Advanced Biofuels
CANADA
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May 21, 2021

Attention: Chair and Vice-Chairs
Standing Committee on Natural Resources

Re: Low Carbon and Renewable Fuels Industry in Canada

About Us

Advanced Biofuels Canada Association ('Advanced Biofuels') has a unique perspective on the options to decarbonize transportation, informed both by our extensive quantitative research, and our 15-year leadership role in Canadian federal and provincial fuel and carbon policy. Our members operate over 90% of the biomass-based diesel production capacity in Canada, and includes innovative low carbon fuel technology providers who are undertaking commercial project development on all continents.

Liquid Biofuels: Indispendable to Net-Zero 2050

To meet climate action targets, reducing greenhouse gases (GHGs) in transportation is essential – Canada cannot otherwise meet its net-zero goals. EVs, hydrogen, and renewable natural gas are important contributors to decarbonizing transport in the 2030-2050 period.

To date, liquid biofuels have proven to be a critical compliance option, generating over 80% of the BC low carbon fuel standard (BC LCFS) emission reductions over 2010-2019[i] (and a similar percentage in the CA LCFS[ii]). Canadian and international experts concur that, going forward, cleaner fossil fuels, liquid biofuels, and other non-fossil clean fuels will be indispensable for reducing emissions from legacy vehicle fleets, and especially with long-haul transport, heavy equipment, aviation, marine, rail and other hard to decarbonize vehicle platforms.[iii]

New ICE (internal combustion engine) vehicles, as well as the legacy ICE fleet, will use liquid fuels for decades to come, even after accounting for ICE bans or zero-emission vehicle (ZEV) sales mandates. Jurisdictions pursuing highly aggressive net-zero plans are projecting ICE vehicles to be between 40-50% (cars, trucks) of total on-road stock in 2045 (e.g, see California[iv]). The International Energy Agency[v] projected recently that over 80% of transportation energy will be ICE-based under a scenario where 75% of global GHG are under some form of national net-zero pledges. Under greater ambition, if full global net-zero is to be achieved by 2050, liquid biofuel use will need to quadruple from 2020 levels.[vi]

Advanced biofuels (e.g. cellulosic ethanol, biodiesel, renewable diesel) and synthetic clean fuels (e.g. carbon capture technologies) can be 'carbon competitive' when used in modern engines. BC data show that biofuels used in BC in 2019 had a weighted average carbon intensity (CI) that was 60% lower than the 2010 intensities.[vii] Biodiesel , for example, had a net-negative carbon intensity of -2 gm CO2e/MJ in 2019. Technologioes being deployed at commercial scale in biofuel production will create net-negative CI for most biofuels by 2035.

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Economic Benefits: Expanded Domestic Biofuel Capacity (Production, Distribution)

Advanced Biofuels commissioned two separate independent studies to assess the impact of the *Clean Fuel Standard*[viii] (CFS) on clean fuel demand & supply in Canada, and the associated socioeconomic benefits to different regions of the country.

In the first study, conducted by Worldwide Agricultural Economic and Environmental Services, the core scenario showed domestic biofuel expanding 200-300% to meet new demand under the CFS.[ix]

The second study, on socioeconomic impact, conducted by the University of Minnesota, estimated that this expanded domectic activity would create as much as $10 billion in new economic output annually and add over 20,000 new jobs to the Canadian economy by 2030.[x]

Total Effects of Biofuel Production by Scenario for Full Study Area (and Change over Baseline), Millions of CAD

Total Effects	***Employment***	***Labor Income***	***Value Added***	***Output***
2020 Baseline	13,026	$783.6	$1,691.7	$5,284.4
2030 Low Estimate	25,650	$1,625.3	$3,400.3	$11,210.2
Increase over Baseline	12,624	$841.7	$1,708.6	$5,925.8
% Change over Baseline	97%	107%	101%	112%
2030 High Estimate	34,828	$2,062.5	$4,350.2	$15,217.5
Increase over Baseline	21,802	$1,278.9	$2,658.5	$9,933.1
% Change over Baseline	167%	163%	157%	188%

Key Issues: *Clean Fuel Standard* Design and Domestic Clean Fuel Production

Point One**:** The *Clean Fuel Standard* design will fail to establish a clear path to Net Zero.

The design of the Clean Fuel Standard disproportionately and inherently incents actions to reduce upstream emissions reductions from oil & gas, which mutes the signal to expand use of biofuels or switch to electric vehicles, clean hydrogen, or renewable natural gas.

While all emissions reductions are important in the battle to address climate change, these 'upstream emission reducitons' (UERs) represent less than 25% of the emissions related to bitumen and crude oil extraction and use. Combustion of refined petroleum products (RPPs - e.g. gasoline, diesel, jet fuel) releases over 75% of the total lifecycle carbon pollution from fuel use.

In other words, the only way to address petroleum fuel emissions to achieve a net-zero future in transportation is to remove crude oil from the combustion equation. This is why it is critical to ensure the CFS design drives expanded use of biofuels, electric vehicles, clean hydrogen, etc. (generically termed 'non-fossil clean fuels').

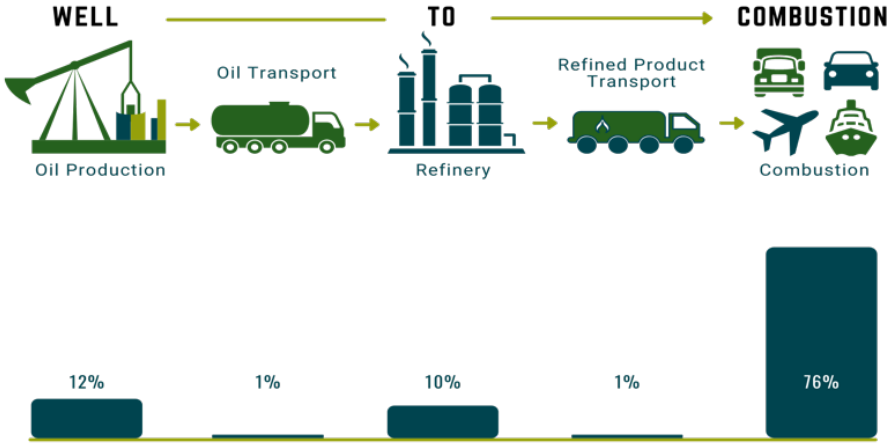

Figure: Well-to-combustion is the scope of full lifecycle fuel emissions. At absolute best, focusing on lower-carbon solutions in 'upstream' and refinery emissions, such as carbon capture and storage (CCS) at processing facilities, would reduce the CI of petroleum fuels by less than 25% (average oilsands-derived gasoline and diesel).

The solution to this imbalance is a **'Net-Zero Backstop'** in the CFS design. The backstop would be triggered when non-fossil clean fuel use for credit generation in the CFS drops below a level consistent with achieving net-zero emissions. If triggered, the backstop would ensure that a prescribed, mimimum use of CFS credits from non-fossil clean fuels are utilized in the compliance year. The backstop threshold should be progressively 'tightened' each year in order to ensure the transportation sector transitions to 'net-zero ready' over time, and that billions of dollars of investments are not mis-aligned with full lifecycle decarbonization.

Point Two: It is imperative that we expand production of clean fuels in Canada.

Canadian fuel production is falling behind. In 2019, western (BC to western ON) and central (ON, QC) fuel markets were reliant on imports of over 12 billion litres of RPPs.[xi] To meet growing clean fuel demands under expanding provincial regulations, imports of renewable fuels have steadily increased.[xii] Our energy security is increasingly weakening, which impairs our economic growth potential.

However, the opportunity that rapidly expanding global demand for clean fuels presents is enormous for incumbent and new Canadian energy market and supply chain participants. To attract the necessary investment to expand non-fossil clean fuel production, we need both a compelling signal from the *Clean Fuel Standard* and competitive capital investment conditions in Canada. Combined, these tools would amplify and accelerate clean fuel investments by de-risking market barriers and supporting a competitive rate of return on Canadian clean fuel investments.

A Net-Zero Backstop will create the proper signal to define non-fossil clean fuel demand, and complement other federal climate plan initiatives.[xiii] Funding programs and clean energy tax policies announced in the strengthened climate plan and Budget 2021 are strengthening investment competitiveness.[xiv] The Conservavite Party of Canada's Secure the Environment[xv] climate plan has narrowed the federal partisan divide on carbon pricing and fuel regulation policies; this is a positive signal to capital markets.

Getting clean fuels to Canadians at a 2-3 times scale (and beyond) will require infrastructure upgrades. This is an area that requires further attention, as Canada remains well behind markets such as the US in establishing the fuel distribution and retail backbone on which to expand clean fuel use.

In Closing: A Generational Opportunity

Canada has a unique opportunity – now - to build a low-carbon energy system that will exceed our 2030 greenhouse gas emission commitments and enable net-zero emissions by 2050. While originating from the twin challenges of a global pandemic crisis and climate emergency, measures being deployed to stimulate an economic recovery and establish durable clean growth will fundamentally determine Canada's place in the global economy for the century ahead.

We have a rich supply of sustainable, high quality agricultural and forestry feedstocks. We have leading clean energy innovators and technologies able to transform wastes to usable, low carbon products. We have the refining and distribution infrastructure, and engineering and fuel systems know-how to not just supply our domestic clean fuel demands, but be a leading contributor to global demand.

We offer our support for the Committee's work, and stand willing to participate or assist, as you require.

ENDNOTES

[i] BC LCFS: Information Bulletin *RLCF-007-2019: Renewable and Low Carbon Fuel Requirements Regulation Summary 2010-2019* – posted April 2021
[ii] CA LCFS: *Low Carbon Fuel Standard Reporting Tool Quarterly Summaries* – to April 2021 .
[iii] IEA *Net Zero by 2050 - A Roadmap for the Global Energy Sector* – May 2021
[iv] UoCA: *Driving California'sTransportationEmissions to Zero*
[v] *Ibid, IEA*
[vi] *ibid*, IEA
[vii] *Ibid,* BC LCFS
[viii] GOC: *Clean Fuel Standard* – accessed May 2021
[ix] ABFC: *The Implications of Canada's Proposed Clean Fuel Standard for Canadian Biofuels and Biofuel Feedstocks* – November 2020
[x] ABFC: *Canadian Biofuels Economic Impact Infographic* – February 2021
[xi] CFA: *Canada's Refining Industry – 2019 Sector Performance Report* – December 2019
[xii] ABFC, StatCan https://drive.google.com/file/d/1TyjNdU8vu5M0-pdMwvwMKN4M6ToQC8x2/view?usp=sharing
[xiii] GOC: Strenghtened Climate Plan - *A Healthy Environment and A Healthy Economy* – December 2020
[xiv] GOC: Budget 2021 - *A Recovery Plan for Jobs, Growth, and Resilience* – April 2021
[xv] CPC: *Secure the Environment – The Conservative Plan to Combat Climate Change* – April 2021