

**ECCC Analysis of Third-Party Analyses:**

**Cost of compliance with the Clean Fuel Regulations in Atlantic Provinces using only Renewable Diesel**

On May 4, 2023 it was requested that ECCC provide feedback on the assumptions and methodologies used in two analyses: *Assessment of petroleum product benchmark options to support price regulation in the Atlantic Provinces* by Gardner Pinfold Consultants Inc. and *Review of the Cost of Carbon Adjustor Mechanism* by Grant Thornton Inc.

These analyses present an estimate of the value of a carbon adjustor add-on to gasoline and diesel price assuming compliance with the Clean Fuel Regulations (CFR) is attained solely through the purchase of renewable diesel, until such time that more information becomes available on the credit market. The first credit creation report must be submitted by June 30, 2023 and the first compliance report by July 31, 2024.

The approach used in the two analyses significantly overestimates CFR compliance costs in 2023 compared to ECCC analysis, as published in the Regulatory Impact Analysis Statement (RIAS) accompanying the final regulations (<https://www.canadagazette.gc.ca/rp-pr/p2/2022/2022-07-06/html/sor-dors140-eng.html>).

The following sections present the annual reduction requirements under the CFR in Atlantic Canada in 2023 and 2024, the number of CFR credits anticipated in the CFR market from 2022 to 2024 in Canada as well as comments on the parameters and methodologies used to estimate the value of a carbon adjustor.

**Overview of the Annual Reduction Requirements and Credits Anticipated**

Table 1 presents the annual reduction requirements under the CFR in 2023 and 2024 in Atlantic Canada and in Canada based on ECCC’s 2022 reference case. Table 1 shows that there is a requirement of 0.1Mt and 0.3Mt of credits respectively for 2023 and 2024 in Atlantic Canada.

Note that the exact quantities of diesel used for space heating and gasoline as well as diesel used in remote communities for non-industrial purposes and power generation are unknown and are included in the fossil fuel demand used to calculate the annual reduction requirements presented in Table 1. However, primary suppliers may subtract these quantities from their obligated pool.

**Table 1: Anticipated Annual Reduction Requirements**

|  | 2023 (July 1 to December 31) | 2024 |
|--|------------------------------|------|
| Reduction Requirements in Atlantic Canada (Mt) | 0.4                          | 1.0  |
| Reduction Requirements in NB (Mt)              | 0.1                          | 0.3  |
| Reduction Requirements in NL (Mt)              | 0.1                          | 0.3  |
| Reduction Requirements in NS (Mt)              | 0.1                          | 0.4  |
| Reduction Requirements in PEI (Mt)             | 0.0                          | 0.1  |
| Reduction Requirements in Canada (Mt)          | 4.8                          | 13.9 |

In the RIAS, which is based on ECCC’s 2021 reference case, it is estimated that credit creation from actions that are expected to occur in the baseline, such as credits from low-carbon intensity fuels supplied for federal and provincial blending mandates, plus banked credits from previous years, will be sufficient to fulfill the regulatory requirements for 2023 and 2024. This is shown in Table 2, where there is a surplus of credits of 8.7Mt and 3.8Mt respectively for 2023 and 2024.

**Table 2: Credit estimates between 2022 and 2024 (Millions of credits)**

|                            | 2022 | 2023  | 2024   |
|----------------------------|------|-------|--------|
| Baseline Credits           | 3.7  | 9.7   | 8.8    |
| Banked Credits             | 0    | 3.7   | 8.7    |
| Incremental Credits        | 0    | 0     | 0      |
| Fund                       | 0    | 0     | 0      |
| Credits Created and Banked | 3.7  | 13.4  | 17.5   |
| Credits Required           | (0)  | (4.7) | (13.7) |
| Net Credits                | 3.7  | 8.7   | 3.8    |

Note: Each credit represents a lifecycle emission reduction of one tonne of CO<sub>2</sub>e.

**Compliance Costs Based on Renewable Diesel**

The approach proposed in the two analyses overestimates the CFR compliance costs in 2023 (\$622/t<sup>1</sup>) for the following reasons:

- 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.
- The likelihood that primary suppliers of gasoline and diesel to Atlantic Canada cannot purchase credits on the market is low. Compared to an approach that relies solely on renewable diesel purchase, credit purchase is expected to be lower cost.
- Importers (such as North Atlantic) have more limited credit creation options and may rely more heavily on the credit market in 2023 or on renewable diesel. However, Irving, Valero and Imperial Oil, that own primary terminals in Atlantic Canada, have opportunities to create credits at a lower price (CO<sub>2</sub>e emission reduction projects at their fossil fuel facilities, producing, importing or purchasing ethanol and biodiesel, electric vehicles).
- Compliance flexibilities are available to regulated parties which would lower compliance costs:
  - Satisfy up to 10% of compliance obligation for the 2023 compliance period by making a contribution to the compliance fund set in the Regulations at \$350 x (Consumer Price Index<sub>2023</sub>/Consumer Price Index<sub>2022</sub>) per tonne – which is lower than the two analyses estimate based on purchase of renewable diesel.
  - Defer 10% of their obligation 2023 to 2024, until such time they can create credits or more credits are available on the market.
- Renewable diesel is supplied to BC and the credit costs under BC LCFS has never reached \$622/t<sup>1</sup>. Renewable diesel is also supplied in other provinces. This indicates that the assumptions and calculations used in the analysis *Review of the Cost of Carbon Adjustor Mechanism* tend to overestimate the cost per liter that is necessary to pay in order to purchase renewable diesel in Canada and compete with California.

<sup>1</sup> See variable R in Appendix C of the analysis *Review of the Cost of Carbon Adjustor Mechanism*

- The default CI value of 35 gCO<sub>2</sub>e/MJ was used to estimate credit creation under the CFR. ECCC suggests a CI value is 29.7 29.7 gCO<sub>2</sub>e/MJ reflects an average . (Details provided in “Selection of CI Section” section of this document.)

### Selection of CI Values

The calculation is based on CI values for renewable diesel under California’s LCFS and the CFR, which are used to estimate the number of credits. The choice of the CI values has an impact on results.

- For California, the CI values seemed to have been selected based on approved CI values for renewable diesel from soybean oil. The average of the approved CI values<sup>2</sup> for renewable diesel produced from soybean oil and canola oil may be used (56.9 gCO<sub>2</sub>e/MJ).
- For the CFR, a default CI value of 35 gCO<sub>2</sub>e/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<sup>3</sup> 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<sub>2</sub>e/MJ).

Note that there are important factors to take into considerations when comparing CI values between programs:

- CI values in California are expressed per MJ on a LHV basis while CI values under the CFR and BC LCFS are expressed per MJ on a HHV basis;
- CI values in California include indirect land use change (ILUC) CI values for some feedstocks (corn, sugarcane, soy, canola, sorghum). CI values under BC LCFS and CFR do not include ILUC;
- Different models are used to determine CI values: California GREET, GHGenius, Fuel LCA Model.

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<sup>2</sup> [current-pathways\\_all.xlsx \(live.com\)](#)

<sup>3</sup> [rlcf012 - approved carbon intensities - current 20230331.pdf \(gov.bc.ca\)](#)