CLEAN ENERGY CANADA

Submission
RE: Low Carbon Fuels Compliance Pathway Assessment

DATE: January 5th, 2017
PREPARED BY: Jeremy Moorhouse

Introduction

Thank for the opportunity to comment on the British Columbia Low Carbon Fuels Compliance Pathway Assessment. We view B.C.'s low-carbon fuel standard as a successful greenhouse gas reducing policy. Strengthening it – in the range of 15% to 20% carbon intensity decline from 2010 levels by 2030 - is also an essential part of a package of policies to meet B.C.'s 2030 climate commitment and 2050 climate target.

Clean Energy Canada generally agrees with the comments and data available in the British Columbia Low Carbon Fuels Compliance Pathway Assessment. The assessment provides a comprehensive overview of the status of different fuels available in B.C. and begins the conversation on how to achieve a 2030 target for carbon intensity reductions.

This document provides comments only on those sections where Clean Energy Canada has questions or suggestions as well as some additional data that may prove useful to discussions on B.C.'s low-carbon fuel standard.

Our general comments are:

Clarify the scope of the 2017 review. We suggest including the scope of the 2017 review in the pathways assessment document. While the document provides a baseline of information, it's unclear how that information is then linked to the consultations. The compliance pathway section, for example, provides a scenario for compliance but does not state for what carbon intensity objective.

Add more scenarios. The document would benefit from some additional compliance scenarios for the potential 15% and 20% targets. We provide some options for scenarios later in this document.

Clarify how the review fits with the climate council and the federal Clean Fuel Standard. B.C. has a climate plan from the previous government and is currently hosting discussions with the Climate Solutions and Clean Growth Advisory Council, while the federal government is developing a Clean Fuel Standard. We suggest including the status of these activities and the link to the consultation as best understood today.

Specific Comments

Compliance Scenario

Compliance scenarios are useful to guide and inform discussions on the feasibility of specific targets for the low-carbon fuel standard. However, multiple scenarios are likely needed to understand the feasibility of a long-term target given the uncertainty of fuel and technology pathways. In the

Suite 721
602 West Hastings Street
Vancouver, BC V6B 1P2

comments below, we share the results of federal research on the Clean Fuel Standard, our research on the low-carbon fuel standard in B.C., and specific questions on the Pathway Assessment.

Scenarios and Analysis: Lessons learned from Clean Energy Canada's analysis of the Clean Fuel Standard

Clean Energy Canada and Navius Research modelled the federal government's proposed Clean Fuel Standard, though our results are not directly relevant to B.C.'s low-carbon fuel standard. We assumed a 12.5% decline in GHG intensity from 2010 levels by 2030 for Canada, which is below the ambition of what B.C. is considering. That said, during our analysis we determined and received several suggestions on sensitivities, scenarios, and types of analysis that may also be useful as B.C. evaluates a 2030 target for its standard. Specifically:

- **Relative cost of different fuels:** Cost sensitivity of oil, natural gas and agricultural feedstock prices would illustrate how different assumptions may change the cost of complying with B.C.'s low-carbon fuel standard. A preliminary assessment of these drivers for Canada's Clean Fuel Standard indicates that higher oil prices can reduce the difference in production costs between fossil fuels and alternative fuels. Reducing this production cost spread will reduce the low-carbon fuel standard credit price substantially while reducing the relative impact of the low-carbon fuel standard on energy prices.
- **Sensitivity analysis for different technologies:** Certain fuel pathways are very sensitive to reasonable differences in technology assumptions, and so it's valuable to consider different technology outcomes and what might be needed to support those outcomes. Some specific areas below:
    - **Flex-fuel vehicles:** In Navius and Clean Energy Canada's analysis, flex-fuel vehicles proved a cost-effective approach to increasing ethanol use. However, this depends on the vehicles and fuelling infrastructure being available.
    - **Electric vehicles:** Electric vehicle uptake is uncertain and depends on many factors, such as battery cost declines, federal and provincial policy, and the decisions of international manufacturers. *Canada's ZEV Policy Handbook* for example, shows the ZEV market share of new vehicles ranging between 10% and 40% by 2040, depending on provincial and federal policies.[1]
    - **Ligno-cellulosic fuels:** We assumed a relatively high carbon intensity for ligno-cellulosic fuel in our federal Clean Fuel Standard analysis, and so there was little uptake. However, ligno-cellulosic fuels could have lower carbon intensities, and there may be other benefits such as less competition with food crops and potentially fewer land-use concerns.
- **2050 context:** Any 2030 target for B.C.'s low-carbon fuel standard should ensure the transportation sector is on a path to meet B.C.'s broader 2050 target.
- **Policy uncertainty:** Policies in other jurisdictions can influence fuel costs and availability. Some policy changes may increase demand for low-carbon fuels (for example, through an

[1] START (2017) *Canada's ZEV Policy Handbook.* https://sfustart.files.wordpress.com/2017/12/zev-policy-handbook_web.pdf

increase in renewable fuel mandates in the U.S. and other countries). Others may reduce the demand for low-carbon fuels (for example, more stringent vehicle efficiency requirements).

- **Opportunities:** By requiring carbon intensity reductions, the low-carbon fuel standard increases the market for cleaner fuels. This presents opportunities for new investment and businesses within B.C. While the low-carbon fuel standard will not and should not dictate where fuels come from geographically, identifying and supporting opportunities for B.C. business development and employment can be part of a broader clean fuels strategy in the province. Any 2030 target for the low-carbon fuel standard should consider the potential magnitude of economic and employment opportunities to produce and distribute clean fuels.

British Columbia Results

Clean Energy Canada and Navius research explored policy mixes to 2050 to achieve B.C.'s climate targets. The details are available in *A Plan for Climate Leadership in British Columbia*. This assessment included a 20% reduction in carbon intensity of fuels by 2030 and then declining by 4% a year out to 2050. A 20% reduction in carbon intensity is consistent with an overall target of decarbonizing transportation by 2050. The analysis included other policies that influenced the transportation sector, including a carbon tax rising to $80 per tonne in 2025 and a zero-emission vehicle mandate requiring that 23% of new vehicles sold in 2030 are zero-emitting. However, the low-carbon fuel standard is the primary policy that reduces the carbon intensity of the transport sector. Below, Figure 1 summarizes the results; Table 1 provides the data for Figure 1.

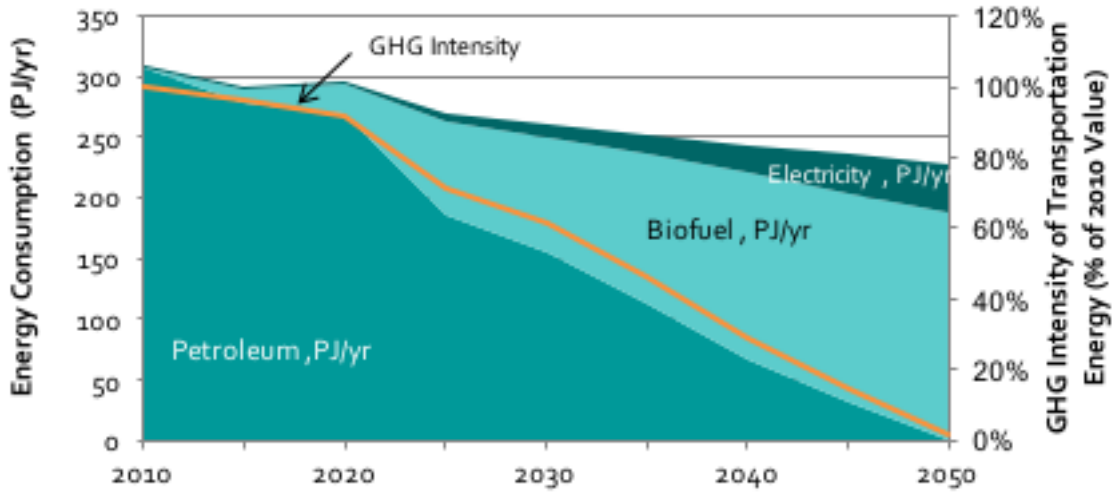

Figure 1: Transportation fuel energy consumption and GHG intensity to 2050

Table 1: Data for figure 1

	2010	*2015*	*2020*	*2025*	*2030*	*2035*	*2040*	*2045*	*2050*
Petroleum Fuel, PJ/yr	306	278	269	186	156	113	66	31	0
Biofuel, PJ/yr	1	12	25	77	95	124	155	173	188
Electricity, PJ/yr	1	1	2	6	11	15	23	32	40
GHG Intensity relative to 2010, %	100%	96%	92%	71%	62%	47%	29%	15%	2%

Thanks to the combination of the low-carbon fuel standard, carbon pricing and a zero-emission vehicle standard, there are approximately 290,000 plug-in vehicles in B.C. by 2030 and 1.6 million in 2050. These vehicles help reduce the carbon intensity of fuels in B.C. However, significant quantities of biofuels are still required.

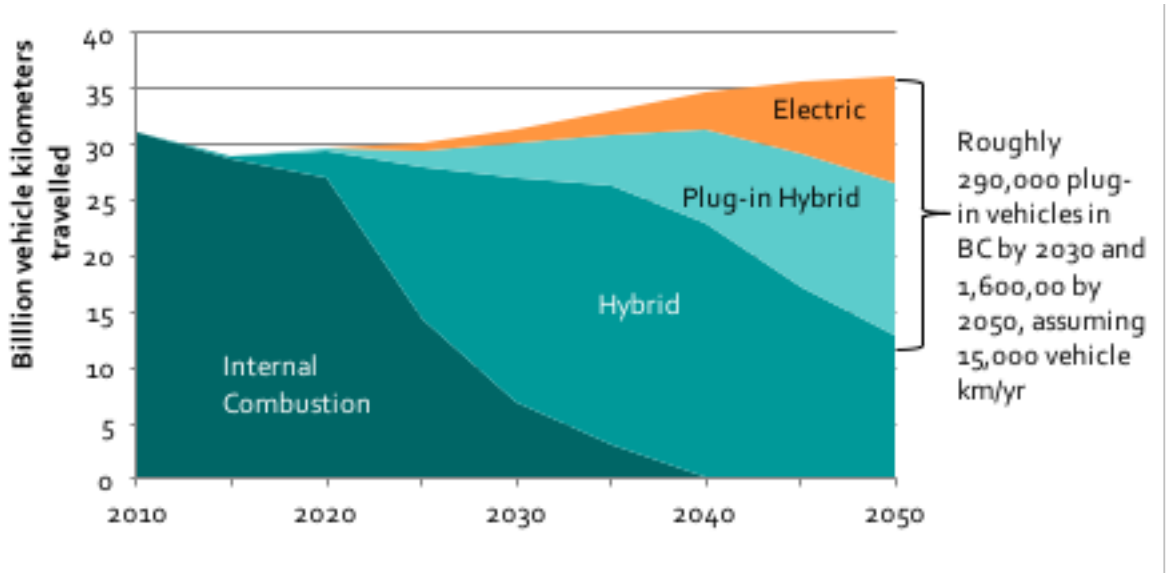

Figure 2: Vehicle stock with climate policies to achieve B.C.'s GHG target

Comments on modelling in the report

Figure 2 in the Compliance Pathways Report shows reducing emissions by 16% from 2010 levels by 2030 without including credits and Part 3 agreements, but more than 20% when credits and Part 3 Agreements are included. However, it's unclear what the targeted carbon intensity is.

Other comments

Fuel delivery infrastructure

This section provides little additional information. We suggest either providing evidence of the types of impacts being discussed or removing this section. For example, "[i]ntroducing a diversity of renewable fuels, each with its own issues, is testing the ability of the delivery network to learn and adapt…" may be true, but the document contains no evidence to substantiate this position and doesn't indicate why this issue is being discussed. Has the reliability of fuel delivery declined in regions with greater fuel type diversity?

Blend Walls

We understand that blend walls apply to specific vehicles and fuels, and that it isn't an overall limit on blending renewable fuels. Nevertheless, it would be useful to have more information on B.C.'s fleet of vehicles by vintage, which could then help us understand the blending limits of specific fuels and help forecast different compliance pathways.

Additional information:

We recommend including some additional information in the Pathways Assessment document as well. Much of this information already exists in other documents, but it is useful to include in the Pathways Assessment document as evidence of success to date. For example:

- **Part 3 Agreements**: Please include information on existing Part 3 Agreements, the number of credits they account for, and the status of projects.

- **Reductions achieved to date**: Please also include reductions achieved to date and any analysis of the types of fuels that have been used, and why, with an evaluation against previous modelling.

- **Interaction with the federal Clean Fuel Standard**: While the design of the federal Clean Fuel Standard is in progress, please include the B.C. government's perspective on developing the provincial standard.

- **Relevance of B.C.'s Climate Leadership Plan**: B.C.'s Climate Leadership Plan included a commitment to strengthen the low-carbon fuel standard by 15% by 2030. How is this commitment viewed by the current government?

Conclusion

We look forward to participating in the consultations on the low-carbon fuel standard. The low-carbon fuel standard remains one of B.C.'s strongest climate policies, and its stringency will need to increase to meet B.C.'s 2030 and 2050 reduction targets.