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June 6, 2023

Cheryl Laskowski, Ph.D.  
California Air Resources Board  
1001 I Street  
Sacramento, CA 95814

**Re: Comments on the May 23, 2023, Public Workshop to Discuss Potential Changes to the Low Carbon Fuel Standard**

Dear Dr. Laskowski:

Thank you for the opportunity to comment on the May 23, 2023, Public Workshop to Discuss Potential Changes to the Low Carbon Fuel Standard (LCFS). The LCFS is one of the most powerful climate change policies in the world, has been a great role model for other programs that have been established and are being established, and it uniquely supports a wide array of innovative low-carbon fuel production pathways. This should also include pathways that significantly reduce emissions of N<sub>2</sub>O, such as projects that Ductor develops. We strongly encourage CARB to include an 18-19% step-down in carbon intensity in 2024 and an auto-acceleration mechanism that would pull forward, on a continuous basis, the entire carbon intensity (CI) reduction schedule under the program, should market conditions warrant.

**About Ductor**

Ductor was founded in 2009 with the ambitious aim of creating a solution that would help solve today's environmental challenges in the energy and agriculture sector. Today we build, own, and operate turnkey microbiological facilities, turning organic resources from the agricultural sector into sustainable fertilizers and biogas. With two plants in Mexico and Germany and numerous projects in the pipeline, we are living up to our purpose and unlocking bio-resources to make food sustainable and energy clean.

Ductor's technology transforms nitrogen-rich organic resources from agriculture, aquaculture, and other organic origin into energy and fertilizers. We specialize in feedstock that cannot be used directly in conventional anaerobic digestion and biogas facilities. This feedstock is fed into the Ductor pre-process, where a IP-protected consortium of microorganisms and the IP-protected Ductor process converts them via fermentation and subsequent ammonia recovery into organic and sustainable liquid nitrogen fertilizer. The feedstock is further processed in the anaerobic digestion stage of facility to generate biogas which is upgraded to pipeline quality. The digestate is further processed into fertilizing and soil-improving products.

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Ductor's technology targets the poultry sector, which is growing globally to meet the increasing demand for meat and egg products. Driven by population growth, urbanization, and rising incomes, global per-capita consumption of poultry meat increased from 3.1 kg to 15 kg between 1964 and 2013, while global per-capita consumption of eggs grew from 4.7 kg to 9.2 kg. The poultry sector generates a large quantity of litter consisting of manure, egg wash water, waste bedding, waste food, and feathers. The amount of litter depends on the frequency of the removal of litter, which varies from country to country. According to USDA, in the United States, as much as 1.4 billion tons of manure is produced by the 9.8 billion heads of livestock and poultry produced yearly. Due to growing environmental and social concerns associated with poultry litter management, storage, land application, and its associated emissions, alternative treatment options are becoming much more attractive and required.

**CARB should support pathways for all manure types, including poultry manure, and the respective avoided N<sub>2</sub>O and CH<sub>4</sub> respectively under the LCFS**

Ductor has consistently engaged throughout the LCFS rulemaking process, including encouraging CARB to adopt a step-down in 2024 and a one-way ratchet to automatically strengthen the program when credits outpace deficits by appropriate levels. In addition to those items, which we elaborate on below, Ductor encourages CARB to:

- Strengthen carbon intensity reduction requirements to align with levels needed to achieve outcomes in the 2022 Final Scoping Plan, including a target of at least 35% carbon intensity reduction by 2030.
- Avoid changes to biogas pathway crediting that lead to high credit price spikes, including reducing book-and-claim opportunities for out-of-state biogas, which provides an important source of fuel and credits under the program.
- Allow biogas to provide book-and-claim energy for all zero-emission vehicle fuels equally (hydrogen production and electricity production) and as process energy to other fuel pathways.
- Ensure that avoided N<sub>2</sub>O emissions are fully and completely valued in the program and calculators, considering all steps of the business as usual poultry manure management practices.
- Update the Tier 1 calculator for dairy and swine manure to be non-discriminatory to other manures and apply to all manure pathways, including biogas from poultry manure, and ensure accounting includes avoided N<sub>2</sub>O emissions and beneficial byproducts like organic and sustainable fertilizers.



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**Maintain ongoing program strength with a step-change in the carbon intensity of 18-19% in 2024 and a one-way ratchet mechanism to strengthen CI targets as needed.**

We have been encouraged by recent workshops where CARB has proposed a step-change in program stringency in the near term. We fully agree that this change is needed to strengthen the program. We support a proposed step down to 18.75% as indicated by CARB (or 19%, as suggested by BTR), but encourage CARB to apply this step down in 2024 rather than waiting until 2025. The market is oversupplied currently, in a way that would trigger an acceleration mechanism under the proposals presented, so CARB should immediately strengthen the standards through a step-down. Including a step change in program stringency in 2024 will address the current credit bank and encourage more rapid project development, including for biogas projects needed to deliver reductions in potent short-lived climate pollutants, including N<sub>2</sub>O emissions.

We also strongly support the development of a one-way ratchet mechanism to ensure the current challenges in the market do not reappear, account for ongoing innovation in the market and unforeseen pathways entering the program, such as those Ductor proposes, and to support compliance and alignment with the Scoping Plan – especially if baseline targets are set at levels less than those needed to achieve a 40-48% reduction in greenhouse gas emissions below 1990 levels by 2030. In response to the proposals and questions discussed at the workshop, Ductor generally agrees with AJW's proposal but suggests a single trigger test rather than two. In particular, we:

- Support a single, credit-based test for verification that would trigger an auto-acceleration. We believe a bank-to-deficit ratio or an annual credit-to-deficit ratio could work, but we do not believe both need to be applied.
- Support pulling forward regulatory requirements by a year with a continuous increase for the entirety of the regulation. We do not believe that limits are required, especially if the design of the mechanism might naturally lead to a lag between ratcheting events, as described in the CARB staff concept. We believe a continuous increase in CI requirements better supports the principles and rationale described by CARB at the workshop than a one-year acceleration and freeze would.
- We support proposals related to quarterly data reviews and lead time provided to the market.

## **Conclusion**

Thank you again for the opportunity to comment on the workshop. We support CARB in maintaining a strong LCFS program so that it may continue serving as a driver of innovation and greenhouse gas reductions, including from pathways that will serve to address one of the most potent and intractable climate change challenges – N<sub>2</sub>O emissions. We look forward to continuing to engage in this process, including reviewing the hopefully



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soon published draft Tier 1 calculator for manure-based pathways, and participating in future discussions regarding amendments to the LCFS and topics presented at the workshop.

Sincerely,

Bernard C. Fenner  
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President, Ductor Americas, LLC