Grant Thornton

Newfoundland and Labrador Board of Commissioners of Public Utilities

Review of Clean Fuel Regulations

Report date: June 21, 2023

Contents

1 Executive summary

1.1 Project overview

This report was prepared by Grant Thornton LLP ("we," "us," "our" or "Grant Thornton") as a Consultant to the Newfoundland and Labrador Board of Commissioners of Public Utilities ("the Board") with respect to the *Petroleum Products Act*[1] and the *Petroleum Products Regulations*[2]. We understand that the Board is currently conducting a three-phased Petroleum Products Pricing Review as directed by the Minister of Digital Government and Service NL in connection to the recent amendments to the Petroleum Pricing Act as outlined in Bill 52[3]. In addition to the ongoing Petroleum Products Pricing Review, the Board has asked us to provide information about a potential cost of carbon adjustor mechanism. Throughout this report, when we refer to the cost of carbon adjustor, we are referring to 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)[4] or any other regulatory instrument made under the Canadian Environmental Protection Act, 1999 (Canada)[5] and the Environmental Violations Administrative Monetary Penalties Act (Canada)[6],[7].

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 Act (the "Act") and the Petroleum Products Regulations (the "Regulations").

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[1] Newfoundland and Labrador Board of Commissioners of Public Utilities - Petroleum Products Pricing Act - SNL2001 CHAPTER P-10.1 - PETROLEUM PRODUCTS ACT (assembly.nl.ca)
[2] Newfoundland and Labrador Board of Commissioners of Public Utilities - Petroleum Products Regulations - NLR 79/01 - Petroleum Products Regulations under the Petroleum Products Act (assembly.nl.ca)
[3] Newfoundland and Labrador House of Assembly - Bill 52 - 2021 Bill 52 (assembly.nl.ca)
[4] Clean Fuel Regulations (justice.gc.ca) - Accessed April 10, 2023
[5] Canadian Environmental Protection Act, 1999 (justice.gc.ca) - Accessed April 10, 2023
[6] Government of Canada - The Environmental Violations Administrative Monetary Penalties Act - The Environmental Violations Administrative Monetary Penalties Act - Canada.ca
[7] Legislative Assembly of New Brunswick - Bill 15: An Act Respecting Petroleum Products Pricing - Bill-15.pdf (legnb.ca)

- Performed a jurisdictional scan relating to current petroleum practices in the Atlantic Canadian provinces (including Newfoundland and Labrador, Nova Scotia, New Brunswick, and Prince Edward Island) 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;
- Considered the impact of exceptions specific to Newfoundland and Labrador as outlined Sections 6(2) and 7(2) of the CFR.
- 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 Newfoundland and Labrador;
- Reviewed how carbon compliance obligation costs may be passed on to consumers and how the Board may adjust retail fuel prices to reflect such costs;
- Considered how cost of carbon compliance obligation costs may be applied to communities within Newfoundland and Labrador that may receive seasonal deliveries of fuel prior to July 1, 2023;
- Consulted with industry stakeholders as necessary;
- Reviewed possible methods to setting the potential cost of carbon adjustor; and
- Prepared a report on findings and conclusions reached.

1.3 Restrictions and limitations

This report was prepared for the Board for the purpose of providing recommendations regarding the potential establishment of a cost of carbon adjustor for the province of Newfoundland and Labrador. 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. It 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 report date, 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 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 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 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 ("CCA") Formula.
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. I.e., implementation on July 1, 2023 with a first review completed prior to January 1, 2024 as well as a second review completed by July 1, 2024. It is expected that the first review would be focused on the assumptions and public availability of information.
3.	An illustrative example of the proposed Interim CCA 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

#	Finding, observation, and conclusion
	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 of information that may better reflect market conditions in Atlantic Canada.
5.	As of the Report date, several stakeholders have indicated that CFR is a federal regulation and as a result, their organizations feedback on compliance and a potential Cost of Carbon Adjustor Formula in Newfoundland and Labrador is comparable to their previous comments regarding their operations in New Brunswick and Nova Scotia. While we did contact stakeholders to provide the opportunity for further discussion, some stakeholders indicated that information provided during stakeholder discussions held earlier this year during engagements with the New Brunswick Energy and Utilities Board and Nova Scotia Utility and Review Board remained true under the Newfoundland and Labrador jurisdiction.
6.	This report includes two illustrative calculations. **Appendix C** is the originally proposed CCA Formula prepared during our work. We have reviewed ECCC's comments pertaining to this calculation. Our response to those comments is outlined in the body of this report. To assist the Board with understanding the impact of adopting alternative inputs, we have prepared Scenario #2 illustrative calculation in **Appendix D** for consideration. The Board should note that a mechanism has already been established in New Brunswick that is consistent with the approach outlined in **Appendix C**. Given our comments in finding #1 regarding understandability of the mechanism we believe it is beneficial to have a consistent mechanism adopted throughout Atlantic Canada. Should the Board decide to accept some of the revisions proposed by the ECCC communicating the jurisdictional differences should be considered to encourage the understandability of the Interim Cost of Carbon Adjustor ("CCA") Formula.

2 Background

2.1 Newfoundland and Labrador

We understand that the Board is currently undergoing a Petroleum Pricing Review. For clarity, this Report pertains to the implementation of CFR which comes into effect on July 1, 2023 as a separate matter. Additionally, we understand that as of the date of this report, no amendments have been made to the Act or the Regulations to allow for a potential cost of carbon adjustor mechanism in Newfoundland and Labrador.

2.2 Clean fuel regulations ("CFR") in Canada

CFR in Canada (published in July 2022)[8] 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.[9] 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.[10] 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.[11] 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 ("gCO_2e/MJ") and subsequently increase by 1.5 gCO_2e/MJ per calendar year until reaching a total of 14 gCO_2e/MJ by 2030.[12]

We understand that there are exceptions specific to Newfoundland and Labrador outlined within the CFR. These exceptions have been highlighted below.

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[8] https://www.canada.ca/en/environment-climate-change/services/managing-pollution/energy-production/fuel-regulations/clean-fuel-regulations/about.html. Accessed January 16, 2023.
[9] https://www.canada.ca/en/environment-climate-change/services/managing-pollution/energy-production/fuel-regulations/clean-fuel-regulations.html. Accessed January 16, 2023.
[10] https://www.canada.ca/en/environment-climate-change/services/managing-pollution/energy-production/fuel-regulations/clean-fuel-regulations/about.html. Accessed January 16, 2023.
[11] https://www.canada.ca/en/environment-climate-change/services/managing-pollution/energy-production/fuel-regulations/clean-fuel-regulations/about.html. Accessed January 16, 2023.
[12] https://www.canada.ca/en/environment-climate-change/services/managing-pollution/energy-production/fuel-regulations/clean-fuel-regulations/about.html. Accessed January 16, 2023.

With regards to the volumetric requirement for gasoline, Section 6(2) of the CFR states the exception for Newfoundland and Labrador:

> *"(2) For the purposes of subsection (1), the primary supplier may, for a compliance period, subtract from their pool of gasoline determined in accordance with section 8 any volume of gasoline that, during the compliance period, the primary supplier produced in or imported into Newfoundland and Labrador and sold or delivered for use in that province, if the primary supplier records information that establishes that the volume of gasoline met those conditions."* [13]

Similarly, Section 7(2) of the CFR outlines the exceptions for Newfoundland and Labrador pertaining to diesel volumetric requirements:

> *"For the purposes of subsection (1), the primary supplier may, for a compliance period, subtract from their pool of diesel determined in accordance with section 8 any volume of diesel that, during the compliance period, the primary supplier produced in or imported into Newfoundland and Labrador and sold or delivered for use in that province, if the primary supplier records information that establishes that the volume of diesel met those conditions."*[14]

Based on our discussions with stakeholders, we understand that the impact of the above exceptions will not be significant enough to warrant a customization to the potential cost of carbon adjustor mechanism specific to Newfoundland and Labrador. Rather, stakeholders emphasized that their desire for having a consistent, simplistic adjustor mechanism across the Atlantic provinces and in place by July 1, 2023 far outweighed their concerns of having the adjustor tailored to address matters by province or zone within a province as applicable. Therefore, the proposed cost of carbon adjustor has not been tailored to encapsulate changes for these exceptions.

2.3 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).[15]

When a supplier cannot generate sufficient compliance credits, the CFR includes provisions in which a market-based approach will be employed. This market-based

[13] Clean Fuel Regulations (justice.gc.ca). Accessed May 17, 2023
[14] Clean Fuel Regulations (justice.gc.ca). Accessed May 17, 2023
[15] Compliance with the Clean Fuel Regulations - Canada.ca

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

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

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

In February 2023, Environment and Climate Change Canada ("ECCC") published an update to the clean fuel regulation credit and tracking system ("CATS")[16]. This demonstrates how quickly information surrounding the availability of credits is evolving at the time of this report.

2.4 Compliance in Atlantic Canada

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

[16] Government of Canada – Clean Fuel Regulations Credit and Tracking System - CFR PS RC FS User Guide - EN - IR7 - v2.2 (canada.ca)
[17] https://www.gazette.gc.ca/rp-pr/p2/2022/2022-07-06/html/sor-dors140-eng.html

The Renewable Fuels Regulations (the "Regulations") require fuel producers and importers to have an average renewable content of at least 5% based on the volume of gasoline that they produce or import and of at least 2% of average renewable content based on the volume of diesel fuel and heating distillate oil that they produce or import.[18] Gasoline is typically blended with ethanol and diesel with biodiesel. However, because this is a federal regulation it is applied to the total Canadian volume of product produced or imported. Therefore, the blended fuels are not necessarily adopted in all provinces in Canada. At the time of this report, renewable fuels are more readily available in New Brunswick, than in Nova Scotia and Newfoundland and Labrador. Industry participants noted that there are limitations to the levels of ethanol and biodiesel blending possible due to the limitations of internal combustion engines currently in use in Canada. Throughout stakeholder consultations it was noted that, increased adoption of ethanol blending would achieve some initial momentum however, stakeholders felt that the approach to CFR compliance in Atlantic Canada is the adoption of renewable diesel. We also confirmed with stakeholders that there was no material difference in their comments regarding their operations in New Brunswick, Nova Scotia, and Newfoundland and Labrador.

Therefore, in the short term, there will be a demand for renewable diesel blending for credit generation as the pathway to compliance. For clarity, Advanced Biofuels Canada explains that renewable hydrocarbon diesel ("RHD") is also known as hydrogenation-derived renewable diesel ("HDRD") in Canada, renewable diesel ("RD") in the US, and hydrogenated vegetable oil ("HVO") or green diesel in Europe. The reader may note differences in this terminology based on the market where the product is produced.[19]

Currently, RD is not produced in Canada. As such, it is expected that renewable diesel will have to be imported. RD can be produced from various biomass sources and is fully compatible with existing engines and infrastructure.[20] RD is a product that is comparable to petroleum diesel and can be blended at higher percentages. While RD does not require a major capital investment for blending, stakeholders noted that it is very expensive to produce. Industry participants noted that the value of RD is set primarily by the California LCFS. Importing RD will require industry participants in Atlantic Canada to compete globally based on the evolving demand and supply conditions at the time.

2.5 Government of Canada input

2.5.1 Letter from the Minister of Environment and Climate Change

[18] Environment and Climate Change Canada - https://publications.gc.ca/collections/collection_2019/eccc/en14-28/En14-28-1-2019-eng.pdf
[19] https://advancedbiofuels.ca/fuels-and-tech/renewable-hydrocarbon-diesel-rhd/
[20] https://advancedbiofuels.ca/fuels-and-tech/renewable-hydrocarbon-diesel-rhd/

On May 25, 2023, the Honorable Steven Guilbeault, Federal Minister of Environment and Climate Change released a letter of comment to the Board ("the Letter").[21] The Letter provided information on the Government of Canada's expectations for the cost of complying to the new CFR regulations effective July 1, 2023. Specifically, the Letter addresses compliance flexibilities, existing refinery margins, the impact of the compliance costs on consumers.

The Letter indicates that the CFR offer flexibility to producers through the various approaches available to reach compliance. The letter includes the following:

> *"The design of the Regulations, following an extended period of exhaustive consultations over seven years, also provides flexibility to fuel producers, including oil refiners, to choose the most cost-effective approaches that work best for them"*[22]

While we understand that there are other options available to meet compliance for primary suppliers who serve the market in Atlantic Canada, participants in stakeholder discussions during this review all indicated compliance in the short term (18-24 months) would be achieved through HDRD. Some participants did note that longer term more options would be available but at this time those pathways and the associated costs are unknown. As a result, the potential cost of carbon adjustor calculation in section 5 of this Report assumes that until the carbon credit market is established, the primary pathway to compliance in Atlantic Canada will be supplying low carbon fuels.

With regards to the existing refinery margins in Newfoundland and Labrador, the Letter states:

> *"To put this in perspective, there was a 37-cent increase in the refinery margins in Newfoundland and Labrador between 2019 and 2022, when margins rose from 11.13 cents per liter to 48.98 cents per liter"*[23]

During our work, we have not obtained any actual financial information pertaining to primary supplier margins. As such, we can provide no further comment on this portion of the Letter.

Additionally, the Letter also comments on the impact on consumers stating:

> *"Given these elevated refinery margins and the compliance flexibilities built into the Clean Fuel Regulations, there is no reason the marginal costs of the Regulations should automatically be passed along to consumers."*[24]

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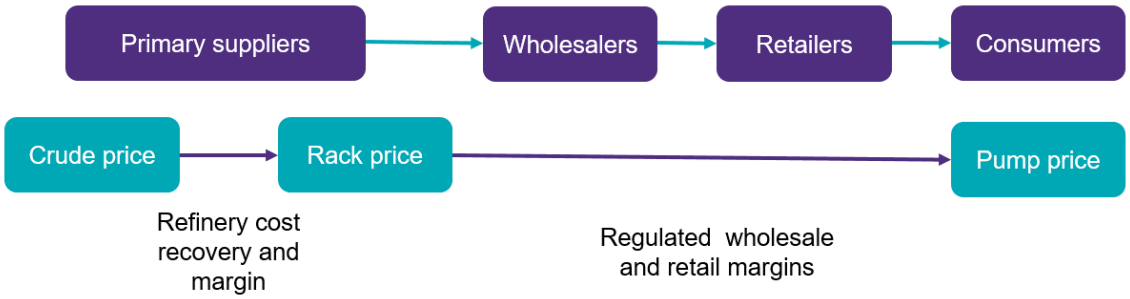
[21] Government of Canada – Letter of Comment from the Federal Minister of Environment and Climate Change – May 26, 2023
[22] Government of Canada – Letter of Comment from the Federal Minister of Environment and Climate Change – May 26, 2023
[23] Government of Canada – Letter of Comment from the Federal Minister of Environment and Climate Change – May 26, 2023
[24] Government of Canada – Letter of Comment from the Federal Minister of Environment and Climate Change – May 26, 2023

Without information regarding primary supplier margins, it is difficult to assess the above comment. However, the Board may wish to review this comment in the context of the variety of ownership structures that exist in the petroleum product supply chain in Newfoundland and Labrador.

For illustrative purposes we have included the following simplified supply chain diagram:



Primary suppliers are organizations that either produce or import gasoline or diesel into Canada. This is the level in the supply chain where the CFR apply. Primary suppliers incur the cost of producing or importing petroleum products. These costs will also include the costs of complying with CFR following July 1, 2023. We believe the refinery margins referred to in the May 26, 2023, letter means the margins primary suppliers earn up to the rack price determination. In Newfoundland and Labrador rack prices are not regulated and as such primary suppliers are able to pass along their supply costs to wholesalers and retailers in the province.

Given that the regulated petroleum pricing in Newfoundland and Labrador starts with the determination of the benchmark price and not the rack price it is possible that CFR costs could be passed along to wholesalers and retailers in the province on July 1, 2023. Without a cost of carbon adjustor mechanism included in the regulated petroleum pricing calculation on July 1, 2023, it is possible that increases in rack prices to reflect CFR costs incurred by primary suppliers will need to be absorbed by wholesalers and/or retailers. Not all wholesalers and retailers in the province have the same or similar ownership to the primary suppliers. As a result, delaying the adoption of a CFR associated adjustment to the regulated petroleum price calculation could potentially have a negative impact on product supply in some areas.

2.5.2 ECCC feedback

On May 26, 2023, the ECCC provided an analysis to Atlantic Canadian regulators (the "ECCC Analysis")[25] commenting on the assumptions and methodologies used in our *Review of the Cost of Carbon Adjustor Mechanism* reports prepared by Grant Thornton[26]. We have reviewed these comments and consulted with ECCC on June 1, 2023, to obtain an understanding of the matters addressed in the ECCC Analysis.

Specifically, the ECCC Analysis notes:

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[25] Environment and Climate Change Canada – Analysis of Third-Party Analyses: Cost of compliance with the Clean Fuel Regulations in Atlantic Provinces using only Renewable Diesel (May 26, 2023)

[26] New Brunswick Energy and Utilities Board - Review of the Cost of Carbon Adjustor (dated February 28, 2023) - 2023 02 28 - NBEUB - Cost of Carbon Adjustor (pdf).pdf

> *"Enough credits are expected to be available in 2023 (13.4Mt in Canada) to allow for compliance with the reduction requirements (4.7Mt in Canada). Annual reduction requirements in Atlantic Canada in 2023 represent 2.7% of the credits expected to be created and banked in 2022 and 2023"*[27]

While we understand ECCC's comments of the availability of credits, there is currently limited publicly available information for the Board to rely upon in future weekly fuel price update calculations. As such, we are not aware of a way these credit costs could be recovered on a per cent a liter basis and have not contemplated this approach in our proposed CCA Formula. Should this information become more readily available, the Board could decide to adjust the inputs into the proposed formula as part of the recommended review every six months.

The ECCC also noted the compliance flexibilities available to regulated parties:

> *"Satisfy up to 10% of compliance obligation for the 2023 compliance period by contributing to the compliance fund set in the CFR at $350 x (Consumer Price Index $_{2023}$/ Consumer Price Index $_{2022}$) per tonne – which is lower than the two analyses estimate based on the purchase of renewable diesel"*[28]

For illustrative purposes, should the Board wish to incorporate the compliance fund into the calculation, we have reflected the 10% compliance fund contribution in the Scenario #2 CCA Formula in **Appendix D**. Given that the compliance costs to suppliers is less than the calculated cost to import renewable diesel as a proxy for compliance costs it's reasonable to assume that where possible primary suppliers will utilize the 10% compliance fund. This revision to the CCA Formula differs from the mechanism that has been approved in New Brunswick and as such the Board should consider if this revision outweighs the benefit of regional consistency.

The ECCC also notes the following compliance flexibility:

> *"Defer 10% of their obligation in 2023 to 2024, until such time they can create credits or more credits are available on the market"*[29]

We understand that including the deferral option in the cost of carbon adjustor could mitigate the increase contemplated on July 1, 2023, as a result of the CFR. However, regulatory practice typically matches cost recovery to the period in which the cost was incurred. As such, the proposed mechanism does not incorporate an adjustment for a short-term compliance deferral.

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[27] Environment and Climate Change Canada – Analysis of Third-Party Analyses: Cost of compliance with the Clean Fuel Regulations in Atlantic Provinces using only Renewable Diesel (May 26, 2023)
[28] Environment and Climate Change Canada – Analysis of Third-Party Analyses: Cost of compliance with the Clean Fuel Regulations in Atlantic Provinces using only Renewable Diesel (May 26, 2023)
[29] Environment and Climate Change Canada – Analysis of Third-Party Analyses: Cost of compliance with the Clean Fuel Regulations in Atlantic Provinces using only Renewable Diesel (May 26, 2023)

With regards to the selection of carbon intensity values, ECCC recommended the following:

> *"For California, the CI values seemed to have been based on approved CI values for renewable diesel from soybean oil. The average of the approved CI values for renewable diesel produced from soybean oil and canola oil may be used (56.9gCo_2e/MJ)."*[30]

The proposed CCA Formula includes soybean-based feedstock. This input into the CCA Formula relies upon the LCFS Pathway Certified Carbon Intensities published by the California Air Resources Board.[31] At the time of this analysis the referenced tables did include two data points pertaining to the energy density of renewable diesel produced with canola oil feedstock. We have found no reason why the Board should exclude canola oil from the analysis. However, given that at the time of our review, there were only two data points noted in the table and both of those data elements pertained to the same fuel producer the Board is encouraged to closely monitor the availability of data pertaining to Canola Oil Feedstock should the interim mechanism approved include this data. As of the date of this report, including canola oil in the analysis does not significantly change the outcome of the calculation. However, given the small population size for carbon intensity data on the canola oil feedstock sourced product, the Board should monitor the information for potential outliers that would incorporate enhanced volatility into the calculation. Our illustrative calculation included in **Appendix C** only includes soybean oil feedstock as it was the most common source in the population reviewed. The Scenario #2 calculation in **Appendix D** includes both soybean and canola oil feedstock for the Board's consideration.

With regards to the CFR default carbon intensity, ECCC recommended the following:

> *"For the CFR, a default CI value of 35 gCO2e/MJ was used. The CI will be calculated from the Fuel LCA Model based on facility-specific data. CI values determined using ECCC's Fuel LCA Model are anticipated to be lower than default CI values. Approved CI values under BC LCFS for HDRD may be used to estimate the CI values of renewable diesel under the CFR at this time. As feedstock types are not indicated, ECCC suggests using the average of the approved CI values greater than 25 (that are likely representative of HDRD produced from soybean oil and canola oil) (29.7 gCO_2e/MJ)."*

ECCC has proposed a methodology for determining the carbon intensity of renewable diesel. We reviewed these alternatives and can offer the following comments:

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[30] Environment and Climate Change Canada – Analysis of Third-Party Analyses: Cost of compliance with the Clean Fuel Regulations in Atlantic Provinces using only Renewable Diesel (May 26, 2023)

[31] https://ww2.arb.ca.gov/resources/documents/lcfs-pathway-certified-carbon-intensities

- The ECCC Fuel LCA Model is a publicly available tool to calculate the life cycle carbon intensity (CI) of fuels and energy sources used and produced in Canada. As such we would agree this is a suitable source for the carbon intensity input for the CCA Formula.
- Approved CI values under BC LCFS for HDRD were also reviewed. Given that the feedstock is not reported on these reports we are unable to conclude on whether excluding CI values greater than 25 focuses the data on products derived from canola oil and soybean oil feedstock.

Scenario #2 CCA Formula in **Appendix D** uses 29.7 gCO2e/MJ in as the assumption referenced as O in the calculation.

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.[32] 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).

	Newfoundland & Labrador[33]	Nova Scotia[34]	New Brunswick[35]	Prince Edward Island[36]
Year in which regulation introduced	2001	2006	2006	1991
Adjustment timeframe	Weekly (Thursday)	Weekly (Friday)	Weekly (Friday)	Weekly (Friday)
Benchmark used	New York Harbor Spot	New York Harbor Spot	New York Harbor Spot / Discretion	Charlottetown Rack
Average benchmark price timeframe	7 days	5 days	5 days	Prior week

[32] Newfoundland & Labrador Board of Commissioners of Public Utilities - 2022-2023 Petroleum Products Pricing Review (issued January 17, 2023).
[33] http://www.pub.nl.ca/PP_historial2022.php
[34] https://nsuarb.novascotia.ca/sites/default/files/gasprice_141.pdf
[35] https://nbeub.ca/past-petroleum-prices
[36] https://irac.pe.ca/petrol/historical-pricing-data/?effDate=2022-12-30

	Newfoundland & Labrador[33]	Nova Scotia[34]	New Brunswick[35]	Prince Edward Island[36]
Extraordinary adjustments/ criteria	(+/-) 6 to 8 cpl change in daily or running average (all fuels)	(+/-) 6 to 8 cpl change in average benchmark price over two days (gas and diesel)	Discretionary	Discretionary based upon daily assessment of prices and impact
Interrupter	✓	✓	✓	✓
Wholesale margin (cpl)	15.65	9.65	6.51	5.0
Retail margin (cpl)	10.28	7.6	8.46	8.0
Fixed minimum retail price	X	✓	X	✓
Transportation /zone differentials (cpl zone range)	0.0 - 32.99	0.6 - 2.3	Actual to maximum of 3.75	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)	7.5	15.5	10.87	8.47
Harmonized sales tax (HST) %	15%	15%	15%	15%
Maximum retail price (as at indicated date) $ / L (December 31, 2022)	1.625	1.50	1.54	1.587

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

- **Benchmark –** The benchmark prices included within the maximum prices represent the cost of the product and are adjusted regularly to reflect the most recent product cost data as stipulated within the provincial petroleum pricing regulations. Benchmark prices are established by the regulator based upon the available commodity market data reported over the period since the last adjustment. The New York Harbor ("NYH") spot price is used for each Atlantic province benchmark price except PEI. NBEUB has discretion to use another

source and method of calculating benchmark prices. PEI uses the Charlottetown Rack as its benchmark.

- **Wholesale and Retail Margin –** The wholesale and retail margin or markups reflect the costs of supply. The margin is set by the regulator periodically following a board review.
- **Transportation / zone differential –** Pricing zones included in the maximum prices provide differential costs to be added reflective of the transportation costs required to the respective zones in each province. Newfoundland and Labrador has 26 pricing zones, Nova Scotia has six, New Brunswick has one plus the Parish of Grand Manan, and Prince Edward Island has one pricing zone.
- **Carbon tax –** The federal government carbon tax was introduced in 2019. The carbon tax applies in provinces that have not adopted a carbon pricing model that meets the federal standard. This currently equals 11.05 cents per liter for gasoline and increases each year up to 2030. Previously, Nova Scotia was exempt from federal carbon tax as it adopted a carbon pricing model (i.e., Cap & Trade program). The carbon tax for Nova Scotia under the Cap & Trade program priced at the floor price of the next auction plus any adjustment required based on settlement price at the most recent auction, converted into Canadian cents per liter until the July 1, 2023 implementation of the federal carbon tax in Nova Scotia.
- **Federal excise tax –** The federal excise tax is currently set at 10.0 cents per liter for gasoline.
- **Provincial fuel tax** – Each province has a distinct provincial fuel tax.

3.2 Status of pricing reviews across Atlantic Canada

3.2.1 New Brunswick

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.*"[37]

Furthermore, in 2023, the New Brunswick Energy and Utility Board ("NBEUB") engaged Grant Thornton LLP to propose the criteria and procedures that the NBEUB

[37] Legislative Assembly of New Brunswick - Bill 15: An Act Respecting Petroleum Products Pricing - Bill-15.pdf (legnb.ca)

may follow in setting the cost of carbon adjustor as expressed in Canadian cents per litre ("cpl"). The NBEUB issued their decision on Matter 549 on June 13, 2023. Details regarding the review completed and the factors considered in the NBEUB's decision are publicly available on the NBEUB's website.[38] The NBEUB concluded that:

> *"The Board establishes the formula and its inputs attached as Appendix "A" as the initial mechanism for setting the cost of carbon adjustor component of maximum motor fuel prices calculated according to the PPPA and the General Regulation. No later than early in 2024, the Board will conduct a review of the ongoing appropriateness of the various aspects of the formula, based on both current market conditions as well as the evolution of carbon credit trading systems in Canada"*

We note that the initial mechanism established by the NBEUB is consistent with the methodology detailed in **Appendix C**.

3.2.2 Nova Scotia

In 2022, the 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 ("New York Harbor") 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.[39]

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.

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[38] New Brunswick Energy & Utilities Board - All Current and Past Matters and Decisions (nbeub.ca)

[39] Gardner Pinfold Consultants Inc. - Assessment of petroleum product benchmark options to support price regulation in the Atlantic Provinces - July 2022

- 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.

The NSUARB's ongoing Petroleum Products Wholesale Margin Review (M10853) is considering several items including:

- The benchmark price for gasoline and diesel;
- A review of the issues regarding the increased New York Harbor spread between regular and premium gasoline;
- The appropriate reporting source for all grades and types of petroleum products; and
- The impact, if any, of ethanol on the wholesale margin and benchmark price[40].

In response to this matter, we understand that the NSUARB had engaged R Cube Economic Consulting Inc to prepare the "Report – Wholesale Margin Review for NSUARB".[41] In this report R Cube Economic Consulting Inc recommended a new framework to evaluate the appropriate price spread between premium and regular gasoline.

As part of this matter, in 2023, the NSUARB engaged Grant Thornton to prepare a report proposing the criteria and procedures the NSUARB may follow in setting the cost of carbon adjustor. We understand that our report is still before the NSUARB under matter M10853[42] and a decision regarding the petroleum pricing adjustor is undetermined as of the date of this report. However, Grant Thornton's report prepared for the NSUARB is publicly available as referenced below.[43] On June 1, 2023 the Nova Scotia Governor in Council amended the Petroleum Products Pricing Regulations, N.S. Reg. 286/2009. These amendments included the establishment of a clean fuel adjustor as follows:

> *""clean fuel adjustor": means 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 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);"*

The amendments also include Section 17A pertaining to the clean fuel adjustor:

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[40] Nova Scotia Utility and Review Board - Notice of Public Hearing; Matter 10853 - UARB15 (APUARB11) (novascotia.ca)
[41] Wholesale Margin Review for NSUARB - R Cube Consulting Inc - March 9, 2023 - UARB15 (APUARB11) (novascotia.ca)
[42] Nova Scotia Utility and Review Board | Nova Scotia Utility and Review Board
[43] Nova Scotia Utility and Review Board - Review of the Cost of Carbon Adjustor Mechanism - Grant Thornton LLP

*"**17A(1)**At any time, the Board may on its own motion investigate a methodology for setting a clean fuel adjustor amount to ensure that it is just and reasonable in light of the application of 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).*

***(2)**On application by any of the following, the Board must carry out an investigation under subsection (1):*

(a)a retailer, wholesaler or wholesaler-retailer;

(b)any 5 persons, firms or corporations;

(c)the Minister.

***(3)**In investigating the methodology for setting a clean fuel adjustor amount, the Board may consider any information the Board considers relevant, including any of the following:*

(a)written submissions from primary suppliers, wholesalers, retailers and the consumer advocate regarding the financial and administrative burdens associated with the application of 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);

(b)conclusions drawn from reports from compliance credit markets under the Clean Fuel Regulations (Canada);

(c)the cost of renewable fuel;

(d)wholesaler and retailer acquisition costs;

(e)any other information the Board considers relevant to the application of 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).

***(4)**Following an investigation, the Board may make an order establishing the methodology for setting a clean fuel adjustor amount, but no order may be made by the Board until a public hearing or inquiry is held.*

***(5)**The Board may set a clean fuel adjustor amount at any time the Board considers appropriate, using*

(a)the methodology established in an order made under subsection (4); and

(b)the criteria and procedure determined by the Board.

***(6)**The clean fuel adjustor amount must be expressed in Canadian cents per litre to the nearest one-hundredth of a cent or in another unit of measurement appropriate to the petroleum product."* [44]

[44] Nova Scotia Utility and Review Board – Petroleum Products Pricing Regulations

3.2.3 Prince Edward Island

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

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
- Parkland Corporation
- Wilsons Fuel Co. Limited
- Irving Oil Ltd.
- Convenience Industry Council of Canada
- Sobeys Capital Inc.
- Harnois Energies Inc.
- Imperial Oil Ltd.
- NARL Marketing Limited Partnership
- Valero Energy Inc.
- Woodward's Oil Limited
- Canadian Tire Corporation, Limited

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 discussions with our team. During our discussions with stakeholders, we provided an overview of the CFR, the potential introduction of a carbon cost adjustor mechanism concept in Newfoundland and Labrador, 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 Newfoundland and Labrador, and thoughts regarding its implementation in considering the timeline proposed by the CFR. 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) During the consultations, we shared our key findings in the New Brunswick Energy and Utilities Board *Review of the Cost of Carbon Adjustor Mechanism*[45], as well as the Nova Scotia Utility and Review Board *Review of the Cost of Carbon Adjustor Mechanism*[46]. When asked about any potential differences in their approach to reach compliance in the province of Newfoundland and Labrador, participants concluded that there would be no material difference. Some stakeholders noted that CFR is a federal regulation and their organizations approach to compliance is consistent across their businesses and not impacted on a provincial basis.

6) Some stakeholders also suggested that inputs to the adjustor mechanism should be tied to actual market conditions in the local market where possible. For example, one stakeholder noted that the market for renewable diesel in California is very different than the market that may exist in Canada for this fuel on a long-term basis.

7) When asked about the impact of the CFR exceptions specific to Newfoundland and Labrador, stakeholders indicated that these exceptions would not have a material impact on their compliance costs. Additionally, stakeholders expressed that their desire to have a consistent cost of carbon adjustor mechanism across the Atlantic provinces in place by July 1, 2023. Stakeholders expressed concerns regarding the complexity that would arise if each province used a different adjustor mechanism.

8) We understand that there are areas in Newfoundland and Labrador, specifically in rural parts of Labrador, that receive semi-annual shipments of fuel, typically in June and November. During the consultations, we discussed the potential impact that the July 1, 2023 regulations would have on fuel delivered to retailers via large fuel shipments before July 1st. The majority of stakeholder's consulted expressed that the July 1, 2023 regulations should be applicable to all fuel sold on or after July 1, 2023, regardless of when the fuel was delivered. However, other stakeholders consulted, who are key suppliers in these areas, expressed different perspectives. We understand that the existing practice in these areas is to lock in fuel prices at a pre-determined rate for the entire delivery supply. Stakeholders also raised concerns

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[45] New Brunswick Energy and Utilities Board - Review of the Cost of Carbon Adjustor (dated February 28, 2023) - 2023 02 28 - NBEUB - Cost of Carbon Adjustor (pdf).pdf
[46] Nova Scotia Utility and Review Board - Review of the Cost of Carbon Adjustor (April 12, 2023)

surrounding potential supply issues if certain areas of the province maintain lower fuel prices. Key suppliers in the area felt that only fuel delivered on or after July 1, 2023 should have the adjustor mechanism applied. They advised that price-locking is a regular practice in Labrador and due to the geographic distance between communities, there is limited risk of individuals traveling to these communities and threatening fuel supply. We also understand that the volume of fuel delivered before July 1, 2023, but sold after, may be considered immaterial in the overall volume of fuel transported and utilized in Newfoundland and Labrador.

9) Some stakeholders also raised concerns surrounding the marine transportation costs of getting HDRD to the Atlantic provinces. Stakeholders expressed that the majority of their renewable diesel will be purchased from the U.S. Some stakeholder's felt that the proposed adjustor mechanism was not reflective of the entire cost of transportation. However, other stakeholders felt that the California LCFS credits price plus the D4 RINS value was reflective of the landed price of HDRD. While there are varying opinions on the completeness of transportation costs included in the proposed adjustor mechanism, all stakeholders concluded that they would prefer the existing adjustor mechanism to be in place by July 1, rather than delay its implementation to investigate this matter. Rather, stakeholders concluded that the transportation costs should be considered as an undertaking during the first review of the adjustor mechanism.

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 July 1, 2023. 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 determined 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 review 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			
	Frequency (Note 1)	**Units**	**Reference**
California low carbon fuels standard ("LCFS") credit	Weekly	USD$/tonne	**A**
California low carbon fuels carbon intensity target	Annually	gCO2e/MJ	**B**
California renewable diesel carbon intensity	Weekly	gCO2e/MJ	**C**
Difference		gCO2e/MJ	**D=B-C**

Step 1 – determine the clean fuels regulation credit price			
	Frequency (Note 1)	**Units**	**Reference**
California renewable diesel energy density	Annually	MJ/liter	**E**
Conversion factor			**F**
Exchange rate	Weekly	CDN$:USD$	**G**
Low carbon fuels standard credit price		CDN$/liter	**H=A*D*E/F*G**
D4 RIN value	Weekly	USD$/US gallon	**I**
Renewable diesel RIN equivalence value	Annually	USD$/US gallon	**J**
Exchange rate	Weekly	CDN$: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			
	Frequency (Note 1)	**Units**	**Reference**
Clean fuels regulation liquid class reference carbon intensity	Annually	gCO2e/MJ	**N**
Clean fuels regulation renewable diesel default carbon intensity	Annually	gCO2e/MJ	**O**
Incremental carbon intensity		gCO2e/MJ	**P=N-O**
Clean fuels regulation renewable diesel energy density	Annually	MJ/liter	**Q**
Conversion factor			**F**
CFR credit price per tonne		CDN$/tonne	**R=M/P/Q*F**

Step 3 – apply the CFR adjustor from Step 2 by fuel type i.e. 1) ultra-low sulfur diesel and 2) gasoline.			
	Frequency	**Units**	**Reference**
Clean fuels regulations default carbon intensity	Annually	gCO2e/MJ	**S**
Clean fuels regulation carbon target	Annually	gCO2e/MJ	**T**
Incremental		gCO2e/MJ	**U=S-T**
Clean fuels regulation energy density	Annually	MJ/liter	**V**
Conversion factor			**F**
Proposed Cost of Carbon Adjustor		CDN$/liter	**W=R*U*V/F**

Note 1 – The suggested frequencies at which the references should be updated.

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

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

5.1 Sources of information

We have included an illustrative calculation using the proposed carbon adjustor formula calculation in **Appendix C – Sample Calculation.**

Currently, the 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 RD over regular ultra-low sulfur diesel.

Based on our consultations, industry participants generally agreed that both Platts and Argus are suitable third-party sources of industry data for Board consideration in petroleum price setting in Newfoundland and Labrador. Some industry participants did indicate that the primary publication relied upon for the trade of petroleum products in their organization is Argus. We found both Argus and Platts to be reputable sources of market information for the industry. When asked, the stakeholders consulted expressed a preference of moving to Argus for all components of the petroleum pricing calculation.

Appendix A – Documents referenced

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

#	Source
1.	Advanced Biofuels Canada – Renewable Hydrocarbon Diesel – https://advancedbiofuels.ca/
2.	Canadian Fuels Association – Driving Towards Canada's Net Zero Goals – Federal CFR and other policies bound to impact Atlantic Price Regulations – January 18, 2023
3.	Canadian Fuels Association - The Inflation Reduction Act (IRA) is a Game Changer for Canada's Climate and Energy Security - The Inflation Reduction Act (IRA) is a Game Changer for Canada's Climate and Energy Security - Canadian Fuels Association
4.	Canadian Fuels Association – Federal CFR Impacts in Atlantic Canada – CFA concerns and potential solution to the CFR impacts on Atlantic Price Regulation – October 2022
5.	Environment and Climate Change Canada – Analysis of Third-Party Analyses: Cost of compliance with the Clean Fuel Regulations in Atlantic Provinces using only Renewable Diesel (May 26, 2023)
6.	Environment and Climate Change Canada – Clean Fuel Regulations Credit and Tracking System – User Guide for Verification Bodies – February 2023 - CFR PS RC FS User Guide - EN - IR7 - v2.2 (canada.ca)
7.	Environment and Climate Change Canada – Federal Renewable Fuels Regulations: Overview - Microsoft Word - 1_RFR_Overview_2019-03-25.doc (publications.gc.ca)
8.	Environment and Climate Change Canada – 2020 Expert Assessment of Carbon Pricing Systems – A report prepared by the Canadian Institute for Climate Choices
9.	Gardner Pinfold Consultants - Assessment of petroleum product benchmark options to support price regulation in the Atlantic Provinces - July 2022
10.	Government of British Columbia – Renewable and low Carbon Fuel Requirements Regulation Approved Carbon Intensities - rlcf012_-_approved_carbon_intensities_-_current_20230331.pdf (gov.bc.ca)
11.	Government of Canada - Clean Fuel Regulations - Clean Fuel Regulations (justice.gc.ca)
12.	Government of Canada – Canadian Environmental Protection Act, 199 (S. C. 1999, c.33) - Canadian Environmental Protection Act, 1999 (justice.gc.ca)
13.	Government of Canada - Clean Fuel Regulations: SOR/2022-140 – Canada Gazette, Part II publication date: July 6, 2022
14.	Government of Canada – Letter of Comment from the Federal Minister of Environment and Climate Change – May 26, 2023
15.	Government of Canada Website - Compliance with the Clean Fuel Regulations – Compliance with the Clean Fuel Regulations – Canada.ca

#	Source
16.	Government of Canada - The Environmental Violations Administrative Monetary Penalties Act - The Environmental Violations Administrative Monetary Penalties Act - Canada.ca
17.	Government of Canada Website – What are the Clean Fuel Regulations? - What are the Clean Fuel Regulations? - Canada.ca
18.	Legislative Assembly of New Brunswick - Bill 15: An Act Respecting Petroleum Products Pricing; December 16, 2022 - Bill-15.pdf (legnb.ca)
19.	New Brunswick Energy and Utilities Board – Past Petroleum Prices – December 2022 – https://nbeub.ca/past-petroleum-prices
20.	New Brunswick Energy and Utilities Board - Review of the Cost of Carbon Adjustor - February 28, 2023 - 2023 02 28 - NBEUB - Cost of Carbon Adjustor (pdf).pdf
21.	Newfoundland and Labrador Board of Commissioners of Public Utilities – Petroleum Products Regulations - NLR 79/01 - Petroleum Products Regulations under the Petroleum Products Act (assembly.nl.ca)
22.	Newfoundland and Labrador Board of Commissioners of Public Utilities – Petroleum Products Pricing Act - SNL2001 CHAPTER P-10.1 - PETROLEUM PRODUCTS ACT (assembly.nl.ca)
23.	Nova Scotia Utility and Review Board - Notice of Public Hearing: Matter 10853 - UARB15 (APUARB11) (novascotia.ca)
24.	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
25.	Nova Scotia Utility and Review Board – Petroleum Products Pricing Regulations - Petroleum Products Pricing Regulations - Petroleum Products Pricing Act (Nova Scotia)
26.	Nova Scotia Utility and Review Board – Review of the Cost of Carbon Adjustor Mechanism (April 12, 2023)
27.	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
28.	R Cube Consulting Inc - Wholesale Margin Review for NSUARB - March 9, 2023 - UARB15 (APUARB11) (novascotia.ca)

Appendix B – Stakeholder consultations

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

#	Company	Date NL focused consultation completed
1	Environment and Climate Change Canada	June 1, 2023
2	Canadian Fuels Association	May 11, 2023
3	Irving Oil Limited	May 11, 2023
4	NARL Marketing Limited	May 12, 2023
5	Woodward's Oil Limited	May 15, 2023
6	Parkland Corporation	May 17, 2023 [1]
7	Imperial Oil Ltd.	May 24, 2023
8	Convenience Industry Council of Canada	January 27, 2023 [2]
9	Sobeys Capital Inc.	May 2, 2023 [3]
10	Valero Energy Inc.	April 6, 2023 [4]
11	Canadian Tire Corporation, Limited	April 11, 2023 [5]

[1] *Parkland Corporation provided comments via email on May 17, 2023, however, prior to this report date they did not confirm whether they were interested in participating in further discussions.*

[2] *We previously consulted with the Convenience Industry Council of Canada on January 27,2023 while engaged by the New Brunswick Energy and Utility Board. On April 28, 2023, the Convenience Industry Council of Canada advised that all commentary provided during our initial consultation remained relevant in the Newfoundland and Labrador jurisdiction.*

[3] *We previously consulted with Sobeys Capital Inc. regarding the cost of carbon adjustor mechanism in February 2023 while engaged by New Brunswick Energy and Utility Board. On April 5, Sobeys Capital Inc. advised that all commentary provided during our initial consultation remained relevant in the organization's Nova Scotia operations. On May 2, 2023, we confirmed that there were no additional comments for their operations specific to Newfoundland and Labrador.*

[4] *We previously consulted with Valero Energy Inc. regarding the cost of carbon adjustor mechanism on April 6, 2023, while engaged by the Nova Scotia Utility and Review Board. On May 1, 2023, Valero Energy Inc. provided additional commentary relevant to their Newfoundland and Labrador operations and advised that their view on the Newfoundland and Labrador market is largely comparable to the commentary provided for the Nova Scotia market.*

[5] *We previously consulted with Canadian Tire Corporation, Limited regarding the cost of carbon adjustor mechanism on April 11, 2023, while engaged by the Nova Scotia Utility and Review Board.*

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	Harnois Energies inc.
2	Wilson Fuel Co. Limited

Appendix C – Sample calculation

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

Step 1 - determine the clean fuels regulation credit price				
	Units	**Reference**	**Inputs**	**Source**
California low carbon fuels standard ("LCFS") credit	USD$/tonne	**A**	73.46	**[1]**
California low carbon fuels carbon intensity target	gCO2e/MJ	**B**	89.15	**[2]**
California renewable diesel carbon intensity	gCO2e/MJ	**C**	56.26	**[3]**
Difference	gCO2e/MJ	**D=B-C**	**32.89**	
California renewable diesel energy density	MJ/liter	**E**	34.25	**[4]**
Conversion factor		**F**	1,000,000.00	**[5]**
Exchange rate	CDN$:USD$	**G**	1.35	**[6]**
Low carbon fuels standard credit price	CDN$/liter	**H=A*D*E/F*G**	**0.11**	
D4 RIN value	USD$/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$/liter	**L=I*J*G/K**	**1.06**	
Interim clean fuels regulations credit price	CDN$/liter	**M=H+L**	**1.17**	

[1] - California Air Resources Board ("CARB")	https://ww2.arb.ca.gov/resources/documents/weekly-lcfs-credit-transfer-activity-reports

Note - at reference A (California LCFS credit) the LCFS Credit Transfer Activity Report tables includes references to zero credit price transfers. While we have not been able to reperform the calculation to arrive at the balance published by the LCFS it appears that the non-zero credit price excludes these transactions. The low carbon fuel standard frequently asked questions defines type 1 transfers as “The LCFS regulation section 95487(b)(1)(B) categorizes credit transfers as follows: Type 1 Transfer: This refers to a credit transfer resulting from an over-the counter agreement for the sale or transfer of LCFS credits for which delivery will take place no more than 10 days from the date the parties enter into the transaction agreement.” The LCFS credit price of US$73.46 per tonne included in the sample calculation included in Appendix C is the average of all the February 2023 transactions reported on the LCFS Credit Transactions Log.

[2] - California Air Resources Board ("CARB")	https://ww2.arb.ca.gov/sites/default/files/2020-07/2020_lcfs_fro_oal-approved_unofficial_06302020.pdf
[3] - California Air Resources Board ("CARB")	https://ww2.arb.ca.gov/resources/documents/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	https://www.argusmedia.com/-/media/Files/sample-reports/argus-americas-biofuels.ashx?la=en&hash=11E8D334DBE87BF0B62EA8FF475212CCF13D3640
[8] - Code of Federal Regulations (CFR)	https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-80/subpart-M/section-80.1415
[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	gCO2e/MJ	**N**	89.20	**[10]**
Clean fuels regulation renewable diesel default carbon intensity	gCO2e/MJ	**O**	35.00	**[11]**
Incremental carbon intensity	gCO2e/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**	**617.29**	

[10] - Clean Fuel Regulations (SOR/2022-140) https://laws-lois.justice.gc.ca/eng/regulations/SOR-2022-140/page-18.html#h-1360777

[11] - Clean Fuel Regulations (SOR/2022-140) https://laws-lois.justice.gc.ca/eng/regulations/SOR-2022-140/page-17.html#h-1360707

[12] - Clean Fuel Regulations (SOR/2022-140) https://laws-lois.justice.gc.ca/eng/regulations/SOR-2022-140/page-19.html#h-1360785

Step 3 – apply the CFR adjustor 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	gCO2e/MJ	**S**	95.00	93.00	**[13]**
Clean fuels regulation carbon target	gCO2e/MJ	**T**	91.50	89.50	**[14]**
Incremental	gCO2e/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**	**0.0749**	**0.0835**	

[13] - Clean Fuel Regulations (SOR/2022-140) https://laws-lois.justice.gc.ca/eng/regulations/SOR-2022-140/page-2.html#h-1358853
[14] - Clean Fuel Regulations (SOR/2022-140) https://laws-lois.justice.gc.ca/eng/regulations/SOR-2022-140/page-2.html#h-1358853
[15] - Clean Fuel Regulations (SOR/2022-140) https://laws-lois.justice.gc.ca/eng/regulations/SOR-2022-140/page-19.html#h-1360785

Appendix D – Scenario #2 CCA Formula

The following table provides a sample of the proposed cost of carbon adjustor under Scenario #2

Step 1 - determine the clean fuels regulation credit price				
	Units	Reference	Inputs	Source
California low carbon fuels standard ("LCFS") credit	USD$/tonne	A	73.46	[1]
California low carbon fuels carbon intensity target	gCO2e/MJ	B	89.15	[2]
California renewable diesel carbon intensity	gCO2e/MJ	C	56.90	[3]
Difference	gCO2e/MJ	D=B-C	32.25	
California renewable diesel energy density	MJ/liter	E	34.25	[4]
Conversion factor		F	1,000,000.00	[5]
Exchange rate	CDN$:USD$	G	1.35	[6]
Low carbon fuels standard credit price	CDN$/liter	H=A*D*E/F*G	0.11	
D4 RIN value	USD$/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$/liter	L=I*J*G/K	1.06	
Interim clean fuels regulations credit price	CDN$/liter	M=H+L	1.17	

[1] - California Air Resources Board ("CARB") https://ww2.arb.ca.gov/resources/documents/weekly-lcfs-credit-transfer-activity-reports

[2] - California Air Resources Board ("CARB") https://ww2.arb.ca.gov/sites/default/files/2020-07/2020_lcfs_fro_oal-approved_unofficial_06302020.pdf

[3] - California Air Resources Board ("CARB") https://ww2.arb.ca.gov/resources/documents/lcfs-pathway-certified-carbon-intensities

Adjusted to reflect ECCC Analysis dated May 26, 2023
Assumption revised to 56.90

[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 https://www.argusmedia.com/-/media/Files/sample-reports/argus-americas-biofuels.ashx?la=en&hash=11E8D334DBE87BF0B62EA8FF475212CCF13D3640

[8] - Code of Federal Regulations (CFR) https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-80/subpart-M/section-80.1415

[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	gCO2e/MJ	**N**	89.20	**[10]**
Clean fuels regulation renewable diesel default carbon intensity	gCO2e/MJ	**O**	29.70	**[11]**
Incremental carbon intensity	gCO2e/MJ	**P=N-O**	**59.50**	
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**	**561.26**	

[10] - Clean Fuel Regulations (SOR/2022-140) https://laws-lois.justice.gc.ca/eng/regulations/SOR-2022-140/page-18.html#h-1360777

[11] - Clean Fuel Regulations (SOR/2022-140) https://laws-lois.justice.gc.ca/eng/regulations/SOR-2022-140/page-17.html#h-1360707

Adjusted to reflect ECCC Analysis dated May 26, 2023
Assumption revised to 29.7

[12] - Clean Fuel Regulations (SOR/2022-140) https://laws-lois.justice.gc.ca/eng/regulations/SOR-2022-140/page-19.html#h-1360785

Step 3 – apply the CFR adjustor 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	gCO2e/MJ	**S**	95.00	93.00	**[13]**
Clean fuels regulation carbon target	gCO2e/MJ	**T**	91.50	89.50	**[14]**
Incremental	gCO2e/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 for 90% RD compliance	CDN$/liter	**W=R*U*V/F**	**0.0681**	**0.0759**	

[13] - Clean Fuel Regulations (SOR/2022-140) https://laws-lois.justice.gc.ca/eng/regulations/SOR-2022-140/page-2.html#h-1358853

[14] - Clean Fuel Regulations (SOR/2022-140) https://laws-lois.justice.gc.ca/eng/regulations/SOR-2022-140/page-2.html#h-1358853

[15] - Clean Fuel Regulations (SOR/2022-140) https://laws-lois.justice.gc.ca/eng/regulations/SOR-2022-140/page-19.html#h-1360785

Step 4 – calculate credit price per tonne for compliance fund	Units	Reference	Inputs	Source
CFR compliance fund price per tonne in 2022	CDN$/tonne	**X**	350.00	**[16]**
Consumer price index current year		**Y**	151.24	**[17]**
Consumer price index 2022		**Z**	155.02	**[18]**
CFR compliance fund price per tonne in 2023		**AA=X*(Z/Y)**	**358.75**	

[16] - Clean Fuel Regulations	SOR-2022-140.pdf (justice.gc.ca)	
[17] - Bank of Canada	Consumer price index - Bank of Canada	*Rolling average of monthly total CPI*
[18] - Bank of Canada	Consumer price index - Bank of Canada	*Average monthly total CPI*

Step 5 – apply the CFR adjustor from Step 4 by fuel type i.e. 1) ultra-low sulfur diesel and 2) gasoline.					
	Units	**Reference**	**Gasoline**	**Diesel**	**Source**
Clean fuels regulations default carbon intensity	gCO2e/MJ	**AB**	95.00	93.00	**[13]**
Clean fuels regulation carbon target	gCO2e/MJ	**AC**	91.50	89.50	**[14]**
Incremental	gCO2e/MJ	**AD=AB-AC**	**3.50**	**3.50**	
Clean fuels regulation energy density	MJ/liter	**AE**	34.69	38.65	**[15]**
Conversion factor		**AF**	1,000,000.00	1,000,000.00	
Proposed Cost of Carbon Adjustor for 10% compliance fund	CDN$/liter	**AG=AA*AD*AE/AF**	**0.0436**	**0.0485**	

Step 6 - Combined cost of carbon adjustor					
	Units	**Reference**	**Gasoline**	**Diesel**	**Source**
Combined Cost of Carbon Adjustor					
Percentage of compliance achieved from renewable diesel		**AH**	90%	90%	
Percentage of compliance from compliance fund		**AI**	10%	10%	
Combined Cost of Carbon Adjustor	CDN$/tonne	**AD = W*AH+AG*AI**	**0.0657**	**0.0732**	

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