GARDNER PINFOLD CONSULTANTS INC.

1186 Rockcliffe Street
Halifax, Nova Scotia
B3H 3Y6
Tel: 902.221.3592
Email: mgardner@gardnerpinfold.ca

46 Weldon Street
Sackville, New Brunswick
E4L 4N4
Tel: 506.939.2261
Email: gregmacaskill@gardnerpinfold.ca

PETROLEUM PRODUCTS BENCHMARK AND MARGIN REVIEW

A report prepared for the
Island Regulatory and Appeals Commission

Attention: Ms. Nicole McKenna
Carr, Stevenson & MacKay
65 Queen Street
Charlottetown, Prince Edward Island
C1A 7L1

Prepared by
Gardner Pinfold Consultants Inc.

May 2023

Table of contents

Recommendations

Recommendation 1: Continue to use the Charlottetown rack price as the benchmark for making weekly price adjustments. Continue to monitor NYH and rack prices in regional markets to identify any shifts in the Charlottetown rack relative to others and to obtain from refiners a satisfactory explanation for such shifts.

Recommendation 2: To avoid significant discrepancies between the rack price used in the pricing formula and the actual price set at the rack, the Commission may wish to consider either adopting the rack price set by the terminal operator as the benchmark price for its pricing formula, or possibly a blended benchmark based on a weighted average rack price set by each of the wholesalers.

Recommendation 3: Any decision by the Commission to adopt NYH as the benchmark would benefit greatly from a clear definition of the scope of wholesale activities (beyond the general definition in the *Act*) and guidance on the relevant factors for quantifying the margin and making subsequent adjustments.

Recommendation 4: To simplify the regulatory process, if NYH were adopted as the benchmark, the Commission may wish to consider dividing the wholesale margin into its distinctive primary and secondary components, allowing the parties to apply for adjustments independently and avoiding a misalignment of activities/costs and the margin revenue needed to cover those costs.

Recommendation 5: The existing 5.0 cpl margin for secondary wholesalers is just and reasonable.

Recommendation 6: The Commission may wish to issue guidance to industry clarifying the scope of wholesale activities it deems are covered by the wholesale margin under the existing pricing formula that relies on the rack price as the benchmark price.

Recommendation 7: If IRAC deems it necessary to implement a wholesale margin for heating fuel and commercial diesel to be compliant with the *Act*, then dividing the existing margin into wholesale and retail components would accomplish this. Both components would accrue to distributors. Subject to Recommendations 9 and 10 addressing the overall margins, the recommended components are:

Furnace oil		Commercial diesel	
Wholesale:	3.0 cpl	Wholesale:	3.0 cpl
Retail:	18.5 cpl	Retail:	15.5 cpl

Recommendation 8: Maintain the retail margin at the current level: a maximum of 8.0 cpl and minimum of 7.0 cpl. The next retail margin review should use 2022 as the base year against which to measure cost changes.

Recommendation 9: Use the posted rack prices for mid-grade and premium grade gasoline as the base prices for setting wholesale and retail prices. This would mean either adjusting the grade premium to maintain margins as relative prices change, or alternatively, applying the existing grade premiums (3.0 and 6.0 cpl) to mid-grade and premium gasoline period average rack prices.

Recommendation 10: Increase the current retail margin of 18.5 cpl on commercial diesel to 21.5 cpl so that it is at parity with furnace oil.

Recommendation 11: Increase the distribution margin by 2.1 cpl, applied equally to furnace oil and commercial diesel. Deducting the increase of 0.5 cpl ordered by the Commission in its Interim Order on August 14, 2022 results in a net increase of 1.6 cpl. Following Recommendation 2 to divide the margin into wholesale and retail components, applying this increase brings the recommended margins to:

Furnace oil		Commercial diesel	
Wholesale:	3.0 cpl	Wholesale:	3.0 cpl
Retail:	20.1 cpl	Retail:	20.1 cpl

1. Background

1.1 Why this review

1. In its August 31, 2022 Interim Order addressing wholesale and retail margins, the Island Regulatory and Appeals Commission (the "Commission") expressed concern about whether it had at the time a reliable basis for making margin adjustments. The Commission pointed to two areas of uncertainty: i) what the changes in the relative movement of regional rack prices and the New York Harbour Mercantile Exchange price ("NYH" spot price) for fuels might mean for its regulatory pricing model, and more specifically, for the basis for determining wholesale margins; and, ii) whether the basis for making the recommended adjustments was statistically sound and would result in a "just and reasonable price" as prescribed in the *Petroleum Products Act*.

2.These concerns establish the scope of work:

- **Recommend a benchmark for pricing petroleum products**. To provide context, the analysis begins with a brief review of how the pricing model and benchmark price used by the Commission have evolved since 1990. We examine the factors that explain the changes in the NYH-rack price gap in the Atlantic Provinces, generally, and more specifically, the implications of the widening of the gap since 2018, and how industry has adjusted (including any impact on acquisition costs and margins). This is contrasted with the implications for industry of using the rack price as the benchmark in PEI. We set out the criteria that a robust benchmark should meet, assess the performance of the Charlottetown rack price and NYH against these criteria, and make a recommendation: either continue to use the Charlottetown rack or switch to NYH.
- **Recommend just and reasonable wholesale and retail margins.** This aspect of the work divides into two parts: a) developing a pricing formula for regulated fuels *if* a change in the benchmark price were implemented; and b) conducting a review of changes in wholesale and retail costs since the last margin adjustments and recommending changes resulting in just and reasonable margins. The recommended changes would be based on cost data obtained from wholesalers and retailers and would incorporate any adjustments needed *if* a new pricing formula were to be recommended.
- **Recommend appropriate wholesale and retail margins for furnace oil/commercial diesel**. The current pricing formula for furnace oil and commercial diesel combines the wholesale and retail margins. In this aspect of the work, the Commission seeks recommendations on appropriate wholesale and retail margins, if the combined margin were to be separated. The recommendations would take into consideration such factors as the structure of the market on the demand side, as well as cost, structure and competitive conditions on the supply side.

1.2 The Prince Edward Island regulatory framework: a brief history

3.*The Petroleum Products Act (1990 c. 43)* provides the basis for regulation of the distribution and sale of petroleum products in the province. The main objective is to ensure a just and reasonable price for heating fuel and motor fuel to consumers and licensees. Regulation seeks to insulate consumers from sharply fluctuating prices, while at the same time providing wholesalers and retailers with reasonable margins.

4. Regulation of the industry began in 1947. For the first 35 years, the Public Utilities Commission (IRAC predecessor) monitored wholesale prices and set maximum dealer mark-ups. Following a series of public hearings in the mid-1980s, government introduced the current system of full regulation of wholesale prices and retail margins.

5. Base prices for wholesalers were introduced in 1989, with minimum and maximum retail margins set in 1991. These base prices reflected the spread between a reference price (benchmark) and prevailing wholesale prices. Crude oil was used as the benchmark price until 2002 when it was replaced by the NYH spot price that more accurately reflected the magnitude and timing of price changes in product markets for each of the regulated fuels.[1] Following extreme volatility in product markets in 2005 (due mainly to hurricane Katrina), IRAC replaced the NYH benchmark in 2006 with the Halifax rack price (movements between the two were highly correlated), which IRAC replaced in 2012 with the Charlottetown rack price (more on this below).

6. Over the years, important changes were also made to the length of the period between regulatory adjustments in response to conditions in petroleum product markets. During the 1990s, adjustments were made on a bi-monthly basis. Wholesalers argued they were incurring heavy losses (in rising markets) due to the combined effects of regulatory lag and the use of crude oil as the benchmark. IRAC changed the adjustment period initially to one-month in 2002 (when NYH was adopted as the benchmark) and then to a bi-weekly basis in late 2005. This continued until the current one-week adjustment period was adopted in 2019 (bringing it into line with regulated markets in the other Atlantic Provinces). The main features of the provincial regulatory models are summarized in Table 1.

Table 1: Petroleum price regulatory elements by province* (as of November 19, 2022)

	Nova Scotia	Prince Edward Island	Newfoundland and Labrador	New Brunswick
Regulation introduced	2006	1991	2001	2006
Benchmark	NYH spot	Cha'town Rack	NYH spot	NYH spot
Adjustment period	Weekly	Weekly	Weekly	Weekly
Interrupter	Yes	Yes	Yes	Yes
Wholesale margin (cpl)	9.65	5.00	10.65	6.51
Retail margin (cpl)	5.3-7.4	7.0-8.0	10.28-12.67	7.33
Fixed minimum retail price	Yes	Yes	No	No
Transportation (cpl zone range)	0.6-2.3	Uniform	3.2-26.0	Actual to 3.5
Other costs				
Carbon levy/tax (cpl)	2.55	11.05	11.05	11.05
Fed/Prov taxes	Excise/HST	Excise/HST	Excise/HST	Excise/HST
Maximum retail price (Nov. 19, '22)	1.64	1.70	1.72	1.76

*The values shown apply to RUL gasoline in provincial capitals. The carbon levy in Nova Scotia will increase to the national value in 2023.
https://nsuarb.novascotia.ca/mandates/gasoline-diesel-pricing
https://irac.pe.ca/petrol/current-petroleum-prices/
http://www.pub.nl.ca/gas_and_diesel.htm
https://nbeub.ca/current-petroleum-prices-2

[1] Regional suppliers also argued NYH made more sense because it is used by industry as a pricing reference.

7. Regulation is implemented through a pricing model that sets maximum retail prices by adding specified wholesale and retail mark-ups to weekly adjustments in benchmark prices. The wholesale mark-up in PEI was set at 5.0 cents per litre (cpl) over NYH in the early 2000s, was maintained at 5.0 cpl when the benchmark was changed from NYH to the rack price in 2006 and has continued at this level. The retail mark-up was fixed at 4.0-5.5 cpl over wholesale in 1991, with an increase to 4.5-6.5 cpl in 2008. The minimum end of the range was increased by 1.0 cpl in 2012, narrowing the scope for competition to drive down prices. Further margin increases in 2020 and 2022 brought the minimum-maximum range to 7.0-8.0 cpl.

8. An arguably more important feature of the PEI pricing model is that retailers operate within a fixed margin framework. Unlike the other provinces, in PEI there is no scope for wholesalers and retailers to enter into alternative pricing arrangements (referred to as "opting out" of regulation) that would reduce the retail margin below the regulated maximum (currently 8.0 cpl). The wholesale price at the time a retailer purchases fuel is a fixed maximum above the benchmark price (currently 5.0 cpl), and the maximum retail price including the 8.0 cpl mark-up is added (along with applicable taxes). Whether the retailer actually achieves an 8.0 cpl margin depends on competitive conditions, but it cannot fall below the 7.0 cpl minimum for the balance of the week in which the fuel is acquired.[2]

9. While one impetus for introducing regulation was to protect consumers, providing support for retail outlets was a second factor; hence incorporation of a minimum price to prevent competition from driving down margins to uneconomic levels for lower volume outlets. Though this arguably helped slow attrition from the retail sector, it could not stem the tide. The number of outlets in PEI today is somewhat less than half the number operating when regulation was introduced: 189 in 1991 vs. ±80 in 2022. Similar declines occurred in the other Atlantic Provinces, attributable to the same combination of factors: declining rural population, greater fuel efficiency of vehicles, greater competition for declining volumes, and greater financial discipline by oil companies resulting in reductions of capital employed.[3]

[2] It is important to note that the guaranteed margin applies at the time of purchase and as long as inventory is not carried over to the following week and subject to a change in the maximum retail price. If the benchmark dictates a retail price decline, margin would be eroded; if the price were to increases, effective margin would increase. In periods of wide price volatility (e.g, much of 2022), retailers can only hope that gains and losses are offset.

[3] See Gardner Pinfold, 2005, *Economics of the Nova Scotia Gasoline Market*, (p. 28-31) for a detailed discussion of the factors driving change in the retail sector of the motor fuel industry from the 1990s to 2005.

2. Petroleum markets and the benchmark price

2.1 Prices and margins

10. Consumers are acutely aware of petroleum prices – price levels and price changes – across the range of products we rely on for travel and home comfort. But there is less understanding about how prices are determined and why they can change as rapidly and by as much as they do.

11. In a broad sense, product prices are determined by the global supply and demand for crude oil from which products are derived. Even at this global level there is a regulatory mechanism at work (OPEC) that constrains supply to maintain price levels. Demand for crude oil is driven by the demand for refined products – gasoline, furnace oil, diesel – needed to support a range of activities that define our economies: transportation, construction, manufacturing, commercial operations, household use. As long as supply and demand are in balance, prices tend to be stable.

12. But they have been anything but stable in the past 2-3 years. COVID lockdowns depressed petroleum demand globally, causing prices to drop sharply in 2020. This led to greatly reduced refining margins, resulting in some refinery closures in North America. Demand recovery in 2021 coupled with supply disruptions arising from Russia's Ukraine invasion caused prices – especially diesel and furnace oil – to rise sharply in 2022 (along with refining margins). With tight refining capacity, the onset of colder weather and continuing instability in global trade, generally higher prices and wide fluctuations are expected to continue into 2023. But there are some signs of weakening global demand as economic activity begins to slow in response to rising interest rates.

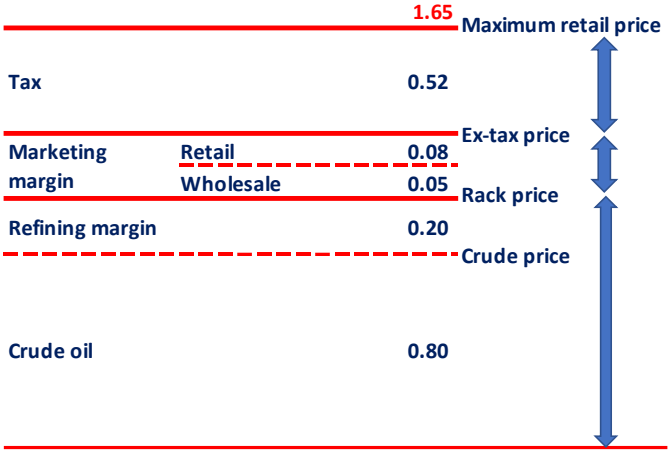
13. Though final selling prices are regulated in each of the Atlantic Provinces, the pricing models differ in their starting point – the benchmark price. PEI relies on the rack price[4] as its benchmark, while the other provinces use the NYH spot price. Wholesale and retail mark-ups are added to the benchmark price, and with the inclusion of applicable taxes, result in maximum wholesale and retail prices. Prices vary week to week as the benchmark is adjusted in response to price shifts in national and global product markets. Price build-up in PEI with the IRAC pricing model is illustrated in Figure 1 for regular gasoline.

14. The Atlantic Provinces petroleum market is too small and the provincial regulatory scope too narrow to have any influence on crude oil or product prices at the commodity level. The regulatory focus is on wholesale and retail prices within each province, and more specifically, on trying to minimize short-term price volatility in final product markets.

15. The regulatory focus is also on security of supply; ensuring that wholesale and retail margins are competitive with other jurisdictions so that refiners continue to supply local markets. The regulatory model was designed to accomplish this by: I) setting initial wholesale and retail margins at levels consistent with those prevailing under competitive conditions (and allowing for periodic adjustments to reflect cost changes), and ii) incorporating a method for adjusting product prices in response to changes in commodity markets.

[4] At the risk of oversimplification, a rack price is the posted wholesale price charged by a refiner for spot purchases at a distribution terminal. The actual prices paid may be lower than the posted price depending largely on volume and the duration of a supply agreement. Purchases are made either directly from the refiner or indirectly through a primary wholesaler with whom the refiner has a supply agreement. Typically, supply agreements, given their broader reach, are priced off NYH rather than rack.

Figure 1: Regular gasoline price build-up in PEI ($/litre)*



*Based on Brent ICE @ US$94/bbl and US$1.00=CAN$1.35

2.2 The role of the benchmark price

Criteria for a benchmark price

16. The regulatory models are broadly similar in design (Table 1). They use a formulaic approach to apply the week-over-week change in the average daily price of a specified benchmark to adjust maximum retail selling prices. Among the elements of design, the choice of benchmark is crucial to meeting the underlying conditions upon which regulation is predicated: that petroleum suppliers operationally and financially are no worse off than in a competitive market (and may be better off); that consumers see that the benefits of regulation (stability, uniformity, security) outweigh the costs (the possibility of slightly higher prices); and, that it provides, and can be seen to provide, a reliable basis for effective regulation.

17. A benchmark price satisfies these conditions if it meets four key criteria:

- Competitively determined: it results from a sufficiently high volume of transactions from a diverse group of buyers and sellers such that it is impossible for a single buyer or seller to influence the price;
- Relevant: it is relied on by industry within the market area as a reference price to settle supply/exchange agreements;
- Timeliness: it results from on-going transactions occurring and reported in real time; and
- Transparent: price information is available from published sources.

18. The regulatory models in Nova Scotia, New Brunswick, and Newfoundland and Labrador rely on the NYH (cargo) daily spot price as their benchmark for weekly price adjustments and any "interrupter" adjustments (when abrupt swings, as defined in regulation, in the benchmark price occur between weekly settings).[5] The NYH spot price meets these criteria for a benchmark price.

[5] Participants in the NYH spot market are engaged in the trade of large physical cargoes in one-off transactions for near-term delivery. While this market accounts for a small portion of overall crude and products transactions, it plays a major role in

The IRAC benchmark: from NYH to Charlottetown rack

19. IRAC switched to the Charlottetown rack price as its benchmark in 2006 in response to requests from suppliers following a period of turmoil in product markets (see below). The precise reasons for the switch are not clear from available records. Companies consulted as part of this study suggest that industry dissatisfaction with the structure of the price adjustment mechanism would have been a key driver. Two factors appeared to be at issue: the applicable benchmark price (NYH) and the lag between maximum retail price adjustments.

20. Companies supplying the local market acquire fuel at a rack price (or at a discount from it), so from their perspective, rack is the better benchmark since it provides a direct link to the retail price through the fixed retail margin. This facilitates compliance and monitoring. With respect to regulatory lag, IRAC had already reduced the length of time between adjustments by moving from monthly to bi-weekly in the weeks following the Katrina disruption (the shift to the current weekly adjustments did not occur until 2019). [6]

21. A potential disruption in supply to PEI occurred in early September 2005 following a sharp increase in the NYH spot price for gasoline (and other fuels) due to crude oil production and refinery disruptions resulting from Hurricane Katrina. This drove up wholesaler gasoline acquisition costs in the days following to the point where their buying prices exceeded the current maximum retail price the Commission had set on September 1st. At this time, the Commission adjusted prices on the 1st of each month based on the average change over a 30-day period.[7] The possibility of a curtailment of supply was avoided when the Commission intervened in the market, allowing two price adjustments within 24 hours that increased the retail price (including taxes) by 34 cpl.

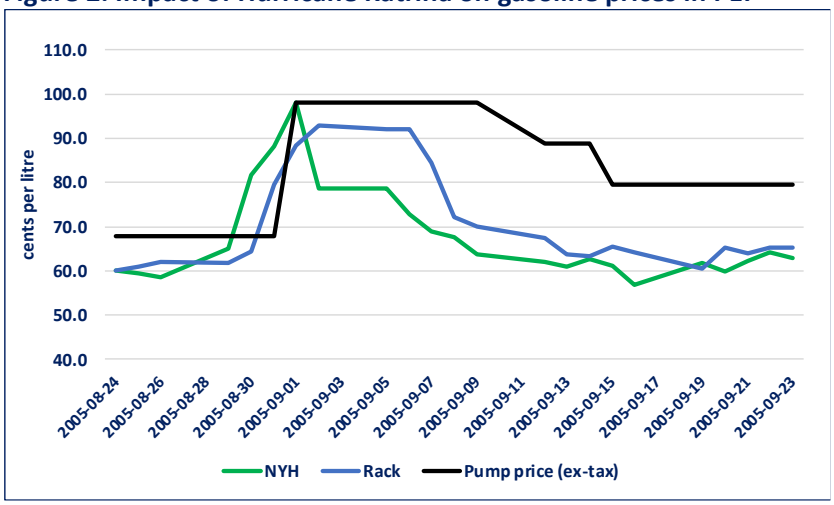
22. The trajectory of pricing within the month leading up to and following this event is illustrated in Figure 2. As NYH spiked, the rack followed (lagged by a day). Though NYH dropped by 20 cpl on September 2nd, the rack price held constant for several days after and then began to follow NYH down to pre-Katrina levels in the 60-65 cpl range two weeks after the initial disruption.

setting prices for most other transactions. Though most buying and selling of crude and products happens under term contracts, these contracts rely on the pricing reported in the spot market as the basis for their pricing. The buyers and sellers in the spot market include crude producers, refiners, professional trading firms, and large distributors or consumers of oil products. Trades are typically done by phone, text, or through online exchanges. The transactions are one-off deals and highly standardized in terms of: location (where the cargo or shipment physically changes hands); Cargo shipping basis (FOB, CIF); mode of transportation (tanker cargo, barge load, pipeline shipment); and, timing window (period in which the transaction must be completed). For further detail see: https://www.mckinseyenergyinsights.com/resources/refinery-reference-desk/spot-market/

[6] Provided there is stability in the relationship between NYH and the rack price, wholesale and retail margins would also remain stable over the long term. If the spread widens, the net effect could be a reduction in the margin for any supplier priced off NYH. Conversely, a narrowing of the spread could result in a higher margin.

[7] The reference period ran from the 24th day of the previous month to the 23rd of the current month, with price changes taking effect a week later on the 1st of the next month. The base price was also adjusted periodically to allow wholesalers to recover losses due to the combined effects of regulatory lag and month-to-month volumetric differences. IRAC introduced the possibility of a "mid-point correction" in 2003 to limit the impact of sustained price changes on margins. An increase or decrease would be triggered on or about the 15th of the month if NYH increased or decreased by at least 4.0 cpl from the 24th of the previous month to the 10th of the current month.

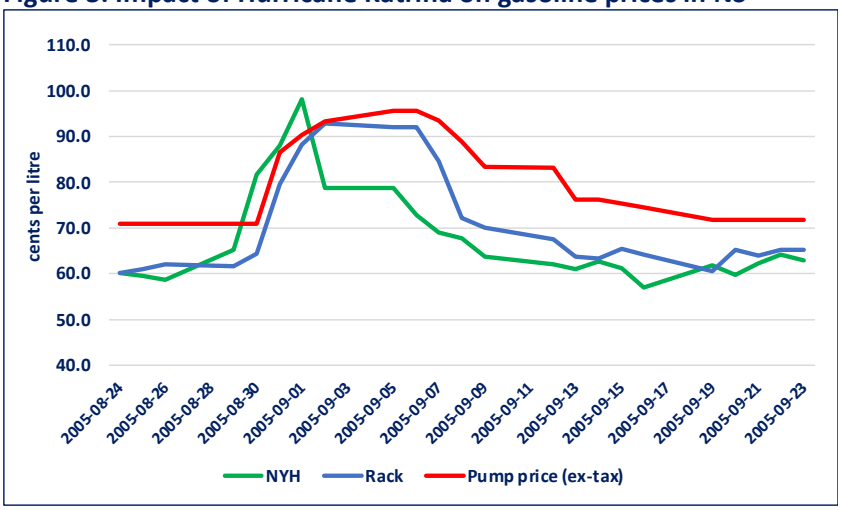
Figure 2: Impact of Hurricane Katrina on gasoline prices in PEI



Source: IRAC

23. The price adjustments at the retail level in the Nova Scotia gasoline market (unregulated at the time) followed a similar path. Figure 3 shows the interplay of NYH, rack and the pump price for Halifax between August 24 and September 23, 2005. What is striking about the trajectory of the price changes is how quickly and sharply they increased in contrast with how gradually rack and retail declined. At the time, the rack price was the same in both provinces (Halifax rack). The retail price in NS was market-determined, declining to its pre-Katrina level by September 19th. The retail price in PEI declined more slowly (pricing model determined) and stabilized at about 10 cpl above its pre-Katrina level by September 15th.

Figure 3: Impact of Hurricane Katrina on gasoline prices in NS



Source: NSUARB

24. Figures 2 and 3 illustrate three things about petroleum markets: how prone the refining industry is to disruption; how sensitive product prices are to these disruptions, given the limited spare refining capacity and high utilization rates in North America; and, how quickly price changes are transmitted due to the interconnectedness of markets through pipeline, rail, and truck networks. These points are clearly illustrated in the following section.

NYH vs. rack: the widening spread is common to regional markets

25. This section examines the factors underlying the widening spread between NYH and regional rack prices. Figures 4 and 5 show price movements at NYH and regional racks – closely related points in the value chain. The net effect – a widening spread between the prices – is shown in Figure 6.

Figure 4: New York Harbour spot price (RUL gasoline), 2007-22

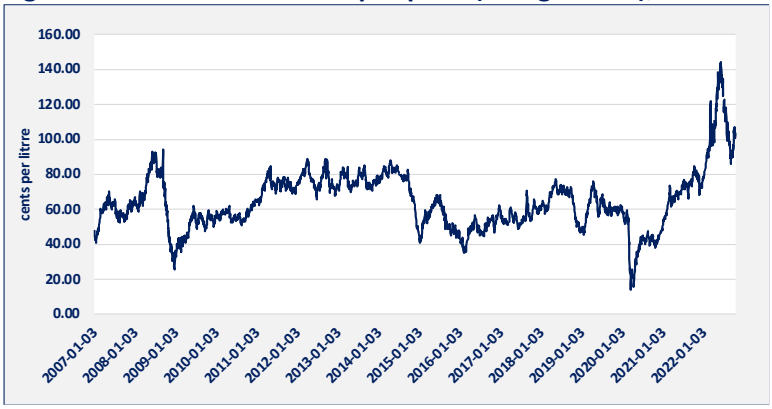


Figure: 5: Rack prices, selected cities (RUL gasoline), 2007-22

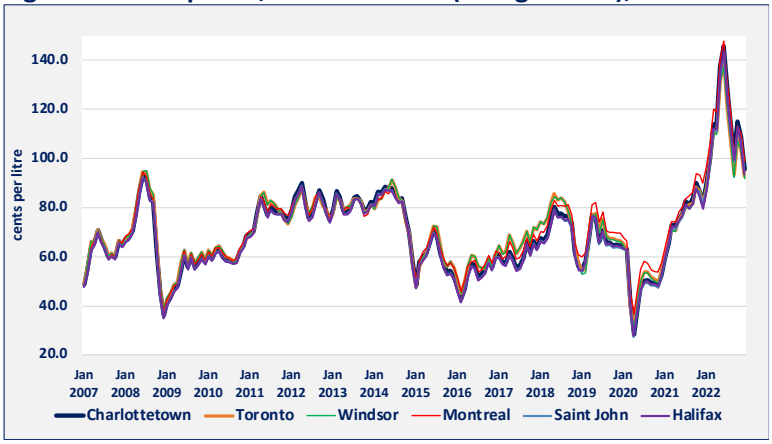
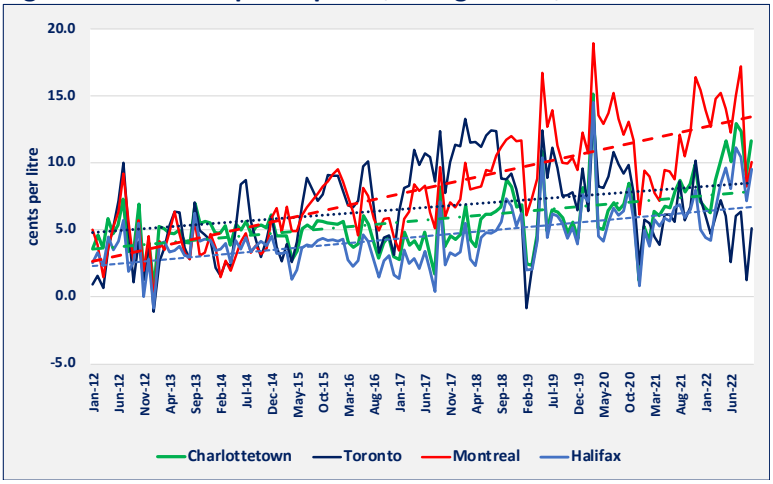


Figure 6: NYH-rack price spread, RUL gasoline, 2012-22



Sources: IRAC/NSUARB/NBEUB, Kalibrate

- Figures 4 and 5 show the day-to-day the volatility of the NYH spot market price and refiner rack prices for gasoline in response to shifts in demand and supply arising from global events.
    - the sharp downturn in 2009 following the financial crisis and the gradual increase during economic recovery to 2012;
    - the drop, 2014-2016, due to excess global supply (the combined effects of increased US shale oil production and imports) against the backdrop of a slowing economy;
    - economic recovery, 2017-2018, resulting in increasing demand and prices;
    - sharp price drop in 2019 due to oversupply resulting from expanded US refining capacity putting downward pressure on refining margins (Figure 7);
    - the impact of the pandemic on demand in 2020 resulting in a precipitous drop in fuel prices and refining margins causing the closure of several US refineries;
    - demand and price recovery in late 2020 and continuing through 2021 as pandemic restrictions eased;
    - continued increase in global fuel prices (particularly diesel), peaking in mid-2022 then declining as high prices cause demand to decline.
- Figure 5 shows how closely rack prices in all markets follow changes in NYH. Refiners typically adjust rack prices the day following the change in NYH.[8] Not all refiners post rack prices.
- Figure 6 tracks the shift in rack prices relative to NYH for Charlottetown, Halifax, Toronto, and Montréal (monthly averages with linear trend lines). Against the backdrop of wide month to month fluctuations, rack prices have been rising relative to NYH in *all* markets in eastern and central Canada, regulated and unregulated. The wider spread for Montréal and Toronto after 2015 is due to the cost of carbon added to the rack price (and the sharp decline for Toronto in 2018 as Ontario withdrew from the cap & trade program). Regulators in the Atlantic Provinces have questioned the cause and implications of this widening spread.[9] The Commission notes that relying on the rack as its benchmark has resulted in an automatic pass through of these price increases. Regulators relying on NYH as the benchmark have expressed concern that the widening of the spread would result in reduced margins for secondary wholesalers whose margins are set in relation to NYH while actual sales are at rack prices. But if margins had been squeezed, these regulators likely would have received numerous complaints (which has not been the case). So, it would appear that industry has managed to internalize the margin impact through some combination of increased rack discounts and reduced refiner margins.
- The refining margin represents an important indicator of the state of the refining industry. The refining margin measures the difference between the purchase price of crude oil and the selling price of finished products.[10] Between 2007 and 2012, margins in eastern Canada and the US northeast fluctuated between 5 and 10 cpl. Refining margins tend to be lower in the northeast than elsewhere in North America because crude costs (mainly imported) are higher

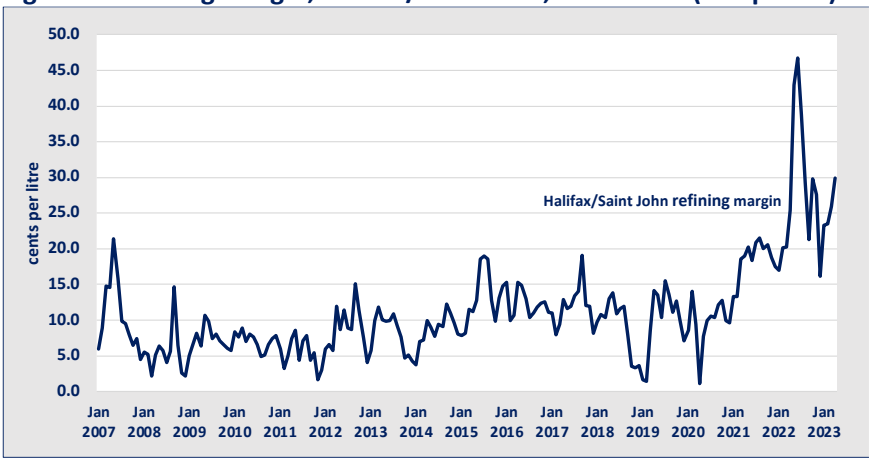
[8] The goal of maximizing profits explains why prices tend to equilibrate across markets. Product moves to where prices and margins are highest. This does not mean there is price competition in the textbook sense. The petroleum industry is characterized by a few large refining companies supplying their branded products within market areas. Typically, in such a market structure, one of the companies (e.g., Imperial Oil in the Maritimes) is seen as the price leader with the others setting their rack prices accordingly. Competition for market share is based less on price than on advertising, product differentiation, location, brand loyalty, promotions, etc.

[9] Figure 8 shows the spread for RUL gasoline, the main refined product. The NYH-rack spread has grown considerably wider for furnace oil and diesel since 2021. Much of this is attributable to supply shortages arising from sanctions on Russian imports.

[10] Figure 7 illustrates a basic measure of the refining margin – the difference between the prices of a litre of crude oil and a litre of RUL gasoline. A more widely used indicator of the margin is the 3:2:1 crack spread, the difference between the sum of the spot prices of two barrels of gasoline plus one barrel of diesel (or furnace oil) minus the price of three barrels of crude oil.

and refiners compete with imported products (NYH). Refiners faced a challenging market in 2020 following the pandemic shutdowns as they competed for limited demand, driving down product prices while crude prices remained relatively elevated. Margins recovered strongly from late 2020 to mid-2022 as demand outstripped supply providing a basis for higher rack (product) prices. Rack prices rose 7-fold, from about 20.0 to 140.0 cpl (Figure 5), lifting the refining margin from the typical 5.0-15.0 cpl range to over 45.0 cpl (Figure 7).[11] It declined to about 20.0 cpl in December 2022 as an improved supply-demand balance caused product prices to drop more rapidly than the price of crude oil. By April 2023 the margin had increased to 30.0 cpl.

Figure 7: Refining margin, Halifax/Saint John, 2007-2023 (to April 30)



Source: Kalibrate

26. The final chart in this sequence (Figure 8) covers the same period (2007-2022), showing how the price spread between NYH and the Charlottetown rack evolved, and comparing this with the NYH-Halifax rack spread. Rack price changes would ordinarily follow the direction of change in NYH, but not necessarily the magnitude. Generally, the widening spread after 2018 means that rack prices increased at a faster rate than NYH spot prices. This would be explained by two factors: rising cost of supply at the rack (higher refining and terminal operating costs); and market conditions (the ability to increase rack prices due to refining capacity constraints). In other words, the increasing NYH-rack spread in Charlottetown corresponds to the pattern of adjustments in the wider product market in which refiners compete.

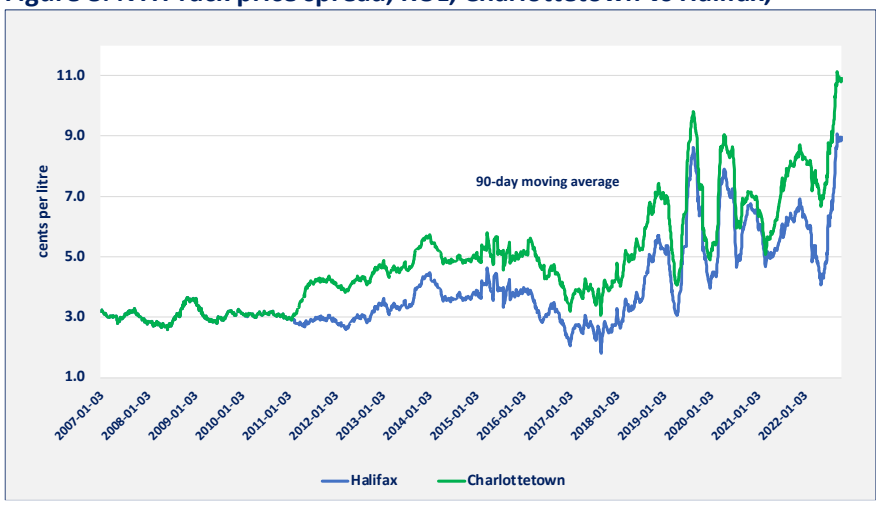
27. The spread between NYH and the Charlottetown and Halifax racks also widened (Figure 8). This would be attributable to this same combination of cost and market factors. After several years of relative stability at about 3.0 cpl over NYH, refiners established a distinct Charlottetown rack in 2012 setting it at 1.0 cpl above Halifax. This widened to over 2.0 cpl after 2021 as the NYH-Charlottetown rack spread grew to about 9.0 cpl, and in early 2023 to just over 11.0 cpl.

28. It follows that the explanation for the widening spread between the Charlottetown and Halifax rack prices lies in the combination of cost and market factors. The same factors, particularly rising costs, were being incurred in Halifax. Imperial Oil closed and dismantled its refinery in 2013 and converted the

[11] Arguably, the strength of the recovery and its positive impact on rack prices and refining margins, may have led NYH prices up rather than the other way round. Knowing how tight refining capacity was, refiners would have been able to increase rack prices in response to supply shortages, which in turn would have influenced NYH prices attracting increased imports.

facilities (marine terminal and tank farm) to import refined product to serve the Nova Scotia market.[12] Seeing an opportunity to supply the Nova Scotia market directly, Irving Oil invested $80 million to re-open its Woodside (Halifax) marine terminal in 2016, rather than renewing its supply agreement with Imperial.[13]

Figure 8: NYH-rack price spread, RUL, Charlottetown vs Halifax,



Source: NSUARB and IRAC

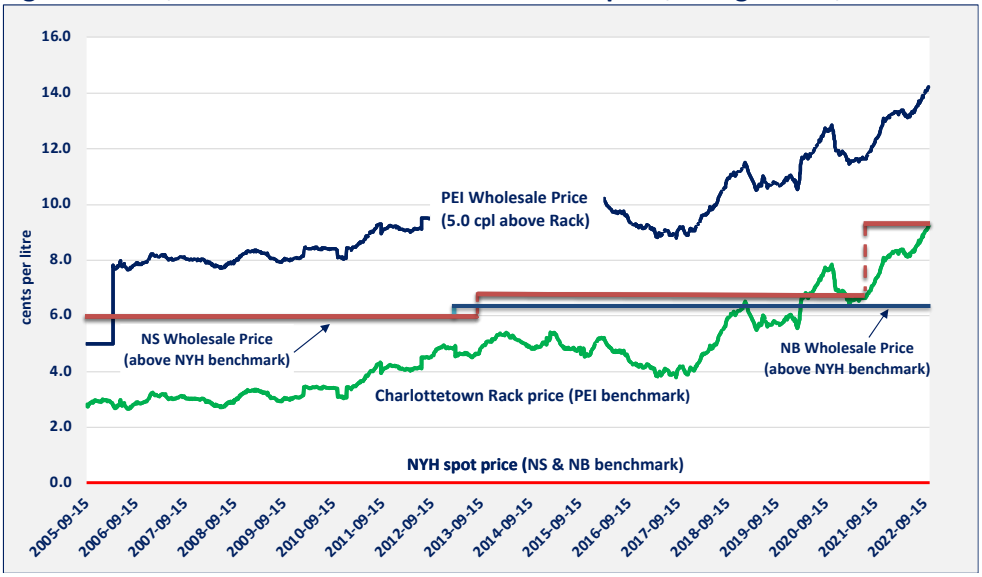
29. With the steady increase in the Charlottetown rack price, the maximum wholesale price has also increased. It had been set at 5.0 cpl over NYH between 2002 and early 2006 (Figure 9). With the Commission's decision to adopt the rack price as the benchmark, the wholesale mark-up increased overnight to 8.0 cpl above NYH, 2.0 cpl above the margin set in NS and NB who were just implementing regulation.[14]

[12] The higher cost of operating a marine terminal may explain the widening NYH-Halifax rack price spread (Figure 7) after 2013, though this spread could not be sustained in the face of an oversupplied market (2014-2016). See Figures 4 and 5, above.

[13] In the 1980s and 1990s, refiners had developed a system of product exchange and supply agreements to keep costs (and prices) down. These agreements meant refiners could supply markets by trading or buying product rather than incurring unnecessary transportation and storage costs. Though many refiners have withdrawn from direct involvement in retail and wholesale activities, supply agreements survive where they make sense for the parties. For example, Irving Oil supplies Imperial Oil in New Brunswick (with Imperial's wholesale function carried out by Wilsons). By contrast, Irving Oil allowed its Nova Scotia supply agreement with Imperial to expire in December 2015, presumably because supplying the province directly through its own terminal was the more attractive option for the company.

[14] Under the PEI *Petroleum Products Act*, Sec. 27, "The Commission has general supervision of all wholesalers, wholesaler-retailers and retailers with respect to the pricing of heating fuel and motor fuel…" Unlike the legislation in other provinces, the *Act* does not define what is meant by a benchmark price or how a pricing model may function, leaving this to the discretion of the Commission. Hence, the ease with which the benchmark was changed from NYH to the rack price in 2006. In designating the rack price as the benchmark, the Commission, understandably, made no effort to influence or control it, though the *Act* would appear to give it the power to do so under Sec. 27. This raises the question of whether the scope of what is covered by the 5.0 cpl wholesale margin has effectively changed from its original scope when linked to NYH. In the NS and NB, the rack price carries no significance from a regulatory perspective; the wholesale margin is related to NYH. As a matter of Board practice, its scope includes the activities (and costs) associated with terminal operations including fuel transportation (product transportation from NYH is specified in the NB *Regulation* 9(1) as a factor for Board consideration; by contrast, the Nova Scotia *Regulation* 17 (4) (b) specifies the refinery gate as the starting point). Such costs in unregulated markets are built into the rack price (which also includes all costs of producing refined products plus a return on investment). With the rack price capturing these costs, the scope of what needs to be recovered from the wholesale margin would appear to be limited to rack forward expenses: the wholesale component of the marketing margin – delivery and administration. More on this in Section 3 of this report.

Figure 9: NYH, Charlottetown rack and wholesale price, RUL gasoline, 2006-2022



Source: IRAC and NSUARB

Pros and cons of NYH vs. Rack

30. The Commission replaced crude oil with the NYH spot price as the benchmark in 2002 because:

- It served as an excellent guide to changes in supply and demand in North American product markets. Many buyers/sellers and substantial volumes of both domestic and imported product mean essentially zero risk of NYH price manipulation (competitively determined).
- Data are available on a daily basis from several PRAs based on sound data gathering methodologies (timely and transparent);
- It is widely used by industry both as a reference point for settling prices in supply and product exchange contracts and also to set rack prices (relevant).

31. These same factors caused the Newfoundland and Labrador Board of Commissioners of Public Utilities to specify NYH as its benchmark in 2001, and the Nova Scotia Utility and Review Board and the New Brunswick Energy and Utilities Board to adopt it as their benchmark in 2006. They continue to do so.

32. In weighing the pros and cons of rack:

Pros

- For the Commission, familiarity would be one of the main advantages for continuing with the rack as benchmark. It receives rack price data directly from Imperial Oil and adjusts prices accordingly. IRAC has relied on this benchmark to guide price-setting for over 16 years (while keeping an eye on daily movements of the NYH spot price).
- For the regulator and refiners, use of the rack price simplifies the regulatory process. The rack price captures the refiners' full cost (including operating margin) of supplying a market, excluding only costs to cover marketing – wholesale and retail activities – a segment of the market from which refiners have largely withdrawn. Setting the rack price as the benchmark effectively accepts the refiners' selling price as a valid representation of the "market price"

thereby narrowing the scope of a regulatory review and the range of factors the regulator needs to consider in determining just and reasonable wholesale and retail prices. By extension, it also narrows the nature and scope of the evidence applicants need to submit.[15]

- Wholesalers who are priced off rack contend that using the rack as the benchmark simplifies their pricing and accounting (they know their "cost of goods").
- Canada is implementing its Clean Fuel Regulation (CFR) in 2023 aimed at reducing carbon emissions by reducing the lifecycle carbon intensity of liquid fossil fuels used in transportation (gasoline and diesel). Fuel suppliers (refiners) will be required to reduce the carbon intensity of these fuels by complying with a Clean Fuel Standard (CFS) that becomes more stringent over time. Compliance costs will be passed on to consumers through higher pump prices. By using the rack price as the benchmark, this higher cost would automatically be passed on to consumers through the rack price as it would be in unregulated markets. This could be more complex with an NYH benchmark, though the market data needed to support the calculation is currently available from Petroleum Reporting Agency (PRA) publications (e.g., Argus).

Cons

- The most compelling reason against using the rack price as a benchmark is that, unlike NYH, the rack may not be immune from the market power of one or a few suppliers. In other words, a rack price may not in every instance result from a highly liquid market, one characterized by large volumes and many sellers and buyers who have no influence over price.
- A lack of transparency represents a second argument against using the rack price as a benchmark. Though posted rack prices find their way into PRA publications (Argus, OPIS, Platts), these prices do not necessarily represent the actual prices at which products are. Posted prices apply to spot sales; the bulk of rack sales would be on terms specified in term agreements and subject to undisclosed discounts. The NYH spot price provides a more transparent reading of product prices, a key reason why it is used as a reference price by industry.
- There is no unique rack price at any refiner terminal (unless there is only one seller from that terminal). Each refiner selling from a particular terminal sets its own rack price based on its pricing strategy and its reading of the market information available to it. While refiners may expect to be close in the prices they set (since they all rely heavily on movements in prior day NYH prices which are known to all), the actual prices may differ slightly. This presents the Commission with a potential problem if the rack price it relies on to set the benchmark differs from the rack price set by the terminal operator and other sellers. Minor differences tend to be of little practical consequence for wholesalers and distributors. But larger differences matter; for example, if for whatever reason the actual price distributors pay for furnace oil or diesel is higher than the period average rack price used to set the maximum retail price, then they could sell at a reduced margin or even a loss. This occurred in November 2022, a period of extreme price volatility, due to such a pricing discrepancy.
- Primary wholesalers (refiners) and some secondary wholesalers are priced off NYH, not the Charlottetown rack, and regard it (NYH) as the more relevant and better benchmark for their operations.

[15] An important presumption underlying this general point is that in an unregulated market the rack price is competitively determined, i.e., sufficiently liquid that it is not susceptible to influence by one or more individual companies. This forms the basis for the way the industry operates in unregulated markets throughout North America. But uncertainty about this forms the very basis for the decision by the NS and NB governments to rely on NYH as a more reliable and transparent benchmark.

33. How much weight to assign to each of these pros and cons is an important consideration in arriving at a recommendation. For guidance on this, the *Act* sets out the purpose of regulation, stating (Sec. 2): "… to ensure at all times a just and reasonable price for heating fuel and motor fuel *to consumers and licensees within the province"* (emphasis added). The *Act* does not elaborate on what is meant by "just and reasonable" – this is left up to the Commission to decide – but it does make clear that this test applies to both consumers and licensees (i.e., wholesalers, distributors, retailers). From a consumer's standpoint, it would mean a price that is no higher than necessary to ensure a continuity of supply. From a licensee's standpoint, it would mean a price that is high enough to generate an acceptable rate of return on the investment needed to supply the market. Common to these perspectives is continuity of supply.

34. In the absence of an absolute measure of what is just and reasonable, the *Act* gives the Commission wide discretion to determine: prices and wholesale and retail mark-ups (Sec. 27), the criteria to apply in determining a price or price change (Sec. 31), and whether prices and price changes are just and reasonable (Sec. 36). Since its inception in the 1990s, the Commission has implemented three key changes to the regulatory framework, each involving a change in the benchmark price: the initial adoption of crude oil, the switch to NYH in 2002, and the switch to the rack price in 2006. Each step in the progression brought the benchmark price closer to the influence of suppliers to the local market.

35. So, in weighing the pros and cons, there would appear to be one main reason for continuing with rack set against one reason for switching to NYH.

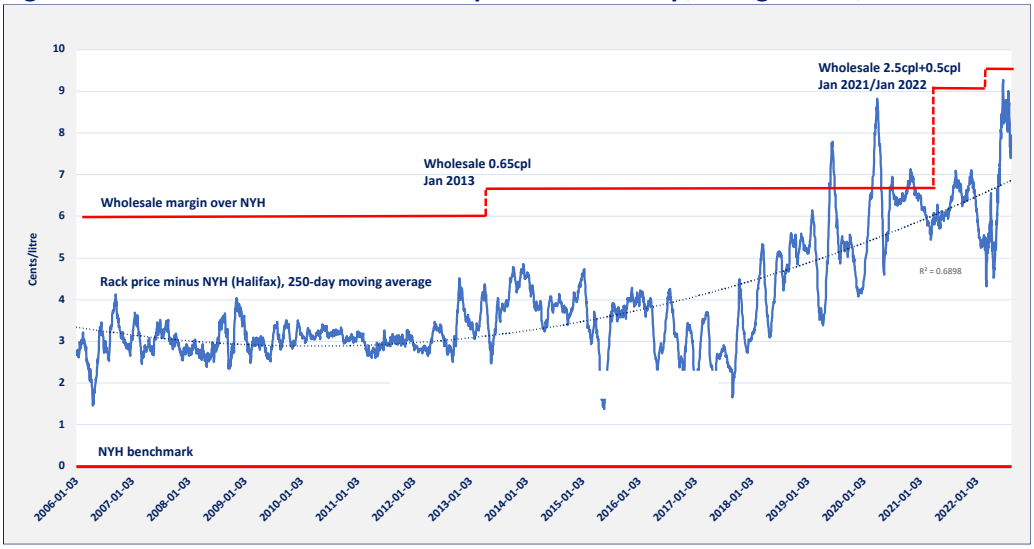
- For the reasons outlined above, relying on rack as the benchmark simplifies the regulatory process for the Commission and refiners (product suppliers). And looking ahead to the implementation of CFR, which is only going to complicate product pricing, there is a strong argument to be made that the Commission would be well served to continue with a rack benchmark at least until a credit market emerges that prices refiners' compliance costs (more on this in Section 5).
- The case for switching to NYH turns mainly on the notion that the risk of rack price manipulation is high enough to offset any merit in using it as a benchmark. This raises two questions: what do we mean by manipulation and how high is the risk? Manipulation generally refers to collusive behavior; companies engaged in a conspiracy to fix prices. There had not been any suggestion that this had occurred or that this was even a significant risk when NS and NB adopted NYH in 2006. It was simply a reasonable precaution with no apparent downside for industry and consumers *provided the regulatory process functioned as intended*.

  This presumption began to be tested in 2018 when the spread between NYH and rack prices began to widen, resulting in an apparent reduction of the wholesale margin (Figure 10).[16] Regulation was intended to moderate price fluctuations while leaving industry no worse off in

[16] With wholesale margins set in relation to NYH, any increase in the rack price – the actual price secondary wholesalers are paying for product (subject to any discounts) – relative to NYH could have resulted in a reduction in the wholesale margin. Figure 10 shows the rack price increasing from mid-2018 to early 2020, giving the appearance of eliminating the wholesale margin (because NYH is used as the benchmark, the wholesale margin is understood to include supply to and operation of the Halifax terminals as well as the wholesale component of the marketing margin). Any impact of the apparent margin squeeze would appear to have been internalized (these may be flow-through costs incurred and recovered by primary wholesalers) to the satisfaction of secondary wholesalers. Note, refiners and wholesalers have not followed through with an application to the NBEUB for a wholesale margin adjustment (see Figure 9).

terms of its ability to realize margins comparable to those it would have realized in a competitive market. This was the case in PEI (rack benchmark), but not in NS and NB between 2018 and 2020. The first meaningful adjustment in the wholesale margin occurred in Nova Scotia in January 2021 when the NSUARB ordered an interim increase of 2.5 cpl, and after a review and hearing, increased the adjustment to 3.0 cpl for gasoline and 4.0 cpl for diesel in January 2022 (Figure 10). This restored the wholesale price to 3.0 cpl over the (current) rack price which is 3.0 cpl higher than in 2006.

Figure 10: NYH-Halifax rack-wholesale price relationship, RUL gasoline, 2006-2022



Source: NSUARB

2.3 Recommendation

36. In my opinion, the arguments in favour of retaining the rack price as the benchmark in PEI carries greater weight than any risk of price manipulation or lack of reliable information. Referring again to the criteria for a suitable benchmark price:

- Competitively determined: the Charlottetown rack does not meet the same standard as NYH in terms of risk of price manipulation, but Charlottetown does not exist in a market vacuum. By comparing rack prices across various terminals involving a large and diverse number of sellers and buyers, it would be statistically possible to identify an outlier as measured by the extent of deviation from NYH. Figure 6 indicates that Charlottetown and Halifax lie at the low end of the widening spread that in general can be explained satisfactorily by market factors.
- Relevant: by its nature, the rack price is relied on by industry within the market area as a reference price. It may not be as foundational as NYH, but it is closely linked in that NYH provides the basis for the day-to-day adjustments that find their way into the thousands of wholesale transactions taking place at terminals throughout the market area.
- Timeliness: rack prices are tracked and reported daily by PRAs. They lag NYH by no more than one day.
- Transparent: rack price data are available for all racks (by subscription) from PRAs. Some refiners (e.g., Valero and Suncor) publish their racks online daily. Though rack prices are spot

prices, not necessarily the actual transaction prices, the discounts typically are low and tend to be stable over time.

37. To conclude, rack prices for Canadian and US northeastern markets are available from PRA reports and are known to regulators including the Commission. They tend to move in unison in response to changes in NYH and can be readily compared, allowing discrepancies to be identified and questioned. Accordingly, the likelihood of manipulation is low. Set against this low risk are the advantages of continuing to rely on the rack price as the benchmark:

- for the Commission, familiarity and simplicity, particularly considering the upcoming complexities of incorporating CFR compliance costs in consumer prices;
- for industry and consumers, a pricing model that provides the basis for a just and reasonable result in the sense that it is consistent with what applies in unregulated markets, thereby offering an assurance of continuity of supply.

Recommendation 1: Continue to use the Charlottetown rack price as the benchmark for making weekly price adjustments. Continue to monitor NYH and rack prices in regional markets to identify any shifts in the Charlottetown rack relative to others and to obtain from refiners a satisfactory explanation for such shifts.

Recommendation 2: To avoid significant discrepancies between the rack price used in the pricing formula and the actual price set at the rack, the Commission may wish to consider either adopting the rack price set by the terminal operator as the benchmark price for its pricing formula, or possibly a blended benchmark based on a weighted average rack price set by each of the wholesalers.

38. While this is the recommendation, the Commission may choose to accept or reject it. The other option would be to adopt the NYH spot price as the benchmark, in common with the approach used by the other regulators in the Atlantic Provinces. Making this transition would mean specifying the scope of the wholesale function that would be covered by the wholesale margin, and then quantifying the margin (in cpl) required to allow this function to be carried out (determining the just and reasonable wholesale price). The scope of what is covered by the *retail* margin remains the same regardless of the benchmark, and hence the margin itself (in cpl) would not change.

39. With NYH as the benchmark, the NS and NB Boards accept that the scope of activities the wholesale margin should cover would include costs from NYH (or the refinery) forward: this includes terminal operations that ordinarily are included in the rack price (see footnote 14), plus the wholesale component of the marketing margin (rack forward costs incurred by secondary wholesalers). The spread between NYH and the rack price (net of any flow-through costs) would appear to be a useful proxy for the wholesale margin from the perspective of primary wholesalers (though actually achieving that margin would depend on competitive conditions among all wholesalers selling at the rack). Following this approach, the formula to arrive at the wholesale price (WP) is:

WP = Period average NYH + wholesale margin + fwd avg adjust + fed & prov tax + carbon levy

Where the wholesale margin (cpl) covers: terminal operations (terminal OpEx and CapEx + fuel transportation to terminal + working capital mgt & overhead + regulatory compliance) + wholesale component of marketing margin (delivery + administration)

40. Applying this formula involves rearranging the values in the first two terms in the current wholesale price buildup, with the aim to leave the wholesale price unchanged at the time of any transition. To illustrate using the May 5, 2023, setting it would start by extracting the NYH-rack price spread (11.2 cpl) from the period average rack and adding it to the existing wholesale margin (5.0 cpl). This gives:

WP = 89.0 + 16.2 – 3.7 + 18.47 + 11.05 = 131.0 cpl

41. Given the similarities between the NS and PEI market circumstances (terminal plus delivery) and pricing models, in the event the Commission were to adopt NYH the 2022 decision of the NSUARB provides some insight into regulatory process for adjusting the wholesale margin to arrive at the wholesale price. That decision ordered a 9.65 cpl wholesale margin (over NYH) for gasoline, a 45% increase from the then current 6.5 cpl. Another review is underway, which, if successful, would increase the wholesale margin by a further 1.79 cpl, bringing the RUL wholesale price to 11.44 cpl over the NYH benchmark.

42. The regulatory approach in NS relies heavily on cost data to support any margin adjustments. Primary wholesalers provide data on changes in NYH to rack costs, while secondary wholesalers provide rack to retail costs. These costs are combined on a weighted average cpl basis to arrive at a recommended adjustment. It is left up to the parties to determine how any adjustment is split between primary and secondary wholesalers.

Recommendation 3: Any decision by the Commission to adopt NYH as the benchmark would benefit greatly from a clear definition of the scope of wholesale activities (beyond the general definition in the *Act*) and guidance on the relevant factors for quantifying the margin and making subsequent adjustments.

Recommendation 4: To simplify the regulatory process, if NYH were adopted as the benchmark, the Commission may wish to consider dividing the wholesale margin into its distinctive primary and secondary components, allowing the parties to apply for adjustments independently and avoiding a misalignment of activities/costs and the margin revenue needed to cover those costs.

3. Wholesale margin

3.1 Who is a wholesaler and what activities is the margin intended to cover

44. Before proceeding, it may be helpful to provide some clarification about what constitutes the "wholesale" function to which the margin is applied. The *Petroleum Products Act* (the "*Act*"), Sec. 1 (n) defines a wholesaler as "any person, other than a retailer, who sells any petroleum product or keeps any petroleum product for sale". On the face of it this would include refiners (primary wholesalers) who are licenced to sell directly from the Irving Oil terminal in Charlottetown, and secondary wholesalers who buy at the rack and sell to retailers. The distinction is important because the range of activities in which primary and secondary wholesalers are engaged differs greatly. It follows that the wholesale margin (the difference between the benchmark price and the wholesale price) should be set at a level that is just and reasonable in relation to the appropriate activities. [17]

3.2 Wholesale margin on motor fuels

45. In 2002 when the Commission adopted NYH as the benchmark, the wholesale margin was 5.0 cpl over the NYH spot price for the fuel in question. Until the Commission switched to using the rack price as the benchmark in 2006, the applicable rack price in Charlottetown was in the range of 2.5 to 3.0 cpl above NYH, implying an effective wholesale margin below 5.0 cpl (how far below would depend on specific supply agreements and whether these were tied to NYH or rack). Whatever the effective margin, presumably it was adequate given the absence of any applications to IRAC for an increase. And although it is difficult to say definitively what activities the 5.0 cpl wholesale margin was intended to cover prior to 2006 (this is not specified in the *Act*), given the NYH benchmark, the supply and operation of the Charlottetown terminal may have been included. See footnote 14 and para 38, above, for details on the scope of the wholesale margin.

46. The wholesale margin was kept at 5.0 cpl after the benchmark was changed in 2006 to the Charlottetown rack price. This would have appeared as a windfall gain for wholesalers because the rack price at the time was approximately 3.0 cpl higher than NYH (Figure 8). But in my opinion, the change in benchmark should have resulted also in a reconsideration and clarification of the scope of the wholesale function by the regulator. The switch to the rack as benchmark accepts the rack price as the refiner's selling price that captures (to the extent that competition allows) all costs associated with refining as well as supplying and operating its terminals, including an adequate return on investment (this is how it works in unregulated markets). With the switch, the scope of the wholesale margin from a regulatory perspective arguably should have narrowed to that needed to cover wholesale costs downstream of the rack – delivery to retail outlets plus any wholesaler funded costs to support retailers (e.g., promotions, site investments).

47. The data requested from wholesalers for this margin review conforms to this distinction between the primary and secondary wholesale functions.

- Four of five secondary wholesalers provided cost data. Three provided data for the 25 independent outlets they supply, representing half the total number of independent outlets.

[17] For example, the regulatory framework in Nova Scotia, implemented in 2006, defines the wholesale margin as "…the difference between the benchmark price for that petroleum product and the price at which a wholesaler sells that petroleum product to a retailer". *Regulation* 17 (3).

These 25 outlets account for 30% of total outlets (independent and corporate) and 35% of total provincial sales volume in 2022. The data cover costs for delivery, support, and administration. Data for the years 2012-2022 had been requested, but with turnover in wholesalers and sites, 2017 was the earliest year for a complete data set covering all 25 outlets. The fourth wholesaler provided aggregate delivery costs only for the corporate and independent sites it supplies.

The data indicate that the weighted average cost of supplying these 25 outlets falls in the 5.0 cpl range, with variation in average cost among the wholesalers ranging from 2.5 cpl at the low end to 7.5 cpl at the high end. In my opinion, the number of observations falls short of what could be considered representative of the industry. And since the result (such as it is) closely approximates the existing margin, there is no reliable basis upon which to recommend an adjustment.

A factor complicating any analysis of the wholesale margin is the sizable proportion of retail outlets (in the range of 30) that is owned and operated by the secondary wholesalers who supply them. Wholesale and retail are closely integrated (sharing an overall margin of up to 13.0 cpl), with no need to distinguish cost elements as belonging to one or the other (delivery charges would be an exception, but these can account for a relatively small part of overall costs). With wholesale costs for integrated outlets effectively excluded from the analysis, there is greater urgency for each wholesaler to submit cost data for the independent outlets they supply.

Recommendation 5: The existing 5.0 cpl margin for secondary wholesalers is just and reasonable.

- One primary wholesaler (the operator of the Charlottetown terminal) submitted cost data. The data, of course, are confidential. They indicate a pattern of gradually rising costs since 2012, with a relatively sharp increase in 2022, particularly in marine shipping. For the reasons provided above (paragraph 46 and footnote 14), I believe it would be incorrect to incorporate these costs in a wholesale margin analysis *while the rack price serves as the benchmark price*. This is not just a question of definition but goes to the heart of what is just and reasonable. If the current wholesale margin were to be adjusted to include recovery of all or part of these terminal costs, this increased margin would accrue to secondary wholesalers who do not incur these costs. It would be a windfall gain. This would clearly not be just and reasonable.

  As long as the rack price continues as the benchmark, primary wholesalers would try to recover rising operating costs through the rack price as they do in unregulated markets. The extent to which this is possible depends on the pricing strategies of other primary wholesalers with whom they compete.

Recommendation 6: The Commission may wish to issue guidance to industry clarifying the scope of wholesale activities it deems are covered by the wholesale margin under the existing pricing formula that relies on the rack price as the benchmark price.

3.3 Wholesale margin for furnace oil and commercial diesel

48. For the other main regulated fuels, furnace oil and commercial diesel, no distinct wholesale margin has been implemented by IRAC. The wholesale and retail margins are combined, currently at 21.5 cpl for furnace oil and 18.5 cpl for commercial diesel. Distributors buy at, or at a discount off, the rack price. They buy daily, paying a varying price as the rack price fluctuates. But they sell at the fixed weekly maximum retail price set by IRAC. In this arrangement, they may gain or lose margin depending on how the rack price changes in relation to the period average rack determining the maximum selling price. In other words, as buyers, distributors approximate the position of a conventional wholesaler (but without a margin), while as sellers they occupy the position of retailers (subject to a maximum selling price).

49. Clearly, the initial seller to the distributor occupies the position of a wholesaler within the definition set out in the *Act*. But that wholesaler has not had a margin applied that would lead to a "dealer base price", and with taxes, to a weekly fixed "wholesale price" as is the case with motor fuels. Accordingly, until one is created, there is no wholesale margin to adjust and no basis for an adjustment. But the challenge in defining one for this primary wholesaler is that there is no distinct wholesale activity that is not already compensated through the rack price. Adjusting the rack price to carve out a margin would be a cumbersome solution.

50. An alternative would be to carve out a wholesale margin from the existing distributor margin. This margin would notionally cover the distributor's trucking costs from the point of last residential/ commercial delivery to the terminal to pick up product and then to the point of first delivery with the full load, plus any administration costs in dealing with the terminal. This would be conceptually similar to the delivery aspect of the wholesale margin applicable to motor fuels where some companies are both wholesalers and retailers. Allowing for the higher unit operating costs of furnace oil delivery trucks, a margin of 3.0 cpl would appear to be appropriate (the average delivery cost for motor fuels in PEI is likely in the 1.0-1.5 cpl range).

Recommendation 7: If IRAC deems it necessary to implement a wholesale margin for heating fuel and commercial diesel to be compliant with the *Act*, then dividing the existing margin into wholesale and retail components would accomplish this. Both components would accrue to distributors. Subject to Recommendations 9 and 10 addressing the overall distributor margin, the recommended components are:

Furnace oil		Commercial diesel	
Wholesale:	**3.0 cpl**	**Wholesale:**	**3.0 cpl**
Retail:	**18.5 cpl**	**Retail:**	**15.5 cpl**

4. Retail margins – motor fuel and furnace oil

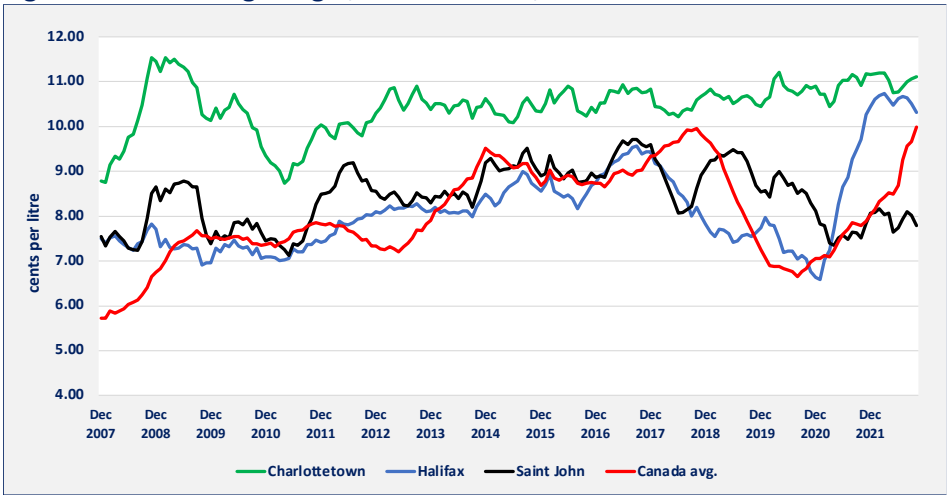
4.1 Motor fuel

Overview

51. Data obtained from the Commission indicates that 85 retail outlets operated in Prince Edward Island over the 2018-2021 review period. These outlets operate from Bothwell in the east to Tignish in the west, providing consumers reasonably good access to motor fuels. Average volume for these 85 outlets was about 2.6 million litres, with a few outlets pumping as little as 300,000 litres and a few at the high end of the range at about 6.0 million.

52. Figure 11 shows that the Charlottetown marketing margin (the rack to retail spread) has tended to exceed by 1-2 cpl the margins elsewhere in the Maritimes (and the Canadian average). Caution should be used in interpreting the data because of differences in competitive conditions among the cities. For example, stations in Halifax and Saint John would pump relatively high volumes, allowing them to operate profitably at prices lower than the Charlottetown minimum (thereby reducing the marketing margin). The sharp increase in the Halifax marketing margin in 2021 is attributable to the NSUARB decision to increase the wholesale margin (thereby widening the spread from rack to retail).

Figure 11: Marketing margin, selected cities, 2015 – 2022

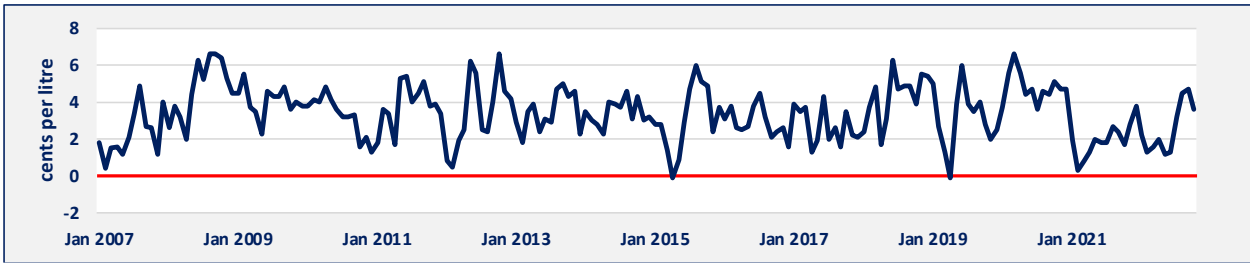


Source: Kalibrate

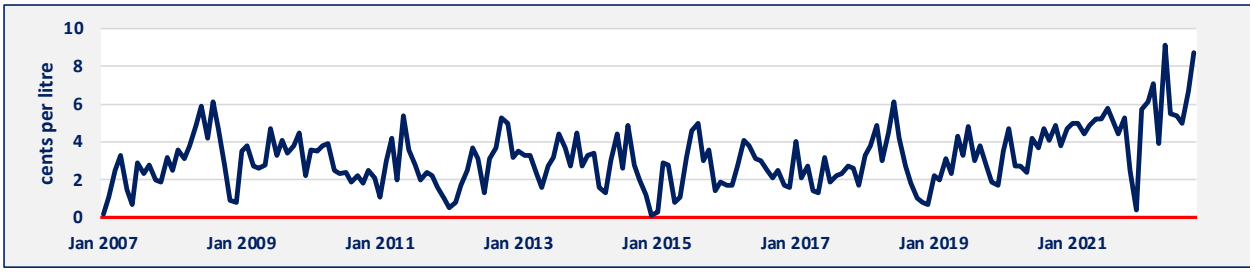
53. Comparing fuel prices (excluding taxes) in different markets also offers some perspective on the variability of price differences arising from competitive conditions peculiar to each market. Figure 12 shows that the Charlottetown price has been fairly consistently 2-4 cpl above that in Halifax, with the outer limits as high as 6 cpl and as low as zero (in January 2021 following the regulatory adjustment in the wholesale margin). Charlottetown vs. Saint John shows the same pattern as Halifax until 2021 when the spread widens to as much as 8 cpl as competition in Saint John keeps prices down (even below Halifax which, unlike Saint John, is subject to a minimum price). Charlottetown prices compare favourably with Montréal in recent years; from consistently as much as 5-8 cpl higher before 2015 to comparable (with fluctuations) in recent years as competition eased. The Charlottetown-Canada pattern is much the same as the Montréal comparison, but with a sharper increase in the average Canadian price (heavily influenced by urban centres) relative to Charlottetown between 2017 and 2019.

Figure 12: Regular gasoline price difference (excluding taxes)

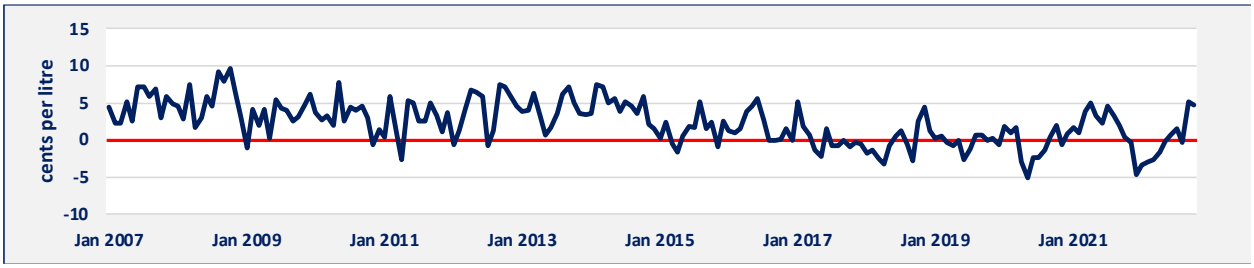
Charlottetown vs. Halifax



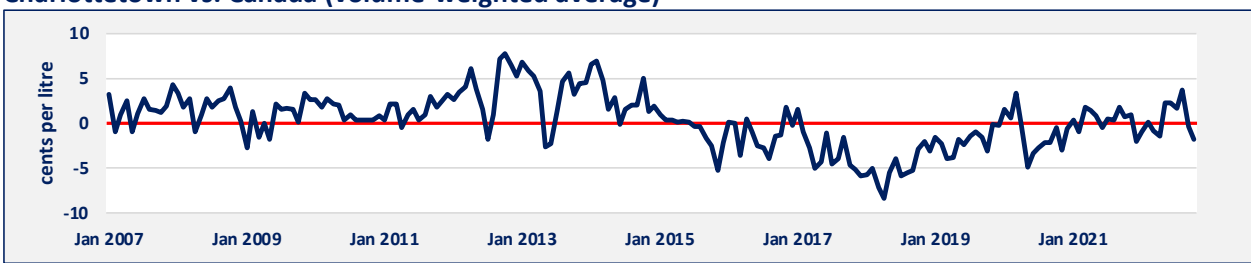
Charlottetown vs. Saint John



Charlottetown vs. Montréal



Charlottetown vs. Canada (volume-weighted average)



Note: Values above the axis represent the amount by which the Charlottetown pump price (excluding taxes) is higher than the comparator. Values below the axis indicate the amount by which the Charlottetown price is lower than the comparator.

Approach

54. Ideally, the analysis would focus only on costs attributable to the petroleum side of the business, since it is the retail supply of petroleum products that is subject to regulation. But this is not realistic given a) the great diversity of retail enterprises and the lack of comparability among them; and b) the close integration of various business activities within each enterprise, particularly from a cost perspective. Relying on operators themselves to allocate costs to petroleum vs. convenience stores and other aspects of the business would produce subjective and widely varying results, and in any event, would not be necessary given our approach to estimating the impact of changes in costs.

55. Our approach assumes that in any review period, changes to industry structure and the apportionment of costs between petroleum and non-petroleum aspects of the business are relatively minor. Considering the stable number of sites over the review period, it follows that any changes in operating costs would apply to the respective aspects of the business in the same proportions throughout the review period.

56. The retail margin is intended to cover the outlet's costs of supplying fuel, including a return on investment. Assessing the impact of changing costs on the retail margin is a matter of determining the extent to which any changes diminish or increase the margin over a specified period. The assessment also considers the impact on the margin of any changes in volume. The review is conducted in the following steps:

1) Obtaining volume sales data from stations through the Prince Edward Island Regulatory and Appeals Commission (IRAC) for the years 2018 and 2021.
2) Conducting a survey of retail stations to gather the required expense data including the following items – wages and salaries (management and operations), utilities and telephone, credit card fees/surcharges, repairs and maintenance, occupancy, and miscellaneous expenses.
3) Assembling a complete data set of retail stations that reported expenses and volume in 2018 and 2021;
4) Determining the percentage change in operating costs of each expense item by comparing 2021 values with those of the Base Year, 2018;
5) Determining the impact on the retail margin, adjusted for changes in sales volume (in cents per litre).

57. The complete data set consists of 53 outlets. Of these, 50 were usable. Unreported data in either the base year (2018) or 2021 is the reason for excluding three outlets. Accordingly, the margin impact of changing input costs is based on the operating experience of the 50 outlets (59% of the total number in the province). These 50 outlets account for 77% of total provincial retail motor fuel sales volume.

Results

58. The margin impact for the 50 stations (Table 2) indicates that operating costs increased by 11.0%. With a 0.7% decline in volumes, the net effect is an increase in cost per litre of 11.8%.

Table 2: Annual operating costs for all motor fuel outlets reporting, 2018-21

Expense Category ($)	Base Year Reporting	Base Year 2018	2019	2020	2021	% Change 2021/2018	% of Total 2018
Wages and salaries	50	9,498,260	10,187,812	10,777,408	11,148,548	17.4%	41.6%
Utilities and telephone	50	1,448,475	1,470,076	1,463,041	1,445,602	-0.2%	5.4%
Credit card fees/surcharges	49	2,151,587	2,167,955	1,886,056	2,288,430	6.4%	8.0%
Repairs and maintenance	50	1,364,830	1,608,433	1,875,603	1,850,348	35.6%	5.1%
Occupancy	48	1,741,941	1,772,115	1,727,525	1,781,092	2.2%	6.5%
All other expenses	49	10,622,028	10,481,294	9,686,357	11,263,510	6.0%	39.6%
Total	50	26,827,120	27,687,686	27,415,990	29,777,529	11.0%	100.0%
Volume							
Total for outlets (litres)		166,019,615	161,549,013	130,214,732	164,802,752	-0.7%	
Cost per litre (cpl)		16.2	17.1	21.1	18.1	11.8%	

Source: 2022 Motor fuel outlet survey.

59. The factors behind the cost pressures for the expense items are as follows:

- **Labour costs**: wages and salaries for operations personnel in the retail gasoline industry are influenced by the provincial minimum wage. PEI minimum wage increased from $11.55 in 2018 to $12.85 in 2020, an increase of 11.3%. The change reported in Table 1 (17.4%) exceeds this amount because of some increased staff hours and more staff benefits offered.
- **Utilities**: the decrease in utility expense (0.2%) reflects usage declines through energy efficiency measures offsetting increases in utility and communications rates.
- **Credit Card Fees**: The credit card cost data indicates that total cost of fees increased by 6.4% from 2018 to 2021. With a stable fee structure (in the 1.75% range for most cards), this increase would be attributable to a combination of increased card usage and increased prices for fuel and convenience store items that fee rates are applied to.
- **Occupancy**: the increase in occupancy (2.2%) represents increases in rental payments for stations leasing properties.
- **Repairs and Maintenance**: Comments from independent stations reported certain infrastructure for outlets had to be updated or replaced causing a 35.6% increase in repair and maintenance expenses over the period.

60. The Commission has wide discretion determining the factors it may consider in prescribing the retail mark-up. Aggregate retail volume is affected by long-term factors such as the number of vehicles in operation, improvements in fuel efficiency, changing economic conditions (affecting distance driven), and short-term factors such as the price of fuel. The relevant measure of volume from an outlet's perspective is litres sold, since every litre contributes margin to gross revenues. This determines the ability to cover overhead costs (most costs do not vary with level of sales). The higher the average sales volume, the greater the ability to cover these costs.

61. While the rationale for including volume as an adjustment factor is clear, it is less clear whether to use average sales volume for the outlets in the sample or average sales per outlet for the province, where the two differ. Table 3 shows that gasoline sales volume in Prince Edward Island has fluctuated over the past several years, against the backdrop of a slowly rising trend. Between 2018 and 2021, total

motor fuel retail sales increased by 0.4% compared to the sample volume decline of 0.7% (Table 2). The net difference of is within the error of the estimates and negligible for purposes of the analysis. Accordingly, the sample volume forms the basis of the analysis.

Table 3: Prince Edward Island motor fuel sales volume, 2010-2021

	Motor fuels	%D	Average volume		
Year	Litres (000)	2018-21	# Outlets	Litres (000)	%D 2018-21
2010	198,514				
2011	203,063				
2012	204,511				
2013	204,016				
2014	205,172				
2015	212,503				
2016	218,544				
2017	219,331				
2018	224,423		85	2,640	
2019	232,807		85	2,739	
2020	214,540		85	2,524	
2021	225,343	0.41%	85	2,651	0.41%

Source: IRAC

Conclusions and recommendations

The sample is reasonably representative

62. The 50 retail outlets included in the sample account for 64% of the total number of active outlets in Prince Edward Island. The sample includes a broad range of stations by geography (all parts of the province are represented) and sales volume (<300,000 l to >6.0 million l), and accounts for 77% of total provincial sales volume. The average outlet size by volume (about 3.3 million l) in the sample is 27% greater than the provincial average for all outlets (about 2.6 million l).

63.Though the sample is broadly representative in terms of geography, format and share of total volume, it does not reflect industry characteristics in terms of average size (outlet volume) and not necessarily in terms of cost structure. Corporately owned stations dominate the sample (72%). A difference in cost structure could introduce a bias into the analysis such that the results could deviate from a more representative industry average, thereby muting or amplifying cost impacts. In our opinion, any such impact is likely to be small and unlikely to have a significant impact on the results.

Regulation has produced results consistent with shifts in competitive markets

64. After 20 years of regulation, the PEI marketing margin in 2021 is comparable (within 1.0 cpl) to the Canadian average (Figure 10). While this provides a useful indicative comparison of market-based vs. regulated adjustments, taken alone, it does not necessarily capture the influence of differences in market characteristics (e.g., competitive conditions and average volumes) and the impact these have on margins.

The impact of pandemic support programs

65. Federal support programs during the pandemic had the effect of supporting businesses, particularly through a wage subsidy. This had the effect of reducing the actual operating costs of eligible businesses, including gas stations. The survey (50 stations) reported $1,526,000 in supports for 2020, dropping to $321,000 in 2021 the year used to quantify impacts relative to the base year (2018). Deducting this from 2021 expenses (Table 2), reduces the impact by 1.0 percentage point, from 11.0 to 10.0%.

The impact of regulatory lag

66. In its August 2022 decision, the Commission approved an interim increase in the retail margin of 1.0 cpl, increasing the maximum margin from 7.0 to 8.0 cpl. This margin is currently in effect. Had the analysis conducted for this report formed the basis for that adjustment, it would have resulted in a 10% increase, bringing the maximum margin to 7.7 cpl, not 8.0 cpl. Since it has been 10 months since that adjustment, with operating costs continuing to rise, in my opinion the retail margin should remain at 8.0 cpl.

Recommendation 8: Maintain the retail margin at the current level: a maximum of 8.0 cpl and minimum of 7.0 cpl. The next retail margin review should use 2022 as the base year against which to measure cost changes.

A consistent approach for setting regulated prices

67. The Commission's pricing model sets and adjusts the prices of regular gasoline and diesel in relation to corresponding rack prices. The prices for mid-grade and premium grades of gasoline are set by applying a fixed grade premium to regular gasoline based on historic differences between these products and regular gasoline (a 3.0 cpl premium for mid-grade and 6.0 cpl for premium). This is the same approach currently used by the NS and NB regulators.

68. This approach works if these products maintain their historic price relationships. But this is no longer the case. With the disruptions in petroleum markets in the past 1-2 years the spread between regular and mid-grade/premium gasoline has widened to double and triple the historic amounts. To illustrate, Table 4 shows Petro-Canada's Feb 10, 2023 rack prices for various cities across Canada. The premium to regular gasoline rack price gap varies from 10.4 (Maritimes) to 18.0 cpl (Western Canada).

69. Two main factors explain the widening spread: higher production cost (rising price of alkylate, an octane rich blending component), and supply not keeping up with increased demand for premium fuel (due to the combined effects of constrained refining capacity and the push to greater fuel efficiency). With the rack price spread (10.4 cpl) exceeding the grade premium (6.0 cpl), the net effect is to reduce the retailer's margin to about half the minimum set by the Commission for premium fuel (8.0 cpl – 4.4 cpl = 3.6 cpl). It is possible that wholesalers are sharing the margin impact with retailers.

70. If the intention is that retailers realize a margin no less than the prescribed minimum, then two options are open to the Commission: 1. adjusting the grade premium to maintain the prescribed retail margins as the regular/mid-grade/premium spreads change; 2. use the same approach to set the prices for mid-grade and premium gasoline as used to set the price for other motor fuels, i.e., with reference to an appropriate benchmark product price. Rack prices for mid-grade and premium grade are set daily as part of the suite of prices most refiners circulate or post on their websites (Table 4). Using the

relevant rack price for these products to arrive at the wholesale and retail prices instead of adding a fixed grade premium to regular gasoline price would resolve the issue.

Table 4: Petro-Canada gasoline rack prices, selected cities, Feb 10, 2023

LOCATION	REG 87	MID 89	SUP 91	91-87
Halifax, NS	99.7	104.0	110.1	10.4
Charlottetown, PEI	**101.5**	**105.8**	**111.9**	**10.4**
Saint John, NB	99.5	103.8	109.9	10.4
Montreal, QC	98.9	106.2	112.9	14.0
Quebec, QC	98.9	106.2	112.9	14.0
Ottawa, ON	92.7	99.0	109.7	17.0
Kingston, ON	92.5	98.8	109.5	17.0
Toronto, ON	90.7		107.2	16.5
Hamilton, ON	90.7		107.2	16.5
London, ON	89.7		106.2	16.5
Sault Ste. Marie, ON	93.6	99.9	111.6	18.0
Edmonton, AB	84.6	91.6	102.6	18.0
Winnipeg, MB	88.3		106.3	18.0
Regina, SK	86.2		104.2	18.0
Calgary, AB	87.0	94.0	105	18.0
Prince George, BC	103.1		121.1	18.0
Vancouver, BC	119.0		135.5	16.5
Nanaimo, BC	120.6	127.6	137.1	16.5

https://www.petro-canada.ca/en/business/rack-prices

Recommendation 9: Use the posted rack prices for mid-grade and premium grade gasoline as the base prices for setting wholesale and retail prices. This would mean either adjusting the grade premium to maintain margins as relative prices change, or alternatively, applying the existing grade premiums (3.0 and 6.0 cpl) to mid-grade and premium gasoline period average rack prices.

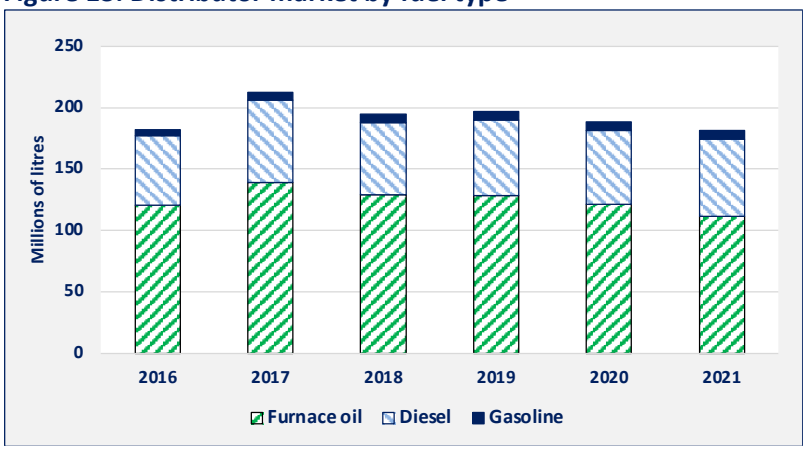
4.2 Furnace oil and commercial diesel margin

Overview

71. The supply side of the furnace oil distribution business is comprised of six companies, four serving customers province-wide and two smaller companies serving local communities. It is essentially a retail business, with each company picking up product at the Irving Oil terminal in Charlottetown and delivering directly to customers throughout the province (one company also operates a small bulk plant). The challenge of maintaining a work force with such a seasonal business is alleviated through diversification: most distributors also deliver diesel fuel and gasoline to commercial customers (contractors, farms, processors, fishing vessels) as an integral part of their operations. Furnace oil accounts for 60% of total sales volume (Figure 13).

72. Furnace oil distributors face challenging market conditions. Demand has been declining for many years in response to competition from alternative sources of heat (wood and propane, and more recently, heavily subsidized heat pumps). It is down by 40% since 2003 (Figure 14). Consultations with distributors indicate that the financial challenges are greatest in rural markets where the characteristics of the customer base (fewer and farther between) make this an increasingly high-cost business.

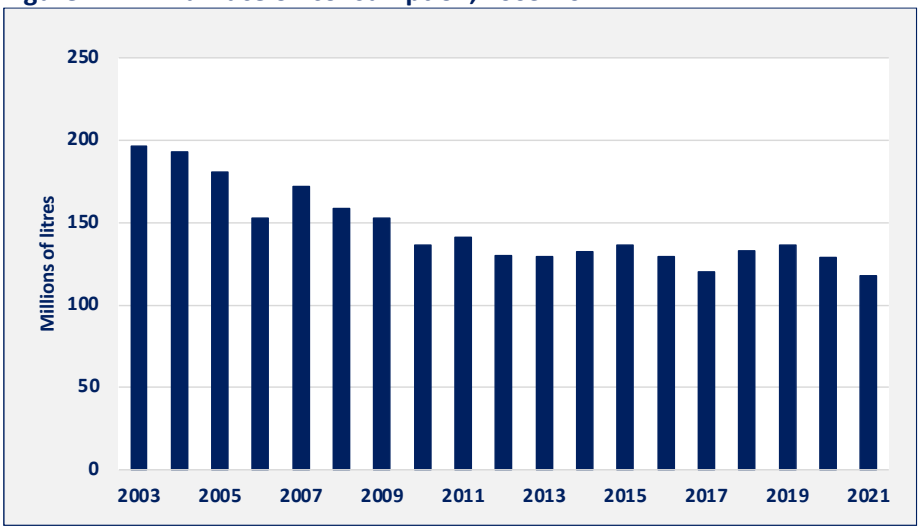
Figure 13: Distributor market by fuel type



Source: IRAC

73. Heating oil prices in PEI conform generally to regional trends with respect to seasonal movements and market fluctuations. From a position of rough equality from 2007 to 2011, prices in NS and NB have since increased relative to those in PEI (Figure 15). Favourable distribution economics in PEI (relative density of furnace oil customers) is a key factor accounting for the price differences. Prices tend to be highest in Nova Scotia where furnace oil is not regulated (in recent years the PEI-NS price gap has reached as much as 20 cpl). Prices in New Brunswick are regulated, though by virtue of frequent margin reviews have risen relative to PEI, with the gap widening after 2014, and reaching the 12 cpl range in recent years.

Figure 14: PEI furnace oil consumption, 2003-2021

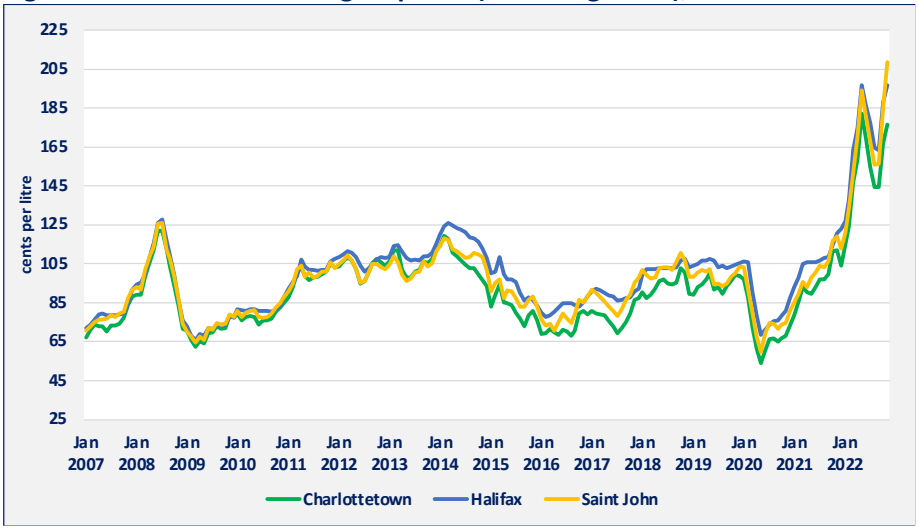


Source: IRAC

Approach

74. Assessing the impact of changing costs on the margins is a matter of determining how any changes have affected margins over the period since the last review in 2016. The assessment also takes into consideration the impact on margins of any changes in volume.

Figure 15: Maritimes heating oil prices (excluding taxes), 2007-2022



Source: Kalibrate

75.We implemented a three-step process:

1) Consulting with companies (in person or remotely) to gain insights into distribution economics and to solicit their participation in the review with a request for financial data on their operations. Each of the companies was sent a reporting template requesting annual data for a standard set of operating expenses plus annual volumes, 2016-2021. Companies were asked also to submit year-to-date (January-October 2022) expenses and volumes so that the analysis could capture the impact of inflationary pressures, particularly the impact on delivery costs arising from the substantial increase in diesel prices.
2) Assembling the data set and following up with companies to address any gaps or ambiguities.
3) Aggregating the data and conducting the analysis that would form the basis for a recommendation to adjust the margin, if warranted.

76. Conducting this analysis presents two challenges: first, most distributors supply 2-3 products using the same equipment, with only two products (furnace oil and diesel) subject to regulated margins; and second, despite using the same trucks, often with both regulated products carried simultaneously, furnace oil and diesel fuel have different margins. Consequently, the recommended adjustment applies to the margin for both products.

Results

77. Operating costs increased by 27.9% over the 2016-2021 period (Table 5). Total volume (all fuels) delivered by these distributors increased by 22.5%. This resulted in a net increase in costs of 0.6 cpl. When the January to October 2022 inflationary effects (particularly higher diesel prices) are considered, the overall cost impact rises to 2.1 cpl.

Table 5: Annual operating costs for heating oil distributors, 2016 vs. 2022 (Jan-Oct)

	2016	2017	2018	2019	2020	2021	% impact 2021/2016	2022 (Jan-Oct)	cpl impact 2022 ytd/2016
Wages and salaries									
Drivers	2,674.8	2,716.0	3,079.4	3,506.7	3,574.8	3,636.5	36.0%	3,055.0	
Management & Admin	2,947.3	3,210.3	3,234.8	3,852.9	3,365.5	3,690.1	25.2%	3,423.5	
Vehicle expenses									
Operation (fuel/supplies)	939.4	1,077.5	1,288.5	1,295.7	1,137.7	1,198.1	27.5%	1,522.0	
Repair/maintenance	1,070.2	1,304.9	1,283.1	1,467.7	1,525.3	1,398.6	30.7%	1,325.9	
Office expenses	592.7	635.2	582.0	685.1	530.3	524.9	-11.4%	451.0	
Advertising & Promotions	220.2	220.3	292.1	316.9	463.1	147.2	-33.1%	124.7	
Credit card fees/surcharges	378.9	326.6	397.0	519.7	390.4	464.1	22.5%	722.1	
Occupancy	445.5	506.0	497.2	402.7	369.8	368.8	-17.2%	312.3	
All other expenses	5,209.1	6,069.3	6,410.9	6,695.1	6,890.7	7,086.0	36.0%	5,791.6	
Total	14,478.1	16,066.2	17,065.0	18,742.6	18,247.7	18,514.3	27.9%	16,728.2	
Volume (litres)	113,822.8	127,387.8	153,570.9	153,599.7	144,837.5	139,428.6	22.5%	113,253.6	
CPL cost	12.7	12.6	11.1	12.2	12.6	13.3	0.6	14.8	2.1

Source: 2022 survey of PEI fuel distributors

Conclusions and recommendations

The case for a single margin for furnace oil and commercial diesel

78. For many years the margin for furnace oil has been set 3.0 cpl higher than the margin on commercial diesel (currently 21.5 and 18.5 cpl, respectively). The rationale for this difference appears to be grounded in the notion that the underlying economics of delivery differed: higher unit costs associated with many smaller deliveries vs. lower unit costs arising from fewer larger deliveries. While this notion has some conceptual appeal, there is no evidence that it ever had an empirical foundation. Outside urban areas, it would be just as reasonable to suggest higher unit costs arising from longer distances between commercial deliveries vs. high density residential deliveries, particularly since the same truck is often carrying both furnace oil and diesel.

Recommendation 10: Increase the current retail margin of 18.5 cpl on commercial diesel to 21.5 cpl so that it is at parity with furnace oil.

The sample data are representative of the industry

79. Four of six distributors submitted complete financial and volumetric data sets. They account for upwards of 85% of regulated fuel volumes, providing an excellent representation of the industry.

Recommendation 11: Increase the distribution margin by 2.1 cpl, applied equally to furnace oil and commercial diesel. Deducting the increase of 0.5 cpl ordered by the Commission in its Interim Order on August 14, 2022 results in a net increase of 1.6 cpl. Following Recommendation 2 to divide the margin into wholesale and retail components, applying this increase brings the recommended margins to:

Furnace oil		Commercial diesel	
Wholesale:	**3.0 cpl**	**Wholesale:**	**3.0 cpl**
Retail:	**20.1 cpl**	**Retail:**	**20.1 cpl**

5. Incorporating CFR carbon costs in the IRAC pricing model[18]

5.1 Pricing carbon in current initiatives aimed at curbing GHG emissions

79. Several federal and provincial initiatives aimed at reducing carbon emissions directly or indirectly are currently in place or soon to be implemented. Each has a direct bearing on the prices consumers pay for petroleum products. Atlantic Provinces regulators currently acquire price information arising from applicable programs to make weekly adjustments.

- **Renewable Fuel Regulation (RFR):** implemented in 2010, these regulations require fuel producers and importers to have an average renewable fuel content of at least 5% based on the volume of gasoline that they produce or import into Canada and of at least 2% based on the volume of diesel fuel and heating distillate oil that they produce or import into Canada.

  To meet these requirements, gasoline is typically blended with ethanol and diesel with biodiesel (derived from plant or animal oils). Because the mandate applies on the total Canadian volume produced or imported, the blended fuels are not necessarily supplied in all provinces. Where fuels are available in unregulated markets, refiners simply reflect the costs of blended product in the rack price. These costs are passed on to retailers. The same approach would be used in the regulated markets in the Atlantic Provinces as blended products become available, with prices reflecting the costs of the base products in proportion to their volumetric share of the blend (for example, E10: 10% ethanol/90% CBOB and B2: 2%B100/98% ULSD). Base product prices are available from daily PRA reports.

- **Carbon tax:** The federal government introduced a carbon tax in 2019. It was set initially at \$20/tonne CO_2e, rising to \$50/t in 2022, with proposed \$15/t annual increments to \$170/t in 2030. At \$50/t in 2022, this translates to 11.0 cpl on gasoline and 13.0 cpl on diesel (higher because of its higher carbon equivalent content). The annual increment (\$15/t) is programmed to 2030, so the impact on regulated fuel prices (2.2 cpl on gasoline and 2.7 cpl on diesel) is implemented automatically (on April 1 each year).

5.2 Pricing carbon under the Clean Fuel Regulation (CFR)

Reducing carbon intensity is the goal

80. The CFR is intended reduce GHG emissions by reducing the lifecycle carbon intensity (CI) of liquid fossil fuels used in Canada by 15% below 2016 levels by 2030. The CFR would encourage investment in the clean fuel sector in two ways: by reducing the CI of liquid fuels by specifying a Clean Fuel Standard (CFS), and through incentives to develop and adopt complementary clean fuel technologies and processes.

81. The CFR will apply to "primary suppliers" (refiners or importers) of transportation fuels – gasoline and diesel (the scope of CFR is currently limited to transportation fuel). Each fuel type is assigned a

[18] This section is an edited version of a section from a previous Gardner Pinfold report, *Adapting petroleum product price regulation in the Atlantic Provinces: Benchmarks and CFS*, prepared for Service Nova Scotia and Internal Services, June 2022. That report recommended regulators in the Atlantic Provinces continue to use NYH as their benchmark price because of uncertainty about factors causing the widening spread between NYH and regional rack prices. Section 2 of this report examines this uncertainty in some detail and concludes that the widening spread can be explained satisfactorily by a combination of market and cost factors common to petroleum product markets in eastern Canada and the northeastern US.

lifecycle carbon intensity value, expressed in grams of carbon dioxide equivalent per megajoule of energy (gCO_2e/MJ), which represents the emission intensity of such fuel throughout its entire lifecycle.

82. The CI default values (fixed in the regulations) serve as a baseline, against which primary suppliers will be required to make annual reductions. Suppliers earn credits for making CI reductions. Credit creation begins in 2022, with credit obligations beginning on July 1, 2023. Each primary supplier must reduce the carbon intensity of the gasoline and diesel it produces or imports by a minimum amount that increases each year (by -1.5 gCO_2e/MJ), starting at -3.5 gCO_2e/MJ in 2023 and culminating in a 14 gCO_2e/MJ reduction in 2030. A primary supplier's pool of gasoline and diesel must not have a carbon intensity greater than the limit indicated in each compliance period.

83. Primary suppliers would demonstrate compliance by creating or acquiring the requisite number of credits for each annual compliance period (1 credit = a lifecycle emission reduction of 1 tCO_2e). CFR credits may be banked for future use or traded, but once used for compliance, they are cancelled. Environment and Climate Change Canada (ECCC) estimates that by 2030, actions taken by industry will have caused a cumulative decline in carbon intensity of 57.8 $MtCO_2e$ from the baseline figure. The supply of low carbon fuels for blending is expected to account for no more than 50% of the reduction.[19]

How compliance credits may be created

84. Three compliance categories are open to regulated (or voluntary) parties for creating credits:

1. Actions through the lifecycle of a fossil fuel that reduces its CI through GHG emission projects (e.g., carbon capture and storage).
2. Supplying low carbon intensity fuels (e.g., ethanol, biodiesel, renewable diesel) for blending with gasoline and diesel.
3. End-use fuel switching in transportation (e.g., replacing or retrofitting combustion vehicles with electric-powered).

85. While the CFR initially will retain the volumetric requirements under the existing RFR (see above), in addition, the CFR mandates more stringent annual carbon intensity reduction targets annually. Prior to the repeal of the RFR in 2024, primary suppliers will be entitled to rollover any existing compliance units created under that program, convert them to credits under the CFR, and bank them until needed to demonstrate compliance. They may also sell them to other primary suppliers who find themselves in a deficit position in relation to their compliance requirements. This entitlement presupposes that all primary suppliers have or have access to banked credits. This may not be the case, particularly for primary suppliers in the Atlantic Provinces.

[19] https://gazette.gc.ca/rp-pr/p1/2020/2020-12-19/html/reg2-eng.html . The constraint arises because of design limitations of gasoline engines and pour point limitations for biodiesel. The supply and use of renewable diesel (RD or R100) is critical for meeting the long-term CI reduction target (based on 15% ethanol, 5% biodiesel, 6% RD). In its analysis, ECCC estimates that renewable diesel will account for about 30% of total low carbon fuel over the forecast period (to 2040). It is not currently produced in Canada, though at least four refiners have indicated they intend to develop production capacity. In the meantime, supply would depend on imports.

CFR creates a credit market essential for pricing

86. The actions primary suppliers take to meet their annual compliance obligations would cause their production costs (capital/operating) to increase. These costs would be passed to consumers through higher pump prices. The challenge for regulated markets in the Atlantic Provinces is determining how these compliance costs would be converted to cents per litre and flowed through to consumers in an administratively efficient manner.

87. The design of the CFR includes provisions for a market-based approach through the creation of a credit trading system, allowing primary suppliers and voluntary credit creators to transfer (buy and sell) credits.[20] The credit market provides primary suppliers with a feasible and flexible method for choosing a CI pathway suited to their circumstances. In economic terms, the market would provide primary suppliers with the basis for an economically efficient solution – "make or buy" – to meet their compliance obligations. Provided the market is sufficiently liquid (many buyers and sellers), the market clearing price of the credits would represent the cost of carbon at the margin.[21]

88. The CFR also establishes a Credit Clearance Mechanism or CCM to underpin the CFS. It acts as a potential backstop in circumstances where a primary supplier reports it is in a deficit position; potential in the sense that that there is no guarantee that credit creators will offer to sell credits. The CCM is intended to provide price certainty to primary suppliers and credit creators ("participants"). The CCM is set by design at $\$300/tCO_2e$ for 2022 (CPI adjusted).[22]

89. In addition to creating credits through these action categories and/or acquiring them by transfer or through the CCM, primary suppliers may obtain credits needed for compliance by paying into a compliance fund. Credits may be obtained at a price of $\$350/tCO_2e$ in 2022 (CPI adjusted). Credits acquired from the compliance fund can be used to satisfy a maximum of 10% of a primary supplier's annual reduction obligation. A primary supplier may also carry forward up to 10% of its reduction requirement into a future compliance period for up to two years.

[20] https://gazette.gc.ca/rp-pr/p1/2020/2020-12-19/html/reg2-eng.html Proposed Regulatory Text, Table of Provisions, Trading System sec. 90

[21] The proposed Regulations would require the reporting of all credit trades, and all parties would be required to register and keep records. Annual compliance reporting to the Minister would be required for all participants. The proposed Regulations would include validation and verification requirements, including number of credits, year created, price, and if for a low CI fuel, whether the fuel was produced in Canada or imported. Participants would also be required to obtain from an independent, accredited third-party verification body a report stating whether the information submitted is complete, compliant with the requirements, and credits and obligations are accurate and without material error.

[22] During stakeholder consultations on the proposed CFR, primary suppliers raised concerns that the price cap under the CCM was too high (they would pay more for credits than the marginal cost of creating them), while low carbon fuel suppliers and ENGOs indicated it was too low (they would receive less for credits than the marginal cost of creating them). The RIAS explains that the price was set based on credit market experience elsewhere (actual credit costs).

From credits to fuel prices

90. A credit market mechanism forms a critical component of the CFR. It will drive participants to meet the CI reduction objective, as the CI reduction model has done in other jurisdictions in North America, notably British Columbia and California. [23] [24]

91. In principle, the CFR credit market should begin to function the first time a primary supplier finds itself in a credit deficit position as a compliance deadline approaches. When this is likely to occur is difficult to predict because the timing also depends on the willingness of credit creators to offer credits for sale. ECCC indicates that the combination of banked credits from RFR and early action credits created for baseline actions in the six months prior to the coming into force date of the Regulations (July 1, 2023) are expected to be sufficient to meet CI reduction targets until 2026.[25]

92. While it may be as late as 2026 as the ECCC analysis states, primary suppliers operating in the Atlantic Provinces believe that an active credit market is likely to be needed by 2024 so that suppliers in a deficit position can buy the credits they need to achieve compliance.[26] [27]

93. If past practice serves as a guide, then we can expect the established PRAs such as Argus and Platts to begin reporting credit prices as soon as the market develops.

94. Considering the uncertainty surrounding credit availability and when a credit market may develop, two questions arise for suppliers and regulators in the Atlantic Provinces' markets:

1. **In the absence of a credit market with credits to be purchased, how will suppliers with insufficient banked credits meet their annual compliance obligation and how will regulators adjust retail prices to reflect compliance costs?**

   Primary suppliers indicate they are most likely to try to meet their compliance requirements in the early years (at least) through Category 2 actions: supplying low carbon intensity fuels. An expressed concern is that supplying E10 (and even B2) will not create sufficient credits in the near term to meet compliance obligations *and* support a liquid credit market in Canada. But if a credit market does not exist to price the credits (or to offer primary suppliers a potentially lower-cost 'buy' option), on what basis will regulators in the Atlantic Provinces adjust fuel prices

[23] https://www2.gov.bc.ca/gov/content/industry/electricity-alternative-energy/transportation-energies/renewable-low-carbon-fuels/credits-market
[24] https://ww2.arb.ca.gov/our-work/programs/low-carbon-fuel-standard
[25] https://gazette.gc.ca/rp-pr/p1/2020/2020-12-19/html/reg2-eng.html Tables 15 and 17.
[26] The compliance challenges facing primary suppliers in the Atlantic Provinces is acknowledged in the Regulatory Impact Analysis Statement where it is noted that Atlantic Canada has fewer opportunities to create credits through Category 1 (fuel lifecycle) and 3 (end-use fuel switching) actions. This leaves blending as the more likely approach to creating credits, but primary suppliers consulted for this study express doubts whether enough credits can be created through blending in the next 2-3 years to meet compliance obligations.
[27] An industry-funded study of supply/demand balances in North America by IHS Markit (*Assessment of the impact of Canadian Clean Fuel Regulation on the Atlantic Canada fuels market, April 2022*) determined that a credit shortage is likely to exist by 2024.

to allow industry to recover its CFR costs? In unregulated markets, suppliers simply pass on such costs in their rack prices (to the extent competition allows).[28]

IRAC could use this approach because it relies on the rack price for its benchmark. Assuming they incorporate renewable diesel to meet their credit obligations, refiners would flow the cost through in their rack prices (See Footnote 19). The same RD cost would be included in rack prices elsewhere in the Atlantic Provinces, but regulators *would require the cost to be justified*. This may be as simple as calculating the sum of the RD lifecycle commodity cost plus other factors contributing to value in the highest price market.

RD would have to be imported since it is not yet produced in Canada. But regardless of source, Canadian primary suppliers (refiners or importers) would have to pay a price which reflects demand/supply conditions in the dominant market, the US (more specifically, California). This "opportunity cost" price would include not just the RD commodity value, but also any additional incentives/payments received by producers or negotiated into supply contracts with obligated parties. The California LCFS credit and the RIN credit (under the US RFS mandate) are the most likely values to be included in the export price.

The key point from the regulator's perspective is that these cost elements – RD commodity, LCFS and RIN – are reported by one or other PRA. They can be tracked and incorporated as an "adder" into wholesale prices and flowed through to retail prices using a formula that converts the LCFS credit price (in US$/t$CO_2$e) and the RIN price (in US cents/gallon) into C$/litre.[29]

2. Once a CFS credit market develops, what options are open to regulators to incorporate compliance costs into wholesale prices?

This may be the most straightforward step for regulators. Just as the regulatory models depend on reporting services for price data on NYH and Rack benchmarks, they will be able to incorporate CFS credit market prices as "adders" into pricing models using these same PRA publications. Examples of carbon market and biofuels reporting are available daily for Québec C&T, and for California and Oregon LCFS credit markets.

[28] For example, in the California retail petroleum products market LCFS credit prices are included as a line item in sales contracts and in the price build-up when setting terminal (rack) prices.

[29] LCFS Credit price (RD) C$/Litre = LCFS credit price $/tonne * (LCFS Diesel CI Target - Renewable Diesel CI) gCO2e/MJ * Renewable Diesel Energy Density / 1000000 * FX rate C$/US$.
D4 RIN value (RD) C$/litre = D4 RIN price/100*1gal/3.7854*1.7 RD equivalence value*FX rate C$/US$
For a formal presentation of the formula for deriving the rack price adder, see Grant Thornton, a report for the New Brunswick Energy and Utilities Board, *Review of the Cost of Carbon Adjuster Mechanism*, February 28, 2023. This report is available on the EUB's website: https://filemaker.nbeub.ca/fmi/webd/NBEUB%20ToolKit13