newfoundland and Labrador market.
6. We calculated the volume-weighted change over the evaluation period to form the basis of our recommendation for operating costs. We examined the aggregate change in operating costs over the evaluation period. We determined the resultant markup adjustment required to maintain margin levels and help ensure a reasonable return for wholesalers.

[15] As an example, if only 95% of the submitted costs represented the regulated fuels, only 95% of the costs by fuel type were considered in this analysis. The remaining 5% for unregulated, such as marine fuel, was dropped.

Figure 7: Volume-Weighted Average Operating Costs of All Submissions (2019-2022)

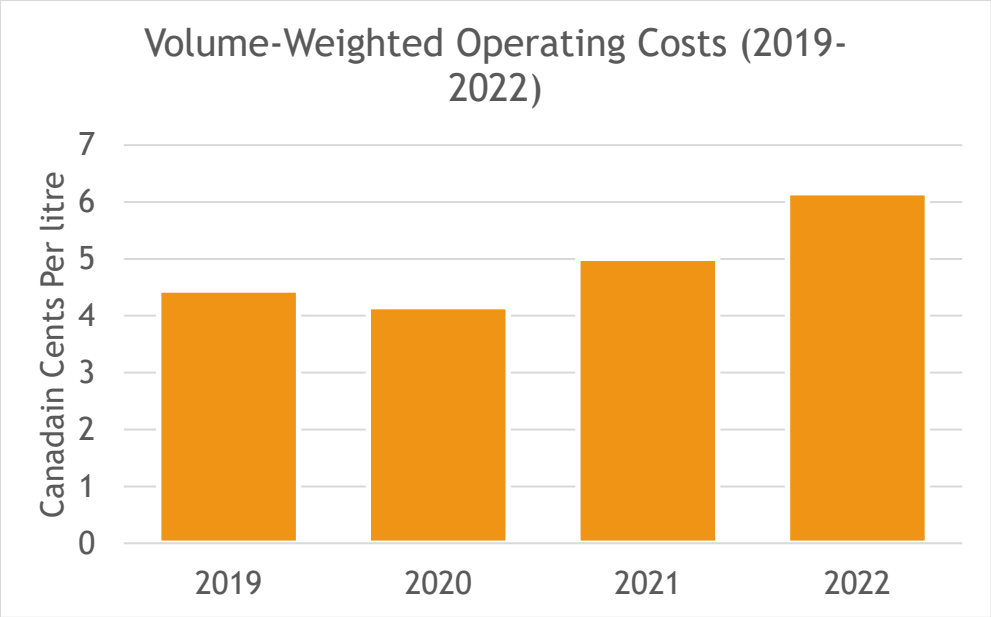
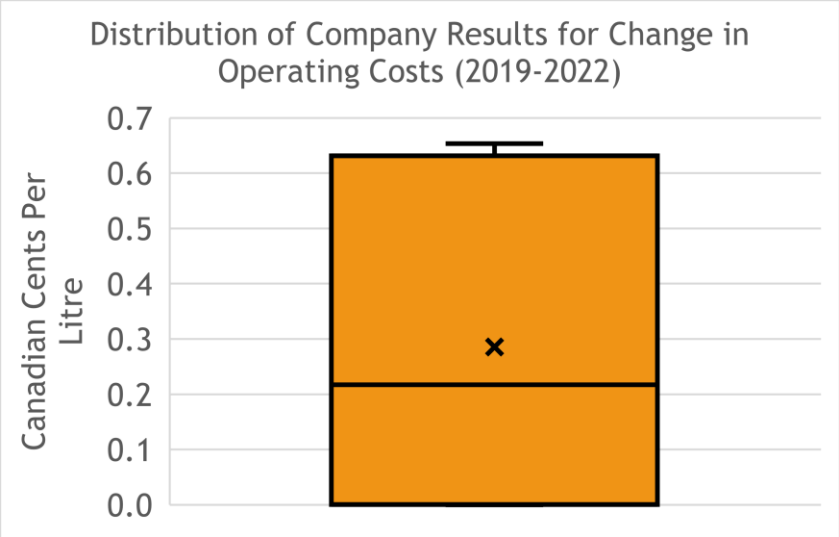


Table 4: Change in Wholesalers' Annual Average Operating Costs Per Litre (2019-2022)

	Change in Operating Costs, Canadian Cents per Litre (2019-2022)
All regulated Products (Gasoline, diesel, furnace oil, and Stove oil)	**1.7136**

Figure 8: A Box and Whisker Plot Showing Distribution of Company Results



Based on the data submitted by the wholesalers and our analysis, we find that the total operating costs related to the wholesale of regulated fuels (all gasoline grades, diesel, furnace oil, and stove oil) increased by 1.7136 cents per litre between 2019 and 2022. The increase will apply to 2019 markups and not the interim markups, which have an additional 5 cents per litre for gasoline and 4 cents per litre for diesel, furnace and stove oil. For example, we recommend that this amount be applied to the 2019 markup of 10.65 cents per litre for gasoline and not to the interim markup[16] of 15.65 cents per litre. Our analysis (volume-weighted average cost change) on the operating costs data submitted by the majority of wholesalers in the province of Newfoundland and Labrador for this review does not suggest a cost change (includes operating costs and excludes acquisition costs component) of 4 to 5 cents per litre between 2019 and 2020 or 2021 (See Figure 7).

We also recommend that the increase of 1.7136 cents per litre be applied to all 14 zones in the province of Newfoundland and Labrador. Although we did not receive any cost information between zones 10 and 14 within the Labrador region, we expect the cost increase in the Island region would also be seen in Labrador, given the proximity and similar nature of operations. Therefore, we recommend that an equivalent increase in the Board's wholesale markup component be considered for all regulated petroleum products (except propane). The cost changes for the wholesale of propane are discussed in a separate section in this report.

[16] NEWFOUNDLAND AND LABRADOR (pub.nf.ca) NO. P.P. 52(2020)

Analysis of Acquisition Costs and Benchmark Price

There are two aspects considered in this analysis; the first is the actual change in the acquisition cost relative to the benchmark price for all regulated fuels between 2019 and 2022, and the second is the source of the benchmark price itself, as NYH prices are reported by more than one provider. Our findings in the recent matter M10853 with NSUARB (Nova Scotia Utility And Review Board) suggest a significant difference in the benchmark prices reported by Platts compared to other price reporting agencies such as Argus and OPIS[17]. If the Board's reported benchmark settlement prices are materially different from other prices reported by other agencies for the regulated petroleum products, it could, in turn, materially impact the margin available to wholesalers. The first part of this section will address the actual spread between acquisition and benchmark prices, and the second will examine the price reported by different reporting agencies and how it may impact margins.

Analysis of Acquisition Costs

We requested wholesalers in Newfoundland and Labrador to provide their acquisition costs for motor fuels (regular, mid-grade, and premium gasoline and diesel), furnace oil and stove oil over the evaluation period (2019 to 2022). We advised participants to submit either the actual acquisition price or a price differential to an identified rack price that relates to their supply agreements. For submissions where the acquisition costs were provided, we use them directly in our analysis. A summary of the data provided includes:

a) There were only three submissions on this component from a potential six. Two wholesalers submitted the absolute acquisition price for all the products except for mid-grade, while the third wholesaler submitted data only for regular gasoline, diesel, and furnace oil.
b) The total volumes of the submissions for motor fuels (regular and premium gasoline and diesel) and heating fuels (furnace oil and stove oil) represented less than half of the total throughput in Newfoundland and Labrador[18].
c) One participant cited confidentiality concerns for not submitting their acquisition costs.
d) No wholesaler provided any kind of information on mid-grade gasoline.

[17] NSUARB Wholesale Margin Review Report (Matter M10853) UARB15 (APUARB11) (novascotia.ca)
[18] Based on Statistics Canada sales of fuel used for road transportation (Table: 23-10-0066-01) and R Cube Economic Consulting Inc. internal calculations.

e) Two participants provided acquisition cost information for only furnace oil, while only one provided acquisition cost data for both furnace and stove oil.

Similar to the analysis of operating costs, our approach to reviewing and analyzing acquisition cost data began with a thorough examination of data quality and identifying anomalies, following up with wholesalers where clarification and explanation were needed. Our process and analysis consisted of the following steps:

1. All the data submitted were in absolute numbers, not price differential, so we used the acquisition cost directly in our analysis.
2. The acquisition cost data submitted by two wholesalers showed a high level of consistency and the absolute costs varied across both submissions.
3. Although the absolute cost levels varied across both submissions, the data showed a steadily increasing and relatively consistent trend between 2019 and 2022.
4. We also observed that one of the wholesalers included taxes in the acquisition cost and R Cube after consultation removed the tax component[19] from the total acquisition cost.
5. We calculated the benchmark price for all the regulated products based on the data provided by the Board. The average price calculation of the benchmark price for specific regulated products followed the descriptions provided by the Board in their regulations[20] (see the benchmark price description on pages 11 and 12 of this report).
6. We calculated the volume-weighted average change over the evaluation period (2019-2022) to form the basis of our recommendation. We examined the change in the acquisition costs relative to Board's benchmark price over the evaluation period to determine the impact and the required margin adjustment to maintain margin levels and help ensure a reasonable return for wholesalers. We observed that the volume-weighted acquisition costs differential exhibited the same trend as individual submissions, as previously noted.

Based on our examination of the submitted and vetted data from the wholesalers and our method of analysis described above, we are unable to recommend a change to the total markups or margins for this component of the margin equation. The total number of submissions and the volumetric representation of those submissions represent less than half of the total throughput of these regulated fuels in the province of Newfoundland and Labrador. In addition, due to confidentiality agreements between R Cube Economic Consulting Inc. and the wholesalers who submitted the data, the calculated volume-weighted numbers can not be disclosed in this report as this would divulge confidential information about the participants.

Therefore, we recommend no change in the regulations' wholesale markup for the acquisition cost component for all the regulated fuels (gasoline, diesel, furnace oil, and

[19] The wholesaler was unable to provide R Cube with a tax breakdown of this cost component, therefore, R Cube estimated the tax portion and used it in the analysis.
[20] Calculations of Benchmark Prices (Board of Commissioners of Public Utilities)

stove oil) since the data sample used in this analysis may not be considered representative of the broader market in Newfoundland and Labrador.

Suitability of Benchmark Price Mechanism

The second aspect of the acquisition costs component is the choice of the benchmark price provider. There are three leading benchmark price providers: Platts, Argus and OPIS (Oil Price Information Service). Currently, the Board uses Platts for all the NYH (New York Harbor) benchmark prices. However, for propane, the Board uses OPIS price at Sarnia as the benchmark price as the marginal barrel of propane is imported from Sarnia instead of NYH[21]. In this section, we will try to answer the following questions:

a) Are these price reporting agencies reporting different prices for motor fuels (gasoline and diesel) and heating fuels such as furnace and stove oil? If material differences exist, what does it mean to the current Board's regulatory framework and markups?
b) Is there a reason to switch the provider of benchmark prices?
c) Are current blending methodologies appropriate?
d) The case of extraordinary adjustments and whether more frequent price adjustments similar to other regulated jurisdictions are necessary?

Are price reporting agencies reporting different prices?

To analyze the relative pricing of the three price reporting agencies, we acquired the daily data between 2019 and 2022. The following considerations/observations were part of our analysis:

a) All three price reporting agencies, Platts, Argus, and OPIS, provided data over the entire evaluation period (2019 and 2022).
b) The daily data provided by these agencies were in US cents per gallon (United States currency). So, we took daily data as reported by these agencies and converted it to Canadian cents per gallon by multiplying it with the daily foreign exchange data published by the Bank of Canada[22].
c) We converted the daily data from Canadian cents per gallon to Canadian cents per litre by dividing the cents per gallon by a conversion value of 3.78541[23] .
d) The Board provides a detailed blending calculation methodology for all regulated products (the calculation breakdown is provided in Table 14 (Appendix A section) in this report)[24].

[21] The propane market is discussed below in a separate section.
[22] Daily exchange rates - Bank of Canada
[23] Energy conversion calculators - U.S. Energy Information Administration (EIA)
[24] A detailed breakdown of the blending methodology is provided here Board of Commissioners of Public Utilities

e) It is important to note that Platts discontinued the premium gasoline price reporting service in 2020; however, both Argus and OPIS still report prices for premium gasoline at NYH.
f) The Board's regulatory framework requires the daily price to be the average of each regulated product's daily high and low prices. The benchmark price is then determined by taking an average of the daily average price (average calculated from high and low) over an interval, typically over the last seven days.
g) We plotted regular gasoline, diesel, and furnace oil prices (calculated using the same methodology as prescribed by the Board) for all three price reporting agencies between 2019 and 2022. We observed that there were deviations between all three price reporting agencies. For regular gasoline (Figure 9), Argus and OPIS are closely matched and tend to deviate from Platts for most periods (except 2021).
h) We observed that, on average, Platts' price of gasoline has been either below or above Argus and OPIS by 1 to 2 cents per litre.
i) For diesel prices, the deviations between Argus and Platts are more pronounced than those between OPIS and Argus. Alternatively, the price reported by Platts and OPIS was more similar for furnace oil than Argus, which was typically higher than both.
j) In the case of stove oil (Island), all three reporting agencies' published prices are close, with very negligible deviations between them.
k) The price deviations between the price reporting agencies for all regulated petroleum products are presented in Tables 5 and 6.
l) These deviations mean that the chosen benchmark price in the Board's regulatory framework, in some periods, may be a lower (or higher) price than the actual market transaction for wholesalers and retailers[25], which could, in turn, result in lower or higher available margins for wholesalers/retailers.
m) Despite its impact on wholesale and retail margins, we may unintentionally capture and correct for some of this difference while calculating the change in the cost of acquisition relative to the benchmark, as acquisition costs are likely based on the local rack price, which may be influenced by Argus or OPIS pricing at NYH instead of Platts. However, we cannot determine this precisely as there have been very few submissions regarding acquisition cost information from the wholesalers in the province.
n) Based on our data analysis approach, the price deviations between Platts, Argus, and OPIS vary for regulated products. Argus and OPIS are more closely matched and deviate from Platts for regular gasoline and diesel but differ significantly in the case of furnace oil.
o) The Board can choose a specific price reporting agency based on two criteria. First, what price reporting agency is predominantly used as a basis for transactions by wholesalers in the province of Newfoundland and Labrador? The second criterion is established through an analysis of the volumetric transactions used to determine the

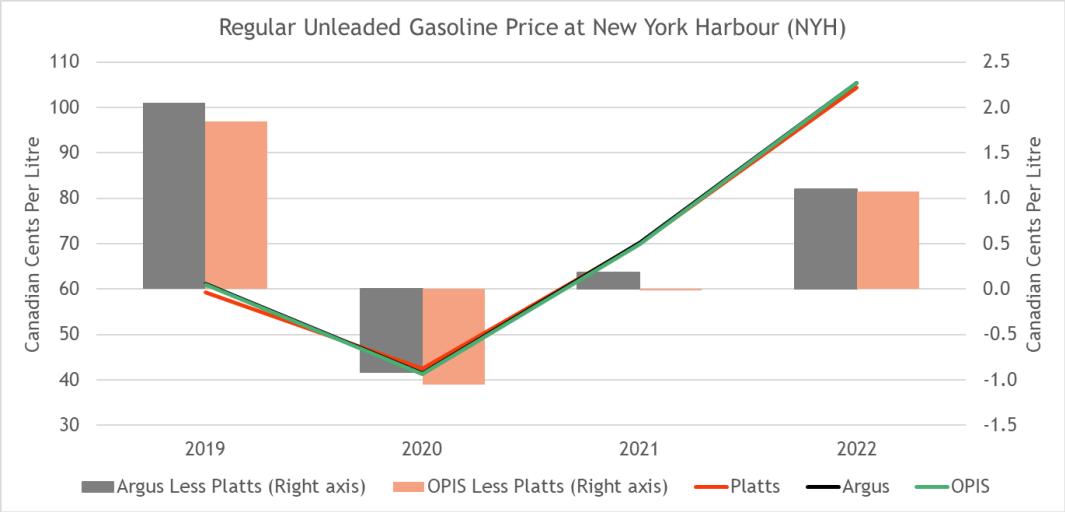
[25] Some refiners and wholesalers may set the local rack price based on the prices reported by Argus and OPIS instead of Platts, which would mean that their acquisition costs could be higher than normal resulting in lower available margins.

daily price for regulated products in the region and choosing a price reporting agency that best represents the typical market transaction.

p) Currently, no price reporting agencies report their volumetric transactions, therefore it makes it difficult to recommend the choice of a price reporting agency based on this criterion.

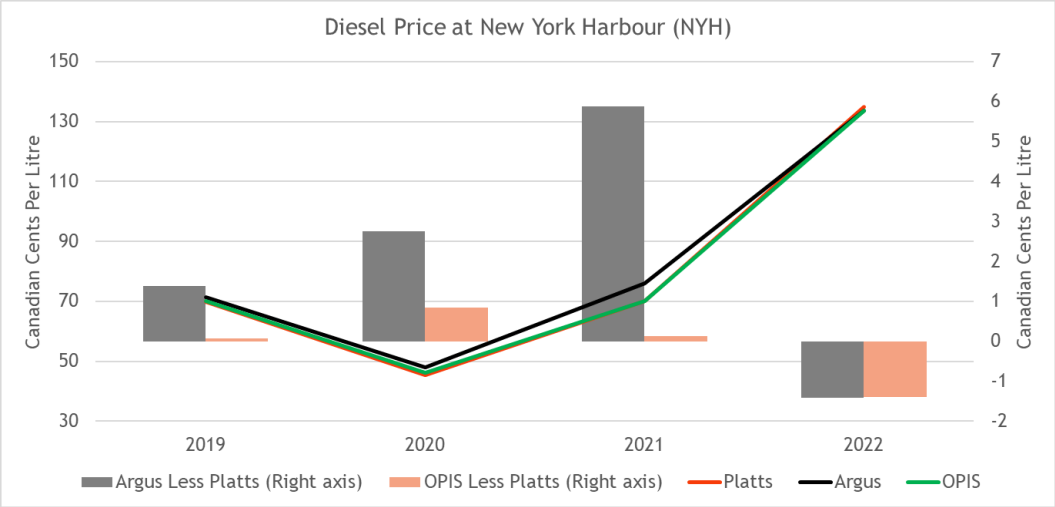
q) If the wholesalers in the province of Newfoundland and Labrador currently use Argus or OPIS as the basis to perform wholesale transactions, then, we recommend a switch to Argus and OPIS. Recently, in the NSUARB wholesale margin review hearing on June 5th, 2023, there was evidence submitted by the NSUARB, containing a letter from the Canadian Fuel Association (CFA), that suggested that the majority of the wholesalers who operate in Nova Scotia have been using Argus instead of Platts as a basis of all their transactions. Many wholesalers operating in Nova Scotia also operate in Newfoundland and Labrador. Given this finding, the Board may consider switching from Platts to Argus reporting to set benchmark prices.

Figure 9: Regular Gasoline Price at NYH



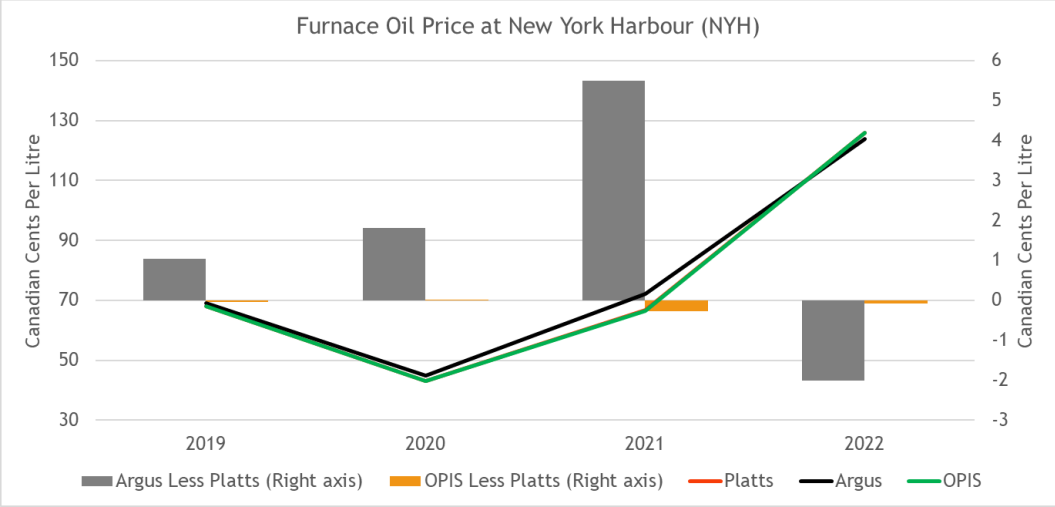
Source: Platts, Argus, OPIS, and Newfoundland and Labrador PUB

Figure 10: Diesel Price at NYH



Source: Platts, Argus, OPIS, and Newfoundland and Labrador PUB

Figure 11: Furnace Oil Price at NYH



Source: Platts, Argus, OPIS, and Newfoundland and Labrador PUB

Table 5: Argus Price Deviations with Platts for All Regulated Products (Excluding Propane)

Benchmark Price Difference between Argus and Platts						
Year	Regular Gasoline	Stove Oil (Island)	Stove Oil (Labrador)	Diesel (Island)	Diesel (Labrador)	Furnace Oil
2019	2.05	0.03	1.16	1.38	1.16	1.03
2020	-0.91	-0.07	2.39	2.75	2.39	1.81
2021	0.18	-0.03	1.51	5.89	1.51	5.50
2022	1.10	0.23	3.00	-1.41	3.00	-2.01

Source: Platts, Argus, OPIS, and Newfoundland and Labrador PUB

Table 6: OPIS Price Deviations with Platts for All Regulated Products (Excluding Propane)

Benchmark Price Difference between OPIS and Platts						
Year	Regular Gasoline	Stove Oil (Island)	Stove Oil (Labrador)	Diesel (Island)	Diesel (Labrador)	Furnace Oil
2019	1.84	0.01	0.22	0.07	0.22	-0.04
2020	-1.05	-0.11	2.15	0.85	2.15	0.02
2021	-0.01	-0.02	0.49	0.13	0.49	-0.27
2022	1.07	0.65	2.80	-1.40	2.80	-0.07

Source: Platts, Argus, OPIS, and Newfoundland and Labrador PUB

Are current blending methodologies appropriate?

As a part of this phase, R Cube also discussed with the wholesalers who participated in the survey about the current blending methodology used by the Board to calculate diesel, furnace oil, and stove oil. A detailed breakdown of the Board's formula is presented in the Appendix section of this report. Five out of six wholesalers who participated in the survey had no negative comments regarding the Board's blending formula during our engagement. However, one participant raised some concern regarding the use of Jet fuel price instead of Ultra-Low Sulphur Kerosene (ULSK). The wholesaler also felt that it did negatively impact their margins as they use ULSK instead of Jet Fuel in their supply of heating oil to meet the cloud point[26] requirements. ***Given that a majority of the wholesalers who participated in the survey were comfortable with the Board's current blending methodology for these regulated fuels, we recommend no change to the Board's existing blending formula for these fuels.***

[26] Cloud Point of Diesel Fuel - Guided Wave (guided-wave.com)

Forward Averaging Methodologies and Approaches

Similar to other regulated jurisdictions in the Atlantic Canada region, the regulations permit extraordinary adjustments[27]. This approach aims to correct and adjust for price swings that may disrupt price stability. Since the beginning of 2022 there have been numerous extraordinary adjustments as a result of significant volatility in global commodity market prices[28]. However, the adjustments are only considered when there is a difference of plus or minus 6 to 8 cents per litre between the daily average, or running average, benchmark price compared to the established benchmark price.

If the variance is greater than plus or minus 8 cents per litre, it will more likely lead to an extraordinary adjustment. However, while making this adjustment, the Board will consider the following factors:

- The scale of the change in the daily benchmark price;
- The variance trends in the data;
- The timing between the last and next adjustment.

There is no precise formula set out in the legislation to calculate the extraordinary adjustments. It differs slightly from Nova Scotia regulations (for example), which have extraordinary and forward-averaging adjustments[29]. In Nova Scotia, the forward-averaging adjustments[30] occur weekly instead of only during exceptional events. The Nova Scotia regulator does have an extraordinary adjustment only during unusual price movements when benchmark prices of both motor and heating fuels are highly volatile, which has a significant bearing on the producer or supplier and consumer of the regulated fuels.

However, in Nova Scotia, they have a weekly forward averaging adjustment on their weekly price adjustment formula based on the price discrepancy between the calculated average benchmark (average of the previous week's price) and the actual settlement of the benchmark price. For example, suppose the current week's benchmark price of 100 cents per litre is lower than the previous week's benchmark prices (105 cents per litre) which is used to set the regulated prices for petroleum products in the current week. In that case, it is assumed that the wholesale costs are falling, and the margins are higher than they likely would be in an unregulated market (The difference of 5 cents per litre). A forward-averaging correction method accounts for this and reduces the current week's pricing by 5 cents per litre to prevent the maximum prices from being too high[31]. An adoption of this method

[27] A detailed description of extraordinary adjustments can be found here (Board of Commissioners of Public Utilities)
[28] Home - Petroleum Products - Extraordinary Adjustments
[29] A detailed description of forward averaging correction can be found here (forward_averaging.pdf (novascotia.ca)
[30] Forward Averaging Correction example Petroleum Pricing Breakdown May 19-23.pdf (novascotia.ca)
[31] NSUARB Wholesale Margin Review Report (Matter M10853) UARB15 (APUARB11) (novascotia.ca)

potentially reduces the need for extraordinary adjustments and provides fair pricing to both consumers and suppliers of the regulated fuels.

If the Board adopted a forward averaging method similar to NSUARB (Nova Scotia Regulatory Board), it would adjust the maximum prices weekly due to the price deviations between the calculated benchmark price (Board's methodology) and the actual settlement price in the market. As stated in our example in the previous paragraph, this would be a fairer representation of the market for both consumers and suppliers of regulated fuels. Table 7 represents the changes to fuel prices if weekly forward averaging methodology[32] was incorporated in the Board's calculation of maximum price between 2019 and 2022. The figures in this table represent annual averages, which typically skew the true impact lower as positive and negative values tend to offset each other. A more representative analysis would be looking at absolute deviations (considers only absolute values of the forward-averaging correction values) or the standard deviation between 2019 and 2022.

As expected, the values in Table 7 are negligible and seem to have next to no impact on benchmark price correction and hence on the maximum wholesale and retail price. However, this method has a natural bias and is therefore not recommended as a basis in this section.

However, Table 8 presents the standard deviation of the forward average correction values, a measure of volatility, and projects a different picture. The volatility was much higher in 2022 than in other years in the sample. For example, in 2020, the maximum price would have been lower for all regulated petroleum products (excluding propane) if the forward averaging correction method were to be adopted by the Board (a negative sign in Table 7 suggests that actual benchmark prices would have been lower if forward averaging correction method was implemented weekly). Similarly, in 2022, suppliers of regulated fuels would have received a higher price, a fairer representation of the actual market price for those products.

Table 7: Annual Average of Forward Averaging Correction Values in Newfoundland and Labrador (2019-2022)

Date	Regular Gasoline	Diesel	Furnace oil	Stove Oil
2019	0.15	0.12	0.05	0.09
2020	-0.14	-0.42	-0.25	-0.23
2021	0.33	0.62	0.34	0.35
2022	0.13	0.86	0.49	0.45

[32] A detailed description of NSUARB's forward-averaging methodology can be accessed here forward_averaging.pdf (novascotia.ca). Based on NSUARB's description, "Forward averaging is a correction or "trueing up" to account for the difference between historical numbers used to set the price and the actual price for the period. On a weekly basis, the Board has discretion on whether to use this mechanism and the magnitude that is applied" (Source: Nov 23-18 Weekly Petroleum Pricing Example.pdf (novascotia.ca.)

Table 8: Standard Deviation of Forward Averaging Correction Values in Newfoundland and Labrador (2019-2022)

Date	Regular Gasoline	Diesel	Furnace oil	Stove Oil
2019	1.84	1.89	1.38	1.37
2020	2.66	2.95	2.34	1.99
2021	2.06	2.37	1.63	1.63
2022	4.53	14.63	9.18	9.44

Based on our analysis, we observe that the volatility in maximum prices would be lower if forward averaging adjustments were incorporated into the regulations. If a forward averaging methodology were to be implemented it also potentially reduces the need for extraordinary adjustments and provides fair pricing to both consumers and suppliers of the regulated fuels. ***Therefore, if the regulations permit, we recommend that the Board consider a forward averaging correction methodology similar to NSUARB with regular frequency (weekly) while setting the maximum wholesale and retail prices.***

Current Supply Dynamics and Infrastructure

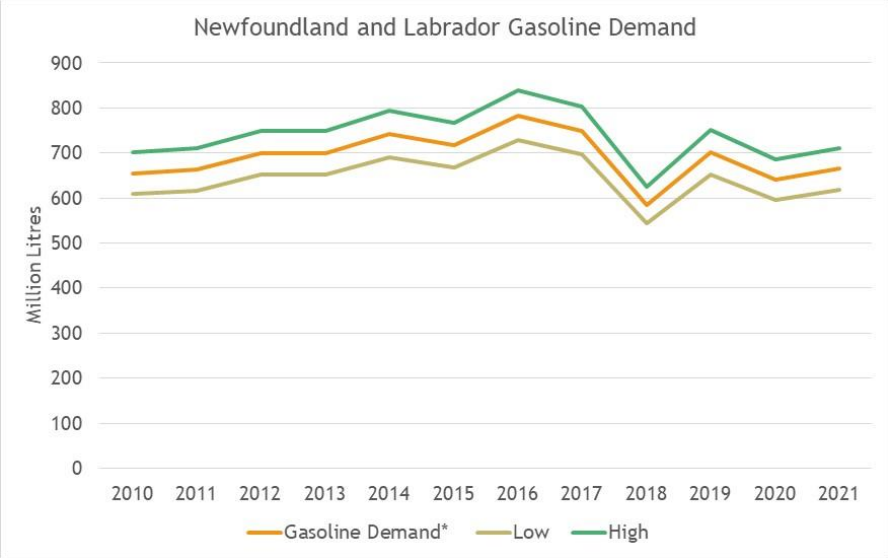
An essential part of this report is understanding the supply dynamics of regulated petroleum products in Newfoundland and Labrador. Supply dynamics here refers to a broader umbrella that will lay out the source of petroleum product supply for the province, along with transportation, storage, and other infrastructure necessary to move products to different markets within the province. This section will also review the existing zone price differentials within the province of Newfoundland and Labrador and recommend changes to the existing structure based on information gathered from surveying wholesalers operating there.

Before understanding the supply sources, it is vital to understand the demand for regulated fuels in Newfoundland and Labrador. Data availability for all regulated petroleum products across time by province is generally challenging. However, there are some data available for motor fuel consumption. Data published by Statistics Canada is the only publically available source for motor fuels with a time trend, but this data has a couple of issues. Firstly, it is an estimated number and not based on actual volumetric transactions. Secondly, the data is published with a considerable lag, meaning that the most recent data for motor fuel demand is for 2021. We observe that gasoline and diesel demand in Newfoundland and Labrador peaked in 2016, reaching about 800 million litres of gasoline[33] and about 350 million litres of diesel[34]. Since then, motor fuel demand has fallen. In 2021, gasoline demand in Newfoundland and Labrador was just over 660 million litres and over 270 million litres for diesel (See figures 12 and 13 below).

We estimate the total demand for heating oil in the province of Newfoundland and Labrador to be around 120 million litres[35]. Here heating oil includes both furnace and stove oil.

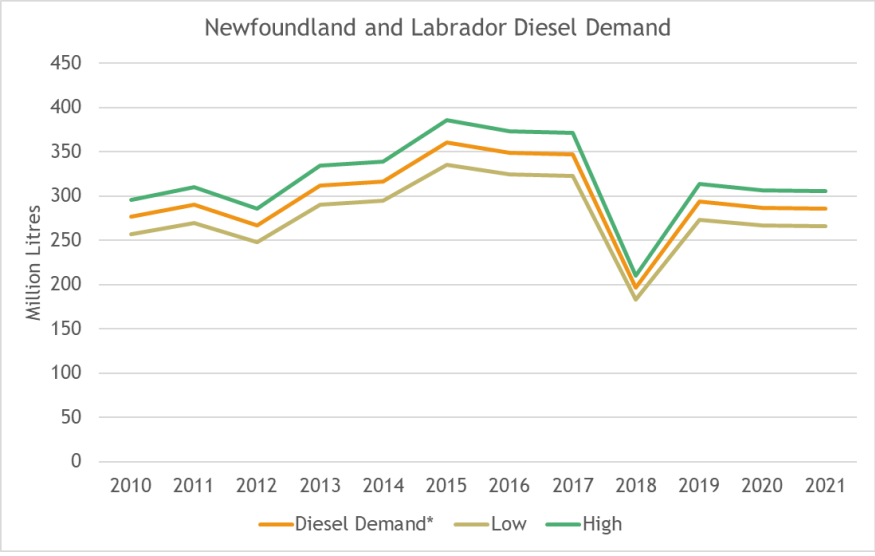
[33] These figures exclude gasoline demand for off-road activities such as farming, forestry, construction and mining.
[34] These figures include only diesel oil sales for road vehicles and exclude demand for off-road activities such as farming, forestry, construction and mining.
[35] The estimate is based on household information data in the report published on June 2019 titled "The Value of Energy – Newfoundland & Labrador Canadians for Affordable Energy: Household Research Series" – CAE09_NFLDLbdr-report_JN2919_F2.pdf (d3n8a8pro7vhmx.cloudfront.net)"

Figure 12: Newfoundland and Labrador Gasoline Demand



Source: Statistics Canada and R Cube Economic Consulting Calculations.
Please note that the low and high cases are presented to acknowledge that the data published by Statistics Canada is survey-based and may have a margin of error of between +/- 5% and 10% (Based on R Cube's calculations)

Figure 13: Newfoundland Labrador Diesel Demand



Source: Statistics Canada and R Cube Economic Consulting Calculations.
Please note that the low and high cases are presented to acknowledge that the data published by Statistics Canada is survey-based and may have a margin of error of between +/- 5% and 10% (Based on R Cube's calculations)

Supply of Petroleum Products

Given that there is only one refinery (which is not fully operational) in the province of Newfoundland and Labrador, the province primarily imports its petroleum products from other Canadian provinces and from PADD 1 (Petroleum Administration for Defense Districts)[36] on the US East Coast. About nine major primary and secondary suppliers represent roughly 95% of the regulated fuel market in Newfoundland and Labrador, with the remaining volumes supplied by smaller secondary suppliers[37].

To understand the supply dynamics in the province, we requested the wholesalers to provide information on the storage capacity and changes to transportation costs between zones. Specifically, the wholesalers were asked to provide the following information:

1. Zone transportation costs between zones for all the petroleum products (gasoline, diesel, furnace oil, and stove oil);
2. Information on the total number of terminals by zone;
3. Information on the number of storage tanks by zone and their total capacity;
4. Further, the wholesalers were also requested to provide throughput volume by product for each zone.

A summary of the data is provided below:

a) Only three wholesalers submitted data on terminals, storage tanks, and throughput volumes by zone. Further, only two wholesalers provided updated transportation cost information by zone.
b) Most submissions covered zones 1 through 9 (See Tables 1 and 2 for zone descriptions). We received no response from wholesalers operating between zones 10 and 14.
c) The wholesalers who submitted the data did not comment on the current zonal boundaries.
d) Compared to the 2005 storage distribution report, which used information from 2004 data, the total storage facilities have grown in the province (See Tables 9 and 10). However, this does not incorporate information between zones 10 and 14, so we estimated[38] the potential storage facilities in these zones.
e) Based on submitted data, the number of storage facilities has grown by almost 35%.

[36] U.S. Energy Information Administration - EIA - Independent Statistics and Analysis
[37] The calculations are based on R Cube's analysis of wholesaler data submitted for the markup review and R Cube's knowledge of the petroleum products market in the province.
[38] R Cube estimated this range based on information from the 2005 study and researching individual companies operating in zones 10 through 14, for which data was not submitted.

Table 9: Total Storage facilities in Newfoundland and Labrador (2005 Study using 2004 data)

Storage Type	Total
Primary Marine Terminals plus 1 Refinery	8
Secondary Marine Terminals	5
Marine Depots	11
Bulk Plants	28
Total	**52**

Source: Pub.nl.ca and R Cube Economic Consulting Calculations.
Appendix L - List of Storage Facilities.xls (pub.nf.ca)

Table 10: Total Storage Facilities in Newfoundland in 2022

Storage Type	Total
Total storage facilities in Operation (Submitted data)	**70**
Potential Other Storage Facilities not confirmed by Wholesalers	10 to 20
Total Potential Storage Facilities in Operation	**80 to 90**

Source: Pub.nl.ca and R Cube Economic Consulting Calculations.
Our estimation of potential storage facilities is based on the report on storage and distribution study in Newfoundland and Labrador Appendix L - List of Storage Facilities.xls (pub.nf.ca)
The total storage facilities in operation excludes zones 10 through 14.

Geographic Pricing Zones

1. As mentioned, only two wholesalers provided zonal transportation, storage and terminal costs and the corresponding volumetric throughputs.
2. All the zone data submitted were for zones between 1 and 9 (inclusive).
3. One participant submitted volumetric throughput data by product type (regular, mid-grade, premium gasoline, and diesel) and associated transportation and storage unit costs in a granular format. Alternatively, the other wholesaler submitted all the data in an aggregated form (not differentiated by product).
4. Given that there were only two submissions, of which one did not provide a detailed breakdown, recommending a change in zonal price differential by product is challenging. We calculated the combined zonal cost for motor fuels (gasoline and diesel) for the submitted wholesaler data.

5. In addition, one wholesaler provided a time series with the changes to their transportation and storage costs.
6. First, we calculated the change in the combined average of zonal costs (essentially the price differential) submitted by the wholesalers for gasoline and diesel compared to the average of both gasoline and diesel for the current zonal price differential as published by the Board (see Tables 1 and 2 for the current price differentials).
7. Then, we applied the average of the average change in transportation and storage costs for both wholesalers.
8. Based on our methodology described above, we observed that the cost of transport and storage for the zones 1 through to 9 increased by 49 percent for both gasoline and diesel. As a result, we recommend that the Board consider an increase to the zonal price differentials by an equivalent amount for zones 1 to 9 to recognize the increased transportation and storage costs of motor fuels in Newfoundland and Labrador.
9. The related costs have risen, and the current zonal price differentials may not be sufficient for the wholesalers to recoup the costs associated with moving the fuel to market as it impacts their total available markups. It is also worth noting that the last time an adjustment was made to the price zones in Labrador was in 2021 and for zone 7a (See Tables 1 and 2) in 2015[39]. A major reason for the increase in transportation and storage costs could be attributed to the abnormal increase in diesel prices in 2022. The majority of regulated fuels are transported by trucks that use diesel as a primary fuel. Therefore, given the industry's lack of adequate data submissions on these costs, the change to zonal price differentials may be tied to a diesel price on an indexed scale (See Table 11). We are unable to pick a common base year for all the zones, given that there were changes to the price differentials for specific zones in 2015 and 2021.

Table 11: Indexing Retail Diesel Price in Newfoundland and Labrador

Year	Retail Diesel Price in Newfoundland and Labrador	Indexing Diesel Prices	Change of Indexation (Annual)
2015	118.3	100	1
2016	111.9	94.59	-5%
2017	124.1	104.90	11%
2018	140.8	119.02	13%
2019	136.5	115.38	-3%
2020	110.6	93.49	-19%
2021	147.4	124.60	33%
2022	224	189.35	52%

Source: Kalibrate Canada and R Cube Economic Consulting Calculations.

10. We traced the change in diesel prices since 2015 to better understand how transportation costs have changed. We observe that retail diesel prices have

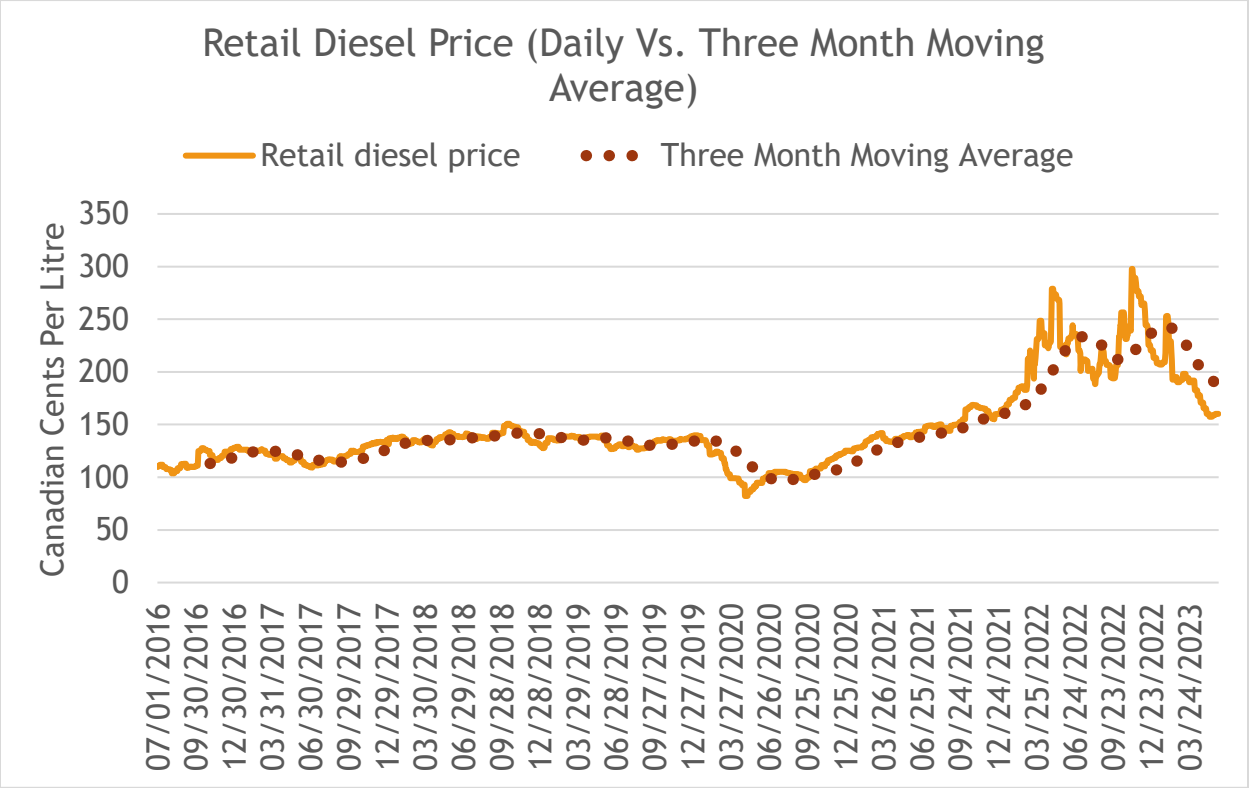
[39] Microsoft Word - History of Petroleum Products Pricing Regulation (pub.nl.ca)

appreciated markedly. This finding validates our assessment (change in zone price differential by almost 50%) that this component has been one of the biggest drivers behind the appreciation in transportation and storage costs since 2015. We also recommend to the Board that the percentage change in retail diesel price indexation may be applied to the zonal price differential when data from the wholesalers are absent, and transportation fuel prices vary drastically.

11. ***Therefore, we recommend that the Board use a metric such as a three-month moving average[40] of retail diesel prices to track the trend in diesel prices as a precursor and a trigger point to engage with the market participants to collect additional storage and distribution cost information to amend the existing zonal price differentials. A measure such as a three-month moving average is an effective way to understand the general trend in price data while removing short-term noise or volatility.***
12. ***In the case, that the Board in unable to collect sufficient information from the suppliers of the regulated fuels, then, R Cube recommends that the Board choose an appropriate base year and index the change (As shown in Table 11) in the retail diesel price (Provincial average) as published by Kalibrate Canada and apply the change of indexation between the base and the current period and apply it to the current zonal price differential. For example, using information in Table 11, if the base year is 2015, and the Board is calculating the change in zonal cost for 2016, then a 5% reduction is applied to the zonal price differential of 2015 to calculate the zonal price differential of 2016.***
13. ***Further, given that wages and salaries change on an annual basis coupled with a yearly inflation adjustor to the storage operating costs (inflation escalation), we recommend that the Board do a mandatory yearly review of zonal price differentials.***

[40] Smoothing Data with Moving Averages - Dallasfed.org

Figure 14: St. John's Retail Diesel Prices (Daily Price Vs. Three Month Moving Average)



Source: Kalibrate Canada and R Cube Economic Consulting Inc. Calculations.

Methodology for Suspension of Price Adjustments

Suspension of maximum price adjustments is undertaken on a seasonal basis in the province of Newfoundland and Labrador[41]. The suspension occurs in zones that receive infrequent supply of the regulated petroleum products, which in most cases is about twice a year. All these zones are in the region of Labrador. With the exception of zones 13 and 13a (access to supply via rail and trucking), maximum price adjustments are suspended in the fall of every year after the delivery of the last shipment and the suspension is lifted in Spring, when the weather and icy condition allow for re-supply.

The seasonal suspension of maximum prices initially applied to zones 11a (Coastal Labrador South – Tanker supplied) and 14 (Coastal Labrador North). However, since 2020, the suspension of maximum prices has been extended to other zones like 10, 11, 11b, and 12 within the region of Labrador. After consultation and upon receiving new information from the stakeholders under the Labrador petroleum products review, the adjustments to maximum prices were suspended for all regulated products except propane for both spring and winter for zones 10, 11, 11a, 11b, 12, and 14. Table 12 below provides a detailed description about the timeline and the corresponding suspension of maximum adjustments between 2017 and 2023.

This report was also intended to gather additional information regarding the current system of suspension and infer from the wholesalers of regulated products through a survey about the implications of costs on their margins. Unfortunately, we received no response about the survey from any wholesaler. We are unable to ascertain what was the main driver behind the lack of submissions. Due to these constraints, we are unable to recommend or comment further regarding a change to the existing structure of periodic suspension of adjustments to maximum pricing within the Labrador region.

[41] Board of Commissioners of Public Utilities – Suspension of Adjustments

Table 12: Timeline of Suspension of Maximum Price Adjustments (2017-2023)

SUSPENSION OF MAXIMUM PRICE ADJUSTMENTS 2017-2023	
Effective Date	**Notes**
13-Jul-17	Suspension in Zones 11a and 14 lifted
02-Nov-17	Suspension in Zones 11a and 14 implemented
05-Jul-18	Suspension in Zones 11a and 14 lifted
01-Nov-18	Suspension in Zones 11a and 14 implemented
04-Jul-19	Suspension in Zones 11a and 14 lifted
07-Nov-19	Suspension in Zones 11a and 14 implemented
11-Jun-20	Suspension in Zones 11a and 14 lifted
05-Nov-20	Suspension in Zones 11a and 14 implemented
26-Nov-20	Suspension of all products, except propane, in Zones 10, 11, 11b and 12 implemented
20-May-21	Suspension for gasoline in Zones 10, 11, 11b and 12 lifted Suspension for diesel and stove oil in Zones 10, 11, and 11b lifted
10-Jun-21	Suspension for all products in Zones 11a and 14 and for diesel and stove oil in Zone 12 lifted; maximum prices adjusted; and a suspension implemented for all products, except propane, in Zones 10, 11, 11a, 11b, 12 and 14
25-Nov-21	Suspension of all products, except propane lifted; maximum prices adjusted; and a suspension implemented for Zones 10, 11, 11a, 11b, 12 and 14
26-May-22	Suspension for gasoline and diesel motor fuels and stove oil heating fuel in Zones 10, 11 and 11b lifted; maximum prices adjusted.
16-Jun-22	Suspension for gasoline and diesel motor fuels and stove oil heating fuel in Zone 12 lifted; maximum prices adjusted.
30-Jun-22	Suspension for gasoline and diesel motor fuels and stove oil heating fuel in Zones 11a and 14 lifted; maximum prices adjusted; suspension for gasoline and diesel motor fuels and stove oil heating fuels in Zones 10, 11, 11a, 11b, 12 and 14 implemented.
25-Aug-22	Suspension for gasoline motor fuel in Zones 10, 11 and 11b lifted; maximum prices adjusted; suspension of gasoline motor fuel in Zones 10, 11 and 11b implemented.
09-Dec-22	Suspension of maximum price adjustments in Zones 10, 11, 11a, 11b, 12 and 14 lifted for gasoline and diesel motor fuels and stove oil heating fuel; maximum prices adjusted.
22-Dec-22	Maximum prices for diesel motor fuel and stove oil heating fuel further adjusted in Zones 10, 11 and 11b to better reflect the cost of the product being supplied.
05-Jan-23	Maximum prices for gasoline and diesel motor fuels and stove oil heating fuel further adjusted in Zones 10, 11 and 11b to better reflect the cost of the product being supplied; suspension implemented for all products, except propane, in Zones 10, 11, 11a, 11b, 12 and 14.
08-Jun-23	Suspension of gasoline motor fuel in Zone 12 lifted; suspension of diesel motor fuel and stove oil heating fuel in Zones 10, 11, 11b and 12 lifted; maximum prices adjusted.
22-Jun-23	Suspension of gasoline motor fuel in Zones 10, 11 and 11b lifted; maximum prices adjusted. Gasoline motor fuel in Zone 12, and diesel motor fuel and stove oil heating fuel in Zones 10, 11, 11b and 12 further adjusted.
29-Jun-23	Suspension of gasoline motor fuel, diesel motor fuel and stove oil in Zones 11a and 14 lifted; maximum prices adjusted; suspension implemented for all products, except propane, in Zones 10, 11, 11a, 11b, 12 and 14.
31-Aug-23	Suspension of gasoline motor fuel, diesel motor fuel and stove oil heating fuel lifted in Zones 10, 11 and 11b; maximum prices adjusted; suspension implemented for all products, except propane, in Zones 10, 11 and 11b.

Source: Newfoundland and Labrador PUB

Propane Market – Evidence Presented by the Wholesalers

A similar approach was undertaken for propane to replicate the analysis conducted for motor and heating fuels. A survey was sent requesting the wholesalers and retailers of propane heating fuel to submit information on the costs (operating and acquisition costs) and zonal price differentials. The wholesale and retail markups for propane are combined, ranging between 51.09 and 71.59 cents per litre (depending on the zone). The current markups were last set in 2021[42] on an interim basis. In 2019, there was a regulation change to the benchmark price data source for propane prices. The government amended the Petroleum Products regulations to replace Bloomberg Oil Buyer's guide with OPIS as the data source for propane heating fuel benchmark prices[43].

The wholesalers and retailers of propane in the province of Newfoundland and Labrador were asked to provide inclusive data from 2019 through 2022. Specifically, they were requested to provide:

1. Sales volume by year;
2. All the operating costs by year broken down by components that allowed the consultant to categorize the cost of storage capital and operating and maintenance if possible;
3. Their acquisition costs for fuel, expressed as the actual cost of acquiring the fuel, or their premium or discount to rack, by year;
4. Zone transportation costs between zones;
5. Information on the total number of terminals by zone;
6. Information on the number of storage tanks per zone and their total capacity; and
7. Further, they were also asked to provide throughput volume by product for each zone.

Only one wholesaler provided information regarding operating costs, zone price differential, and storage facility information, despite R Cube initiating several follow-ups with wholesalers. R Cube has no firm reason for the lack of adequate submissions. However, the one submission does provide some indication regarding the change in costs for propane heating fuel in Newfoundland and Labrador. The wholesaler did not provide information on acquisition costs. Due to the confidential agreement with the wholesaler, we are unable to provide additional details regarding costs and other items submitted. However, we have observed that the operating cost of propane heating fuel has more than doubled between 2019 and 2022. We can also state that the province's number of storage facilities for propane

[42] NEWFOUNDLAND AND LABRADOR (pub.nl.ca)
[43] Page 4 Microsoft Word - History of Petroleum Products Pricing Regulation (pub.nl.ca)

heating fuels is above the previous study[44]. We also received anecdotal statements from wholesalers that most propane is brought to market via more expensive modes of transportation, and the marginal fuel supply is imported from Sarnia. Therefore, the price of propane in the province follows propane prices at Sarnia.

Given that the wholesale and retail mark ups for Propane heating fuel are determined together, an analysis of propane markups will be undertaken in the Phase III report while evaluating the retail markups for regulated petroleum fuels.

[44] We are unable to publish the data due to lack of adequate submissions and confidentiality reasons.

Summary - Findings and Conclusions

Phase II (i) – Current Supply Dynamics and Infrastructure

Only three out of possible six wholesalers submitted data on terminals, storage tanks, and throughput volumes by zone. Based on the data submitted by these wholesalers, the total storage facilities have grown in the province compared to the 2005 storage distribution report. However, given the lack of information from wholesalers operating between zones 10 and 14, we have estimated the potential storage facilities in these zones. Therefore, we estimate that the number of storage facilities has grown by almost 35% in the province of Newfoundland and Labrador.

Phase II (ii) Suitability of Benchmark Pricing Mechanism

Based on our analysis, we observe that based on the Board's benchmark methodology that out of the three major price reporting agencies, it is increasingly common that Argus pricing is closely matched with OPIS and increasingly deviates from Platts, particularly for gasoline and diesel. However, OPIS and Platts are more closely matched for furnace oil and differ from Argus. All three price reporting agencies are virtually the same concerning stove oil.

Recently, there have been evidence submitted by the NSUARB in a public hearing held on June 5th, 2023, that the CFA had communicated to them over a letter that the majority of the wholesalers in the province of Nova Scotia have been using Argus-reported prices for wholesale transactions. Given that many of the wholesalers also operate in Newfoundland and Labrador, we recommend the Board considers a switch to Argus from Platts as their benchmark price provider.

Further, given that a majority of the wholesalers who participated in the survey were comfortable with the Board's current blending methodology for these regulated fuels, we recommend no change to the Board's existing blending formula for these fuels.

Phase II (iii) – Geographic Pricing Zones

R Cube recommends that the Board continue to use the existing geographic pricing zones, as R Cube did not receive any negative comments on this matter from the wholesalers.

Phase II (iv and v) Wholesale Markups and Zonal Price Differentials

Based on our analysis of the data submitted by six wholesalers in Newfoundland and Labrador for the evaluation period (2019 and 2022), we find that the volume-weighted wholesale operating costs of regulated fuels motor fuels (gasoline and diesel) and heating fuels (furnace and stove oil) have increased by about 1.7146 cents per litre cents a litre. The data submitted by the wholesalers was determined to be reasonable and a representative sample of the broader market in Newfoundland and Labrador.

Only three wholesalers submitted information regarding the acquisition cost component, and given the relatively small sample size and potential breach of confidentiality, we cannot publish any information regarding the change in acquisition costs. We recommend no change to the wholesale margin for this component.

Since operating costs are independent of acquisition costs, we recommend a 1.7136 cents per litre increase to the wholesale markups from 2019 (Base year) for all regulated fuels (except propane). The increase in markups does not apply to the interim changes. Our analysis (volume-weighted average cost change) on the operating costs data submitted by the majority of wholesalers in the province of Newfoundland and Labrador for this review does not suggest a cost change (includes operating costs and excludes acquisition costs component due to lack of submissions) of 4 to 5 cents per litre between 2019 and 2020 or 2021.

R Cube also collected data on zonal transportation, storage and terminal costs and the corresponding volumetric throughputs from all wholesalers to analyze the existing zonal price differentials in the province of Newfoundland and Labrador. Based on the two submissions, R Cube observed that the cost of transport and storage for the zones 1 through to 9 increased by 49 percent for both gasoline and diesel. As a result, R Cube recommends that the Board consider an increase to the zonal price differentials by an equivalent amount for zones 1 to 9 to recognize the increased transportation and storage costs of motor fuels in Newfoundland and Labrador. The related costs have risen, and the current zonal price differentials may not be sufficient for the wholesalers to recoup the costs associated with moving the fuel to market. A major reason for the increase in transportation and storage costs could be attributed to the abnormal increase in diesel prices in 2022. The majority of regulated fuels are transported by trucks that use diesel as a primary fuel. Therefore, given the industry's lack of adequate data submissions on these costs, the change to zonal price differentials may be tied to a diesel price on an indexed scale (See Table 11).

R Cube also recommends that the Board use a metric such as a three-month moving average of retail diesel prices to track the trend in diesel prices as a precursor and a trigger point to engage with the market participants to collect additional storage and distribution cost information to amend the existing zonal price differentials. A measure such as a three-month moving average is an effective way to understand the general trend in price data while removing short-term noise or volatility.

Phase II (vi) – Methodology for Suspension of Price Adjustments

Regarding the suspending the maximum price adjustments for zones 10, 11, 11a, 11b, 12, and 14 in the Labrador region, we did not receive any data submission or comments from wholesalers operating in these zones. Due to these constraints, we are unable to recommend or comment further regarding a change to the existing structure of periodic suspension of adjustments to maximum pricing within the Labrador region.

Phase II (vii) – Forward Averaging Methodologies and Approaches

The Board employs extraordinary adjustments only when there is a difference of plus or minus 6 to 8 cents per litre between the daily average benchmark price or the running average benchmark price and the established benchmark price. Also, there is no precise formula in the legislation to calculate the extraordinary adjustments. Based on our analysis, we observed that the volatility in maximum prices would be lower if forward averaging adjustments were incorporated in the regulations in place of the current approach with extraordinary adjustments. Therefore, we recommend that the Board implement forward-averaging adjustments weekly, similar to other regulated markets like Nova Scotia.

Appendix A

Table 13: An Illustration of Benchmark Calculations

Illustration of a Benchmark Price Calculation Actual Platts daily data cannot be released by the Board							
Platts Day of Data	Platts Daily Low cents/US Gallon	Platts Daily High cents/US Gallon	Daily Average cents/US Gallon	US Gallons to Litres (divide by 3.78541) cents/Litre	Bank of Canada Exchange Rate	Platts Daily Average Converted to CAD¢ / Litre	Running Average CAD¢ / Litre
Wednesday	289.75	289.85	289.8	76.56	1.2512	95.79	95.79
Thursday	296.45	296.55	296.5	78.33	1.272	99.63	97.71
Friday	294.25	294.35	294.3	77.75	1.2545	97.53	97.65
Saturday*	294.25	294.35	294.3	77.75	1.2545	97.53	97.62
Sunday*	294.25	294.35	294.3	77.75	1.2545	97.53	97.6
Monday	290.65	290.75	290.7	76.79	1.2617	96.89	97.48
Tuesday	299.15	299.25	299.2	79.04	1.2624	99.78	97.81
						Hypothetical Calculation of a Benchmark Price:	97.81

*Friday data is used as a proxy for Saturday and Sunday as there is no reported data.

Source: Newfoundland and Labrador, Board of Commissioners of Public Utilities

Table 14: Benchmark Sources and Blending Methodology

Benchmark Sources and Blending Methodology				
Product	Reporting Data Source	Product Price Assessment	Blend Methodology	
			Winter Blend	Spring Blend
Regular gasoline	Platts US MarketScan	New York Harbor UNL 87 (Cargo)	100% UNL 87 Year Round	
Mid-grade gasoline	Platts US MarketScan	New York Harbor UNL 87 (Cargo)	100% UNL 87 Year Round	
Premium gasoline	Platts US MarketScan	New York Harbor UNL 87 (Cargo)	100% UNL 87 Year Round	
Diesel Motor Fuel (Island)	Platts US MarketScan	New York Harbor ULSD (Barge) New York Harbor ULSK (Barge)	25% ULSD 75% ULSK	100% ULSD
Diesel Motor Fuel (Labrador, except zones 13 and 13a)	Platts US MarketScan	New York Harbor ULSK (Barge)	100% ULSK Year Round	
Furnace oil heating fuel	Platts US MarketScan	New York Harbor ULSD (Barge) New York Harbor Jet (Barge)	25% ULSD 75% Jet	100% ULSD
Stove oil heating fuel	Platts US MarketScan	New York Harbor ULSD (Barge)	100% ULSD Year Round	
Propane heating fuel	Oil Price Information Service	Sarnia Propane (Weekly Average)	Sarnia Propane Price Year Round	

Source: Newfoundland and Labrador, Board of Commissioners of Public Utilities.
* Please note that ULSD denotes for Ultra-Low Sulphur Diesel, and ULSK denotes here as Ultra-low Sulphur Kerosene
* Winter months are between October until the beginning of April and the remaining months are treated as spring for blending calculation purposes.

Table 15: Price Schedule Motor Fuels – Newfoundland and Labrador Petroleum Product Price Breakdown (May 18, 2023)

Gasoline	Zone 1 Max	Zone 1a Max	Zone 2 Max	Zone 3 Max	Zone 3a Max	Zone 3b Max	Zone 3c Max	Zone 4 Max	Zone 4a Max	Zone 5 Max	Zone 5a Max	Zone 5b Max	Zone 6 Max	Zone 7 Max	Zone 7a Max	Zone 7b Max	Zone 8 Max	Zone 9 Max	Zone 10 Max	Zone 11 Max	Zone 11a Max	Zone 11b Max	Zone 12 Max	Zone 13 Max	Zone 13a Max	Zone 14 Max
Benchmark Price	88.53	88.53	88.53	88.53	88.53	88.53	88.53	88.53	88.53	88.53	88.53	N/A	88.53	88.53	88.53	88.53	88.53	88.53	94.97	94.97	97.12	94.97	97.12	88.53	88.53	97.12
Zone Price Differential	0.00	0.48	1.61	2.18	5.88	6.32	9.60	5.12	8.09	3.42	6.97	N/A	0.62	1.39	10.79	12.06	1.55	3.28	18.20	21.55	27.81	32.99	7.23	10.73	12.91	27.81
Wholesale Markups	15.65	15.65	15.65	15.65	15.65	15.65	15.65	15.65	15.65	15.65	15.65	N/A	15.65	15.65	15.65	15.65	15.65	15.65	10.65	10.65	10.65	10.65	10.65	10.65	10.65	10.65
Retail Markups	10.28	10.28	10.28	10.28	10.28	10.28	10.28	10.28	12.67	10.28	10.28	N/A	10.28	10.28	10.28	12.67	10.28	10.28	10.28	10.28	12.67	12.67	10.28	10.28	10.28	12.67
Federal Tax	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	N/A	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Provincial Tax	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	N/A	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50
Carbon Tax	11.05	11.05	11.05	11.05	11.05	11.05	11.05	11.05	11.05	11.05	11.05	N/A	11.05	11.05	11.05	11.05	11.05	11.05	11.05	11.05	11.05	11.05	11.05	11.05	11.05	11.05
HST (15%)	21.45	21.52	21.69	21.78	22.33	22.40	22.89	22.22	23.02	21.96	22.50	N/A	21.54	21.66	23.07	23.62	21.68	21.94	24.40	24.90	26.52	26.97	23.07	22.31	22.64	26.52
Retail Pump Price	164.5	165.0	166.3	167.0	171.2	171.7	175.5	170.4	176.5	168.4	172.5	N/A	165.2	166.1	176.9	181.1	166.2	168.2	187.0	190.9	203.3	206.8	176.9	171.1	173.6	203.3

Diesel	Zone 1 Max	Zone 1a Max	Zone 2 Max	Zone 3 Max	Zone 3a Max	Zone 3b Max	Zone 3c Max	Zone 4 Max	Zone 4a Max	Zone 5 Max	Zone 5a Max	Zone 5b Max	Zone 6 Max	Zone 7 Max	Zone 7a Max	Zone 7b Max	Zone 8 Max	Zone 9 Max	Zone 10 Max	Zone 11 Max	Zone 11a Max	Zone 11b Max	Zone 12 Max	Zone 13 Max	Zone 13a Max	Zone 14 Max
Benchmark Price	83.48	83.48	83.48	83.48	83.48	83.48	83.48	83.48	83.48	83.48	83.48	N/A	83.48	83.48	83.48	83.48	83.48	83.48	173.54	173.54	154.84	173.54	154.84	84.47	84.47	154.84
Zone Price Differential	0.00	0.48	1.61	2.18	5.88	6.32	9.60	5.12	8.09	3.42	6.97	N/A	0.62	1.39	3.68	9.60	1.55	3.28	15.59	20.33	27.31	33.29	6.98	9.73	11.91	27.31
Wholesale Markups	14.07	14.07	14.07	14.07	14.07	14.07	14.07	14.07	14.07	14.07	14.07	N/A	14.07	14.07	14.07	14.07	14.07	14.07	10.07	10.07	10.07	10.07	10.07	10.07	10.07	10.07
Retail Markups	14.03	14.03	14.03	14.03	14.03	14.03	14.03	14.03	14.03	14.03	14.03	N/A	14.03	14.03	14.03	14.03	14.03	14.03	14.03	14.03	14.03	14.03	14.03	14.03	14.03	14.03
Federal Tax	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	N/A	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Provincial Tax	9.50	9.50	9.50	9.50	9.50	9.50	9.50	9.50	9.50	9.50	9.50	N/A	9.50	9.50	9.50	9.50	9.50	9.50	9.50	9.50	9.50	9.50	9.50	9.50	9.50	9.50
Carbon Tax	13.41	13.41	13.41	13.41	13.41	13.41	13.41	13.41	13.41	13.41	13.41	N/A	13.41	13.41	13.41	13.41	13.41	13.41	13.41	13.41	13.41	13.41	13.41	13.41	13.41	13.41
HST (15%)	20.77	20.85	21.02	21.10	21.66	21.72	22.21	21.54	21.99	21.29	21.82	N/A	20.87	20.98	21.33	22.21	21.01	21.27	36.02	36.73	34.97	38.68	31.92	21.78	22.11	34.97
Retail Pump Price	159.3	159.8	161.1	161.8	166.0	166.5	170.3	165.1	168.6	163.2	167.3	N/A	160.0	160.9	163.5	170.3	161.0	163.0	276.2	281.6	268.1	296.5	244.8	167.0	169.5	268.1

Source: Newfoundland and Labrador, Board of Commissioners of Public Utilities (PUB).

Table 16: Price Schedule Heating Fuels – Newfoundland and Labrador Petroleum Product Price Breakdown (May 18, 2023)

Furnace Oil	Zone 1ANE Max	Zone 1ANW Max	Zone 1AS Max	Zone 1a Max	Zone 2 Max	Zone 3 Max	Zone 3a Max	Zone 3b Max	Zone 3c Max	Zone 4 Max	Zone 4a Max	Zone 5 Max	Zone 5a Max	Zone 5b Max	Zone 6 Max	Zone 7W Max	Zone 7SE Max	Zone 7a Max	Zone 7b Max	Zone 8 Max	Zone 9 Max	Zone 10 Max	Zone 11 Max	Zone 11a Max	Zone 11b Max	Zone 12 Max	Zone 13 Max	Zone 13a Max	Zone 14 Max
Benchmark Price	83.48	83.48	83.48	83.48	83.48	83.48	83.48	83.48	83.48	83.48	83.48	83.48	83.48	N/A	83.48	83.48	83.48	83.48	83.48	83.48	83.48								
Zone Price Differential	0.00	3.00	4.30	1.30	4.30	4.00	7.00	6.50	8.40	7.20	17.30	4.50	5.00	N/A	0.90	4.30	6.80	10.40	16.50	1.90	6.50								
Wholesale Markups	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	11.11	9.11	9.11	N/A	9.11	9.11	9.11	9.11	11.11	9.11	9.11								
Retail Markups	18.27	18.27	18.27	18.27	18.27	18.27	18.27	18.27	18.27	18.27	16.27	18.27	18.27	N/A	18.27	18.27	18.27	18.27	16.27	18.27	18.27								
Retail Pump Price	110.86	113.86	115.16	112.16	115.16	114.86	117.86	117.36	119.26	118.06	128.16	115.36	115.86	N/A	111.76	115.16	117.66	121.26	127.36	112.76	117.36								
Stove Oil	**Zone 1ANE Max**	**Zone 1ANW Max**	**Zone 1AS Max**	**Zone 1a Max**	**Zone 2 Max**	**Zone 3 Max**	**Zone 3a Max**	**Zone 3b Max**	**Zone 3c Max**	**Zone 4 Max**	**Zone 4a Max**	**Zone 5 Max**	**Zone 5a Max**	**Zone 5b Max**	**Zone 6 Max**	**Zone 7W Max**	**Zone 7SE Max**	**Zone 7a Max**	**Zone 7b Max**	**Zone 8 Max**	**Zone 9 Max**	**Zone 10 Max**	**Zone 11 Max**	**Zone 11a Max**	**Zone 11b Max**	**Zone 12 Max**	**Zone 13 Max**	**Zone 13a Max**	**Zone 14 Max**
Benchmark Price	83.48	83.48	83.48	83.48	83.48	83.48	83.48	83.48	83.48	83.48	83.48	83.48	83.48	N/A	83.48	83.48	83.48	83.48	83.48	83.48	83.48	173.54	173.54	154.84	173.54	154.84	84.80	84.80	154.84
Zone Price Differential	0.00	3.00	4.30	1.30	4.30	4.00	7.00	6.50	8.40	7.20	17.30	4.50	5.00	N/A	0.90	4.30	6.80	10.40	16.50	1.90	6.50	18.50	19.20	25.40	37.20	4.20	5.20	7.30	25.40
Wholesale Markups	12.11	12.11	12.11	12.11	12.11	12.11	12.11	12.11	12.11	12.11	15.61	12.11	12.11	N/A	12.11	12.11	12.11	12.11	15.61	12.11	12.11	8.11	8.11	15.49	15.49	8.11	8.11	8.11	15.49
Retail Markups	20.28	20.28	20.28	20.28	20.28	20.28	20.28	20.28	20.28	20.28	16.78	20.28	20.28	N/A	20.28	20.28	20.28	20.28	16.78	20.28	20.28	20.28	20.28	12.90	12.90	20.28	20.28	20.28	12.90
Retail Pump Price	115.87	118.87	120.17	117.17	120.17	119.87	122.87	122.37	124.27	123.07	133.17	120.37	120.87	N/A	116.77	120.17	122.67	126.27	132.37	117.77	122.37	220.43	221.13	208.63	239.13	187.43	118.39	120.49	208.63
Propane Heating Fuel	**Zone 1ANE Max**	**Zone 1ANW Max**	**Zone 1AS Max**	**Zone 1a Max**	**Zone 2 Max**	**Zone 3 Max**	**Zone 3a Max**	**Zone 3b Max**	**Zone 3c Max**	**Zone 4 Max**	**Zone 4a Max**	**Zone 5 Max**	**Zone 5a Max**	**Zone 5b Max**	**Zone 6 Max**	**Zone 7W Max**	**Zone 7SE Max**	**Zone 7a Max**	**Zone 7b Max**	**Zone 8 Max**	**Zone 9 Max**	**Zone 10 Max**	**Zone 11 Max**	**Zone 11a Max**	**Zone 11b Max**	**Zone 12 Max**	**Zone 13 Max**	**Zone 13a Max**	**Zone 14 Max**
Benchmark Price	29.99	29.99	29.99	29.99	29.99	29.99	29.99	29.99	29.99	29.99	29.99	29.99	29.99	N/A	29.99	29.99	29.99	29.99	29.99	29.99	29.99	29.99	29.99	29.99	29.99	29.99	29.99	29.99	29.99
Zone Price Differential	2.00	2.00	2.00	3.00	0.00	2.90	5.00	4.50	6.40	3.70	15.30	3.50	3.00	N/A	4.60	5.90	5.90	8.40	14.50	5.70	7.70	6.50	15.20	23.40	33.20	1.20	3.20	5.30	23.40
Wholesale and Retail Markups	71.59	71.59	71.59	71.59	71.59	68.09	68.09	68.09	68.09	63.09	63.09	63.09	63.09	N/A	63.09	63.09	63.09	63.09	63.09	63.09	63.09	63.09	63.09	63.09	63.09	51.09	51.09	51.09	63.09
Retail Pump Price	103.6	103.6	103.6	104.6	101.6	101.0	103.1	102.6	104.5	96.8	108.4	96.6	96.1	N/A	97.7	99.0	99.0	101.5	107.6	98.8	100.8	99.6	108.3	116.5	126.3	82.3	84.3	86.4	116.5

Source: Newfoundland and Labrador PUB.

Appendix B

R Cube Economic Consulting Inc Credentials

We are uniquely qualified and positioned to deliver this project:

- **We are specialists and cover the entire value chain of the petroleum industry (upstream and downstream petroleum).**
- **Our extensive experience with market analysis and previous regulatory work in the petroleum product markets has a long reputation among stakeholders for its impartial and data-based approach.**
- **We are industry experts in petroleum economics. We often provide interviews, presentations, and seminars to various stakeholders on the subject of the North American petroleum industry).**
- **We have extensive experience in regulated petroleum markets. We have recently conducted or are currently engaged in several margin reviews in Atlantic Canadian markets.**
- **Vijay Muralidharan (Vijay), the Owner and Director at R Cube Economic Consulting Inc. and has over 19 years of work experience in petroleum industry consulting, upstream and downstream for both oil and gas companies, and central banking (Macroeconomic forecasting). Vijay has a Master's in economics and a Master of Science in Resource economics from the University of Alberta, Canada. Over the years, Vijay has acquired and developed extensive knowledge in upstream and downstream market fundamentals, margin review analysis, macroeconomic forecasting, and investment analysis within the petroleum industry.**