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California Air Resources Board
1001 I Street
Sacramento, CA 95814
Rajinder Sahota
Deputy Executive Officer, Climate Change and Research

Reference: July 7, 2022 LCFS Workshop

CARB has maintained a leadership position in managing GHG emissions over the decades and the 2022 scoping plan provide a critical opportunity to act on managing greenhouse gases in an environment of unprecedented awareness and urgency over global warming. We would like to offer our support for the LCFS program and encourage its ongoing development. The growth of credits shown by CARB illustrates the success of the program. As more credit generators enter the program, the excess of credits will continue to affect credit prices and a more stringent compliance curve would lead to stable credit prices and support more innovation and support of zero emission transportation.

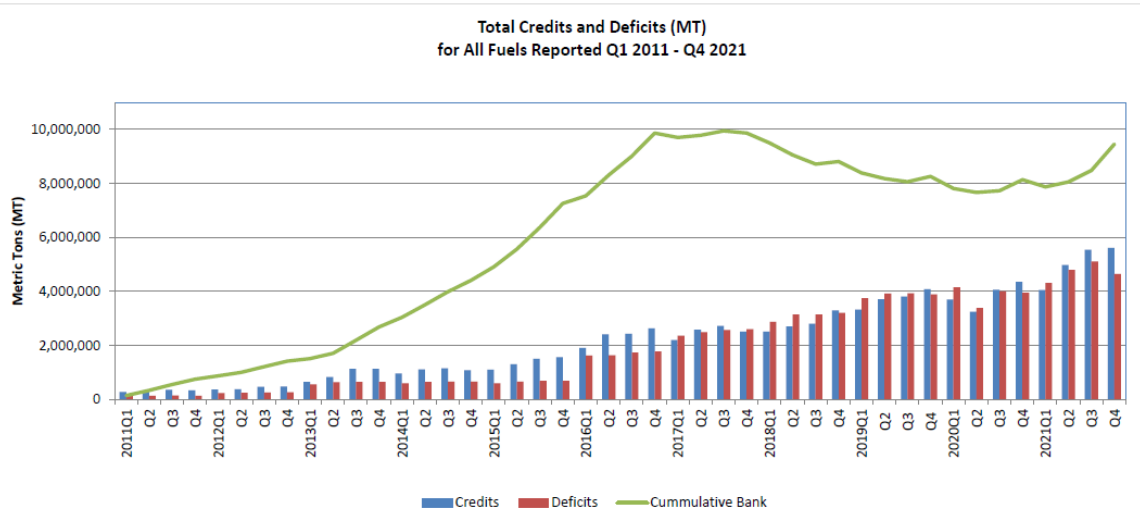

Figure 1. The rapid growth of credits relative to deficits is a measure of success of the LCFS program. A stricter compliance curve will help maintain a stable credit price to support advanced technologies.

Critical to successful implementation of California's carbon neutrality strategy is alignment of carbon accounting methods employed to measure the desired outcomes. Such alignment is considered to be more straightforward for biomass with relatively short annual growth cycles, such as agricultural crops, and more challenging for woody biomass that have longer growth cycles. Methods that focus on different greenhouse gases, varied timing for emission release and uptake, and alternative methods of aggregating emissions can have very different outcomes. The diversity of approaches to biogenic carbon accounting and lack of scientific consensus represents a challenge for incorporating such biomaterial into programs reducing emissions, such as the California Low Carbon Fuel Standard (LCFS) and the federal Renewable

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Fuel Standard (RFS). Many programs have identified a treatment of biomass notionally shown in Figure 2.

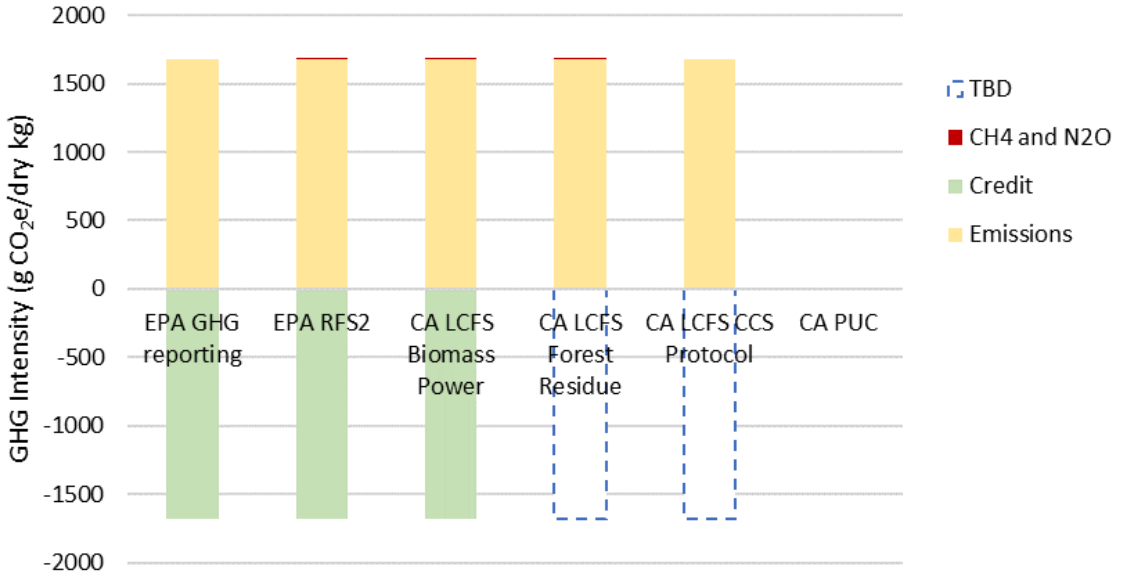

Figure 2. Treatment of biogenic carbon in fuel policies (excluding collection and end-use emissions).

We appreciate the fact that the scoping plan recognizes the role of biomass as a potential energy source as well as wildfire remediation strategy the LCFS has provides an opportunity for a broad range of fuels not just electricity and hydrogen with the aim of utilizing waste resources such as corn stover and sugarcane straw which have already been approved as prospective pathways and biomass which is also been included as a prospective pathway the use of biomass has numerous advantages as a feedstock first it utilizes waste resources that would otherwise lead to avoided emissions such as decomposition and control burns with potentially even greater GHG emissions biomass is potentially a feedstock for numerous fuel production technologies as well as a process fuel sources of biomass include forest thinnings and residues which are certified as sustainable feed stocks under the federal renewable fuel standard in addition materials such as lumber mill waste construction and demolition debris are also waste resources that could be used to generate fuels under the LCFS finally various energy crops could also provide a source of feedstock or process fuel in order to consider such feed stocks ARB has indicated that they will need the agency will need to assess the indirect emissions associated with these feedstocks in the case of residues this means providing an understanding of the alternative fate to that end we look forward to working with ARB to understand verification requirements from numerous waste biomass resources and aligning those verification requirements with those that would occur under the RFS in the case of energy crops such crops would potentially divert productive resources from producing agricultural commodities to that extent ARB has indicated that they would need to look at the indirect land use conversion impacts. We encourage ARB to take on this exercise both of these evaluations should be examined in the forum of a public workshop where data and analysis methods can be examined transparently to arrive at an effective solution to the use of these important feed stocks

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We look forward to working with ARB to evaluate the leading effective approaches for biomass emission characterization and verification also add some history on the use of biomass in California policy.

The Biomass Gap

The scoping plan addresses a wide range of options but requires additional detail to accommodate evolving energy options related to forestry materials and biomass. The primary approach in biofuel policy is to model biogenic carbon based on a carbon neutral approach. The diversity of approaches to biogenic carbon accounting represents a challenge for incorporating such feedstocks into LCFS programs. I co-authored CARB's report on forest residue to fuel 13 years ago and the accounting for biomass to fuels and process heat has yet to be resolved[1].

To date, CARB has not formally identified an approach to quantifying emissions associated with certain types of biomass residues, including those from wood and nutshells for LCFS pathways. The lack of such transparent guidance impinges on the ability to plan and execute biofuel projects that can deliver alternative biomass residue fates for hard-to-decarbonize sectors such as sustainable aviation fuel. As a result, these types of biomass residues may continue to emit GHG emissions associated with business-as-usual conventional fates, e.g., burning and decomposition, as uncertainty of their treatment in the LCFS increases perceived investor risk.

Recommended Actions

Biomass is a key resource for energy production identified in the scoping plan and its role could be strengthened through the following actions.

1. Categorize biomass types used in energy production including residues from agriculture, forestry, and urban sources as well as purpose grown energy crops.
2. Examine and disclose the energy and GHG balance and underlying assumptions associated with biomass options including the C-BREC model used in the scoping plan.
3. Align all California GHG policies with a consistent treatment of biogenic carbon including: Cap and Trade, Reporting to EPA, LCFS fuel pathways, LCFS CCS protocol, LCFS grid power, and AB1383 reporting.
4. Align the GWP of methane and N_2O between policies and consider the impact of black carbon from avoided forest fires.
5. Hold a workshop on biomass used in energy applications to resolve decade old issues.

Thank you for your consideration.
Best Regards,

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[1] CARB. (2009). Detailed California-Modified GREET Pathway for Cellulosic Ethanol from Forest Waste. Stationary Source Division, Version 2.1.