

ALDER FUELS

June 24, 2022

California Air Resources Board
1001 I Street
Sacramento, CA 95814

Rajinder Sahota
Deputy Executive Officer, Climate Change and Research

Matthew Botill
Division Chief, Industrial Strategies Division

Re: Alder Fuels Comments on 2022 Draft Scoping Plan – Urging Revision of CARB’s Approach to Forest Biomass

To the California Air Resources Board (CARB) Team:

I write on behalf of Alder Fuels to share our appreciation for the work CARB is doing to advance the State’s goal of achieving carbon neutrality by 2045 or earlier through the Draft Scoping Plan. Although broadly supportive of the Draft Scoping Plan, we are concerned that the way CARB has addressed woody biomass in the Draft Scoping Plan is not fully reflective of the state of the science or of the critical need and significant opportunity presented to use woody biomass to produce sustainable aviation fuel (SAF) and other low-carbon transportation fuels. Hence, as detailed below, we urge CARB to revise its assumptions and approach to woody biomass and, going forward, to take further steps to enable appropriate treatment of such biomass under all CARB programs, particularly including the Low Carbon Fuels Standard (LCFS) and its supporting tools. By appropriately embracing woody biomass as a bountiful, sustainable, and beneficial feedstock, CARB can facilitate the achievement of carbon neutrality, improve safety and air quality for all Californians, and create rural jobs and economic development.

By way of background, Alder Fuels is a process technology and project development company in the advanced, low-carbon transportation fuels industry. Our proprietary technology uniquely enables the efficient conversion of abundant, sustainable biomass residues and regenerative grasses into a carbon negative “green” biocrude oil, suitable for conversion into drop-in SAF, diesel, and naphtha by 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 for the production of SAF and military-grade fuels. That facility, in Paramount, California, has maintained continuous production since 2016. In 2020, subsequent to the successful transfer of operations of the Paramount facility to World Energy, the AltAir leadership team founded Alder Fuels.

Today, Alder Fuels is focused on the conversion of biomass, including wood and forest residues, crop residues, and regenerative species like miscanthus, into biocrude and the production of SAF. Currently, we are engaging with various California State agencies 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.¹ Because electrification of commercial aircraft is decades away, SAF is the solution to meaningful reduction of aviation sector emissions to help California achieve its climate goals. SAF can reduce greenhouse (GHG) emissions by up to 80 percent, and Alder Fuels is working on processes that make our biocrude 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.

Turning to the Draft Scoping Plan, while supporting CARB's efforts to advance low-carbon fuels, we are concerned about the method CARB uses for evaluating forest biomass in the Draft Plan and urge reconsideration of that method. The Draft Plan appears to propose either open burning or abandoning in the forest significant volumes of residues resulting from wildfire prevention treatments. This results from a gross underestimation of the quantity of woody residues that are capable of being collected and likely to be collected, with the combined Draft Plan assumptions resulting in the estimation that, on average across scenarios, only 2.4 dry tons of residues would be collected per acre subject to forest treatment,² with the remaining (vast majority) of residues then modeled as subject to open burning or being left to decay.³

The Scoping Plan estimate of woody residue that is projected to be collected is extremely low, as expert analyses of California's woody biomass demonstrate that woody residue mobilization can be expected to average 10-15 dry tons per acre, and as much as 20 dry tons per acre per year by 2030 with State and federal policy alignment.⁴ Indeed, Alder Fuels seeks to source such woody biomass residue in the State to produce biocrude that can be refined into SAF and other low-carbon transportation fuels, as do several other biofuels companies.⁵

¹ The opportunity presented to facilitate California's wildfire prevention and climate change goals by producing SAF and other low-carbon transportation fuels from woody biomass generated by forest management activities is detailed in the White Paper, "Turning Wildfire Tinder into Low Carbon Fuels," issued under the Low Carbon Fuels Coalition (hereinafter "Turning Wildfire Tender into Low Carbon Fuels"). This White Paper was based on the California Joint Institute for Wood Products Innovation's 50-member working group assessment on "Advancing Collaborative Action on Forest Biofuels."

² See Scoping Plan, at Appendix I (woody biomass collection derived from the scenarios presented).

³ The technical basis of our concerns is also expressed and documented in the section of the joint letter on the Scoping Plan, submitted on June 23, 2022, by Lawrence Livermore National Laboratory, the University of California at Berkeley, Princeton University, and Conservation Strategy Group, titled "Analysis on the treatment of forest biomass in the draft Scoping Plan," and we incorporate that section of the joint letter by reference.

⁴ See "Turning Wildfire Tinder into Low Carbon Fuels," at 12. See also S. Baker, J. Stolaroff, et al "Getting to Neutral: Options for Negative Carbon Emissions in California," January, 2020, Lawrence Livermore National Laboratory, LLNL-TR-796100 (available at https://gs.llnl.gov/sites/gf/files/2021-08/getting_to_neutral.pdf.)

⁵ See "Turning Wildfire Tinder into Low Carbon Fuels."

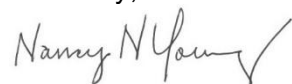
Following through on the Draft Scoping Plan's approach to woody biomass and the assumptions underlying it would not only result in severe air and water quality impacts and carbon dioxide (CO₂) and methane emissions but would perpetuate wildfire risk to communities while missing the tremendous opportunity woody biomass presents for scale-up of SAF and other low-carbon transportation fuels. Instead, the Draft Plan should acknowledge and support removal of higher quantities of residues – closer to the gross resource total that would accrue from an ecological wildfire prevention treatment in line with the expert analyses we cite above. Notably, a strategy to collect and convert residues into low- and carbon-negative transportation fuels would provide a 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 In contrast, by minimizing the role of forest biomass in the Draft Plan, CARB could inadvertently discourage investments and policy support for climate-resilient California forests and local communities based on erroneous assumptions, thereby undermining the State's ability to achieve net-zero emissions by 2045 or sooner. Hence, we urge CARB to reassess its assumptions with additional expert inputs.

In addition, we urge CARB to revise its approach to GHG emissions accounting for woody biomass residues to take into account avoided emissions from use of such residues for low carbon fuels, consistent with the recommendations of the State's Joint Institute for Wood Products Innovation in its report, "Advancing Collaborative Action on Forest Biofuels in California." Specifically, CARB should support research and adopt a simplified forest biomass feedstock calculator for CA-GREET which estimates emissions savings from mobilizing in-state woody wastes and residues relative to the counterfactual fate of these feedstocks. Moreover, CARB should consider additional, targeted incentives for fuel pathways making use of in-state woody wastes and residues from fire management and forest restoration activities, such as credit carve-outs.

Through improved assumptions and accounting for woody biomass utilized as feedstock for SAF and other low-carbon transportation fuels, CARB can further solidify the State's position as a global leader in biofuels production, thereby supporting California businesses and jobs while advancing California's climate and wildfire prevention goals. Alder Fuels stands ready to support CARB in this important endeavor.

Thank you for your consideration.

Sincerely,



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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>).