CLEAN ENERGY CANADA

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Clean Energy Canada is a climate and clean energy think tank within the Centre for Dialogue at Simon Fraser University. We work to accelerate our nation's transition to clean and renewable energy systems by telling the story of the global shift to clean and low-carbon energy sources. We conduct original research, host dialogues and aim to inspire and inform policy leadership.

INTRODUCTION

We commend Ontario for developing its Modern Renewable Fuel Standard, an important part of a package of policies designed to meet the province's greenhouse gas reduction targets while growing the economy. A low carbon transportation sector will need increased deployment of both commercial and new low-carbon fuel and vehicle technologies, creating significant opportunities for new business growth. For context, global revenues for clean transportation hit $109.5 billion in 2014 and are expected to more than double to $258 billion by 2022[1]. Policies such as the Modern Renewable Fuel Standard increase the market for clean transportation solutions and allow Ontario companies to compete for that new market share. The local market thus functions as a training ground, helping companies refine their business at home to then better compete globally.

COMMENTS AND RESPONSE TO QUESTIONS

Each of the sections below respond to specific questions within the Government of Ontario's discussion paper. We have restricted comments to those areas where we believe our experience, expertise and support will be of value to the government.

Clear Objectives

We encourage Ontario to clearly state its objectives for the Modern Renewable Fuel Standard, since these objectives will help guide answers to the questions posed in the discussion paper. For example, California's Low-Carbon Fuel Standard's goal is to reduce the greenhouse gas intensity of fuels by 10% but also to transform and diversify the fuel pool and reduce petroleum dependency[2]. Similarly, B.C.'s Renewable and Low Carbon Fuel Requirements Regulation aims to reduce the province's reliance on non-renewable fuels, help reduce the environmental impact of transportation fuels and contribute to a low-carbon economy[3].

[1] Analytica Advisors (2016) *Canadian Clean Technology Industry Report*
[2] California Air Resources Board (2016) *Low Carbon Fuel Standard*. https://www.arb.ca.gov/fuels/lcfs/background/basics.htm
[3] Government of British Columbia (2017) *Renewable & Low Carbon Fuel Requirements Regulation*. http://www2.gov.bc.ca/gov/content/industry/electricity-alternative-energy/transportation-energies/renewable-low-carbon-fuels. Accessed March, 7th, 2017.

A similar set of objectives, including a greenhouse gas reduction target and a commitment to innovation and the reduction of petroleum dependence, would help guide the design of the policy and create clearer accountability for its results.

Clear objectives would build on the considerations provided in the discussion paper. While we agree with and support the considerations in the discussion paper, we believe they could be strengthened. We offer advice regarding objectives and principles on biofuels policy in a recent report we developed, "Biofuels in Canada: Tracking progress in tackling greenhouse gas emissions from transportation fuels."[4] The report concludes that a low-carbon fuel policy should:

1. Drive greenhouse gas avoidance
2. Support investment in low-carbon fuel production, use and innovation
3. Support sustainability criteria for renewable fuels
4. Ensure affordability of fuel supplies
5. Improve compliance reporting and transparency

Targets and blending requirements

In general, the targets and blending requirements should be demonstrably aligned with Ontario's long-term targets and stringent enough to incentivize technological and process changes. Existing research suggests that the transportation sector will require significant changes to meet 2030 and 2050 targets. For example, in order for Canada to meet a 2050 reduction target average biofuel blending would need to be more than 20% by 2030 with electricity representing 16% of transport energy [5]. Attaining this trajectory in Canada or Ontario will require new technologies and processes and support to grow their market share relatively quickly. The Modern Renewable Fuel Standard can help to create a market for these technologies—but only if they are stringent enough.

To mitigate cost-escalation concerns (the notion that fuel supplies, vehicle technologies and processes may not be ready in time or at too high a cost to meet the standard), the province could implement a maximum credit cost like B.C. and California have done. Any revenues generated through this approach could then be reinvested to reduce barriers to low-carbon fuel adoption.

Unfortunately, we haven't studied Ontario's fuel pathways and fuel intensity sufficiently to recommend specific target and blending requirements. However, we expect targets would be similar in magnitude to those in other jurisdictions. Both California and B.C. implemented their policies with a 10-year schedule of intensity improvements. Both also set a 10%-reduction intensity target over the 10 years. Since then, B.C. has increased its target to 15% by 2030. Mark Jaccard's most recent study includes a 40% intensity reduction target for the transportation sector[6], and B.C.'s climate leadership team recommended a 20% reduction target by 2030 for the province. California is considering intensity reductions between 18% and 25% by 2030.

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[4] Moorhouse J, (2016) *5 principles for designing effective biofuel policy*. http://cleanenergycanada.org/5-principles-for-designing-effective-biofuels-policy/

[5] Bataille, C et al. (2015) *Pathways to deep decarbonization in Canada*. SDSN - IDDRI

[6] M. Jaccard, M. Hein & T. Vass (2016) *Is Win-Win Possible? Can Canada's Government Achieve Its Paris Commitment . . . and Get Re-Elected?* http://rem-main.rem.sfu.ca/papers/jaccard/Jaccard-Hein-Vass%20CdnClimatePol%20EMRG-REM-SFU%20Sep%2020%202016.pdf

Flexibility

We encourage the regulation to be as flexible as possible for the regulated parties, so long as the stringency of the policy is sufficient to drive reductions in line with long-term targets. There are several options that would achieve this:

- **Credit trading system:** Credit trading systems help mitigate the costs of compliance on any one business while also providing incentives for innovation and commercial deployment of low-carbon fuel solutions. Both California and B.C. use credit trading systems in their clean fuel standards. However, the only credits available should be those that are generated within the transportation sector. Credits generated through the economy wide cap-and-trade program, offsets generated for that program or other credits generated outside the regulation should not be included, as these credits would undermine the stringency and dilute the transportation focus of the policy.

- **Maximum credit cost:** As discussed earlier, costs can be further mitigated by regulating a maximum credit price, a clearance market or a combination of both. Both options help contain costs associated with the regulation and provide an additional compliance pathway. However, it should be noted that the Renewable and Low Carbon Fuel Requirements Regulation in B.C.[7] has not produced any detectable increase in pump prices. In California, the Low Carbon Fuel Standard —in combination with other transportation policies such as a Zero-Emission Vehicle Standard and vehicle efficiency requirements and incentives—is expected to provide a net financial benefit to consumers over time.[8] In a worst-case scenario, where all companies comply entirely with credits (this hasn't happened in B.C. or California), a $200 per tonne maximum credit price would translate to a maximum cost per litre of 4.6 cents.

- **Easy to generate credits:** The regulation should make it relatively easy for regulated parties to generate credits from alternative fuel pathways such as electricity, biofuels and hydrogen, as well as for improvements within traditional fossil fuel supply chains. This could include the following:
    - **Allow third parties to sell electricity**: The Modern Renewable Fuel Standard can be designed to allow for third parties (e.g. gas stations, charging companies and utilities) to sell electricity for vehicle charging and gain credits that can be used against a company's compliance obligations. California included this approach in the 2015 re-adoption of its Low Carbon Fuel Standard.[9] Every electric vehicle on the road in Ontario represents $410 per year in potential credit revenue under the Modern Renewable Fuel Standard, assuming a credit value of $170 per tonne of CO_{2eq} (similar to the credit price in B.C. today[10]). This could be a powerful incentive to encourage electrification, but only if organizations can easily claim this credit.

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[7] Wolinetz, Michael (2015) Examining the Renewable and Low-Carbon Fuel Regulation Requirement in the Context of Refinery Net-Revenues. http://www.naviusresearch.com/wp-content/uploads/2016/05/Refining_Margins_-and_the_BC_Clean_Fuel_Regulation_Navius.pdf

[8] ICF International (2016) Consumer Impacts of Low-Carbon Transportation Policies. http://consumersunion.org/wp-content/uploads/2016/03/Consumer-Impacts-of-Low-Carbon-Transportation-Policies-Report.pdf

[9] California Air Resources Board (2015) *Low Carbon Fuel Standard*. https://www.arb.ca.gov/regact/2015/lcfs2015/lcfsfinalregorder.pdf

[10] Credit price from Government of British Columbia (2017) Credit Transfer Activity Dec. 31st, 2016. http://www2.gov.bc.ca/gov/content/industry/electricity-alternative-energy/transportation-energies/renewable-low-carbon-

- **Pathways or credits for petroleum industry products**: Individual producers could provide evidence that their specific fuel carries a lower emission intensity than the industry average and thus receive credits against their compliance obligations. This should be limited to specific kinds of improvements such as carbon capture and storage or integrating renewable energy, as California has allowed[11]. B.C. does not currently provide credit for these types of actions.
- **Broader credits:** We recommend that financial support for investment in infrastructure, processes or other activities to encourage low-carbon fuel adoption occur outside the regulation. The Modern Renewable Fuel Standard focus on accounting for actual life-cycle greenhouse gas reductions. However, if external funds and programs are unavailable, a second-best option could be credits to support these type of investments, as B.C. has done with its part-3 agreements. As with the part-3 agreements, credits should be limited to less than a quarter of total compliance, be for specific, targeted and temporary purposes, and any projects funded in this way should be open to public review.
- **Partner policies and/or credits reserved for technology:** There are legitimate barriers outside the scope of the Modern Renewable Fuel Standard that may limit compliance pathways. For example, electricity will be limited by the number of electric vehicles on the road and biofuel blend levels may be limited by vehicles that can run on these types of fuel. Ontario should continue supportive policies including investing cap-and-trade and other revenues in alternative fuel infrastructure: charging stations, hydrogen distribution stations and higher-level biofuel pumps, as well as purchase-incentives for electric and other vehicle types.
- **Align the Greener Diesel Regulation with the Modern Renewable Fuel Standard:** Post-2020 Ontario should consider bringing both gasoline and diesel under one regulation that includes the intensity reductions and fuel pathways proposed in the Modern Renewable Fuel Standard. This would simplify administration, align the policy with other jurisdictions and broaden the market for alternatives, since some technology options like electricity apply equally to gasoline and diesel.

Transparency, accountability, reporting and research

Once implemented, the Modern Renewable Fuel Standard should publicly, report compliance quarterly with all fuel volumes, feedstocks, carbon intensities, credit trading and greenhouse gas avoidance estimates per fuel type. This recommendation applies to fossil fuels and other fuels, such as electricity and hydrogen. This could also include reports on how the regulated parties plan to meet the regulation over specific time periods. Ideally, the information would be aligned with federal reporting requirements for the Clean Fuel Standard.

This level of reporting is necessary to measure policy effectiveness and to inform changes to the policy. Compliance reporting across Canada is generally poor and variable, leading to a diverse set of estimates on policy effectiveness and impact[12].

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fuels. Assumes GHG intensity of gasoline of 84.26 gCO2eq/MJ, electricity grid intensity of 80 gCO2eq/kwh. For an electric vehicle using 3,600 kwh per year, driving of total 19,200km with an energy efficiency ratio of 3, relative to a gasoline vehicle. The value of a credit per kwh of electricity is equal to the difference of GHG intensity multiplied by the energy efficiency ratio for electric vehicle.

[11] California Air Resources Board (2015) *Low Carbon Fuel Standard*. https://www.arb.ca.gov/regact/2015/lcfs2015/lcfsfinalregorder.pdf

[12] Moorhouse, J, Wolinetz, M. (2016) Biofuels in Canada: Tracking the progress in tackling greenhouse gas emissions from transportation fuels

We also encourage Ontario to support comprehensive, public research on the pathways to achieve the standard, evaluations of reported data, and to estimate the job and economic benefits of the standard. This research will help to guide future stages of the regulation.

Indirect land-use change

We support the inclusion of indirect land-use change estimates but cannot provide guidance on the best approach.

Alignment of federal and provincial standards

As noted in the discussion paper, the federal government is currently designing a Clean Fuel Standard and plans to publish a final regulation in 2019. Aligning and eventual linking of the fuel standards would reduce costs by allowing for larger credit markets. During the federal engagement process we encourage Ontario to recommend the government seek to align the two policies in some key areas:

1. **Incentivize technology change objective**: The Government of Canada is still developing its Clean Fuel Standard so its objectives are not finalized. While we support the goal of a 30 $MTCO_{2eq}$ emission reduction by 2030, we encourage Ontario to support the addition of a technology innovation objective for the Clean Fuel Standard. Existing analysis that meeting long-term targets will require significant technological and process changes. Both California and B.C. have technology change objectives.

2. **Sectoral credit trading:** The Government of Canada has not yet determined whether the various sectors will have different reduction targets and whether credits will be traded within one sector or between them. As noted above we recommend Ontario's Modern Renewable Fuel Standard generate and use credits within the standard. We therefore encourage Ontario to support a similar approach at the federal level where transportation has its own reduction target and credits available in the transportation must be generated in the transportation sector. This approach would encourage technology change and is more aligned with Ontario's existing approach for its cleaner diesel regulation—and the intent of the Modern Renewable Fuel Standard.

3. **Safety valve**: Similar safety valve prices (the maximum price for credits) would provide a consistent signal and help jurisdictions, businesses and individuals know the maximum cost of the regulation.

4. **Partner policies**: As Ontario has done in its discussion paper, the Government of Canada should also clearly articulate how partner policies and the Clean Fuel Standard will interact and support each other.

In Ontario, we would support aligning the Greener Diesel Regulation and the Modern Renewable Fuel Standard so that both allow for not only biofuels but also electricity, hydrogen and other fuels to compete for the lowest cost option.

Impact on cap-and-trade

We view cap-and-trade and the Modern Renewable Fuel Standard as complementary regulations. Cap-and-trade works well in industrial sectors to help reduce emissions from power generation and

industry. However, it is unlikely to be as effective at incentivizing changes in types of fuel supply. The Modern Renewable Fuel Standard helps fill that gap with a targeted, yet flexible policy.

However, Ontario will need to consider the impact of its Modern and Renewable Fuel Standard on cap-and-trade credit prices and revenue generation. In general, any policy aimed at reducing emissions under a cap-and-trade program will tend to decrease credit costs, since there will be less need for credits. Estimates of California's Low Carbon Fuel Standard have found that credit prices could be up to 50% lower if the current Low Carbon Fuel Standard is strengthened compared to a scenario where its stringency is unchanged. This could have important implications on planned government revenue from the cap-and-trade system[13].

PATH FORWARD

We look forward to reviewing the next iteration of the Modern Renewable Fuel Standard. We would be happy to discuss any of the recommendations in this submission at your leisure.

[13] ICF (2017) *Post-2020 Carbon Constraints: Modeling LCFS and Cap-and-Trade.*