ALDERFUELS

August 8, 2022

Submitted Electronically

Cheryl Laskowski, Branch Chief
Transportation Fuels Branch
California Air Resources Board
1001 I St.
Sacramento, CA 95814

RE: Alder Fuels Comments in Response to the July 7, 2022, Public Workshop to Discuss Potential Changes to the LCFS

Dear Ms. Laskowski,

Alder Fuels appreciates the opportunity to provide comments on issues raised by the California Air Resources Board (CARB) during its July 7, 2022, Public Workshop to discuss potential changes to the Low Carbon Fuel Standard (LCFS). Alder greatly appreciates the leading roles the State and CARB have been playing in advancing climate action. As detailed below, we support CARB's efforts to continue to strengthen the LCFS. In particular, we support CARB's work in assessing the carbon intensity (CI) target and to take more action in support of scaling up alternative jet fuel, also known as "sustainable aviation fuel" (SAF) under the LCFS.[1] Moreover, we urge CARB to take steps to more fully reflect the carbon savings attendant to the use of woody waste residuals for low-carbon transportation fuels, including SAF, and to better prioritize woody waste pathways. Doing so will not only bring significant carbon emissions savings but will also help address California's wildfire crisis by increasing utilization of residuals and waste derived from sustainable forest management treatments that would otherwise decompose or burn.

Background on Alder Fuels

By way of background, Alder Fuels converts natural, sustainable biomass, including forest residuals, agricultural residues, and regenerative grasses, into a low-carbon to carbon-negative "green" biocrude oil (hereinafter "greencrude") that can be used to produce drop-in sustainable SAF, renewable diesel, and renewable naphtha at existing refineries using their current equipment and infrastructure. Our team has a proven record for development and commercial deployment of novel technology, including having founded AltAir Fuels, which developed the world's first refinery designed to produce SAF and military-grade fuels. That facility, in Paramount, California, has maintained continuous production since 2016. In 2020, after the successful transfer of operations of the Paramount facility to World Energy, the AltAir leadership team founded Alder Fuels.

Currently, we are engaging with various California State agencies and departments to realize synergies between the State's forest management and wildfire prevention activities and the use of woody waste biomass for low-carbon transportation fuels, including SAF. SAF can

[1] The LCFS regulations use the term "alternative jet fuel" when referring to this fuel. For purposes of these comments, Alder Fuels uses the term SAF synonymously.

meaningfully reduce aviation sector emissions today and help California achieve its climate goals. SAF reduces greenhouse gas (GHG) emissions by up to 80 percent, and Alder Fuels is working on processes that make our greencrude carbon negative, enabling extremely low-carbon and carbon-negative SAF. SAF also greatly reduces emissions that impact local air quality, reducing sulfur oxides (SOx) from jet fuel combustion by nearly 100 percent and particulate matter (PM) by approximately 50 percent, reductions that are especially impactful in communities around airports.

Support for Considering Increasing the CI Target

Alder Fuels supports CARB's plan to consider increasing the 2030 CI target to 25 or 30 percent, taking into account the results of the analysis CARB is doing on supply and demand, carbon intensity trends, and alignment with other State objectives. Based on the information we have seen to date we believe the results of this assessment will support a significant strengthening of the target. With specific reference to low-carbon transportation fuels, there is ample evidence showing that the LCFS is driving significant GHG emissions savings. At the same time, however, as CARB noted in the July 7 Workshop Presentation, additional transportation emissions reductions are needed for the State to be able to achieve its climate goals. Increasing the State's CI target will send a strong market signal resulting in additional investment and reductions in these emissions, which now account for the largest portion of the State's GHG inventory. Such a move would also serve as an example of ambition for other states and countries around the world, helping to further accelerate the adoption of SAF and other decarbonized fuels beyond California's borders. Hence, Alder Fuels supports the work CARB is doing to confirm an appropriately supportive target.

Aligning with Sustainable Aviation Fuel Goals

Alder Fuels also supports CARB's consideration of additional ways in which the LCFS could support SAF production and deployment. In recognition that SAF is relatively new to the market and faces higher production hurdles than ground-based alternative fuels, one approach would be to keep the CI baseline for petroleum-based jet fuel at a higher static level for longer, thereby providing greater incentives for low-carbon SAF production. This can also include consideration of ways to incentivize utilization of forest residuals tied to forest health and wildfire prevention, or other residuals whose utilization can help solve for other priorities of the State. As noted above, scale up of SAF is critical to meaningful reduction of aviation sector emissions to help California achieve its climate goals. Further, providing enhanced crediting for SAF would be consistent with Governor Newsom's directive for the State to adopt policies to further accelerate alternative aviation fuels deployment.[2]

Use of Forest Residues for SAF and Other Low-Carbon Transportation Fuels

A critical way in which CARB could meet its goal to better align the LCFS' climate objectives with other State priorities would be for CARB to better reflect in the LCFS and the supporting CA-GREET model the emissions savings attendant to using woody biomass residues for low-carbon transportation fuels. Further, we urge CARB to take steps to support and incentivize the inclusion of woody waste pathways under the LCFS.

[2] See Letter from Governor Newsom to Liane Randolph, Chair of CARB (July 22, 2022).

The recent White Paper, "Turning Wildfire Tinder into Low Carbon Fuels,"[3] issued by key members of the Low Carbon Fuels Coalition working on forest residuals utilization, details the tremendous wildfire prevention and climate benefits achieved through the use of forest residuals to produce SAF and other low-carbon liquid transportation fuels. This White Paper, which was based on the California Joint Institute for Wood Products Innovation's 50-member working group assessment on "Advancing Collaborative Action on Forest Biofuels," explains that "the production of transportation fuels is the highest and best use of woody biomass because this feedstock is abundant and reliable, advanced technologies drastically reduce criteria pollutants and greenhouse gas (GHG) emissions relative to fossil fuel refining, and transportation is the hardest economic sector to decarbonize."

While California leads the nation in decarbonizing its transportation fuels, this has been achieved primarily through the importation of liquid fuels from other states and countries, with California currently importing over 90% of its low carbon liquid fuels.[4] In dramatic contrast to other feedstocks suitable for producing low carbon liquid fuels, California currently possesses forest woody biomass in overabundance. Indeed, California's forest health management and forest fire fuels reductions are projected to produce close to 24 million bone dry tons of biomass waste per year as the California State and Federal governments reach their goal of treating one million acres annually. Without significant commercial alternative uses for that waste, the State would be forced to leave tons of the material in piles that will eventually burn or decay, posing other risks and releasing carbon and particulate matter emissions into the air.

To address this, and as recommended in the California Joint Institute for Wood Products Innovation's seminal report, "Advancing Collaborative Action on Forest Biofuels," Alder Fuels urges CARB to adopt a simplified forest biomass feedstock calculator for CA-GREET to estimate lifecycle emission savings from mobilizing woody wastes and residues relative to their counterfactual fate. Moreover, CARB should expedite review of fuel pathways using woody biomass as feedstock to produce SAF and other transportation fuels. These actions would increase SAF production and support California's climate and carbon neutrality goals. As the California Energy Commission recently recognized in its Pre-Solicitation Workshop on Zero- and Near-Zero Carbon Fuel Production and Supply Funding Concepts, "unlock[ing] waste-based woody biomass" would provide "one of the largest sustainable feedstocks for fuels and energy," while also creating jobs and positive economic impact, particularly in disadvantaged communities.[5] In addition, provision of the appropriate regulatory foundation for use of woody waste residues for SAF and other low- and carbon-negative transportation fuels would provide a

[3] Turning Wildfire Tinder into Low Carbon Fuels: https://static1.squarespace.com/static/586eba3b15d5db8b6432c77d/t/6266e5d2c2744b357a4aaa72/1650910726895/Turning+Wildfire+Tinder+Into+Low+Carbon+Fuels_White+paper+for+Policymakers.pdf.

[4] California Air Resources, Board, Low Carbon Fuel Standard (LCFS) Data Dashboard, Figure 10, at https://ww2.arb.ca.gov/resources/documents/lcfs-data-dashboard.

[5] California Energy Commission, "Zero- and Near-Zero Carbon Fuel Production and Supply Funding Concepts – Docket Number 22-TRAN-01, TN # 243123, Pre-Solicitation Workshop Presentation, Slides 17-18 (July 14, 2022).

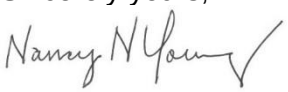
revenue stream that would help to defray the high costs of forest treatments and support the State's ambition for treating a million or more acres of forestland in the State per year.[6]

Expert and Cross-Agency Collaboration on Forest Residuals Utilization

Alder Fuels believes that advancing forest residuals utilization in support of California's climate and wildfire prevention goals can be best accomplished by augmenting CARB's expertise through nimble, yet thorough, collaboration with other key California departments and agencies with distinct roles in this space, including the California Natural Resources Agency, Department of Forestry and Fire Protection, the Board of Forestry, the California Energy Commission, GoBiz, and the Governor's Office of Planning and Research. In addition, outside experts in lifecycle GHG emissions analysis have considerable insights to share, as do those of us who work with the technologies to convert woody wastes into low-carbon transportation fuels. To leverage the expertise of other California State departments and agencies and outside experts, we recommend that CARB consider a focused conversation in which CARB staff, staff from other relevant agencies (including relevant federal partners), and primary stakeholders such as the companies that contributed to "Turning Wildfire Tinder into Low Carbon Fuels" White Paper, can discuss forest residuals utilization in the context of the LCFS. Accordingly, Alder Fuels strongly urges CARB staff to convene an LCFS workshop focused on woody biomass as soon as practicable. Alder Fuels stands ready to assist with identifying key organizations and individuals that would be critical for this work should staff be open to receiving recommendations and to participating in any resulting workshop.

Thank you for your consideration.

Sincerely yours,



Nancy N. Young
Chief Sustainability Officer

[6] See B. Cabiyo, J. Fried, B. Collins, W. Stewart, J. Wong, and D. Sanchez, "Innovative Wood Use Can Enable Carbon-Beneficial Forest Management in California," PNAS (2021) (available at https://www.pnas.org/doi/epdf/10.1073/pnas.2019073118).