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RE: CFS Regulatory Design Paper and January Technical Working Group

We generally support ECCC's December 20th release of the Clean Fuel Standard Regulatory Design Paper. Many of the policy design components chart the right course for the Clean Fuel Standard (the Standard) and we look forward to seeing these reflected in Canadian Gazette 1 as soon as possible.

A strong clean fuel standard would mean new economic activity and employment in the clean fuel sector of up to \$5.6 billion and 31,000 people by 2030. The standard will also be affordable for Canadians, with an estimated household cost of \$2 a month in 2025. Clean fuels are already affordably reducing emissions by more than 4.1 MtCO₂eq a year¹.

The comments in the submission apply to both the regulatory design paper and some of the presentations during the technical working group meeting. We first summarize our support and areas of concern followed by detailed comments by regulatory design paper section and specific presentations at the technical working group.

Summary of support and areas of concern

We fully support:

- **The 23 MtCO₂eq requirement for the liquid stream:** We're encouraged that three quarters of the Standard obligation will be in the liquid stream and strongly support ECCC's aim that these reductions be incremental to other climate actions across Canada.
- **The actions that generate credits:** We also support ECCC's intention to include a broad set of clean fuels including liquid biofuels, electricity, hydrogen and emerging fuels in the liquid stream.
- **Limited trading between fuel streams:** We support a full partition of the liquids fuel stream. This approach provides clean fuel providers with certainty that reductions must occur in the liquid stream which helps clean fuel providers invest in clean fuel facilities. The 10% credit trading between the liquid and other fuel streams does provide obligated parties with flexibility, but we recommend it be a maximum percentage.

Our primary recommendations are:

- **Ensure flexibilities are designed to encourage clean fuel investment, not replace it:** The cumulative impact of flexibilities considered in the regulatory design paper is at least **16 MtCO₂eq** or **70%** of the liquids obligation with the potential to be much higher². Flexibilities

¹ Navius (2018) Biofuels in Canada 2018: Tracking biofuel consumption, feedstocks and avoided greenhouse gas emissions. <https://www.naviusresearch.com/publications/2018-biofuels-in-canada/>. Includes biofuel reductions only. Existing electrification and renewable natural gas use would include additional reductions.

² The Draft Regulatory Design paper includes 10% cross stream trading, 10% deferral of credits, undefined protocols for upstream oil and gas credits, early action credits and an undefined emissions fund. ECCC estimates the protocols will account for 11.3 MtCO₂eq of reductions. The 10% cross stream trading and 10% deferral of credits both allow for 2.3 MtCO₂eq of credits from outside the liquids stream, for a combined

included in the estimate include credit trading between streams, deferred credits, and oil and gas facility improvements. This would include, but is not limited to:

- **Capping flexibilities:** Obligated parties should be limited to some maximum percentage of credits from the combination of deferred credits, cross stream trading, early action credits, facility improvements and the emission reduction fund in any reporting period, depending on the final design of these flexibilities.
- **Transparent protocols for upstream oil investments:** Any protocols developed for upstream oil and gas facility improvements should be developed collaboratively, be publicly available and obligated parties should be held accountable for reporting and demonstrating emission reductions.
- **Market stability measures should have clear objectives and appropriate credit prices:** A functioning market, broad fuel participation and a reasonable target such as the 23 MtCO₂eq target, are the Standard's primary market stability and cost containment measures. Additional measures such as a credit-clearance market and emission reduction fund should maintain the investment signal for clean fuels, while mitigating concerns over credit availability, affordability and clean fuel supply.
- **Clear timeline for developing ILUC values:** We recommend ECCC publish a timeline for consulting, analyzing and proposing ILUC values for all fuels for implementation in 2022. This would include engaging with members of the technical working group, developing Canadian ILUC values and recommending proposed ILUC values for incorporation into the Standard.
- **Ensure electric vehicle credits are reinvested and account for incremental EV sales:** Generally, we believe that electric vehicle credits are underestimated and that the Standard, if designed with reinvestment requirements, will drive incremental additions of electric vehicles across Canada. If EV credits are re-invested, we estimate there would be 70% more electric vehicles on the road when compared to a scenario without the Standard and this would represent **1.4 MtCO₂eq** of incremental reductions. Overall EV credits should be in the range of **4 MtCO₂eq**.

4.6 MtCO₂eq flexibility. In total these sum to 16 MtCO₂eq of reductions which represents the majority of emission reductions in the standard. This is a conservative estimate since it doesn't account for early action credits nor the emissions fund.

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Comments on the Regulatory Design Paper

Application of the Clean Fuel Standard Self-Produced and Used Fuels:

- **Recommend** – We recommend ECCC not provide additional credits for biojet fuel, or any other fuel. The regulatory design paper notes that “[c]onsideration is being given to the use of a multiplying factor for low carbon aviation fuel credits”. Many fuels may attempt to claim special consideration, by providing a multiplier credit for aviation fuels, this enables other fuels to argue for multiplier credits and this could then lead to an overall weakening of the policy. We recommend ECCC and the Canadian Government develop a Clean Fuel Implementation Strategy that could support specific fuel pathways like low carbon aviation fuel, in place of modifying credit values in the Standard.
- **Agree** - Self-produced and used fuels in the gaseous stream should count under life-cycle production of those fuels. “In the gaseous fuel stream, self-produced and used fuels will not have separate carbon intensity reduction requirements.”

Calculating Carbon Intensity

Recommendation - Indirect Land-use Change (ILUC) & Sustainability Criteria:

- **Process for developing ILUC values** - We recommend ECCC establish a timeline for consulting, analyzing and proposing ILUC for all fuels for implementation in 2022. This would include stakeholder engagement with members of the existing technical working group, modeling ILUC values customized for Canada and recommending proposed ILUC values for incorporation into the Standard. Adopting ILUC values post 2025 could have serious consequences for clean fuel providers and obligated parties. ILUC accounting may abruptly change the value of specific low-carbon fuels and potentially strand investments in fuels.
- **Proxy values:** ECCC does not plan to develop ILUC values for the 2022 implementation date and instead is considering proxy values. While we disagree with this approach, it is preferable to no consideration of ILUC. We agree with the types of criteria ECCC is considering like biodiversity, presence of anti-deforestation rules and tracking of feedstocks.

If ECCC pursues this option we recommend ECCC provide at least two categories of fuels as the Council of the European Union has recommended³. Existing evidence suggests that high-ILUC risk feedstocks are primarily in countries and sources where a significant component of new agricultural land occurs in high-carbon stock land like forests or swamp/peat land and depends on specific feedstocks and its country of origin. The ICCT, through a comprehensive literature review, found that palm oil presents the highest ILUC risk with an estimated 40 to 53 percent of new palm oil plantations occurring on high-carbon stock land in Indonesia and

³ Council of the European Union (2018) Proposal for a Directive of the European Parliament and of the Council on the promotion of the use of energy from renewable sources. <https://data.consilium.europa.eu/doc/document/ST-10308-2018-INIT/en/pdf>

Malaysia. Soy and sugarcane also posed high risk in Central/South America where 55% and 85% of crop expansion occurred on high carbon lands between 1990 and 2018 respectively⁴.

If establishing high and low risk distinctions, ECCC would need to first define high and low ILUC risk and criteria for evaluating these distinctions. Fuel providers would then demonstrate why they shouldn't be classified as high risk based on the definition. The General Secretariat of the Council recommended the Council of the European Union provide additional guidance by February 1st, 2019 on criteria for assessing high and low ILUC risk fuels.

The EU includes the following definitions for high and low risk indirect land-use change.

- **High indirect land-use change risk food or feed crop-based biofuels, bioliquids and biomass fuels** [are] produced from food or feed crops for which a significant expansion of the production area into land with high carbon stock is observed⁵.
- **Low indirect land-use change risk biofuels and bioliquids**⁷ means biofuels and bioliquids, the feedstocks of which were produced within schemes which avoid displacement effects of food and feed crop based biofuels, bioliquids and biomass fuels through improved agricultural practices, as well as the cultivation of crops on areas which were previously not used for cultivation of crops and which were produced in accordance with the sustainability criteria for biofuels and bioliquids set out in Article 26. General Secretariat of the Council of the European Union, 2018, Article 2, paragraph u).
- **Carbon intensity look-up tables** in the life-cycle model should include a blank, but visible location for ILUC values to be included. This will remind fuel suppliers and obligated parties that ILUC values are likely to added to the Standard.

Fossil Fuel Carbon Intensity Values

- **Agree** – We agree with the 2016 baseline values for fossil fuel carbon intensity based on lifecycle tool.

Carbon intensity values of renewable and other low-carbon intensity fuels

- **Recommend clearly provide where Energy Effectiveness Ratios will be used and their values.** The regulatory design paper notes that “Some energy effectiveness ratios may be developed for credit generated from specified end-use fuel switching, for example from displacing gasoline with electricity to power light-duty and heavy-duty vehicles” This implies a scenario where energy effectiveness ratios aren't used. We recommend that ECCC use energy effectiveness ratios for light, medium and heavy-duty electric vehicles at a minimum for the liquids portion.

⁴ ICCT (2017) Analysis of High and Low Indirect Land-use Change Definitions in EU Renewable Fuel Policy. https://www.theicct.org/sites/default/files/publications/High_low_ILUC_risk_EU_20181115.pdf

- **Recommend ECCC use updated EER values, in place of following California or British Columbia:** B.C. and California’s developed many of its EER’s a number of years ago when there were limited electric vehicle options for passenger cars and trucks as well as medium and heavy-duty vehicles. Navius Research has completed recent estimates for EER’s for Powerex. This research suggests the following EER’s should be used⁶:
 - **Heavy and Medium Duty Vehicles EER of 5.0 or segment:** Buses and trucks should receive a 5.0 EER, especially when operating in urban environments. Or ECCC could segment EER for more specific uses. Navius found that the EER varies between 2 and 5 depending on the specific diesel to electricity switch.
 - **Light duty vehicles:** Navius suggests an EER value of 4.1 is more representative of the Canadian fleet of vehicles, instead of the 3.4 value currently used in B.C.’s low-carbon fuels standard.

Carbon Intensity Reduction Requirements

- **Agree** – We agree with ECCC’s recommended approach of requiring a 10 g CO₂e per MJ reduction per fossil liquid fuel from a 2016 baseline.

Credit Generation

Compliance Category 1 – Actions that reduce the carbon intensity of the fossil fuel throughout its lifecycle:

- **Agree** - We agree with including actions that reduce the carbon intensity of fossil fuels throughout its lifecycle and that protocols are the appropriate approach.
- **Recommendation:** Any protocols developed for upstream oil and gas facility improvements should be developed collaboratively, be publicly available and obligated parties should be held accountable for reporting and demonstrating emission reductions.

Compliance Category 2 – Supplying low-carbon fuels

- **Agree** – We agree with the approach in the regulatory design paper.

Compliance Category 3 – End-Use Fuel Switching to Electricity

- **Agree** – We support the inclusion of end-use fuel switching to natural gas, propane and electricity and hydrogen as described in the regulatory design paper.
- **Recommend** – We recommend ECCC include renewable natural gas as an available fuel for use in the liquid stream. Renewable natural gas has proved an important credit generation

⁶ Navius Research (2018) Analysis of Energy Effectiveness Ratios for Light and Heavy Duty Vehicles. <https://www.naviusresearch.com/wp-content/uploads/2018/11/BC-EER-Review-Final-Report-2018-11-06.pdf>

opportunity in California. In 2017 it generated 0.7 MtCO₂eq of credits, 7% of total credits in that year⁷.

- **See technical working group comments for comments on electricity generation**

Early Credit Generation

- **Agree** – We agree with including early action credits for actions taken after the publication of Canadian Gazette 2. Early credit generation allows industry to plan earlier and extends the window for developing projects from 2020 to 2030.

Trading between the fuel streams

- **Agree** - We support a full partition of the liquids fuel stream. This approach provides certainty to clean fuel providers that reductions must occur in the liquid stream which will help clean fuel providers invest in clean fuel facilities. The 10% credit trading between the liquid and other fuel streams does provide obligated parties with flexibility, but we recommend it be a maximum percentage.

Meeting Obligations

Credits generated under the federal output-based pricing system and other programs

- **Agree** – We agree that credits generated for compliance with the Standard also reduce the carbon intensity under the Output Based Pricing System and so can count in the Output Based Pricing System.

Additional Compliance Flexibilities

- **Agree & Recommend** – We support a carry forward flexibility but recommend a 5% carry forward. This flexibility's primary objective should be to address small credit deficits that may have resulted from accounting errors, program changes or methodological changes. We agree with a maximum of 2 years and 20% annual interest.
- **Overall & Recommend** – Overall, we recommend that the primary compliance pathways should be investment in clean fuels to reduce greenhouse gas emissions. Flexibilities, market stability mechanisms and the base design of the Standard should facilitate this outcome. Each flexibility mechanism should have a specific objective and the cumulative impact of the flexibilities should not undermine the investment signal to invest in clean fuels. As noted in the introduction we are concerned that the cumulative impact flexibilities and market stability mechanisms could undermine the clean fuel investment signal, depending on the design of the mechanisms. Obligated parties should demonstrate reasonable attempts to comply with the standard at each step before accessing further flexibilities. The table below summarizes the objectives and an approach for each cost containment action.

⁷ CARB (2018) Low Carbon Fuel Standard Dashboard. <https://www.arb.ca.gov/fuels/lcfs/lcfs.htm>

Step	Action	Description
1	Base Design of the Standard	<ul style="list-style-type: none"> • Objective: Demonstrate reasonable ability to meet targets at reasonable costs. • Appropriate Targets: The 23 MtCO₂eq target for the liquids stream is appropriate. • Broad Fuel & Reduction: Mix of biofuel, RNG, electricity, opportunities for other fuels including by industry such as fuel substitution for ore hauling at mining operations, and facility improvements at refineries and upstream oil and gas. • Functioning Market: Market rules and credit ownership are clear and credits are easily traded.
2	Flexibility – carry forward	<ul style="list-style-type: none"> • Objective: Address small credit deficits that may have resulted from accounting errors, program changes or methodological changes. • Carry Forward: <5% carry forward to address small credit deficits that may have resulted from accounting errors, program changes or methodological changes.
3	Market Stability – Credit Clearance Market	<ul style="list-style-type: none"> • Objective: Facilitate short-term credit imbalances. • Credit Clearance Market: Establish a credit clearance market with a credit price set at \$250 per tonne CO₂eq.
4	Flexibility – Cross Stream Trading	<ul style="list-style-type: none"> • Objective: Facilitate short-term credit limitations, while ensuring greenhouse gas reductions in the Standard. • We prefer no cross-stream trading. ECCC’s proposed 10 per cent level should be a maximum and only accessible if the credit clearance market is unsuccessful.
5	Emission reduction fund	<ul style="list-style-type: none"> • Objective: Cap costs and address potential for limited credits. • The emission reduction fund should be the last resort and only used if obligated parties have in good faith pursued all other options for credit generation in the liquids stream and a small portion of cross stream trading. It can also serve as a guaranteed cap on costs for the program. • We recommend a compliance penalty of at least \$350 per tonne, indexed to inflation. We recommend this value to both preserve the signal to invest in clean fuels while ensuring an affordable standard for

		<p>Canadians and businesses. Should additional measures be added later this price may increase as California has done with its \$1,000 non-compliance penalty.</p> <ul style="list-style-type: none"> Funds raised could then be auctioned to the most effective projects delivering carbon reductions within each stream. For example, any funds raised in the liquid stream would then support reductions in the liquid stream.
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Comments on Technical Working Group Meeting Jan. 2018 – Clean Fuel Standard: Carbon Intensity Reduction Requirement for the Liquid Stream

“Credits from electric vehicles: 1-2 Mt were estimated assuming incremental reductions compared to the ZEV strategy baseline in 2030” & “Credits for electric vehicles are not attributed to measurable incremental reductions in the CFS”

Generally, we believe that electric vehicle credits are underestimated and that the Standard, if designed with reinvestment requirements, will drive incremental additions of electric vehicles across Canada. If EV credits are re-invested, we estimate there would be 70% more electric vehicles on the road when compared to a scenario without the Standard and this would represent **1.4 MtCO₂eq** of incremental reductions.

Recommend - We recommend all electricity for transportation be allowed to generate credits under the Standard. Our and Navius’ research estimated ~**4 MtCO₂eq** credits from electric vehicles (including light, medium and heavy duty by 2030)⁸. There will be overlap with other provincial and federal policies. However, it’s unrealistic to attribute, or attempt to delineate which EVs or charging sessions are specifically caused by the Standard. Provincial governments will also likely modify electric vehicle supports. In some cases this includes removing incentive programs as Ontario has done and British Columbia plans to do. The Standard credits could be an important replacement for cancelled incentive programs.

Even in cases where provinces include policies like zero-emission vehicle mandates, the Standard can generate additional reductions from electrification, especially in the medium and heavy-duty sectors⁹. In addition, EV incentives are often considered a necessary support policy when provinces introduce ZEC mandates¹⁰. As incentives will eventually be phased out, the Standard can continue to provide that financial support and so continued support for mandates.

⁸ Navius and EnviroEconomics (2017) Analysis of the Proposed Canadian Clean Fuel Standard. <http://cleanenergycanada.org/wp-content/uploads/2018/03/CFS-technical-report.pdf>

⁹ Lepitzki, Justin. Aksen, Jonn. (2018) The role of a low carbon fuel standard in achieving long-term GHG reduction target.

¹⁰ Electric Mobility Canada (2016) Electric Mobility Canada’s Supply and demand policy. <http://emc-mec.ca/wp-content/uploads/EMC-supply-and-demand-policy-april-20162.pdf>

Recommend - Include estimates for other medium, heavy duty and other areas of electrification:

In our analysis we found there would likely be 260,000 medium and heavy duty plug-in or plug-in hybrid vehicles on the road by 2030. We do not have a separate emission reduction estimate, but these areas have the potential to provide significant reductions as well and so should be included. Like with personal vehicles, monetizing electricity credits helps improve the business case for electrifying medium/heavy duty vehicles. This is why transit authorities in both California have or are seeking the right to generate and monetize electricity credits¹¹. The California Air Resources Board also found that the LCFS reduces fuel costs by 45 to 80 per cent when switching from diesel to electricity¹². Either by helping to reduce the cost of charging infrastructure, reducing the cost of electricity or vehicle price. The electricity used in other transit systems, port electrification, trolley buses, electric ferries etc... should all be eligible for credit generation.

Recommend – We recommend ECCC require electric vehicle credit generators reinvest the credits in a select set of activities including:

- Purchase incentives
- Reduced electricity costs for EV drivers
- Infrastructure investments
- Limited awareness campaigns

Credit generators need not invest in all of these activities, just those that makes sense for their business. Charging station providers for example already invest in electricity infrastructure and utilities are better suited to reducing electricity rates for EV drivers in their service areas.

If credits are fully recycled, we estimate this would increase the number of EVs on the road in 2030 by 70% compared to case without the Standard. In our assessment we assumed that the electricity credit owners return the value of the credits either off the cost of electricity or as an incentive off the cost of an electric vehicle. Similar to different utility programs in California¹³ required under its LCFS. In our modelling, these reductions are additional since they wouldn't have occurred without the Standard. This would mean the Standard generates an incremental **1.4 MtCO₂eq** of reductions from electric vehicles.

Recommend – To facilitate reinvestment we recommend ECCC provide credit ownership to those organizations best able to reinvest. We agree with the delineation of credit ownership for charging station providers and site-hosts.

Residential charging credit ownership, however, should go to whichever organization can demonstrate the ability, intention, and successful reinvestment of credits. This would include consideration of the ability to:

- Accurately estimate electricity use for fuel switching

¹¹ SFMTA, 2017, San Francisco Transportation Sector Climate Action Strategy, https://www.sfmta.com/sites/default/files/reports-and-documents/2017/12/12-5-17_item_15_transportation_sector_climate_action_strategy.pdf & Translink (2018) Clean Growth Strategy Intention Paper. <https://engage.gov.bc.ca/app/uploads/sites/391/2018/08/Corporate-Sustainability-Strategist.pdf>

¹² CARB workshop, August 30 2018, https://www.arb.ca.gov/msprog/zev_fleet_workshop_presentation_083018.pdf

¹³ SDGE (2018) Electric Vehicle Climate Credit <https://www.sdge.com/residential/electric-vehicles/electric-vehicle-climate-credit>.

- Have the ability, in a timely manner (< 1 year from generation to reinvestment), to reinvest the credits in some mix of the activities discussed above
- Publicly disclose how the credits were used to support vehicle electrification

Residential charging credits are significant estimated at 80% of passenger vehicle charging¹⁴ and have been difficult to successfully incorporate into both B.C.'s low-carbon fuel standard and California's low-carbon fuel standard.

Distribution utilities could have first access as discussed in the regulatory design paper. However, if they are unable or unwilling to reinvest in a timely manner, other organizations such as vehicle manufacturers could own and reinvest those credits. Finally, a government backstop program could be created that would own any unclaimed credits, and use those credits to invest in national EV programs.

Recommend – We recommend ECCC include an estimate of incremental reductions because of the Standard from EVs in its compliance scenario and in the cost benefit analysis. At a minimum we suggest a **1.4 MtCO₂eq** value, contingent on a requirement that electric vehicle credits be reinvested.

¹⁴ US Department of Energy (2018) Charging at Home. <https://www.energy.gov/eere/electricvehicles/charging-home>