Nov 5, 2020

Rajinder Sahota
Division Chief, Industrial Strategies Division
California Air Resources Board
1001 I Street
Sacramento, California 95814

Re: Low Carbon Fuel Standard Public Workshop

Dear Ms. Sahota,

Thank you for the opportunity to comment on the Low Carbon Fuel Standard ("LCFS") workshops on October 14th and 15th. Staff did not discuss biomethane at the workshop, but as described below, there are some problems with the treatment of biomethane in the current regulation that should be addressed in the next rulemaking process.

Specifically, we are concerned that LCFS support for biomethane may be having some unintended negative consequences, and we urge CARB to revisit this topic in future workshops and consider appropriate remedies in future rulemakings. Our concerns include: counterproductive support for concentrated animal feeding operations ("CAFOs"); support for compressed natural gas ("CNG") combustion vehicles in preference to zero emissions technologies; and confusion about what constitutes negative emissions. While we appreciate the CARB's previous motivation of spurring early action on short lived climate pollutants, the continued treatment of agricultural methane capture as a substantial source of LCFS credit generation has become an ill-designed agricultural offset program that supports only a narrow and unsustainable segment of the agricultural sector. This undermines California's climate policy in both transportation and agriculture. We urge CARB to ramp down LCFS credits for agricultural methane destruction by 2030 and consider other policy changes to address the concerns described below.

Subsidies for CAFOs

We are concerned that CARB's discussions of biomethane production continue to be siloed from the health and ecological harms of industrial livestock production. The majority of these CAFOs are located in the San Joaquin Valley—one of the most environmentally stressed regions in the nation—where they are the region's largest source of volatile organic compounds, a significant source of particulate matter, and a major source of nitrate pollution in groundwater. Anaerobic digestion does not control these other sources of pollution associated with CAFOs, and neither the market nor existing safeguards require CAFOs to cover the environmental and human health costs that they impose on nearby communities.[1]

Moreover, we believe LCFS credits may perversely incentivize the continued production and capture of methane when our policies should instead be driving alternatives that reduce or eliminate methane pollution in the first

[1] D. Lee Miller and Gregory Muren, *CAFOs: What We Don't Know is Hurting Us*, (Sept. 2019) at 8. https://www.nrdc.org/sites/default/files/cafos-dont-know-hurting-us-report.pdf

instance. The pathways for dairy biomethane stand out because of their large negative CI scores. These negative scores reflect the GWP adjusted value of destruction of unregulated methane pollution from the agricultural sector. But the large amounts of methane that result from dairy manure handling is not an inevitable consequence of raising livestock—it is a relatively recent, human-induced problem. Since 1990, methane emissions from dairy manure rose 134 percent, even while the national dairy animal population has *decreased*.[2] The reason, according to the U.S. EPA, is that the industry has become more consolidated in certain areas, such as California, and "the shift toward larger dairy cattle and swine facilities since 1990 has translated into an increasing use of liquid manure management systems, which have higher potential CH4 [methane] emissions than dry systems."[3]

When manure is handled as a solid or deposited on pasture or rangelands, it tends to decompose aerobically and produce little or no methane. But large dairies that produce waste in excess of soil absorption capacity rely on flushing wet manure into lagoons, a process that produces substantial amounts of methane. Out of a range of management strategies, wet manure lagoons have the highest per-cow global warming potential—about 20 times higher than solid manure storage.[4] An Assembly Budget Committee review of methane reduction strategies for dairies found that effective aeration of manure was more cost-effective than digesters as a mitigation strategy, and particularly more cost-effective for the State's 1,100 smaller dairies.[5] The findings led the Committee to ask in its report: "Why is [aeration] not more of a focus in the [CDFA's] efforts?"[6]

While there are numerous strategies to reduce agricultural methane pollution in the agricultural sector, only a small subset of these strategies are able to link to transportation fuel supply chains to claim valuable LCFS credits. We are concerned that this may be distorting the economics of agricultural methane management, favoring large, confined animal operations relative to other more sustainable strategies. We urge the ARB to work with relevant stakeholders to identify alternative program designs to mitigate this problem, including ramping down credits for agricultural methane destruction within the LCFS.

Support for CNG vehicles

The extremely favorable treatment of dairy biomethane can also have unintended consequences in the vehicle space, creating the impression that fuel switching from diesel to bio-CNG is an equivalent or superior strategy to zero emission technology. This stands in contradiction to the State's longstanding goal of addressing both climate and air pollution by achieving widespread transportation electrification.[7] A recent E3 report commissioned by CARB to identify pathways to carbon neutrality underscore the need to focus on zero-emission solutions for road-transportation and reserve limited supplies of low-carbon fuels for more difficult-to-electrify sectors:

> "The use of fossil natural gas and biomethane for CNG trucks is phased out in the Balanced scenario and the Zero Carbon Energy scenario. The Balanced scenario assumes a complete transition to hydrogen fuel cell and electric truck sales by 2035. In the Zero Carbon Energy scenario, this transition to 100% hydrogen fuel cell and electric truck sales occurs by 2030."

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[2] U.S. EPA, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2017 – Agriculture*, at 5-9, https://www.epa.gov/sites/production/files/2019-04/documents/us-ghg-inventory-2019-chapter-5-agriculture.pdf.
[3] Id.
[4] Justine J. Owen & Whendee L. Silver, *Greenhouse gas emissions from dairy manure management: a review of field-based studies*, Global Change Biology, Vol. 21, No. 2 (Feb. 2015), https://escholarship.org/uc/item/5gg2r58c
[5] California Assembly Budget Committee, Subcommittee Hearing No. 3 on Resources and Transportation (Apr. 19, 2017) at 20 https://abgt.assembly.ca.gov/sites/abgt.assembly.ca.gov/files/April%2019%20-%20Toxics%20Recycling%20Ag.pdf.
[6] Id.
[7] This objective is explicitly outlined in Senate Bill (SB) 350 and re-affirmed by the Mobile Source Strategy, CARB's Vision for Clean Air, and the recent Executive Order by Governor Gavin Newsom on Zero-Emission Vehicles.

While we appreciate the recent availability of pathways for biomethane to electricity, it's not clear that electricity generation is the highest and best use of biomethane. We urge CARB to consider changes to the LCFS to ensure it is supporting the use biomethane in applications that are most challenging to supply with zero carbon fuels.

Confusion about what constitutes negative emissions

The LCFS improperly quantifies the carbon intensity of biomethane from industrial livestock methane capture as extremely negative. This inaccurate results from the flawed treatment of dairy methane as inevitably vented *but* for the LCFS program. As explained above, methane from industrial dairies is neither natural nor inevitable. Even if it were, capturable methane should be compared to the counterfactual of flaring, not venting. Indeed, under SB 1383, enforcement of regulations for methane emissions from livestock manure are to begin on January 1, 2024. Recent scholarship has pointed to this contradiction of ignoring counterfactual management practices in determining dramatically negative CI scores, stating:

"Specifically, if the methane can be captured for RNG production, it can be captured for diversion to a flare, and it is unrealistic to assume that capturable methane would be vented under a GHG conscious policy regime… Flaring destroys the methane with the same destructive benefit as combusting the methane productively."[8]

As we consider the future of the LCFS, it is important that it support the State's broader climate and air quality objectives, including the need to achieve zero tailpipe and smokestack emissions and then begin to drawdown carbon. The LCFS is poised to play a significant role in support of these goals, but under current program design, the greatest beneficiary is the capture of unregulated methane pollution. Moreover, with a negative 300 g/MJ CI score, a single vehicle driving on dairy biomethane can appear to eliminate the emissions from 3 vehicles using fossil diesel. This is inconsistent with the Executive Order to phase out fossil fuel. Reducing short lived climate pollutants is an important climate strategy, but it is not carbon removal. We urge CARB to separately account for carbon removal and agricultural methane capture as part of the fuel supply chain and ramps down credits for methane destruction within the LCFS by 2030. This way a zero CI LCFS would deliver net zero climate pollution, rather than a poorly designed agricultural offset program that benefits only a narrow, unsustainable slice of the agricultural sector.

Thank you for your consideration of this important reform to the LCFS program.

Sincerely,

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Senior Scientist and Director of Fuels Policy
Union of Concerned Scientists

Tom Frantz
Director
Association of Irritated Residents

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[8] Emily Grubert, At Scale, Renewable Natural Gas Systems Could be Climate Intensive: The Influence of Methane Feedstock and Leakage Rates, *Environ Research Letters*, at 6 https://iopscience.iop.org/article/10.1088/1748-9326/ab9335/pdf