



January 5th, 2018

Sent via email: lcfr@gov.bc.ca

RE: British Columbia Low Carbon fuels Compliance Pathway Assessment

Director Rensing,

Renewable Energy Group, Inc. (REG) appreciates the opportunity to comment on the 2017 British Columbia Low Carbon Fuels Compliance Pathway Assessment. REG is a leading provider of cleaner, lower carbon intensity products and services. We are an international producer of biomass-based diesel, a developer of renewable chemicals, and are North America's largest producer of advanced biofuel. REG utilizes an integrated procurement, distribution, and logistics network to convert natural fats, oils, greases, and sugars into lower carbon intensity (CI) products. With 14 active biorefineries, research and development capabilities and a diverse and growing intellectual property portfolio, REG is committed to being a long-term leader in bio-based fuel and chemicals industry.

REG believes that the British Columbia Greenhouse Gas Reduction (Renewable and Low Carbon Fuel Requirements) Act and the Renewable and Low Carbon Fuel Requirements Regulation (BC-LCFS) with its performance based incentives and agnostic approach to alternative fuels puts British Columbia on a leading path to sustainable transportation in North America. Broadly, we agree with the historical perspective and future analysis that was included in this document. Our comments provide broad feedback on the majority of the document and contain significant discussion around the topics of credit markets, co-processing of crude oil and biomass, *perceived* limitations to biodiesel blends, and the environmental benefit that can come from blends of Hydrogenation Derived Renewable Diesel (HDRD) and biodiesel.

Credit Markets

We strongly agree with the Ministry that building a transparent market for credit prices will further incentivize the market to provide lower carbon alternatives. We believe that having a transparent credit price similar to the California LCFS or US RFS RIN market will incentivize more, lower-CI transportation fuels to enter the Province. The data on the growth of the market in California and Oregon are proof. Expediting the creation of a transparent market will help ensure that the province will reach its 2020 carbon intensity targets. Furthermore, we encourage

the Ministry to consider linking its credit market with other US and Canadian jurisdictions as has happened with Cap and Trade programs.

We think that the combination of a transparent market price and fuel types coupled with their underlying feedstock will lead to lower CI products such as REG Grays Harbor's biodiesel which has a registered CI of 3.54 g/MJ. We also agree with the agency that a transparent market will drive more ethanol production and importation. This will have the knock on effect of producing more distiller's corn oil, providing even more lower CI feedstock for the production of HDRD or biodiesel. In addition to increased volumes of traditional renewable fuels, a strong/healthy credit market will assist with the adoption of next generation renewable fuels such as Alternative Jet Fuel (AJF). We agree with the Ministry that renewable methanol has a very difficult path for commercialization as a transportation fuel. However, we believe its production can still serve an important purpose of providing a source of renewable methanol to biodiesel producers.

Co-processing

REG agrees with the ministry that co-processing, like all renewable fuel production, has a place in performance-based standards such as the BC-LCFS. However, because the incentives are strong, the risk for fraud is greater. We believe the Ministry needs to carefully consider a framework for verification and quantification of both the real volume of the renewable gallons and their carbon intensity. We believe the only way to ensure that accurate quantities of fuel are credited is to utilize ¹⁴C radiocarbon assay.

ASTM method D6866 proscribes two methods, method B, Accelerator Mass Spectrometry (AMS) is quite accurate for verification of the renewable fuel, even at low levels (<5%). Furthermore, this only needs to be done on fuel streams that a producer wishes to seek credit for. This alleviates the burden on producers and the Ministry to develop complex and likely inaccurate mass balance methods that do not accurately account for renewable content produced. The ministry should also take careful consideration when reviewing different renewable feedstock and process method combination. For example, hydrotreating a lipid alongside middle distillate will yield very different results than injecting pyrolysis oil in atmospheric distillation alongside crude oil. We believe the Ministry needs to carefully quantify the carbon intensity of the renewable fuel produced, as some processes may lead to carbon intensities higher than petroleum when the mass yield loss is considered.

Lastly, given the unique climate challenges throughout the province in the winter months, we think it important that the Ministry consider requiring appropriate production practices, like isomerization, to ensure the long chain paraffin's produced can perform in harsh cold weather environments.

We look forward to a robust discussion with the Ministry on these issues.

Perceived limitations to HDRD and Biodiesel

We appreciate the agencies push to dispel the myths which hamper higher levels of biodiesel. We strongly agree that labeling, warranty issues, and blend walls are perception issues which are not rooted in fact. Furthermore, we believe that biodiesel can be used year round throughout all of BC. In our experience if a biodiesel producer selects the appropriate feedstocks, produces quality biodiesel, and utilizes appropriate additives (which are already used in diesel in cold weather) there should be no restriction on year round blends of biodiesel.

In an effort to bring year round blends of biodiesel to the Province, REG and their partner Parkland have applied for a 2018 Part 3 agreement to demonstrate the use of biodiesel in colder climates. REG agrees with the Ministry that significant volumes of HDRD and biodiesel will be needed to meet the 2020 targets. Currently, REG is distributing blends of this product successfully in California. We have found that a mixture of HDRD and biodiesel provides a far superior tailpipe emissions profile with some of the lowest carbon intensities available. Furthermore, by utilizing biodiesel in a blend with HDRD, the biodiesel can help prevent shrinking of seals without the use of an additive or fossil diesel fuel.

We want to thank the Ministry for the opportunity to comment and we look forward to a wide ranging discussion in Victoria later this month.

Sincerely,

Matt Herman and Scott R. Hedderich