



# Alternative Fuels & Chemicals Coalition

*Advocating for Public Policies to Promote the Development & Production of  
Alternative Fuels, Renewable Chemicals, Biobased Products, and Sustainable  
Aviation Fuels*

**September 19, 2022**

**California Air Resources Board  
Rajinder Sahota  
Deputy Executive Officer  
Climate Change and Research, CA Air  
1001 1 St #2828  
Sacramento, CA, 95814**

## **Re: Request for LCFS Workshop on Biomass & Carbon-Neutral Forest Residuals as Potential Changes to the Low Carbon Fuel Standard**

**Dear Ms. Rajinder Sahota,**

The role of biomass, which is identified in the draft 2022 Scoping Plan as a key resource for energy production, could be strengthened through the Low Carbon Fuel Standard (LCFS)-related actions outlined in the following comments provided by AFCC and its member companies.

### **Executive Summary – Recommended Actions for Changes to the Low Carbon Fuel Standard**

- Hold a workshop on biomass used in energy applications to resolve decade-old issues.
- Categorize biomass types used in energy production including residues from agriculture, forestry, aquaculture, and urban sources as well as purpose-grown energy crops.
- Examine and disclose the energy and greenhouse gas (GHG) balance and underlying assumptions associated with biomass options, including the C-BREC model used in the Scoping Plan.
- Establish consistent treatment of biogenic carbon emissions across all California GHG policies, including LCFS fuel pathways, the LCFS CCS protocol, LCFS grid power, Cap and Trade, reporting to EPA, and AB1383 reporting.
- Align the global warming potential (GWP) of methane and nitrous oxide (N<sub>2</sub>O) across CARB policies and consider the impact of avoided black carbon and other emissions from the removal and repurposing of woody material that otherwise would be consumed in forest fires.

### **Background**

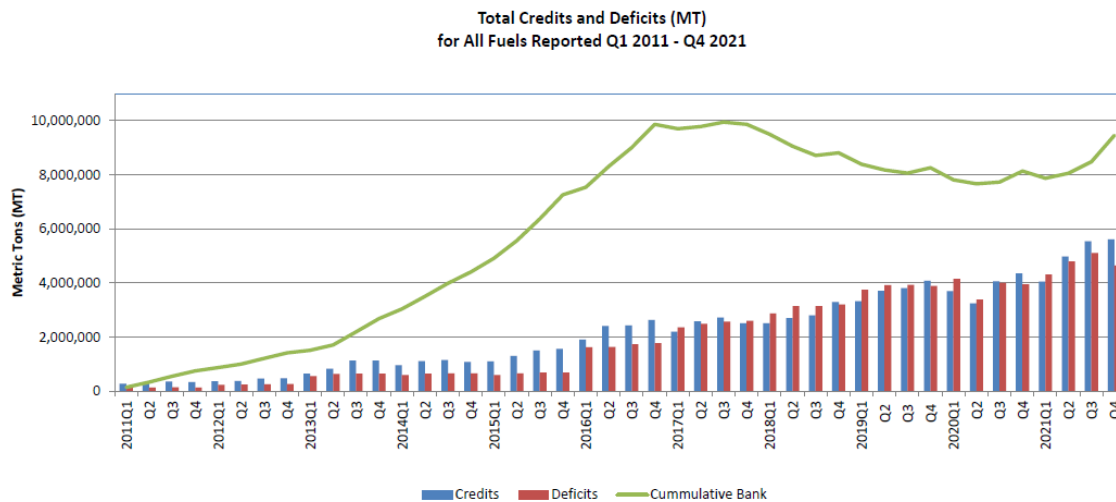
AFCC and its member companies welcome the opportunity to provide comments on potential changes to the Low Carbon Fuel Standard.

AFCC is a collaborative government affairs effort organized by the Kilpatrick Townsend & Stockton law firm and American Diversified Energy. AFCC was created to address policy and advocacy gaps at the federal and state levels with respect to

renewable chemicals, bioplastics/biomaterials, cell-cultured food ingredients, alternative proteins, single cell protein for food and feed, enzymes, alternative fuels, biobased products and sustainable aviation fuel sectors. AFCC member companies work on food and fiber supply chain security and sustainability, renewable chemicals, industrial biotechnology, bioplastics and biomaterials, and biofuels.

## Growth Opportunities Outlined for CARB & LCFS

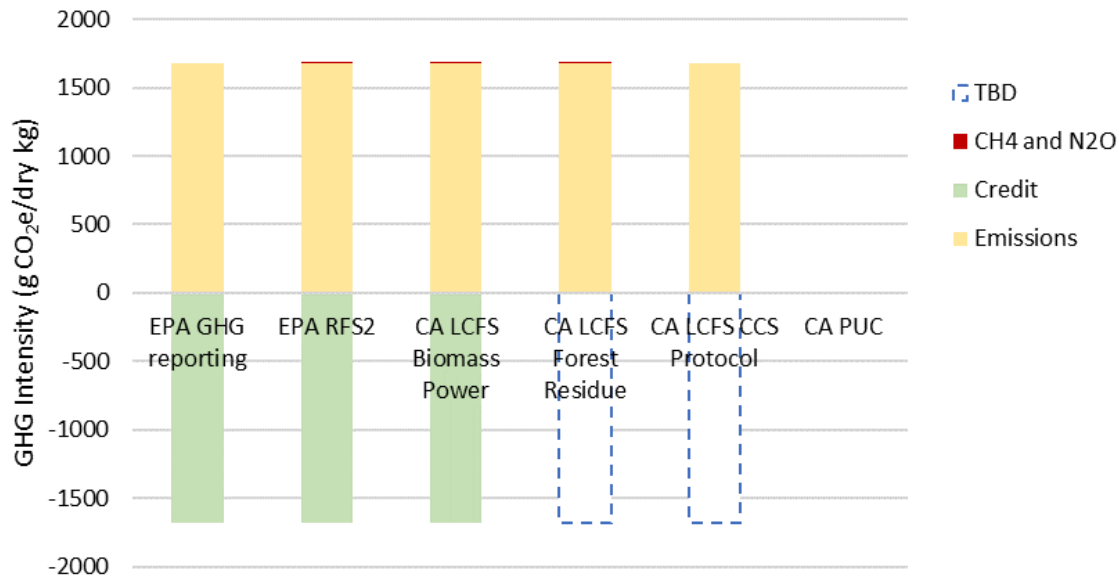
CARB has maintained a leadership position in managing GHG emissions over the decades and the 2022 scoping plan provides a critical opportunity to act on managing GHGs in an environment of unprecedented awareness and urgency over global warming. AFCC and its member companies would like to offer our support 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. In our view, a more stringent compliance curve would lead to stable credit prices and support more innovation and 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 the carbon accounting methods employed to measure the desired outcomes. Such alignment is more straightforward for biomass with relatively short annual growth cycles, such as agricultural and aquacultural crops, and more challenging for woody biomass materials that have longer growth cycles. Methods that focus on different GHGs, 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 represents a challenge

for incorporating such biomaterials into emissions reduction programs, such as the LCFS and the federal Renewable Fuel Standard (RFS).



**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 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 bagasse, which have already been approved as prospective pathways, and biomass that also has been included as a prospective pathway. The use of biomass has numerous advantages as a feedstock. First, it utilizes waste resources and avoids emissions that would otherwise occur through decomposition and control burns. Biomass is a potential feedstock for numerous fuel production technologies as well as a process fuel. Sources of biomass include forest thinnings and residues that qualify under the RFS. In addition, materials such as lumber mill waste and 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 feedstocks, CARB has indicated that it 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 CARB 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, to the extent that such crops could potentially divert productive resources from producing agricultural commodities, CARB has indicated that it would need to look at the potential for indirect land use conversion impacts. AFCC encourages CARB to take on this exercise, and requests that both of these

evaluations be undertaken promptly through a public workshop in which data and analytical methods can be examined transparently to arrive at an effective solution to the use of these important biomass feedstocks.

The emerging technologies for converting organic waste and direct carbon capture should be considered within the scope of renewable feedstocks.

We look forward to working with CARB to evaluate the leading effective approaches for biomass emissions characterization and verification.

## **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. CARB issued its report on forest residue to fuel 13 years ago but has yet to settle upon the accounting for biomass to fuels and process heat.<sup>1</sup>

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. This impinges 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. Further, this is a missed opportunity for productive use of abundant California biomass residues. As a result, these residues may continue to emit GHG emissions associated with business-as-usual conventional fates, e.g., burning and decomposition, as uncertainty of their treatment under the LCFS increases perceived investor risk.

## **Carbon Neutrality from Forest Residuals**

Innovators strive to produce biofuels that are more carbon efficient for both on-road and aviation biofuels. In the draft 2022 Scoping Plan, CARB announced its plan to increase the short – and long-term ability for the LCFS to achieve carbon neutrality by 2045, which will result from reducing reliance on fossil fuels. Carbon neutrality is an important long-term goal; however, it can only be enabled by appropriate accounting of carbon from feedstocks. AFCC is concerned that CARB is not appropriately recognizing the carbon neutrality of forest residuals, and instead is inclined to rely on erroneous or incomplete reports based on narrowly focused modeling studies that fail to account for the carbon benefits of diverting forest residuals to use in products, chemicals, and fuels relative to open burning, decay, or other dispositions. We respectfully urge CARB to consider all reports carefully and eliminate consideration of those that are narrowly focused on predictive modeling and have limited scientific scope.

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

Most recently and concerningly, the C-BREC Model as described in various reports ([Minimizing emissions from forest residues – Schatz Energy Research Center \(schatzcenter.org\)](https://www.schatzcenter.org/)), which was developed by Professor Kevin Fingerman at Humboldt State for CA's biopower program (<https://www.energy.ca.gov/publications/2021/california-biopower-impacts-project-climate-and-air-pollution-impacts-generating>), has been recommended for adaptation to the LCFS program. Based on its embedded assumptions and inputs, this model shows forest residue as carbon-positive, even considering avoided wildfire and avoided burn piles. There are multiple concerns with reliance on this model, particularly given other models and well-established reports of the carbon neutrality of forest residuals as feedstocks. For example, the model takes the existence of forestry/thinning residues as a given, and then compares conventional management practices (i.e., leaving these materials to decay in place, and some pile-burned) to biomass removal and bioenergy production. Without transparency on the portions of these alternative fates or on their relative carbon releases conclusions should not be drawn.

The model is entirely based on forest practices in California although the LCFS program provides credits to fuels brought to California from outside the State where forestry practices are often significantly different. For example, the forestry practices in the 40 million acres of privately held plantation pine forest in the southern US differ significantly from California forestry practices. The warm climate, abundant rain, sunshine, soil conditions, and selective genetic development of the pine trees have generated short 30-to-35-year crop cycles for efficient lumber production.

The model does not include a meaningful number of intermediate results that would be needed for evaluative purposes, so it is difficult to parse. For example, there is an apparent attempt to account for residue decay times and integrating emissions impacts over time, but no half-life studies were reported. The scope is narrowly focused, that it does not address or quantify the potential benefits from more widespread fuel management consideration. Furthermore, it is probably no surprise that the results are carbon-positive, since the model does not include any of the factors that could make such a system carbon-negative – reduced wildfire severity from the fuels reduction treatment itself, co-production of wood products, or carbon-negative bioenergy production. AFCC and its member companies recommend a wider, more relevant scope for any predictive modeling from feedstocks to end of life of the biofuel.

## **Biofuel Policies Treat Biomass as Carbon-Neutral for Decades**

AFCC and its member companies have been working very closely with USDA (Forest Service (FS)) and EPA (Office of Transportation and Air Quality (OTAQ)) regarding areas at risk of wildfire. Based on this work and in keeping with good forest management for wildfire prevention, we recommend and support policies that forest residuals be removed from forest grounds quickly for use by biofuel producers, so that aging and decaying emissions do not become an undue and

inaccurate factor in forest predictive modeling studies that are not set up to capture decaying emissions and counterfactual fates accurately. If inaccurate models are used, this will materially change the carbon intensity (CI) calculation for LCFS credits for AFCC producers, making them worth far less than what is supported by the best science and the experience of AFCC and its member companies. The vast majority of GHG emissions accounting and biofuel policies treat forest residual feedstocks employed for biofuel as carbon neutral, as should CARB under the LCFS. Therefore, we ask CARB to consider adopting the definition for carbon neutrality in the most recently enacted (FY2022) federal omnibus appropriations bill, Public Law 117-103 -- see Division G, section 432 (136 Stat. 419), referred to as the Carbon Neutrality language, which is shown below.<sup>2</sup> The language is commonly referred to as "Promoting biomass as carbon neutral."

*POLICIES RELATING TO BIOMASS ENERGY  
SEC. 432.*

*To support the key role that forests in the United States can play in addressing the energy needs of the United States, the Secretary of Energy, the Secretary of Agriculture, and the Administrator of the Environmental Protection Agency shall, consistent with their missions, jointly—*

*(1) ensure that Federal policy relating to forest bioenergy—*

*(A) is consistent across all Federal departments and agencies; and*

*(B) recognizes the full benefits of the use of forest biomass for energy, conservation, and responsible forest management; and*

*(2) establish clear and simple policies for the use of forest biomass as an energy solution, including policies that—*

*(A) reflect the carbon neutrality of forest bioenergy and recognize biomass as a renewable energy source, provided the use of forest biomass for energy production does not cause conversion of forests to non-forest use;*

*(B) encourage private investment throughout the forest biomass supply chain, including*

*in—*

*(i) working forests;*

*(ii) harvesting operations;*

*(iii) forest improvement operations;*

*(iv) forest bioenergy production;*

*(v) wood products manufacturing; or*

*(vi) paper manufacturing;*

*(C) encourage forest management to improve forest health; and*

*(D) recognize State initiatives to produce and use forest biomass.*

Most federal, state, and international standards such as the RFS, EPA U.S GHG Emissions Inventory, CA LCFS Crop Residue 2009, CA LCFS CCS Protocol, CA LCFS Grid Avg Power, CA RPS, and the internationally agreed Carbon Offsetting and Reduction Scheme for International Aviation (CORSA), all consider biomass such as forest residuals to be carbon neutral. AFCC and its member companies consider

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<sup>2</sup> Available at <https://www.congress.gov/117/plaws/publ103/PLAW-117publ103.pdf>.

CARB a leader in developing GHG policies and therefore CARB needs to ensure the treatment of carbon accounting is done accurately with the appropriate scientific methodologies and predictive models. AFCC and its member companies request that CARB treat all forest residuals at risk of wildfire that are deployed in new fuel technologies consistent with all fuel policies and pathways.

AFCC and its member companies request that CARB convene a workshop on forest residuals and achieve consensus among all stakeholders on carbon neutrality studies and the development and use of a forest biomass feedstock calculator for CA-GREET that estimates emissions from forest residuals and recognizes zero indirect land use change. This, in turn, should lead to an administrative action or rulemaking by CARB to confirm the carbon neutrality of forest residuals and ensure that CARB's tools reflect that.

### **Conclusion**

AFCC and its member companies are requesting that forest residuals or hazardous fuels be treated as carbon-neutral feedstocks for producers of biofuels. We respectfully ask CARB to have consistency in its regulatory development of standards to that of other states, federal agencies, and international policies, for ease of adoption, and not create market confusion. We ask that CARB convene a stakeholder workshop on forest residuals and its treatment of carbon neutrality, leading to policies, rules, and tools properly reflecting the carbon neutrality of forest residuals as biofuel feedstock.



**Rina Singh, PhD.**  
**Executive Vice President, Policy**  
**Alternative Fuels & Chemicals Coalition**