California Air Resources Board
1001 I Street
Sacramento, CA 95814

Richard Corey
Executive Officer

Liane Randolph
Chair

Rajinder Sahota
Deputy Executive Officer, Climate Change and Research

Cheryl Laskowski
Branch Chief, Transportation Fuels

June 24th, 2022

Subject: Comments relating to 2022 Draft Scoping Plan Update by John Deere, Inc.

To the Scoping Plan team,

We commend the California Air Resources Board (CARB) staff for completing the Draft 2022 Scoping Plan Update. By both extending the Scoping Plan's duration to 2045, and further integrating natural and working lands into State planning and accounting, CARB continues California's long history of leadership in climate change mitigation. John Deere supports the recognition of how vital our forests and soils are to climate mitigation, and climate resiliency and adaptation.

We at John Deere are actively contributing to this vision as part of our day-to-day operations. In this letter we outline three modes of action cited by CARB as joint priorities with our internal strategy, and where we can contribute substantive climate impact, especially with additional support and consideration from CARB. These are: (1) on-farm electrification; (2) healthy working lands; and (3) low-carbon fuels. We emphasize that when it comes to climate action, there is no 'silver bullet' solution. Rather, we see each of these modes of action as complementary and additive towards larger climate goals. For example, we believe that both on-farm electrification and biofuels – especially in the near-term for large equipment – are necessary solutions for realizing robust working lands that leverage alternative power. As a recent DOE Co-Optima publication highlighted, even with a rapid rise in electrification options, it will still take decades to

transition fully to electric, highlighting the need for both long-term electrification plans and robust low-carbon fuel supply chains.[1]

Electrification

On-farm electrification has the potential to reduce carbon footprints of production practices in measurable and verifiable ways. John Deere is currently developing electrification solutions for those products that have the best potential for rapid, commercial applicability. While not all farming operations are amenable to electric power, battery electric vehicles may be a good fit for high-value crop production as practiced in California and elsewhere. For these applications, we anticipate operating and cost efficiencies, on-farm fuel use reductions, and lower carbon emissions. Additionally, with our digitization tools, these effects can be easily measured and documented using the John Deere Operations Center, which will enable producers to participate in markets that pay a premium for climate-smart commodities with rigorous data. John Deere is currently developing electrification solutions for those products that have the best potential for rapid, commercial applicability. While not all farming operations are amenable to electric power, battery electric vehicles may be a good fit for high-value crop production as practiced in California and elsewhere. For these applications, we anticipate operating and cost efficiencies, on-farm fuel use reductions, and lower carbon emissions. Additionally, with our digitization tools, these effects can be easily measured and documented using our John Deere Operations Center, which will enable producers to participate in markets that pay a premium for climate-smart commodities with rigorous data.

Deere believes that electrification & digitization will play a significant role among alternative propulsion strategies to help decarbonize agriculture. As has proven effective for passenger electric vehicles, CARB policies can help advance this transition by: communicating widely to producers the benefits of electrification; providing producers with incentives to finance electric off-road equipment; and by supporting manufacturing and workforce development for this emerging sector.

Healthy working lands

Deere technology supports regenerative agriculture in myriad ways and we are constantly improving and iterating. Our technical solutions prioritize operational efficiency – saving producers time and money, as well as reducing the environmental impact of their operations. Deere's product lines support growers doing more with less, with technology such as Autotrac and Section Control, which save fuel and inputs by reducing overlapping passes; and See & Spray, which drastically reduces herbicide application by only spraying where there are weeds that need to be controlled.

1 U.S. Department of Energy. "Co-Optimization of Fuels and Engines: the road ahead toward a net-zero-carbon transportation future." https://www.energy.gov/sites/default/files/2022-06/beto-co-optima-fy15-fy21-impact.pdf (2022).

Beyond our continued research and development targeted at operational efficiencies and sustainability across a diversity of machine-based technical solutions, John Deere is uniquely positioned to enable producers interested in participating in climate smart commodity programs to directly measure and report on their operational activities through the John Deere Operations Center data platform. Operations Center is additionally interoperable with machinery outside of the John Deere family, thereby promoting data empowerment broadly among producers.

High-integrity operational data tracking (e.g. agrochemical application, tillage depth, seeding rate, grain moisture content, etc.) allows growers to move beyond the use of imprecise emissions factors for tracking on-farm GHG impacts. These direct measurements could easily be paired with water, soil health, and carbon sequestration monitoring for growers that want to distinguish themselves in markets where climate-smart crops are valued with a premium. These capabilities could enable producers to rigorously and reliably monitor, report, and verify emissions reductions and avoidance. With support from CARB, we could empower growers to participate in voluntary carbon markets and incentives programs for insetting and climate-smart agricultural practices. CARB policies can further help us to achieve a goal of empowering producers to uptake climate-smart practices by: communicating widely to producers the benefits of leveraging their data; and by providing frameworks that enable producers to participate in markets that pay a premium for low carbon commodities, such as low carbon fuel markets.

Low-carbon fuels

Low-carbon and carbon-negative fuels, driven largely by California's supportive climate policy, is a key area of focus and growth for John Deere's customers. We are glad that the Draft Scoping Plan embraces the promise of low-carbon fuels, and sets out a process for extending and strengthening the Low Carbon Fuel Standard (LCFS).

In addition to improvements contemplated in the Draft Scoping Plan, we recommend future improvements to the LCFS in one key area: inclusion of farm-level GHG accounting for biofuel feedstocks, whether produced in or out of the state of CA, in the future LCFS policy. Emissions generated as part of growing feedstock for biofuel production are as engrained in the fuel carbon footprint as processing of the feedstock, which is already included in LCFS calculations regardless of where the processing occurs.

Growing feedstock is an important part of the overall carbon footprint of producing biofuels. The carbon footprint associated with feedstock production can vary significantly between producers based on their on-farm practices, primarily through variability in synthetic nutrient use. John Deere equipment, such as variable rate and split fertilizer applicators, can provide growers with the tools to reliably monitor and reduce these inputs while still maintaining best-in-class yields. At the same time, clean fuel policies can support uptake of climate-smart practices such as no-till, and cover cropping by incorporating on-farm practices into dynamic CI calculations. However, existing clean fuels policies, including the CARB LCFS and Oregon's Clean Fuels Program do not currently recognize or compensate farmers for climate-smart farming practices.

Instead, these programs assign average values for biofuel feedstocks. Not driving innovation in farm-level practices is a missed opportunity for climate leadership.

To practically implement these recommendations, we recommend that CARB review the recently released Great Plains Institute "Framework for Including Farm-Level Greenhouse Gas Emissions in Clean Fuels Policies."[2] California risks becoming the target for emissions leakage; as other low-carbon fuels policies, such as those contemplated in the Midwest, begin to recognize farm-level GHG accounting, California could inadvertently allow higher emissions growers to continue to sell into their markets without proper emissions attribution. This would sacrifice State leadership in climate-smart agriculture.

John Deere is committed to enabling growers to robustly measure the field-level carbon intensity of the feedstocks they produce through high quality data recorded directly by machines. We recently submitted multiple applications to the USDA Climate Smart Commodity RFP specifically to demonstrate pathways for robust and transparent measurement and verification methodologies in this space. We look forward to providing further perspectives on this issue in upcoming LCFS-related proceedings and other public processes.

Driving further reductions of feedstock carbon intensity is consistent with the following aspects of the Draft Scoping Plan:

- "The overriding goal of [the] plan" to "support success in the necessary transition away from fossil combustion" (page 146). By establishing a methodology for recognizing climate smart farming practices as part of LCFS, CARB will set the tone for followers considering low-carbon fuels policies across the US and world.
- "Healthy land can sequester and store atmospheric carbon dioxide in forests, soils, and wetlands." (page 22) The LCFS can reward developing healthy lands as part of the production of biofuels.
- "Natural systems operate on a longer timescale than the energy and industrial sectors, and benefits from climate action on our lands can take decades to accrue, so California recognizes that climate action may lead to less total carbon on the landscape than we currently have in order to ensure ecosystem benefits in the long run. Scaling climate smart land management in California requires taking action now and playing the "long game" by establishing and maintaining consistent, patient approaches and programs." (page 197). Taking a patient, consistent approach to on-farm practices is key to encouraging climate-smart agriculture.
- "Leverage existing and explore new innovative financial and market mechanisms between the public, private, and philanthropic sectors to secure funding of climate smart land management." (page 202) The LCFS is an existing, innovative market mechanism that could be used to drive climate smart land management.

[2] https://betterenergy.org/blog/coalition-releases-framework-for-including-farm-level-greenhouse-gas-emissions-in-clean-fuels-policies/

- The following benefits are recognized in-state, but not when integrated into biofuels production: “cover cropping, no till, reduced till, compost amendment, transition to organic farming, avoided conversion of annual crop agricultural land through easements, establishing riparian forest buffers, alley cropping, establishing windbreaks/shelterbelts, establishing tree and shrubs in croplands, and establishing hedgerows. For perennial crops, windbreaks/shelterbelts, hedgerows, conversion from annual crops to perennial crops, and avoided conversion to other land uses.” (page 75)

Conclusion

In summary, John Deere is actively contributing to the draft Scoping Plan’s vision as part of our day-to-day operations. California and U.S. forests and soils *are* our climate mitigation, as well as climate resiliency and adaptation. The primary modes of action where John Deere and its customers can directly contribute substantive climate impact include: (1) on-farm electrification; (2) healthy working lands; and (3) low-carbon fuels.

John Deere plans to actively participate in upcoming rulemakings around both LCFS, and medium- and heavy-duty electrification. We look forward to the opportunity to share more information with the ARB and continue, collectively, to climate leadership domestically and internationally.

Respectfully submitted,

Julian Sanchez
Director, Emerging Technology
Deere & Company