May 9, 2024

The Honorable Liane M. Randolph, Chair
California Air Resources Board
P.O. Box 2815
Sacramento, California 95812

RE: Bayer Crop Science's Comments Relating to Climate Smart Agriculture and other Biofuel Issues raised by the Proposed Amendments to the Low Carbon Fuel Standard

Dear Chair Randolph:

Bayer Crop Science (Bayer) appreciates the current and historic efforts by the California Air Resources Board (CARB) to reduce the greenhouse gas (GHG) emissions from transportation through the implementation of the State's Low Carbon Fuels Standard (LCFS). Bayer supports the continued evolution of the LCFS through the CARB rulemaking process. Of particular interest to Bayer is the production of biofuels in the most sustainable manner.

In 2018, the Intergovernmental Panel on Climate Change (IPCC) published a Special Report on the impacts of a 1.5°C global warming above pre-industrial levels. This report found that achieving global carbon neutrality by mid-century is critical to avoiding the most catastrophic impacts of climate change.[1] Moreover, the IPCC Sixth Assessment identified land-based emissions mitigation as "the only [sector] in which large-scale carbon dioxide removal may currently and short term be possible" and that it is "crucial to limit climate change and its impacts."[2] The latest science finds that it is increasingly likely that the 1.5°C target will be exceeded[3] and that large-scale GHG reductions are critical to meeting any state or global target.[4]

Already a leader in the response to climate change, CARB's 2022 Scoping Plan Update details sector-by-sector roadmaps for California to achieve carbon neutrality by 2045 or earlier. One critical roadmap is for the aviation sector, where the scenario includes a transition of 20 percent of aviation fuel demand to zero-emission technologies by 2045 and sustainable aviation fuel (SAF) for the other 80 percent.[5]

The agriculture sector can play a significant role in helping California meet the goal of generating SAF and achieving LCFS carbon intensity (CI) standards. Viable practices to significantly reduce CI include optimizing fertilizer

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[1] IPCC, 2018: Summary for Policymakers. In: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, pp. 3-24, https://doi.org/10.1017/9781009157940.001.

[2] Nabuurs, G-J., R. Mrabet, A. Abu Hatab, M. Bustamante, H. Clark, P. Havlík, J. House, C. Mbow, K.N. Ninan, A. Popp, S. Roe, B. Sohngen, S. Towprayoon, 2022: Agriculture, Forestry and Other Land Uses (AFOLU). In IPCC, 2022: Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change[P.R. Shukla, J. Skea, R. Slade, A. Al Khourdajie, R. van Diemen, D. McCollum, M. Pathak, S. Some, P. Vyas, R. Fradera, M. Belkacemi, A. Hasija, G. Lisboa, S. Luz, J. Malley, (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA. https://doi.org/10.1017/9781009157926.009.

[3] Mathews, D.H., Wynes, S. (2022) Current global efforts are insufficient to limit warming to 1.5°C. *Science* 376 (6600) 1404-1409. https://www.science.org/doi/10.1126/science.abo3378

[4] Mace, M.J., Fyson, C.L., Schaeffer, M., Hare, W.L. (2021) Large-Scale Carbon Dioxide Removal to Meet the 1.5°C Limit: Key Governance Gaps, Challenges and Priority Responses. *Global Policy* 12 (51) 67-81. https://doi.org/10.1111/1758-5899.12921

[5] CARB (2022) 2022 Scoping Plan for Achieving Carbon Neutrality. https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf

application, reducing tillage, using enhanced-efficiency fertilizers, double-cropping and planting cover crops. Collectively, these practices have the potential to reduce the CI of fuels by more than 40 g CO_2e/MJ.[6] These practices are not limited to their GHG-reducing benefits; they also provide "additional ecosystem service benefits, including watershed protection, increased biodiversity, and improved soil health and fertility."[7] Carbon sequestration in agriculture presents one of the greatest potential mitigation sources. IPCC's 2024 Summary for Policymakers identified this strategy as one of the top five mitigation options in the near term with the sequestration potential of approximately 3.4 $GtCO_2$-eq/yr by 2030.[8]

About Bayer Crop Science
Bayer is a global enterprise with core competencies in the life science fields of health care and crop science. Bayer's products and services are designed to help people and the planet thrive by supporting efforts to master the major challenges presented by a growing and aging global population. Bayer is pioneering farming solutions that accelerate the decarbonization of the food, fuel and agricultural supply chain and is supportive of policy development that recognizes the potential of climate-smart agriculture as an effective lever for achieving these goals.

Support for the reduction of impacts of agricultural practices in feedstock production
With reference to slide 58 of the presentation from the April 10 workshop, we support the need to "[r]educe other impacts of agricultural practices in feedstock product." To meet this goal, CARB should continue to ensure that the fuels used in the LCFS program are produced in the most sustainable manner. We advocate for rigorous accounting methods that quantify the GHG emissions from crop-based feedstocks. We encourage CARB to incentivize the production of low carbon feedstocks. Corn, soybeans, canola and other crops can be grown on a wide range of soils using a variety of farming techniques and inputs that significantly impact the CI of those fuels. CARB's best opportunity to support the use and expansion of these practices is to accurately reflect the GHG benefits in the CI scores of the fuels produced from the lowest carbon feedstocks.

Recommendation to Analyze and Develop Focused Reports on Climate-Smart Agriculture
We recognize that this is a rapidly evolving and complex area. To best integrate farming practices and climate-smart agriculture into the LCFS program structure, we encourage the Board to direct staff to dedicate time and resources to analyze the GHG reduction opportunities for crop-based feedstocks and report back to the Board. We would recommend that an initial report be presented to the Board by the end of 2025, and a final report by the end of 2026. This timeline is proposed to coincide with the proposed new LCFS regulatory requirement pursuant to section 95488.9(g)(1)(A) that all crop-based and forestry-based feedstocks used for LCFS fuel pathways must maintain continuous third-party sustainability certification with an original certification completed before January 1, 2028. The focused research, analysis, and reporting by CARB staff that will be necessary to develop the reports to the Board and also will inform CARB staff's and the Board's review of certification systems. This process will provide the foundation for potential future modifications to the LCFS regulations and CA-GREET to recognize climate-smart agricultural practices with the next update of the LCFS regulations.

In the interim period before January 1, 2028, we are requesting that the Board encourage CARB staff to consider and potentially evaluate Tier 2 pathways to credit climate-smart farming practices that enable feedstock to be produced in a less carbon intensive manner. In addition, we encourage CARB to allow the crediting of higher yields than the defaults in the GREET calculator, as well as indirect benefits potentially attained from producing oilseeds on fallow acres (e.g. negative land use change values as has been documented in published, peer reviewed studies.). We recommend that the total feedstock CI reduction for a qualifying fuel pathway be based on the aggregate net reduction achieved for all the farming practices as compared to the Tier 1 CA-GREET calculator standard value for these feedstock CI components.

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[6] Liu, X. et. al. (2020) Shifting agricultural practices to produce sustainable, low carbon intensity feedstocks for biofuel production. *Environ. Res. Lett.* https://doi.org/10.1088/1748-9326/ab794e
[7] *ibid*.
[8] IPCC, 2023: Summary for Policymakers. In: *Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, H. Lee and J. Romero (eds.)]. IPCC, Geneva, Switzerland, pp. 1-34, doi: 10.59327/IPCC/AR6-9789291691647.001, at p. 27, figure SPM.7.

Feedstock Sustainability Certification

Bayer supports CARB's recognition of the important role that crop-based biofuels play in reducing GHG emissions and appreciates CARB's decision to reject an arbitrary cap on crop-based fuels. As previously noted, CARB is proposing that all crop-based feedstock used for LCFS fuel pathways must obtain third-party sustainability certification by January 1, 2028, under an approved certification system. Bayer is committed to strong sustainability provisions; however, we have significant concerns regarding CARB's current open-ended proposal to require third-party "sustainability certifications" for crop-based feedstocks.

At Bayer, we are committed to agriculture solutions for today and tomorrow. We support farmers as they work to optimize their fields, care for their land, and contribute to the climate solution. Through Bayer's digital platform ForGround, we are striving to make the adoption of regenerative agriculture practices, like reduced tillage and cover crops, easier for farmers across the country. Through these practices farmers can support their long-run soil health, create more resilient crops, reduce erosion, and increase soil water availability for their crops. Critically, these practices also sequester carbon in soil and are critical to producing sustainable agricultural biofuel feedstocks.

We believe the provisions under section 95488.9(g)(1)(B) are too vague, and insufficiently aligned with LCFS program goals. Additionally, it is unclear why only crop and forestry-based fuels are required to meet social and economic criteria, as these same criteria could equally apply to other fuel pathways participating in the program. These additional criteria have the potential to add substantial administrative burdens to both farmers and fuel producers, potentially creating barriers to participation in the LCFS, and as such should be carefully considered in the context of what the program hopes to achieve with these criteria.

Therefore, we respectfully recommend that this portion of the proposed regulatory structure undergo significant additional review and development prior to being integrated into the LCFS regulation. Based on our own experiences in the creation and development of new business models for CSA, we would like to offer the following perspectives and recommendations:

- Program requirements should be informed by farmers and their associations who have the best on-the-ground understanding of ways to improve soil health within a given soil type, cropping system, or geography.
- CARB should do outreach, hold dedicated workshops, and provide the opportunity for multi-stakeholder input and workshop feedback to align substantive LCFS requirements with specific LCFS goals and to make the sustainability provisions practicable.
- In the process of determining whether specific sustainability criteria should be imposed on crop-based feedstocks, CARB should simultaneously determine how to best integrate climate-smart agriculture practices to be credited under the LCFS, While these climate-smart practices represent significant additional effort and cost on the part of the farmer to learn and implement, they can bring significant GHG emissions reductions, as recognized by the U.S. Department of Agriculture, the National Academy of Sciences, the IPCC, and others.[9] Therefore, these practices should be incentivized through crediting to drive adoption of these important practices.
- CARB should consider the indirect benefits potentially attained from producing oilseeds on fallow acres. Feedstocks from crops which grow between rotations of primary crops, and act as a functional cover crop, should be afforded negative land use change values in the updated LCFS. Feedstocks from these new crops are incremental, additive sources of feedstock without driving any land use change. Additionally, processing of

[9] J. Rosenfeld, J. Lewandrowski, T. Hendrickson, K. Jaglo, K. Moffroid, and D. Pape, 2018. A Life-Cycle Analysis of the Greenhouse Gas Emissions from Corn-Based Ethanol. Report prepared by ICF under USDA Contract No. AG-3142-D-17-0161. September 5, 2018. 7. National Academies of Sciences, Engineering, and Medicine. 2019. Negative Emissions Technologies and Reliable Sequestration: A Research Agenda. Washington, DC: The National Academies Press. doi: https://doi.org/10.17226/25259. Nabuurs, G-J., R. Mrabet, A. Abu Hatab, M. Bustamante, H. Clark, P. Havlík, J. House, C. Mbow, K.N. Ninan, A. Popp, S. Roe, B. Sohngen, S. Towprayoon, 2022: Agriculture, Forestry and Other Land Uses (AFOLU). In IPCC, 2022: Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, P.R. Shukla, J. Skea, R. Slade, A. Al Khourdajie, R. van Diemen, D. McCollum, M. Pathak, S. Some, P. Vyas, R. Fradera, M. Belkacemi, A. Hasija, G. Lisboa, S. Luz, J. Malley, (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA. doi: 10.1017/9781009157926.009.

these crops adds other materials, such as animal feeds, into our economy that help to decrease the risk of land use changes globally.

By focusing on what the State of California seeks to achieve through additional sustainability criteria, and delineating those criteria with appropriate inputs, CARB can ensure that program requirements are fit for purpose, clear, transparent, applied fairly across feedstocks and fuel production processes, properly credit GHG emissions reductions from agricultural feedstocks, and align with LCFS-specific program goals. And such a process need not take long, as CARB could set up a process with a specified time frame (e.g., six months) as it has in other instances where program requirements need to be refined.

The Imperative of Dramatically Expanding the Supply of Sustainable Aviation Fuel Underscores the Importance of Policy that Leverages GHG Reductions from Climate-Smart Agriculture

The Biden Administration launched the SAF Grand Challenge three years ago to inspire a dramatic increase in the production of SAF to at least 3 billion gallons per year by 2030.[10] Subsequently the 2022 Inflation Reduction Act (IRA) established a federal tax credit of $1.25-$1.75 per gallon under section 40B for SAF that attained a CI reduction of at least 50% (SAF Tax Credit). Just last week, the Department of Treasury and the Internal Revenue Service issued a series of guidance documents including Notice 2024-37 for the SAF Tax Credit.[11] This Notice introduced the U.S. Department of Agriculture's (USDA) Climate Smart Agriculture Pilot Program (CSA Pilot Program). The objective of the CSA Pilot Program is to provide farmers with the opportunity to achieve greater emissions reductions pursuant to the 40BSAF-GREET 2024 model. The CSA Pilot Program provides specific and certifiable farming practices that can be implemented by domestic soybean and domestic corn feedstock producers. The benefit to farmers of implementing and certifying the use of these practices is to open the door to SAF Tax Credits and resulting revenues.

California has similarly established the expansion of SAF as a priority goal for the State. Governor Newson has targeted 20% clean fuels adoption in the aviation sector.[12] The Legislature has estimated a need for at least 1.5 billion gallons of SAF blending by 2030.[13] Moreover, in order to fulfill California's goal of achieving carbon neutrality by 2045, the 2022 CARB Scoping Plan states that 80% of all aviation fuel demand will need to come from SAF by 2045.[14] These California goals are aligned with the federal government's SAF Grand Challenge. We encourage CARB to consider the USDA CSA Pilot Program and the certification recognized therein. While the pilot program will need adjustments regarding the bundling of climate-smart practices and crops included, it does recognize the opportunity of climate-smart agriculture practice's ability to unlock additional GHG reductions and expand the availability of SAF. It also sets a standard for certification and record keeping documentation which warrants evaluation as a reference point for potentially establishing a similar California program. By evaluating existing programs like the USDA CSA Pilot Program, or the Renewable Fuel Standard (RFS), CARB could permit some level of aggregate compliance. This approach would streamline compliance requirements for feedstocks from regions with proven sustainability practices, aligning with existing regulatory frameworks while ensuring environmental integrity and reducing the administrative burden for farmers.

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[10] The White House, "FACT SHEET: Biden Administration Advances the Future of Sustainable Fuels in American Aviation," (September 9, 2021), available at https://www.whitehouse.gov/briefing-room/statements-releases/2021/09/09/fact-sheet-biden-administration-advances-the-future-of-sustainable-fuels-in-american-aviation/

[11] https://www.irs.gov/pub/irs-drop/n-24-37.pdf

[12] See California Office of the Governor, Governor's Letter to Chair Randolph. July 22, 2022. https://www.gov.ca.gov/wp-content/uploads/2022/07/07.22.2022-Governors-Letter-to-CARB.pdf?emrc=1054d6

[13] See AB1322 (Rivas) available at https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202120220AB1322. AB 1322 was passed by the California assembly in 2022 and later vetoed by Governor Newsom, who, in his veto letter, supported the legislature's intent with the bill and ordered CARB to develop a "plan to reduce greenhouse gas emissions through the production and use of sustainable aviation fuels by July 1, 2024". Governor Newsom's veto letter available at https://www.gov.ca.gov/wp-content/uploads/2022/09/AB-1322-VETO.pdf?emrc=7598b6

[14] *See* CARB, 2022 Scoping Plan for Achieving Carbon Neutrality. December 2022. https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp_1.pdf. Page 73. The Scoping Plan scenario envisions 20% of aviation fuel demand met by electricity (batteries) or hydrogen (fuel cells) in 2045, with sustainable aviation fuel meeting the remaining 80%.

Conclusion
CARB has been an international leader in developing and implementing programs to reduce GHG emissions across the California economy. The inclusion of climate-smart agricultural practices will continue the State's leadership throughout the country, especially in the Midwest where a large portion of the corn and soy are grown that provide the feedstocks used to produce a large portion of the low carbon liquid fuels that enable attainment of LCFS CI reduction standards. We thank CARB for this opportunity to offer these comments and look forward to continued collaboration to implement policies and strategies that further reduce emissions from the transportation sector.

Sincerely,

Chelsey Robinson

Chelsey Robinson
Director, North America Sustainability; Agriculture Affairs
Bayer Crop Science