CORRECTED: **Subject: CARB Tier 2 LCFS Pathways public comment for Application No. B0521 PHILLIPS 66 COMPANY (4528); California B052101**

RE: Begin forwarded message:

**From:**charlesdavidson@me.com

**Subject: CARB Tier 2 LCFS Pathways public comment for Application No. B0521 PHILLIPS 66 COMPANY (4528); California B052101: Fuel Producer: PHILLIPS 66 COMPANY (4528); Facility Name: Phillips 66 Rodeo (82191); Renewable gasoline derived from Argentina soybean oil**

**Date:**December 13, 2023 at 4:45:29 AM PST

**To:**Charles Davidson <charlesdavidson@me.com>

From: Charles Davidson. Hercules CA

To: CARB Industrial Strategies Division. isd@arb.ca.gov

Re: CARB Tier 2 LCFS Pathways public comment for Application No. B0521  PHILLIPS 66 COMPANY (4528); California  B052101: Fuel Producer: PHILLIPS 66 COMPANY (4528); Facility Name: Phillips 66 Rodeo (82191); Renewable gasoline derived from Argentina soybean oil (soybean oil is produced in Argentina and transported by ocean tanker to California)

To whom this may concern,

Notwithstanding global cooking oil price inflation and food insecurity, for the following reasons and also for the reasons discussed in my attached letters, I describe why large-scale soybean oil-based refinery biofuels production is unsustainable, from both a land-use and a carbon dioxide greenhouse gas perspective. For all phases of the renewable diesel’s lifecycle combined, renewable diesel should not be qualified for the low carbon fuel standards credits because of its carbon footprint supersedes that of petroleum diesel.

The following is my stance against the importation of Argentinean soybeans into the United States is firmly based on a comprehensive understanding of the environmental impacts associated with agricultural practices, particularly those related to deforestation and sustainability. This position considers various technical aspects and environmental factors detailed below:

Land Use Inefficiency and Biofuel Production: The conversion of agricultural land for biofuel feedstock, specifically soybeans, exhibits a significant inefficiency in land use. Soybean cultivation for biofuel yields about 57 gallons (or 1.5 barrels) of oil per acre annually, or about one-quarter ton per year, a fraction of the carbon sequestration potential seen in natural landscapes. For example, an acre of mature oak trees, within a 100-years timespan, can sequester up to 1,000 tons of carbon, vastly outperforming soybean cultivation in terms of environmental benefits by 40-fold (1,000 tons total weight of 25 forest trees at 40-tons per tree versus 25-tons only for soybeans). Additionally, at a yield of only 57 gallons of soybeans per acre, Phillips 66 alone could annually use up to 33,000 square miles of soybean acreage or nearly the size of the State of Indiana, for its expected 1.22 billion gallons of renewable diesel produced yearly (assuming that soybean oil is both of their renewable diesel biofuels projects’ feedstock, ie Rodeo Renewed Project plus the Nustar Soybean Oil Project).

Agricultural Expansion and Deforestation in Argentina: Argentina's aggressive expansion of its agricultural sector, notably into the ecologically sensitive Gran Chaco region, has led to widespread deforestation. Since 1985, this expansion has resulted in the clearing of approximately 100,000 square kilometers of woodlands, predominantly for soybean cultivation. Such extensive deforestation is not just a loss of natural habitats and biodiversity; it significantly disrupts the ecosystems' inherent ability for carbon storage. The transformation of these natural landscapes into agricultural lands undermines the vital role they play in capturing and storing atmospheric carbon dioxide (CO2) within the soil and plant biomass.

Soybean Processing, Export, and Environmental Impacts: Argentina processes an enormous quantity of soybeans, about 62 million tonnes annually, into products like soy cake and oil, which are then exported globally for various uses. Positioned near major soy producers such as Brazil, Paraguay, and Bolivia, Argentina has become a key hub for soy importation and processing. However, this role comes with environmental repercussions. For instance, soybeans imported from Paraguay have been linked to deforestation, notably in the Atlantic Forest in 2019. The environmental impact of these soybeans is challenging to trace due to the mixing of batches at ports and processing facilities, complicating efforts to accurately assess their deforestation footprint.

Soil Carbon Sequestration Considerations: Soil carbon sequestration is critically impacted by agricultural practices. When areas like the Gran Chaco are cleared for soybean cultivation, the soil's carbon storage capacity is drastically reduced. Natural ecosystems, rich in organic carbon, facilitate carbon sequestration through plant and microbial activity. However, deforestation for agriculture disrupts this natural cycle, leading to faster decomposition of soil organic matter and the release of stored carbon back into the atmosphere.

Soil Carbon Sequestration in the Context of Agricultural Expansion and Deforestation: The practice of expanding agricultural land, as seen in Argentina's foray into regions like the Gran Chaco, has significant implications for soil carbon sequestration. When natural landscapes such as forests and grasslands are cleared for agricultural purposes, like soybean cultivation, the soil's ability to store carbon is greatly affected. In their natural state, these ecosystems are rich in organic carbon, with carbon sequestration occurring both through the biomass of plants and within the soil itself. Soil carbon sequestration involves the process of capturing atmospheric carbon dioxide (CO2) and storing it in the soil organic carbon pool. This is primarily facilitated by plant roots and soil microbes that convert CO2 into organic matter. However, deforestation for agriculture disrupts this natural cycle. The removal of vegetation and subsequent soil disturbance reduces the input of organic matter into the soil, diminishing its carbon storage capacity. Moreover, agricultural practices often lead to the faster decomposition of soil organic matter, releasing stored carbon back into the atmosphere and contributing to greenhouse gas emissions.

Impact of Soybean Cultivation and Biofuel Production on Soil Carbon Storage: In the specific case of soybean cultivation for biofuel production, as prevalent in Argentina, the environmental impact extends beyond deforestation to the inefficiency of land use. Producing soybean oil for biofuel yields a relatively low amount of oil per acre annually compared to the potential carbon sequestration of natural landscapes. For instance, an acre dedicated to soybean cultivation for biofuel produces significantly less carbon sequestration benefits than an acre of mature forest with its extensive root systems and soil microbial activity. These natural systems are capable of sequestering a substantial amount of carbon, far outweighing what is achieved through soybean farming. Additionally, the claim that biofuel combustion is carbon-neutral often overlooks the significant carbon sequestration potential lost due to converting natural landscapes into agricultural land. This omission leads to a skewed representation of the true environmental impact of biofuel production, particularly in its lifecycle greenhouse gas (GHG) emissions calculations. It's crucial to recognize that preserving and restoring natural ecosystems like forests and grasslands can offer more effective soil carbon sequestration benefits, thereby playing a vital role in mitigating climate change.

Biofuel Combustion and Carbon Neutrality Misrepresentation: The claim that the combustion of renewable diesel biofuel, such as that derived from soybeans, is carbon-neutral often overlooks the comparative inefficiency of biofuel feedstocks in carbon sequestration. This perspective, as echoed in guidelines from entities like the IPCC and U.S. EPA, fails to account for the long-term carbon sequestration potential of natural landscapes. Reports like the Revised Environmental Impact Report (REIR), which treat biofuel combustion CO2 emissions as carbon-neutral, ignore the "No Project" alternative of preserving natural lands for carbon sequestration. This omission skews the lifecycle greenhouse gas (GHG) emissions calculations, favoring biofuel production.

Most importantly, the position of CARB is based upon factually inaccurate land-use GHG assumptions as a reason for disregarding renewable diesel biofuels combustion during the tailpipe emissions portion of their lifecycle (which is considered to be approximately 75% of the total). CARB states that “the CO2 emitted from vehicles during biofuel combustion is considered carbon neutral, in accordance with IPCC and U.S. EPA GHG inventory guidelines, as the carbon released was uptaken from the atmosphere within a short timeframe by the plant that produced the oil”. In this case, for land-use GHG considerations, the Phillips 66 Draft (Environmental Impact Report (EIR) and Revised EIR do not consider the "No Project" alternative of preserving natural lands for natural carbon sequestration, which starkly contrasts with the inefficient agricultural use for soybean farming. By not including tailpipe admissions in the renewable diesel biofuel lifecycle GHGs, the report gives the refinery an unmerited advantage, as tailpipe emissions account for about 75% of the total petroleum diesel lifecycle emissions and they should for renewable diesel biofuels as well (if true or unbiased carbon dioxide greenhouse gas accounting protocols were followed).

Advocacy for Sustainable Practices: My stance is a call for more sustainable agricultural practices and better ecosystem management, particularly in preserving the carbon storage capacity of both grasslands and forests. The soybean supply chain in South America, with Argentina as a key player, needs to adopt environmentally responsible practices to reduce the impact on forests and grasslands.

In conclusion, my opposition to importing Argentinean soybeans into the U.S. is based on the environmental consequences of soybean agriculture, including deforestation, inefficient land use for biofuel production, and the misrepresented carbon neutrality claims in biofuel lifecycle analyses. My advocacy for a shift towards more environmentally conscious agricultural and land management approaches, prioritizing the preservation of ecosystems crucial for carbon storage and climate change mitigation.

Charles Davidson

Hercules CA

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