Thank you for the opportunity to submit comments to the 2022 Scoping Plan. California's goal to achieve carbon neutrality by 2045 is ambitious and will require CARB and other state agencies to work together with industry and other stake holders to achieve this laudable goal.

To that end, Cargill respectfully requests that CARB reconsider its treatment of wet milled corn ethanol. Current carbon intensity (CI) models used by CARB are not consistent with the Argonne National Lab's Greenhouse Gas and Regulated Emissions and Energy in Transportation (GREET) model or more recent data from the USDA. Additionally, we ask that any CI model should reflect the adoption of voluntary and sustainable farm practices such as the planting of cover crops to improve soil health, no till/strip till farming, precision agriculture, and several others.

Further, CARB's goal could be accelerated by recognizing the role dextrose can play in moving toward a low carbon economy. Dextrose is a critical feedstock of the corn wet milling manufacturing process and is the primary feedstock for making new petroleum-free chemicals and products, from fabrics and plastic to jet fuel and other advanced biofuels. Such uses of this vital feedstock should also contribute to a better reflection of wet milled corn ethanol's carbon intensity rating.

Again, Cargill appreciates the opportunity to submit comments to the 2022 Scoping Plan and we are eager to be a partner to the California Air Resources Board in achieving its carbon neutrality goals. We wish to be a resource as the scoping plan progresses. Our full position paper addressing how wet milled corn ethanol and dextrose can contribute to a carbon-free economy is attached, and we welcome any comments and questions you might have.

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# Supporting the Bioeconomy: *How corn is part of the climate solution*

Cargill supports a thoughtful, scientific, and holistic approach to establishing **low-carbon or clean fuel standards** and related policies that reflect all relevant aspects of corn processing and recognize its value for biobased chemicals, fuels, and products to accelerate the growth of value-added agriculture and the bioeconomy, advance a more circular economy, and contribute to the decarbonization of the U.S. economy.

## Wet Corn Milling Process

Cargill is a global agribusiness company with nearly 40,000 U.S. employees. In the U.S. we operate seven wet corn milling facilities. In this process, corn kernels are steeped in water and separated into starch, protein, germ, and fiber. These food, feed and chemical manufacturing plants take corn as the raw ingredient and produce a variety of value-added products, such as corn oil, corn syrup, ethanol, animal feed, and dextrose.

## Importance of Dextrose

Dextrose is a critical feedstock for production of biobased, renewable chemicals and products ranging from jet fuel to biodegradable plastics. As a replacement to fossil fuel-derived chemicals and fuels, dextrose can play an important role in reducing the greenhouse gas (GHG) impacts of our nation's chemical manufacturing, energy and transportation sectors in the future. Unfortunately, current biofuel and low carbon fuel policies do not adequately recognize the role that dextrose plays as part of the lifecycle of the corn wet milling process, putting corn-based biobased chemicals, fuels, and products at a significant market disadvantage.

## Commitment to More Sustainable Corn

As a key feedstock for the bioeconomy, Cargill is committed to supporting farmer adoption of practices foundational to regenerative agriculture across our corn supply chain. We engage farmers to promote continuous improvement in corn production and address its environmental impact, including reducing fertilizer use and nutrient runoff, improving water quality, reducing erosion and improving soil health, and reducing greenhouse gas emissions from crop cultivation (e.g. our commitment to advance regenerative agriculture practices on 10 million acres in North America by 2030). On the processing side, we are constantly working to improve the efficiency of our facilities to conserve energy, water, and other resources used in biorefining.

## Our Positions

To support the health and growth of agriculture and the bioeconomy, Cargill calls on federal and state lawmakers and key stakeholders to take actions that are critical for ensuring corn-based chemicals, fuels, and products can remain a part of the solution to reducing U.S. greenhouse gas emissions and growing the bioeconomy such as:

**Ensure updated and accurate data is used when determining the carbon intensity (CI) of the wet corn milling process for setting low carbon fuel standards**

- Recent research indicates that CI for corn ethanol has decreased by ~50% over the past 30 years and is now at a central estimate of ~55 gCO2e/MJ, which is more than 40% lower than conventional gasoline. [1]
- However, the data used in current models significantly overestimates the CI of corn ethanol and all other associated corn-based products, thus limiting their ability to enter certain markets. States should use more current assessments and projections for estimating the CI of ethanol production. For example:
    - Consider emissions reductions that have taken place at the farm level and existing farmer-led efforts to adopt regenerative agricultural practices that benefit soil health and water quality while also contributing to GHG reductions (e.g., precision agriculture, no-till farming, etc.).

[1] Melissa J. Scully *et al* 2021 *Environ. Res. Lett* in press https://doi.org/10.1088/1748-9326/abde08

- Adopt updated central estimates and ranges of Land Use Change (LUC), farming, co-product credit, fuel production, fuel and feedstock transport, tailpipe, and denaturant emissions. [2]
- Ensure the range of products produced in modern biorefineries, such as dextrose, are included and accurately reflected in models.

- Support enactment of the federal *Adopt GREET Act (S. 193*), to require the U.S. EPA to update its greenhouse gas modeling using the Argonne National Lab's Greenhouse Gas and Regulated Emissions and Energy Use in Transportation (GREET) Model or the 2019 U.S. Department of Agriculture (USDA) methodology. EPA would then be required to update its modeling every five years or report to Congress to affirm its modeling is current or otherwise explain why no updates were made. This would help ensure that accurate CI values are assigned to ethanol and products of the corn wet milling process.

**Ensure lifecycle models recognize dextrose as a feedstock for biofuels and biobased products**

- Under the GREET model, dextrose is not considered as a feedstock when determining CI values for corn ethanol, advanced biofuels or bioproducts made from dextrose. This means biofuels or bioproducts made from dextrose in a particular biorefinery may not receive appropriate CI value and therefore would be at a competitive disadvantage in the market. Dextrose is an attractive raw material for bioproducts and advanced biofuels and should be reflected as a feedstock in the GREET model and other lifecycle models.

**Build on existing policies that have demonstrated success**

- New low carbon fuel policies should build on, rather than replicate, existing state and federal fuel and GHG policies (e.g., state biofuel blending requirements and incentives, state GHG reduction goals, and the federal Renewable Fuel Standard).

**Recognize improvements in wet corn milling production and transportation logistics when calculating CI values of corn-based feedstocks such as**:

- GHG reductions achieved as a result of a facility's participation in renewable energy programs (e.g., MidAmerican Energy's GreenAdvantage® in Iowa) and local utility emission factors at facility locations.
- Energy efficiency investments in biorefineries that have resulted better performance.
- The limited radius for obtaining feedstock (50-75 miles) near our biorefineries, resulting in fewer transportation GHG emissions from delivery of corn to the processing plant compared to refineries that source and transport feedstocks from further distances.

**Develop a feedstock-neutral Low Carbon Fuel Standard and energy economy to combat climate change**

- Support a portfolio of innovative renewable feedstocks for biofuels and bioproducts that contribute to a low-carbon economy by replacing fossil fuels.

**Support agriculture as a climate solution**

- Provide incentives to scale adoption of voluntary conservation practices that improve soil health and reduce greenhouse gas emissions on farms, such as through Farm Bill working lands conservation programs or supporting farmers' participation in voluntary carbon markets.

**Support growth of the rural economy by taking action to ensure corn-based chemicals, fuels, and products remain part of a low carbon economy.**

- The U.S. has an opportunity to develop a new rural economy based on biomanufacturing by turning unused coproducts or feedstocks (i.e. dextrose) into new chemicals and products (from fabrics to plastic) — creating new jobs in rural America and providing new market opportunities for farmers while contributing to a decarbonized U.S. economy.

[2] Melissa J. Scully *et al* 2021, 19