



February 20, 2024

California Air Resources Board
1001 I Street
Sacramento, CA 95814

Re: Comments in Response to the California Air Resources Board Rulemaking to Amend the Low Carbon Fuel Standard

Friends of the Earth U.S. (FOE), on behalf of our 120,000 members and supporters in California, welcomes this opportunity to provide comments in response to the California Air Resources Board’s (CARB) rulemaking to amend the Low Carbon Fuel Standard (LCFS). We echo the calls of California-based organizations and individuals living near industrial dairy operations in California to reform the LCFS and immediately address the egregious environmental injustices in the program.

LCFS is driving the demand for manure biogas — or “factory farm gas” — by allowing concentrated animal feeding operations (CAFOs), or factory farms, to generate credits from installing and operating anaerobic digesters that can be sold to companies to pay for their pollution. It creates a perverse incentive for CAFO operators to generate as much methane — and therefore as much manure — as possible to capitalize on these hefty subsidies the program provides. As a result, the LCFS is exacerbating existing pollution and failing to mitigate animal agriculture’s climate impacts by driving the growth of both factory farms and factory farm gas production across the United States.

To achieve California’s environmental, public health, climate, and environmental justice objectives, CARB must cease the incentives for factory farm gas and stop paying these industrial polluters to capture methane emissions in a dangerous, ineffective approach to address the climate crisis.

Industrial Animal Agriculture’s Environmental & Health Impacts on Communities

Industrial animal agriculture operations are a major polluter of the rural communities in which they are located, which are disproportionately communities of color and low-wealth communities such as California’s San Joaquin Valley.¹ Today’s industrial-scale farms, housing thousands — or sometimes hundreds of thousands — of animals, generate as much as 1 billion tons of manure per year, which contaminates air, drinking water, and surface waters, directly impacting the health of the surrounding communities.²

Manure from industrial dairy and hog operations, the main beneficiaries of LCFS’ incentives, is typically stored as liquid in giant manure lagoons and periodically applied to spray fields and contains

¹ Arbor J.L. Quist et al., *Disparities of industrial animal operations in California, Iowa, and North Carolina*, https://earthjustice.org/wp-content/uploads/quistreport_cafopetition_oct2022.pdf.

² U.S. Env’t Prot. Agency, *Detecting and mitigating the environmental impact of fecal pathogens originating from confined animal feeding operations: Review* (Jan. 2005), <https://nepis.epa.gov/Exe/ZyPDF.cgi/P10089B1.PDF?Dockey=P10089B1.PDF>.

pathogens, antibiotic-resistant bacteria, and heavy metals.³ The sprayed, untreated waste can contaminate the soil and run off into waterways, causing harmful downstream effects.⁴ The manure also emits hazardous gases and particulate matter, causing toxic air emissions and noxious odor.⁵ Studies have shown that people living near factory farms face higher risk and severity of respiratory illnesses, digestive issues, headaches, and other serious health conditions.⁶

As mentioned above, these negative impacts disproportionately affect low-income communities and communities of color because of where CAFOs operate. One study found that of the 15,900 deaths from food production in the U.S., 80 percent, or 12,700 deaths, are attributable to industrial animal production, and the majority of deaths — 12,400 deaths each year — are attributable to ammonia acting as a PM2.5 precursor.⁷ Environmental justice communities face a so-called “triple jeopardy” where their proximity to sources of air pollution, disproportionate disease burdens, and psychosocial stressors compound to diminish their quality of life.⁸

In addition to being a major polluter of rural communities, animal agriculture is the top source of U.S. climate changing methane emissions, accounting for 36% of total U.S. methane emissions.⁹ Climate change also disproportionately affects communities of color, low-income communities, and other vulnerable populations, which are more likely to live in isolated rural areas, floodplains, coastlines, and other at-risk locations, putting them at risk of exposure to adverse climate change impacts and compounding the harm inflicted by factory farm pollution.¹⁰

Ultimately, the state of California should be doing so much more to protect these long-suffering communities from both industrial pollution and climate change. The very least it could do is stop rewarding the perpetrators.

Factory Farm Gas Production Fails to Address Environmental and Health Impacts on Communities and Creates New Problems

Not only does producing factory farm gas fail to address the aforementioned public health and safety concerns of communities, producing factory farm gas also generates additional environmental, public

³ See, Daniel Hellerstein et al., *Agricultural Resources and Environmental Indicators, 2019*, U.S. Dep’t of Ag. Econ. Research Serv. (May 2019), <https://www.ers.usda.gov/webdocs/publications/93026/eib-208.pdf>; V. Blanes-Vidal, et al., *Residential Exposure to Outdoor Air Pollution From Livestock Operations & Perceived Annoyance Among Citizens*, 40 *Env’t Int’l* 44 (2012) (exposure to animal waste odor is “a significant degradation in [rural residents’] quality of life”).

⁴ Rolf U. Halden & Kellogg J. Schwab, The Pew Comm’n on Industrial Farm Animal Production, *Environmental Impact of Industrial Farm Animal Production* (2008), <https://law.lclark.edu/live/files/6699-environmental-impact-of-industrial-farm-animal>. Carrie Hribar, Nat’l Ass’n of Local Bds. of Health, *Understanding Concentrated Animal Feeding Operations and Their Impact on Communities* 2-3 (2010), https://www.cdc.gov/nceh/ehs/docs/understanding_cafos_nalboh.pdf.

⁵ J.Y. Son et al., *supra* note 1.

⁶ *Id.*

⁷ Nina Domingo et al., *Air Quality-Related Health Damages of Food*, 118 *PNAS* 1, 2 (2021), <https://www.pnas.org/content/pnas/118/20/e2013637118.full.pdf>.

⁸ Fiona Ward et al., *Engaging communities in addressing air quality: a scoping review*, 21 *Env’t Health* 1 (2022), <https://doi.org/10.1186/s12940-022-00896-2>.

⁹ Quirin Schiermeier, *Eat less meat: UN climate-changes report calls for change to human diet*, *Nature* (Aug. 12, 2019), <https://www.nature.com/articles/d41586-019-02409-7>.

¹⁰ See, U.S. Global Change Research Program, *Impacts of Climate Change on Human Health in the United States* 249 (2016), https://health2016.globalchange.gov/low/ClimateHealth2016_FullReport_small.pdf; California’s Fourth Climate Change Assessment: Climate Justice Summary Report 36-48 (2018), https://health2016.globalchange.gov/low/ClimateHealth2016_FullReport_small.pdf.

health, and safety concerns for communities living near CAFOs and biogas plants. These include increased production of ammonia pollution from anaerobic digestion,¹¹ higher concentrations of nutrients digestate that contribute to water pollution,¹² increased disruption and pollution from new pipelines and trucks to transport manure or biogas through communities, and more toxic air pollution from biogas processing than is produced by fossil gas.¹³

For example, as petitioners point out in their *Petition for Rulemaking to Exclude all Fuels Derived from Biomethane from Dairy and Swine Manure from the Low Carbon Fuel Standard*, the Lakeview Dairy Biogas project in Kern County, California, uses two internal combustion engines to produce over 1,000 kW of electricity on-site.¹⁴ Even with the required pollution control technology, this project emits 4.58 tons/year of NO_x, 1.98 tons/year of PM₁₀ (fine particulate matter), and 3.18 tons/year of VOC.¹⁵ Compared to a natural gas combined cycle plant in a nearby town, the Lakeview digester project produces much higher levels of NO_x, SO_x, and VOC emissions per unit of electricity generated.¹⁶ Meanwhile, communities in California's San Joaquin Valley, which are disproportionately Latino and low-income, already suffer some of the worst air and water quality in the country due in large part to the concentration of dairy factory farms. The California Air Resources Board acknowledges that 1,200 residents of the San Joaquin Valley die prematurely each year from PM_{2.5} pollution alone.¹⁷ Producing and combusting manure biogas onsite leads to even worse air quality, exacerbating public health harms and environmental injustice.

The Low Carbon Fuel Standard is Flawed

The LCFS incorrectly assigns factory farm gas an extremely large negative Carbon Intensity (CI) score, one even better than electric vehicles powered by renewable electricity, and as result, it generates a large subsidy for the CAFOs and biogas operators.¹⁸ This is because CARB gives participating CAFOs credit for both reducing methane emissions from manure under the assumption

¹¹ See, Michael A. Holly et al., *Greenhouse Gas and Ammonia Emissions from Digested and Separated Dairy Manure during Storage and after Land Application*, 239 *Agric., Ecosystems & Env't* (2017), <https://doi.org/10.1016/j.agee.2017.02.007>; Thomas Kupper et al., *Ammonia and Greenhouse Gas Emissions from Slurry Storage – A Review*, 300 *Agric., Ecosystems & Env't* (2020), <https://doi.org/10.1016/j.agee.2020.106963>; Lowry A. Harper et al., *The Effect of Biofuel Production on Swine Farm Methane and Ammonia Emissions*, 39 *J. Env't Quality* (2010), <https://doi.org/10.2134/jeq2010.0172>.

¹² Katarzyna Chojnacka & Konstantinos Moustakas, *Anaerobic digestate management for carbon neutrality and fertilizer use: A review of current practices and future opportunities*, 180 *Biomass and Bioenergy* (2024), <https://doi.org/10.1016/j.biombioe.2023.106991>.

¹³ Alarico Macor & Alberto Benato, *A Human Health Toxicity Assessment of Biogas Engines Regulated and Unregulated Emissions*, 10 *Applied Sciences* (2020), <https://doi.org/10.3390/app10207048>.

¹⁴ Ass'n of Irrigated Residents et al., *Petition for Rulemaking to Exclude All Fuels Derived from Biomethane from Dairy and Swine Manure from the Low Carbon Fuel Standard Program*, (Oct. 27, 2021), https://ww2.arb.ca.gov/sites/default/files/2022-01/2021.10.27%20Petition%20for%20Rulemaking%20AIR%20et%20al_.pdf.

¹⁵ San Joaquin Valley Air Pollution Control District, *Notice of Preliminary Decision – Authority to Construct* (Mar. 22, 2016), [http://www.valleyair.org/notiCes/Docs/2016/03-22-16_\(S-1143770\)/S-1143770.pdf](http://www.valleyair.org/notiCes/Docs/2016/03-22-16_(S-1143770)/S-1143770.pdf) at 14.

¹⁶ *Id.*

¹⁷ Press Release, Cal. Air Resources Bd., *Clean-Air Plan for San Joaquin Valley First to Meet All Federal Standards for Fine Particle Pollution* (Jan. 24, 2019), <https://ww2.arb.ca.gov/news/clean-air-plan-san-joaquin-valley-first-meet-all-federal-standards-fine-particle-pollution>.

¹⁸ Kiki Velez, *CARB Must Reform LCFS Program to Meet Climate Goals*, NRDC (Aug. 23, 2023), <https://www.nrdc.org/bio/kiki-velez/carb-must-reform-lcfs-program-meet-climate-goals-0>; Aaron Smith, *What's Worth More: A Cow's Milk or its Poop?*, AG Data News (Feb. 3, 2021), <https://asmith.ucdavis.edu/news/cow-power-rising>.

that wet, methane-generating manure is an unavoidable byproduct of livestock production, and for replacing fossil fuels with higher CI scores.¹⁹

This is flawed for a number of reasons. First, CARB completely disregards the greenhouse gas emissions from the underlying factory farming operations as well as the increased greenhouse gas emissions when operators use and dispose of the digester waste. Second, maintaining massive quantities of liquid manure is not a given; it is a choice — one that the LCFS rewards and reinforces. There are alternative manure management practices that have lower methane-emissions and are more sustainable.²⁰ Finally, the LCFS does not prohibit participants in the program from double-counting the emissions reductions attributable to anaerobic digesters, with the same purported emissions reductions being counted toward multiple programs, inflating climate progress. Research has shown that the LCFS takes credit for the same emissions reductions as California's state-funded Dairy Digester Research and Development Program.²¹

The LCFS Creates Perverse Incentives

Due to factory farm gas' flawed CI score, the LCFS distorts the market for transportation fuels, boosting fuels derived from manure above truly renewable sources. Perversely, CAFO operators and energy companies are incentivized to produce more manure biogas, in the most methane-emission heavy manner, to receive the lucrative rewards from the false market that has been created. This is done either by consolidating farms, creating an even more unfair playing field for producers, by increasing herd sizes (and the pollution, public health risks, and animal cruelty that comes with expanding CAFOs), or by utilizing the worst (most methane-generating) manure management strategies.

These perverse incentives exacerbate extensive environmental and public health impacts frontline communities are already enduring from CAFOs and undermines the methane-reducing potential of anaerobic digesters.

Reform the LCFS Immediately

Failing to reform the LCFS will entrench our current, inherently unsustainable systems of industrial animal agriculture and fossil fuel energy. Without a change, industrial polluters will continue to reap lucrative benefits at the expense of frontline communities' health and safety, perpetuating the environmental injustice California seeks to address. As such, CARB should prioritize the following changes to the program:

1. Eliminate "avoided methane crediting" in 2024.
2. Fix the inaccurate Life Cycle Assessment that ignores upstream and downstream greenhouse gas emissions associated with factory farm gas production.
3. Eliminate the 10-year "grace period" for factory farm gas producers.
4. Eliminate credit generation from factory farm gas projects that would have happened anyway due to other programs or investments.

¹⁹ *Id.*

²⁰ It's worth noting that an even more effective approach to mitigating animal agriculture's impact on the climate is for methane emissions from industrial livestock facilities to be monitored, publicly disclosed, and regulated by the state.

²¹ Phil McKenna, *Is California Overstating the Climate Benefit of Dairy Manure Methane Digesters?*, Inside Climate News (Dec. 30, 2023), <https://insideclimatenews.org/news/30122023/milkingit-california-overstating-climate-benefit-dairy-manure-methane-digesters>; Gabriel Petek, Legislative Analyst's Office, *Assessing California's Climate Policies—Agriculture* (Dec. 2021), <https://lao.ca.gov/Publications/Report/4483>.

We encourage CARB to change course and prioritize the well-being of Californians over industrial polluters and reform LCFS immediately. Thank you for your consideration.

Sincerely,

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