

New Brunswick Energy and Utilities Board

Review of the Cost of Carbon Adjustor Mechanism

Report date: February 28, 2023

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1. Executive summary

1.1. Project overview

This report was prepared by Grant Thornton LLP (“we,” “us,” “our” or “Grant Thornton”) under an engagement as a Consultant to the New Brunswick Energy and Utilities Board (the “NBEUB” or “the Board”) in connection to recent amendments to the *Petroleum Products Pricing Act* and the *General Regulation – Petroleum Products Pricing Act*. Section 13.2 of the Act requires the Board to set a cost of carbon adjustor at any time in which it considers appropriate, using criteria and procedures as determined by the Board. This report is provided for the use of the Board in conducting a review and providing recommendations regarding the establishment of a cost of carbon adjustor for the province of New Brunswick.

1.2. Scope of work

Our report outlines the results of our work and documents our observations, findings, and recommendations. Specifically, our review included procedures undertaken in the consideration of the following matters:

- Reviewed the Petroleum Products Pricing Act (the “Act”) and the General Regulation – Petroleum Products Pricing Act (the “Regulation”);
- Performed a jurisdictional scan relating to current petroleum practices in the Atlantic Canadian provinces (including New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland and Labrador) and how these provinces establish their benchmark fuel prices;
- Reviewed industry updates on carbon pricing approaches across North America, with a particular emphasis on Canada, and how current carbon reduction initiatives across the country are incorporated into provincial and territorial fuel prices;
- Reviewed the guidelines outlined within the Government of Canada’s Clean Fuel Regulations (“CFR”) and the purpose of their establishment in an effort to curb greenhouse gas (“GHG”) emissions, as well as its implications on future fuel prices within Canada;
- Reviewed how current carbon reduction initiatives can be accommodated, and how carbon compliance credits may be created, within the regulated fuel pricing framework in the province of New Brunswick;
- Reviewed how carbon compliance obligation costs may be passed on to consumers and how the NBEUB may adjust retail fuel prices to reflect such costs;
- Consulted with any industry stakeholders deemed necessary;
- Reviewed possible methods to setting the cost of carbon adjustor; and
- Prepared a report on findings and conclusions reached, with consideration for the following matters, outlined as per section 13.2(1) of the Act:
 - Any written submissions from primary suppliers, wholesalers, retailers, and the Public Intervener for the Energy Sector regarding the financial and administrative burdens associated with the application of Canada’s CFR or any other regulatory instrument made under the *Canadian Environmental Protection Act, 1999* and the *Environmental Violations Administrative Monetary Penalties Act*;
 - Conclusions drawn from reports from compliance credit markets under the CFR;
 - The cost of renewable fuel;
 - Wholesaler and retailer costs, including the purchase of liquid petroleum products at rack prices; and
 - Any other information the Board may consider relevant in relation to the application of the CFR or any other regulatory instrument made under the *Canadian Environmental Protection Act, 1999* and the *Environmental Violations Administrative Monetary Penalties Act*.

1.3. Restrictions and limitations

This report was prepared for the NBEUB for the purpose of providing recommendations to the Board regarding the establishment of a cost of carbon adjustor for the province of New Brunswick. This report is not intended for general circulation or publication nor is it to be reproduced or used for any purpose other than that outlined herein without prior written permission in each specific instance. Notwithstanding the above, we understand that our report may be disclosed as a part of a public hearing process. We have given the Board consent to use our report for this purpose.

This report shall be used solely for the benefit of the Board and not for the benefit of any third-party and may be relied upon only for the purpose for which the report is intended as contemplated and/or defined within the engagement. Grant Thornton recognizes no responsibility whatsoever, other than that owed to the Board as at the date which the report is given to the Board by Grant Thornton, for any unauthorized use of or reliance on the report.

Our scope of work is as set out throughout this report. The procedures undertaken in the course of our review do not constitute an audit of financial information and consequently, we do not express an audit opinion on any financial information provided. Our opinions on other matters are outlined throughout this report.

Unless stated otherwise within the body of this report, Grant Thornton LLP has referenced information provided by third-party sources in the preparation of this report. Where we have referenced third party information, we have included relevant footnotes throughout this report, a summary of which can be found in [Appendix A – Documents referenced](#). At the time of this report, Grant Thornton LLP believes this information to be reliable. We are not guarantors of the information referenced. In preparing our report and, except as stated, we have not audited or otherwise attempted to verify any of the underlying information or data contained in the documents referenced.

All analysis, information, and recommendations contained herein are based upon the information made available to Grant Thornton LLP as of the date of this report. We reserve the right, but will be under no obligation, to review and/or revise the contents of this report in light of any information which becomes known to us after the date of this report.

1.4. Summary of findings, observations, and conclusions

The following represents a summary of our key findings and recommendations based on the procedures outlined throughout the report:

#	Finding, observation, and conclusion
1.	Some stakeholders contacted were generally unclear of why a cost of carbon adjustor mechanism was required and the pathway to implementing this mechanism. Additionally, some stakeholders expressed concerns with the public understanding of the cause of future price increases and the feedback they expect to receive from the public. As such, the Board may wish to reflect on the role they may have in communicating this change to improve understandability prior to implementing the Interim Cost of Carbon Adjustor Formula on July 1, 2023.
2.	The market for carbon credits and information about potential compliance options are rapidly evolving. Until the carbon credit market matures and becomes more liquid, we have proposed an Interim Cost of Carbon Adjustor Formula. Given that there is no set timeline for when this may occur, we recommend a review of the Interim CCA Formula every six months.
3.	An illustrative example of the proposed Interim Cost of Carbon Adjustor Formula has been included in Appendix C – Sample Calculation.
4.	California Low Carbon Fuel Standard (“California LCFS”) is a market-based program meant to reduce the carbon intensity of fuels in California. This market has been in place for some time and as a result is a reasonable proxy for market pricing for the import value of the incremental cost of compliance with CFR in the interim period. Industry participants generally agree that in a period of 18-24 months there may be greater certainty in the availability and pricing of carbon.

2. Background

2.1. New Brunswick Petroleum Pricing Act

On December 16, 2022, New Brunswick's Bill 15 received Royal Assent and as such An Act Respecting Petroleum Pricing was revised to include a cost of carbon adjustor. The Act defines the cost of carbon adjustor as "...the result of a monetary adjustment intended to mitigate for wholesalers and retailers the effect of costs incurred during a given compliance period by a primary supplier of liquid petroleum products to comply with the Clean Fuel Regulations (Canada) or any other regulatory instrument made under the Canadian Environmental Protection Act, 1999 (Canada) and the Environmental Violations Administrative Monetary Penalties Act (Canada)." Section 13.2 of the Act notes "The Board shall set the cost of carbon adjustor and the market adjustor at any time the Board considers appropriate, using criteria and procedure as determined by the Board."

As a result, the purpose of this report is to propose the criteria and procedures that Board may follow in setting the cost of carbon adjustor as expressed in Canadian cents per litre ("cpl").

2.2. Clean fuel regulations in Canada

Clean Fuel Regulations in Canada (published in July 2022)¹ are a component of the overall climate initiative to reduce greenhouse gas emissions and accelerate the usage of clean fuels and technologies across the country.² CFR requires all suppliers (including producers and importers) of liquid fossil fuel to gradually reduce the amount of pollution emitted in the form of GHG emissions from the extraction, refining, distribution, and use of the fuels in Canada.³ Over time, the benchmark established by the CFR is to achieve a reduction from levels in 2016 of approximately fifteen percent (15%) in the carbon intensity ("CI") of gasoline and diesel consumed in Canada by the year 2030.⁴ The CFR will take into account the GHG emissions connected to all stages of the lifecycle of fuel production and consumption, including extraction, processing, distribution, and end-usage. By July 1, 2023, the carbon intensity reduction requirement for petroleum fuel suppliers is to start at 3.5 grams of carbon dioxide equivalent per megajoule of energy ("gCO₂e/MJ") and subsequently increase by 1.5 gCO₂e/MJ per calendar year until reaching a total of 14 gCO₂e/MJ by 2030.⁵

2.2.1. Compliance credits

CFR contemplates the establishment of a market for compliance credits. The market is a means for regulated parties to create or purchase credits to comply with carbon reduction requirements. Under the CFR the annual CI reduction requirement could be met through the creation of compliance credits through three categories:

1. Undertaking projects that reduce the lifecycle CI of liquid fossil fuels (e.g., carbon capture and storage, on-site renewable electricity, co-processing);
2. Supplying low carbon fuels (e.g., ethanol, biodiesel); and
3. Supplying fuel or energy to advanced vehicle technology (e.g., electricity or hydrogen in vehicles).⁶

When a supplier cannot generate sufficient compliance credits, the CFR includes provisions in which a market-based approach will be employed. This market-based approach will be achieved through the creation of a credit trading system. This credit trading system is to be open to all primary suppliers of liquid fossil fuels and other participants, to be known as voluntary credit creators (and includes such functions as producers and importers of low-carbon fuel). Under the provisions of the credit market, a singular credit is to represent a one tonne lifecycle

¹ <https://www.canada.ca/en/environment-climate-change/services/managing-pollution/energy-production/fuel-regulations/clean-fuel-regulations/about.html>. Accessed January 16, 2023.

² <https://www.canada.ca/en/environment-climate-change/services/managing-pollution/energy-production/fuel-regulations/clean-fuel-regulations.html>. Accessed January 16, 2023.

³ <https://www.canada.ca/en/environment-climate-change/services/managing-pollution/energy-production/fuel-regulations/clean-fuel-regulations/about.html>. Accessed January 16, 2023.

⁴ <https://www.canada.ca/en/environment-climate-change/services/managing-pollution/energy-production/fuel-regulations/clean-fuel-regulations/about.html>. Accessed January 16, 2023.

⁵ <https://www.canada.ca/en/environment-climate-change/services/managing-pollution/energy-production/fuel-regulations/clean-fuel-regulations/about.html>. Accessed January 16, 2023.

⁶ [Compliance with the Clean Fuel Regulations - Canada.ca](https://www.canada.ca/en/environment-climate-change/services/managing-pollution/energy-production/fuel-regulations/clean-fuel-regulations/about.html)

1 emission reduction of carbon dioxide equivalent (“CO₂e”). When a supplier is unable to meet their CFR obligation
2 they can achieve compliance as follows:

- 3 1. Primary suppliers may make use of the Credit Clearance Mechanism (“CCM”). The CCM sets a
4 maximum price of \$300/tonne per credit; however, credit generators have no obligation to participate in
5 the CCM. Alternatively, primary suppliers can be linked to credit generators through direct agreements.
- 6 2. Primary suppliers may also obtain credits through contributions to a registered compliance fund that has
7 a purchase price of \$350/tonne in 2022 to be adjusted annually by the consumer price index. It is
8 important to note that primary suppliers may only rely on contributions to the compliance fund for up to
9 10% of their annual CI reduction obligation.

10 Industry participants have noted that there is a risk that available credits will be insufficient for compliance at the
11 maximum price in the CCM as the list of projects anticipated to generate credits in Canada is limited and credit
12 generators are able to retain credits for future use.

13 In February 2023, Environment and Climate Change Canada (“ECCC”) published an update to the clean fuel
14 regulation credit and tracking system (“CATS”). This demonstrates how quickly information surrounding the
15 availability of credits is evolving at the time of this report.

16 2.2.2. Compliance in Atlantic Canada

17 The Government of Canada published Regulatory Impact Analysis Statement – Clean Fuel Regulations;
18 SOR/2022-140 on June 21, 2022, which states “...it is estimated that provinces in Atlantic Canada will be more
19 negatively affected by the Regulations. This is largely because the Atlantic Provinces are estimated to have fewer
20 opportunities to create credits from actions along the lifecycle of fuels (for example credit creating opportunities
21 from CCS are unavailable due to inadequate geological storage). Furthermore, baseline EV and low-carbon fuel
22 uptake in Atlantic Canada is low in comparison to other provinces.”⁷ In addition, during stakeholder consultations
23 it was noted that there are limited opportunities to create credits through Category 1 and Category 3 in Atlantic
24 Canada. Industry participants indicated that compliance could be achieved through Category 2 by supplying low
25 carbon fuels through blending.

26 Furthermore, industry participants noted that there are limitations to the levels of ethanol and biodiesel blending
27 possible due to the limitations of internal combustion engines currently in use in Canada. Therefore, in the short
28 term, this will create a demand for renewable diesel blending for credit generation as the pathway to compliance.
29 For clarity, Advanced Biofuels Canada explains that renewable hydrocarbon diesel (“RHD”) is also known as
30 hydrogenation-derived renewable diesel (HDRD) in Canada, renewable diesel (“RD”) in the US, and
31 hydrogenated vegetable oil (“HVO”) or green diesel in Europe. The reader may note differences in this
32 terminology based on the market where the product is produced.⁸

33 Currently, RD is not produced in Canada. As such, it is expected that renewable diesel will have to be imported.
34 RD can be produced from various biomass sources and is fully compatible with existing engines and
35 infrastructure.⁹ RD is a product that is comparable to petroleum diesel and can be blended at higher
36 percentages. While RD does not require a major capital investment for blending, stakeholders noted that it is very
37 expensive to produce. Industry participants noted that the value of RD is set primarily by the California Low
38 Carbon Fuel Standard (California LCFS). Importing RD will require industry participants in Atlantic Canada to
39 compete globally based on the evolving demand and supply conditions at the time.

⁷ <https://www.gazette.gc.ca/rp-pr/p2/2022/2022-07-06/html/sor-dors140-eng.html>

⁸ <https://advancedbiofuels.ca/fuels-and-tech/renewable-hydrocarbon-diesel-rhd/>

⁹ <https://advancedbiofuels.ca/fuels-and-tech/renewable-hydrocarbon-diesel-rhd/>

3. Jurisdictional review

3.1. Petroleum Pricing Models in Atlantic Canada

The regulatory pricing frameworks for petroleum products across the Atlantic provinces are similar, with formulaic approaches being applied to compute weekly price adjustments.¹⁰ As a function of the formulaic approaches employed, the average daily price is compared to a specified benchmark to adjust the maximum retail selling prices for petroleum fuels. Based on the legislation enacted in each jurisdiction and the information made publicly available by the regulating authority we considered how other jurisdictions within Atlantic Canada may have contemplated implementing a cost of carbon adjustor.

Maximum fuel prices are reflective of the components set out in each province's respective legislation and includes benchmark prices, mark-ups, zone differentials, and various forms of taxation (federal excise taxes, provincial taxes, carbon taxes/levies, and sales tax). Within Atlantic Canada, the provincial governments have granted authority over the regulation of maximum petroleum product pricing to the provincial regulatory boards.

The table below provides a summary of the petroleum pricing regulatory elements as at the week ending Saturday, December 31, 2022 for regular self-service gasoline. For purposes of comparison, the figures included below are illustrative of the maximums established for the lowest priced zone in each of the four Atlantic provinces (St. John's, NL; Halifax, NS; Charlottetown, PEI; and Saint John, NB).

	New Brunswick ¹¹	Nova Scotia ¹²	Newfoundland & Labrador ¹³	Prince Edward Island ¹⁴
Year in which regulation introduced	2006	2006	2001	1991
Adjustment timeframe	Weekly (Friday)	Weekly (Friday)	Weekly (Thursday)	Weekly (Friday)
Benchmark used	New York Harbor Spot / Discretion	New York Harbor Spot	New York Harbor Spot	Charlottetown Rack
Average benchmark price timeframe	5 days	5 days	7 days	Prior week
Extraordinary adjustments/criteria	Discretionary	(+/-) 6 to 8 cpl change in average benchmark price over two days (gas and diesel)	(+/-) 6 to 8 cpl change in daily or running average (all fuels)	Discretionary based upon daily assessment of prices and impact
Interrupter	✓	✓	✓	✓
Wholesale margin (cpl)	6.51	9.65	15.65	5.0
Retail margin (cpl)	8.46	7.6	10.28	8.0
Fixed minimum retail price	X	✓	X	✓
Transportation/zone differentials (cpl zone range)	Actual to maximum of 3.75	0.6 - 2.3	0.0 - 32.99	N/A
OTHER COSTS				
Carbon levy/tax (cpl)	11.05	Varies: Cap & Trade	11.05	11.05
Federal excise tax (cpl)	10.0	10.0	10.0	10.0
Provincial fuel taxes (cpl)	10.87	15.5	7.5	8.47
Harmonized sales tax (HST) %	15%	15%	15%	15%
Maximum retail price (as at indicated date) \$ / L (December 31, 2022)	1.54	1.50	1.625	1.587

¹⁰ Newfoundland & Labrador Board of Commissioners of Public Utilities; 2022-2023 Petroleum Products Pricing Review (issued January 17, 2023).

¹¹ <https://nbeub.ca/past-petroleum-prices>

¹² https://nsuarb.novascotia.ca/sites/default/files/gasprice_141.pdf

¹³ http://www.pub.nl.ca/PP_historial2022.php

¹⁴ <https://irac.pe.ca/petrol/historical-pricing-data/?effDate=2022-12-30>

1 The prescribed petroleum pricing components for each of the Atlantic provinces include elements which are
 2 common to each, and are described below as follows:

- 3 • **Benchmark** – The benchmark prices included within the maximum prices represent the cost of the
 4 product and are adjusted regularly to reflect the most recent product cost data as stipulated within the
 5 provincial petroleum pricing regulations. Benchmark prices are established by the regulator based upon
 6 the available commodity market data reported over the period since the last adjustment. The New York
 7 Harbour (“NYH”) spot price is used for each Atlantic province benchmark price except PEI. NBEUB has
 8 discretion to use another source and method of calculating benchmark prices. PEI uses the
 9 Charlottetown Rack as its benchmark.
- 10 • **Wholesale and Retail Margin** – The wholesale and retail margin or mark ups reflect the costs of
 11 supply. The margin is set by the regulator periodically from a public hearing and/or industry application.
- 12 • **Transportation / zone differential** – Pricing zones included in the maximum prices provide differential
 13 costs to be added reflective of the transportation costs required to the respective zones in each
 14 province. Newfoundland and Labrador has 26 pricing zones, Nova Scotia has 6, New Brunswick has
 15 one plus Parish of Grand Manan, and PEI has one pricing zone.
- 16 • **Carbon tax** – The federal government carbon tax was introduced in 2019. The carbon tax applies in
 17 provinces that have not adopted a carbon pricing model that meets the federal standard. This currently
 18 equals 11.05 cents per liter and increases each year on April 1 up to 2030. Nova Scotia is exempt from
 19 federal carbon tax as it adopted a carbon pricing model (i.e., Cap & Trade program). The carbon tax for
 20 Nova Scotia under the Cap & Trade program is priced at the floor price of the next auction plus any
 21 adjustment required based on settlement price at the most recent auction, converted into Canadian
 22 cents per liter.
- 23 • **Federal excise tax** – The federal excise tax is currently set at 10.0 cents per liter.
- 24 • **Provincial fuel tax** – Each province has a distinct provincial fuel tax.

25 3.2. Status of pricing reviews across Atlantic Canada

26 3.2.1. Newfoundland and Labrador

27 The Government of Newfoundland and Labrador requested a pricing review on June 7, 2022. At the time of this
 28 report, the Newfoundland and Labrador Board of Commissioners of Public Utilities (“P.U.B.”) is actively
 29 conducting a review of its Petroleum Products Pricing. The P.U.B. engaged consultant Kalibrate Canada Inc.
 30 (“Kalibrate”) to participate in the review. A work plan has been developed with three phases to be conducted as
 31 follows:

Phase	Description	Timeline
I	Background and issue identification	Oct 2022 – Jan 2023
II	Benchmarking and wholesale markups	April 2023 – Oct 2023
III	Retail mark-ups and other issues	August 2023 – February 2024

32 Kalibrate’s Phase 1 work has been completed in its report dated November 3, 2022 titled ‘Phase 1 Report:
 33 Preliminary and Background Market Review’. On January 13, 2023 the P.U.B. released a Consultation document
 34 as part of Phase I. This document includes information with respect to fuel price regulation, the supply, storage
 35 and distribution of regulated petroleum products, how maximum fuel prices are established and issues to be
 36 addressed as part of the review. According to the Consultation document Phase I is expected to conclude with
 37 the release of an issue list in February 2023. As of the date of this report this issues list was not publicly
 38 available. PUB is seeking direct input from residents as part of the review. It is unclear if this project includes a
 39 review of the impact on pricing for Newfoundland and Labrador due to the Clean Fuel Regulations or the
 40 contemplation of a cost of carbon adjustor currently.

3.2.2. Nova Scotia

Service Nova Scotia and Internal Services engaged Consultant 'Gardner Pinfold Consultants Inc.' ("Gardner Pinfold") to perform an assessment of petroleum benchmark options to support price regulation in the Atlantic Provinces. The report examined two issues:

1. The continuing relevance of the NYH spot price as the benchmark used in pricing models by the Nova Scotia Utility and Review Board and other regulators in the Atlantic Provinces.
2. How changes in petroleum markets arising from the implementation of Canada's CFR can be accommodated in the regulated pricing framework.¹⁵

With regards to implementation of Canada's CFR into the regulated pricing framework, the Gardner-Pinfold report concluded the following:

- An 'adjustor' to retail prices, linked to public pricing in an established credit market, can be used to adjust fuel prices to allow industry to recover its CFR costs.
- Concern is that a national/Canadian market may not develop for several years, leaving regulators no direct basis to adjust fuel prices.
- Use of a proxy to derive the 'adjustor' (e.g. \$300/credit based on the Credit Clearance Market cap), however it was noted this price is unlikely to be sufficient to compensate for costs incurred in meeting the regulatory requirements.
- It is expected that renewable diesel will be the primary source of compliance in Atlantic Canada. Suppliers will have to pay a price which reflect supply conditions in the dominant US market.

3.2.3. Prince Edward Island

We are not aware of any petroleum pricing reviews being conducted in Prince Edward Island.

¹⁵ Assessment of petroleum product benchmark options to support price regulation in the Atlantic Provinces, by Gardner Pinfold Consultants Inc., July 2022

4. Stakeholder consultations

4.1. Organizations contacted

We contacted the following organizations as part of our review. Organizations contacted included representatives from industry associations as well as industry participants such as primary suppliers, wholesalers and retailers.

- Canadian Fuels Association
- Cape D'Or Holdings Ltd. (operating as Wilsons Gas Stops)
- Convenience Industry Council of Canada
- Groupe F. Dufresne (Pétroles Cadeko Inc.)
- Harnois Énergies
- Imperial Oil Ltd.
- Irving Oil Ltd.
- Michaud Petroleum Inc.
- Parkland Corporation
- Sobeys Capital Inc.
- Taylor Petroleum (1985) Ltd.
- Valero Energy Inc.

4.2. Consultations completed

We contacted each of the organizations noted above to request introductory calls on an individual basis with representatives from the organizations. [Appendix B – Stakeholder Consultations](#) indicates which organizations participated in initial discussions with our team. During our discussions with stakeholders, we provided an overview of the Clean Fuel Regulations, the introduction of a carbon cost adjustor mechanism concept in New Brunswick legislation and an overview of the purpose of our review. We invited stakeholders to share their insights and opinions on the matter of a proposed cost of carbon adjusting mechanism for the province of New Brunswick and thoughts regarding its implementation in considering the timeline proposed by the Clean Fuel Regulations. We provided opportunities for contacted stakeholders to express any support and/or concerns that they may have in relation to the potential carbon adjustor and welcomed participants to share any information we should consider during our review. The feedback gathered and key themes expressed by stakeholders through our consultation process are summarized below.

4.3. Themes identified during consultation

While the level of detail in the stakeholder discussions varied from organization to organization, we found some general themes:

- 1) Generally, a cost of carbon adjustor mechanism was viewed as a flow through charge for most wholesalers and retailers. Some participants expressed concerns with the public understanding of the cause of future price increases and the feedback they expect to receive from the public.
- 2) Some participants expressed the need for a cost of carbon adjustor mechanism to have the flexibility to adapt to changing market conditions regularly while balancing the administrative burden of updating the adjustor.
- 3) It was acknowledged that the market for carbon credits and information about potential compliance options are rapidly evolving at this time. Therefore, it was noted by some participants that any adjustor mechanism established today should be an interim solution which is reviewed regularly over the next 18 to 24 months.
- 4) Many stakeholders participated in the discussion but expressed an interest in following the matter further and providing input to the regulatory process once more information is publicly available.

5. Potential cost of carbon adjustor formula

At the time of this report, a carbon credit trading system has not been fully established and is not expected to be in place prior to the July 1, 2023, implementation date of the cost of carbon adjustor. As a result, we have proposed an interim approach to calculating the cost of carbon adjustor until the carbon credit trading system is established and has reached a state of liquidity ("Interim CCA Formula"). The Interim CCA Formula assumes that until the carbon credit market is established and there is liquidity within the market, the primary pathway to compliance with the CFR for primary suppliers in Atlantic Canada will rely heavily on HDRD. This assumption was discussed with industry associations and primary suppliers of fuels to the region. During these consultations it was discussed that while some additional opportunities for ethanol blending in gasoline exist, this is limited and HDRD provides the most likely approach to achieving compliance in the short term. Furthermore, some stakeholders noted that it would be difficult to independently verify the compliance costs associated with further ethanol blending for the purpose of updating the Interim CCA Formula.

As a result, we have recommended a multi-step calculation to determine the Interim CCA Formula in cents per liter as follows:

- Step 1 – determine the clean fuels regulation credit price
 - In the interim period this is determine based on the difference between the price per liter of RD and the price per liter of low-sulfur diesel in Canadian Dollars.
- Step 2 – convert the incremental credit price per liter calculated in Step 1 to a credit price per tonne.
- Step 3 – apply the resulting CFR adjustor from Step 2 by fuel type i.e. 1) ultra-low sulfur diesel and 2) gasoline.

We recommend that the Board reviews the Interim CCA Formula regularly to consider the appropriateness of continuing the adopted formula based on both current market conditions as well as the evolution of the establishment of the carbon credit trading systems. Based on current market conditions we recommend this review be completed every six months.. Below is an illustrative calculation of the proposed mechanism:

Step 1 - determine the clean fuels regulation credit price		
	Units	Reference
California low carbon fuels standard ("LCFS") credit	USD\$/tonne	A
California low carbon fuels carbon intensity target	gCO ₂ e/MJ	B
California renewable diesel carbon intensity	gCO ₂ e/MJ	C
Difference	gCO ₂ e/MJ	D=B-C
California renewable diesel energy density	MJ/liter	E
Conversion factor		F
Exchange rate	CDN\$:USD\$	G
Low carbon fuels standard credit price	CDN\$/liter	H=A*D*E/F*G
D4 RIN value	USD\$/US gallon	I
Renewable diesel RIN equivalence value	USD\$/US gallon	J
Exchange rate	CDN\$:USD\$	G
Conversion US gallon to liter		K
D4 RIN price	CDN\$/liter	L=I*J*G/K
Interim clean fuels regulations credit price	CDN\$/liter	M=H+L
Step 2 – convert the credit price per liter calculated in Step 1 to a credit price per tonne		
	Units	Reference
Clean fuels regulation liquid class reference carbon intensity	gCO ₂ e/MJ	N
Clean fuels regulation renewable diesel default carbon intensity	gCO ₂ e/MJ	O

Incremental carbon intensity	gCO ₂ e/MJ	P=N-O
Clean fuels regulation renewable diesel energy density	MJ/liter	Q
Conversion factor		F
CFR credit price per tonne	CDN\$/tonne	R=M/P/Q*F

1

Step 3 – apply the CFR adjustor from Step 2 by fuel type i.e. 1) ultra-low sulfur diesel and 2) gasoline.		
	Units	Reference
Clean fuels regulations default carbon intensity	gCO ₂ e/MJ	S
Clean fuels regulation carbon target	gCO ₂ e/MJ	T
Incremental	gCO ₂ e/MJ	U=S-T
Clean fuels regulation energy density	MJ/liter	V
Conversion factor		F
Proposed Cost of Carbon Adjustor	CDN\$/liter	W=R*U*V/F

2

3 Once the carbon credit trading system has been established and has reached a state of market liquidity, the
 4 Board may wish to revise Step 1 of the Interim CCA Formula to reflect the following (Step 2 and 3 remain
 5 unchanged):

- 6 • Step 1 – determine the Canadian clean fuels regulation credit price
 - 7 ○ While the exact source is unclear as of the date of this report it could come from Government
 8 published credit market reports or through third parties such as Argus etc.

9 5.1. Sources of information

10 We have included an illustrative calculation using the proposed carbon adjustor formula calculation in [Appendix](#)
 11 [C – Sample calculation](#).

12 Currently, the California LCFS is a market-based program meant to reduce the carbon intensity of fuels in
 13 California. This market has been in place for some time and as a result is a reasonable proxy for market pricing
 14 for the import value of the incremental cost of RD over regular ultra-low sulfur diesel.

15 Based on our consultations, industry participants generally agreed that both Platts and Argus are suitable third-
 16 party sources of industry data for Board consideration in petroleum price setting in the Province of New
 17 Brunswick. Some industry participants did indicate that the primary publication relied upon for the trade of
 18 petroleum products in their organization is Argus. We acknowledge that the New York Harbour amount currently
 19 included in the petroleum pricing calculation in New Brunswick relies on reporting from Platts. We found both
 20 Argus and Platts to be reputable sources of market information for the industry. When asked, the stakeholders
 21 consulted expressed a preference of moving to Argus for all components of the petroleum pricing calculation.
 22 However, we specifically discussed if there would be any negative implication to industry from the continued use
 23 of Platts for NYH pricing if the Board should adopt Argus as the source of information pertaining to renewable
 24 fuels or the carbon adjustor mechanism.

1 Appendix A – Documents referenced

2 The following table provides a summary of the external documents referenced during our review:

#	Source
1.	Legislative Assembly of New Brunswick – An Act Respecting Petroleum Products Pricing – December 16, 2022
2.	Government of Canada Website - Compliance with the Clean Fuel Regulations – Compliance with the Clean Fuel Regulations – Canada.ca
3.	Clean Fuel Regulations: SOR/2022-140 – Canada Gazette, Part II publication date: July 6, 2022
4.	Regulatory Impact Analysis Statement – Clean Fuel Regulations
5.	Assessment of petroleum product benchmark options to support price regulation in the Atlantic Provinces – Gardner Pinfold Consultants Inc. – July 2022
6.	Advanced Biofuels Canada – Renewable Hydrocarbon Diesel – https://advancedbiofuels.ca/
7.	New Brunswick Energy and Utilities Board – Past Petroleum Prices – December 2022 – https://nbeub.ca/past-petroleum-prices
8.	Nova Scotia Utility and Review Board – Prices Prescribed for Petroleum Products under the Petroleum Products Pricing Act – December 2022 – https://nsuarb.novascotia.ca/sites/default/files/gasprice_141.pdf
9.	Prince Edward Island Regulatory & Appeals Commission – Gas Retail Pumps – All Brands – December 2022 – https://irac.pe.ca/petrol/historical-pricing-data/?effDate=2022-12-30
10.	Newfoundland and Labrador Board of Commissioners of Public Utilities – December 2022 – Compliance with the Clean Fuel Regulations – Canada.ca
11.	Newfoundland & Labrador Board of Commissioners of Public Utilities – 2022-2023 Petroleum Products Pricing Review – Consultation Document – January 17, 2023
12.	Kalibrate – Phase 1 Report: Preliminary and Background Market Review – Newfoundland and Labrador Board of Commissioners of Public Utilities – November 3, 2022
13.	Canadian Fuels Association – Driving Towards Canada’s Net Zero Goals – Federal CFR and other policies bound to impact Atlantic Price Regulations – January 18, 2023
14.	Canadian Fuels Association – Federal CFR Impacts in Atlantic Canada – CFA concerns and potential solution to the CFR impacts on Atlantic Price Regulation – October 2022
15.	Environment and Climate Change Canada – Clean Fuel Regulations Credit and Tracking System – User Guide for Verification Bodies – February 2023
16.	Environment and Climate Change Canada – 2020 Expert Assessment of Carbon Pricing Systems – A report prepared by the Canadian Institute for Climate Choices

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Appendix B – Stakeholder consultations

The following table provides a summary of the industry consultations completed:

#	Company	Date consultation completed
1	Canadian Fuels Association	January 30, 2023 February 8, 2023 February 22, 2023
2	Cape D'Or Holdings Ltd. (Wilson's Gas Stops)	February 17, 2023
3	Convenience Industry Council of Canada	January 27, 2023
4	Groupe F. Dufresne (Pétroles Cadeco Inc.)	February 10, 2023 February 20, 2023
5	Harnois Énergies	February 9, 2023
6	Imperial Oil Ltd.	February 27, 2023
7	Irving Oil Ltd.	January 25, 2023 February 15, 2023
8	Michaud Petroleum Inc.	February 17, 2023
9	Sobeys Capital Inc.	February 1, 2023

The following includes a list of parties that were contacted but consultation discussions were not completed prior to the date of this report:

#	Company
1	Parkland Corporation
2	Taylor Petroleum (1985) Ltd.
3	Valero Energy Inc.

Appendix C – Sample calculation

The following table provides a sample of the proposed cost of carbon adjutor:

Step 1 - determine the clean fuels regulation credit price				
	Units	Reference	Inputs	Source
California low carbon fuels standard ("LCFS") credit	USD\$/tonne	A	73.46	[1]
California low carbon fuels carbon intensity target	gCO ₂ e/MJ	B	89.15	[2]
California renewable diesel carbon intensity	gCO ₂ e/MJ	C	55.05	[3]
Difference	gCO ₂ e/MJ	D=B-C	34.10	
California renewable diesel energy density	MJ/liter	E	35.52	[4]
Conversion factor		F	1,000,000.00	[5]
Exchange rate	CDN\$:USD\$	G	1.35	[6]
Low carbon fuels standard credit price	CDN\$/liter	H=A*D*E/F*G	0.12	
D4 RIN value	USD\$/US gallon	I	1.75	[7]
Renewable diesel RIN equivalence value	USD\$/US gallon	J	1.70	[8]
Exchange rate	CDN\$:USD\$	G	1.345	
Conversion US gallon to liter		K	3.79	[9]
D4 RIN price	CDN\$/liter	L=I*J*K/G	1.06	
Interim clean fuels regulations credit price	CDN\$/liter	M=H+L	1.18	

- [1] - California Air Resources Board ("CARB") [Weekly LCFS Credit Transfer Activity Reports](#)
[2] - California Air Resources Board ("CARB") [RESO 18-34 LCFS Attachment A Final Reg Order - Table 2](#)
[3] - California Air Resources Board ("CARB") [LCFS Pathway Certified Carbon Intensities](#)
[4] - Argus - Methodology and Specifications Guide [www.argusmedia.com](#)
[5] - Argus - Methodology and Specifications Guide [www.argusmedia.com](#)
[6] - Bank of Canada - 2023-02 Exchange Rate [www.bankofcanada.ca](#)
[7] - Argus - Issued Weekly [Argus Media - Sample Report](#)
[8] - Code of Federal Regulations (CFR) [80.1415 -- How are equivalence values assigned to renewable fuel?](#)
[9] - 1 US liquid gallon = 3.78541 liters

Step 2 – convert the credit price per liter calculated in Step 1 to a credit price per tonne				
	Units	Reference	Inputs	Source
Clean fuels regulation liquid class reference carbon intensity	gCO ₂ e/MJ	N	89.20	[10]
Clean fuels regulation renewable diesel default carbon intensity	gCO ₂ e/MJ	O	35.00	[11]
Incremental carbon intensity	gCO ₂ e/MJ	P=N-O	54.20	
Clean fuels regulation renewable diesel energy density	MJ/liter	Q	34.92	[12]
Conversion factor		F	1,000,000.00	
CFR credit price per tonne	CDN\$/tonne	R=M/P/Q*F	621.71	

- [10] - Clean Fuel Regulations (SOR/2022-140) [Schedule 1](#)
[11] - Clean Fuel Regulations (SOR/2022-140) [Section 170\(1\)](#)
[12] - Clean Fuel Regulations (SOR/2022-140) [Schedule 2](#)

Step 3 – apply the CFR adjutor from Step 2 by fuel type i.e. 1) ultra-low sulfur diesel and 2) gasoline.					
	Units	Reference	Gasoline	Diesel	Source
Clean fuels regulations default carbon intensity	gCO ₂ e/MJ	S	95.00	93.00	[13]
Clean fuels regulation carbon target	gCO ₂ e/MJ	T	91.50	89.50	[14]
Incremental	gCO ₂ e/MJ	U=S-T	3.50	3.50	
Clean fuels regulation energy density	MJ/liter	V	34.69	38.65	[15]
Conversion factor		F	1,000,000.00	1,000,000.00	
Proposed Cost of Carbon Adjustor	CDN\$/liter	W=R*U*V/F	0.08	0.08	

- [13] - Clean Fuel Regulations (SOR/2022-140) [Section 5\(1\)](#)
[14] - Clean Fuel Regulations (SOR/2022-140) [Section 5\(1\)](#)
[15] - Clean Fuel Regulations (SOR/2022-140) [Schedule 2](#)



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