



October 15, 2024

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California Air Resources Board  
1001 I Street  
Sacramento, CA 95814

Attachment: Comments on [the second 15 day notice proposed amendments to the LCFS](#) regulations.

We have been following CARB's approach to the short-lived climate pollutant methane for a number of years. While we are attaching our formal comments on the second round of 15-day amendments to the Low Carbon Fuel Standard, we want to share our overall perspective on your efforts to reduce dairy methane, which we regard as well-intentioned but short-sighted.

CARB has scrupulously worked to avoid any intimation that the dairy and livestock industries will have to change due to the climate impact of cattle methane and nitrous oxide, or because of the climate impact of cattle feed, or because of the environmental consequences of misusing the land (nitrates in the water, NOx in the air, and eutrophication). Your position is *directly* contrary to climate science. Below we're including a short list of facts about the role of cows in climate change gleaned from a brief survey of recent writings of climate scientists.

- "More than half of all methane emissions from human activities are agricultural – exceeding the combined emissions from all oil and gas wells, coal mines, and industrial activities in the world."<sup>1</sup>
- "Every four pounds of beef you eat contributes to as much global warming as flying from New York to London."<sup>2</sup>
- "Beef provides less than 1 percent of calories globally but accounts for 5 percent of greenhouse gas emissions from *all* human activities."<sup>3</sup>
- "There are 1.7 billion cows on Earth. If you calculate the total biomass of cows and compare it to the total biomass of every remaining wild terrestrial vertebrate left on Earth, the cows outweigh them by more than a factor of ten. We have literally replaced nature with cows."<sup>4</sup>

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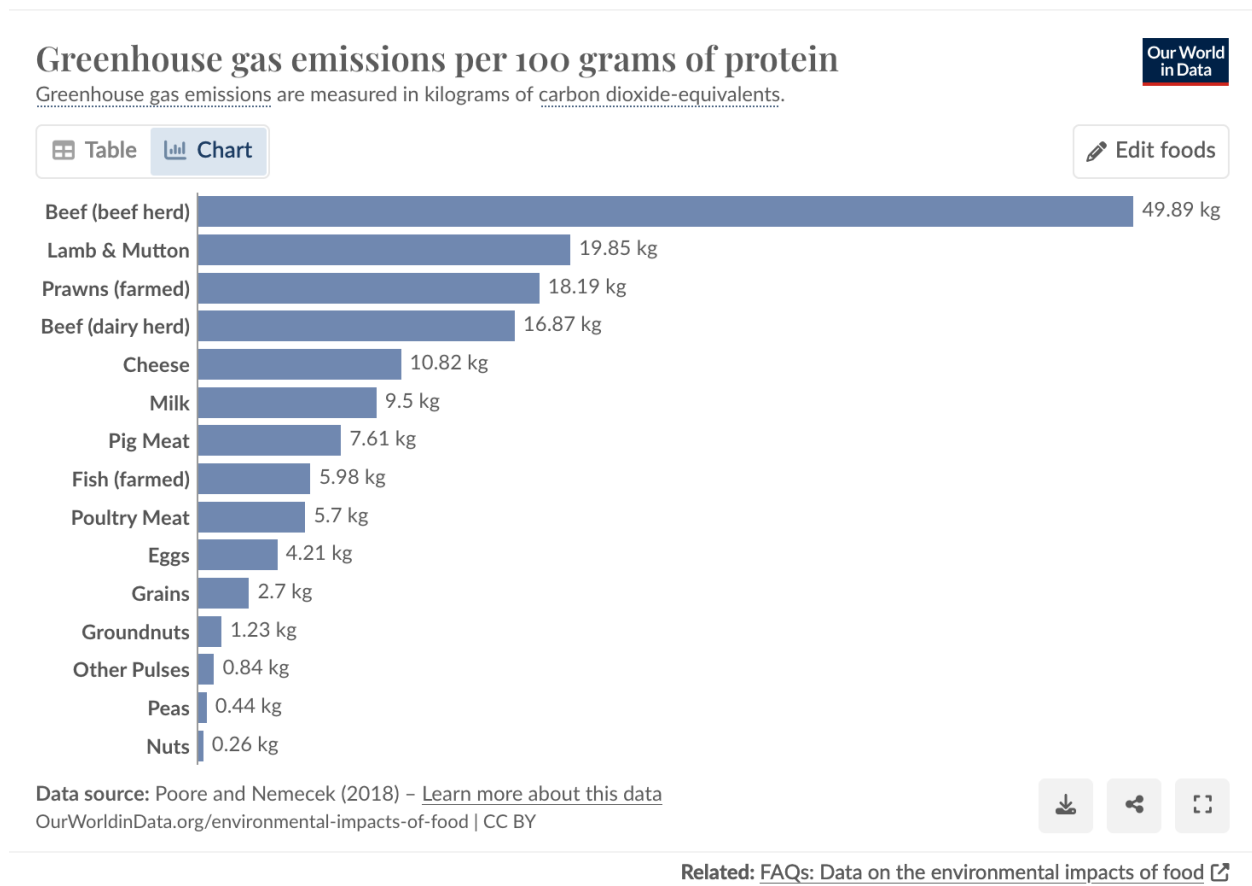
<sup>1</sup> Rob Jackson, *Into the Clear Blue Sky*, 2024

<sup>2</sup> Tad Friend, Can a Burger Help Save Climate Change?, *New Yorker*, September 23, 2019

<sup>3</sup> Jackson, *op cit.*

<sup>4</sup> Pat Brown in Jackson, *op cit.* page 28

- “If all the grain currently fed to livestock in the United States were consumed directly by people, the number of people who could be fed would be nearly 800 million.”<sup>5</sup>
- “We find irrigation of cattle-feed crops to be the greatest consumer of river water in the western United States, implicating beef and dairy consumption as the leading driver of water shortages and fish imperilment in the region.”<sup>6</sup>
- “Of all antibiotics sold in the United States, approximately 80% are sold for use in animal agriculture.”<sup>7</sup>
- “The lowest-carbon meat emits more than the highest-carbon plant protein....The world uses around 4 billion hectares of land to grow food. Simply cutting out beef and lamb (but still keeping dairy cows) would nearly halve our need for global farmland. We’d save 2 billion hectares, which is an area twice the size of the United States. If we were to cut out dairy too, we’d halve this land use again to just over 1 billion hectares.”<sup>8</sup>



<sup>5</sup> Cornell ecologist David Pimentel in Jackson, p.30

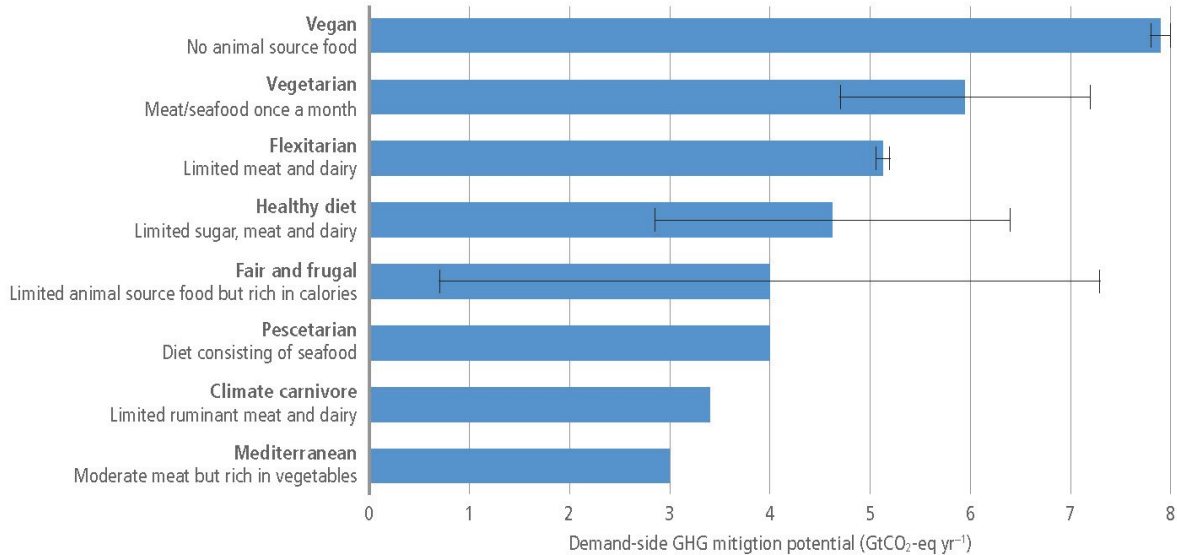
<sup>6</sup> B.D. Richter, et al., Water Scarcity and Fish Imperilment Driven by Beef Production,” Nature Sustainability 3 (2020): 319-28. Cited in Jackson, p. 33

<sup>7</sup> M.J. Martin, et al. Antibiotics Overuse in Animal Agriculture: A Call to Action for Health Care Providers,” American Journal of Public Health, 105 (2015): 2409-10. Cited in Jackson, p.33

<sup>8</sup> Ibid.

- According to the IPCC no one needs to become vegan in order to begin to put meat and dairy in its proper place.<sup>9</sup>

Demand-side mitigation  
GHG mitigation potential of different diets



We believe that you and CARB's staff are well aware of these facts. But we are baffled to see the agency taking actions contrary to what is needed: no regulation of dairy manure emissions, extraordinarily high credit values for "avoided emissions" for up to 30 years, no fuel cell requirements for California dairies producing electricity, no pilot programs for enteric emissions (despite the Legislature having provided \$25 million), no public service announcements as with tobacco, and no incentives for alternatives to meat and dairy in Californians' diets.

It is a profound disappointment for us that some of the striking gains CARB has made in tackling vehicle pollution and emissions have not yet been carried over to agriculture. We understand that CARB would much rather not be alone in the lead, taking on powerful agricultural interests; but in fact you are arguably the best situated agency in the nation to do so, and it is entirely within your mission.

Hurricanes Helene and Milton and their horrific effects on many thousands of innocent people give us some hope that political calculations may begin to change in regard to climate change and the really very drastic changes we are called on to make. This is an existential opportunity for California to lead once again.

Please see our specific comments on the second 15-day amendments, attached.

Janet Cox, CEO  
Climate Action  
California

Daniel Chandler, Ph.D.  
Steering Committee  
350 Humboldt

Will Brieger  
Chair, Legislation and Policy  
Team, 350 Sacramento

<sup>9</sup> <https://www.ipcc.ch/srccl/chapter/chapter-5/5-5-mitigation-options-challenges-and-opportunities/5-5-2-demand-side-mitigation-options/5-5-2-1-mitigation-potential-of-different-diets/figure-5-12/>



October 15, 2024

To: California Air Resources Board  
via email: <https://ww2.arb.ca.gov/lispub/comm/bclist.php>  
From: Daniel Chandler, 350 Humboldt  
Janet Cox, CEO, Climate Action California  
Will Brieger, 350 Sacramento

**Comments on [the second 15 day notice proposed amendments to the LCFS regulations.](#)**

Note: We are only submitting comments on a few of the proposed changes, and our comments are labeled as such.

**Modifications to Section 95482. Fuels Subject to Regulation.**

1. **In section 95482(h), staff proposes to require that hydrogen produced using fossil gas as a feedstock will become ineligible for LCFS credit generation beginning January 1, 2035, instead of January 1, 2030.** In 2030, hydrogen dispensed as a vehicle fuel would need to be at least 80 percent renewable to match the requirement listed in sections 95486.3(a)(4)(F) and 95486.4(a)(4)(G) for hydrogen refueling infrastructure (HRI) crediting. The proposed change, apparently intended to improve alignment of hydrogen renewable content requirements across the LCFS regulation, better align with the renewable requirements for the electricity grid and give more time for non-fossil hydrogen to scale up and effectively displace fossil hydrogen used in California.

**Comment:** During the Treasury Department's solicitation of comments for 45V incentives for green hydrogen, multiple informed commenters made clear that goals for electrolytic hydrogen in compliance with the three pillars could be met without compromising requirements.

- Given the national context, we see no justification for CARB to give an "extra" seven years to fossil hydrogen.
  - In addition, your reference to non-fossil hydrogen is misguided. Hydrogen made from biomass is neither emissions-free nor even lower emission than combustion of biomass. LCFS program planners should know that LCAs of all woody biomass sources of energy show positive, not negative or neutral, emissions well past the time we need to be at net zero.
2. **In section 95482(i), staff proposes to modify the twenty percent crediting eligibility limitation on certain virgin crop-based feedstocks used to produce biomass-based diesel, to include sunflower oil in addition to soybean and canola oils.** This means that biomass-based diesel using virgin soybean, canola, or sunflower oil in excess of twenty percent will be assigned the carbon intensity of

the applicable diesel pool benchmark for that year, or the certified carbon intensity of the applicable fuel pathway; whichever is greater. These limitations are consistent with the rulemaking’s objective to provide guardrails on crop-based biofuels to prevent potential adverse impacts. Further, adding sunflower oil is also responsive to public feedback that limiting this provision to soy and canola could lead to incentives to increase use of other oilseeds for biofuel production. The proposed modification also clarifies that this provision applies to the following transaction types: production in California, produced for import, and import. This clarifies that the provision applies to transactions for transportation fuels used by vehicles in California. Additionally, staff proposes to specify that the provision will not apply to any biomass-based diesel pathway certification applications submitted before the effective date of the regulation until January 1, 2028. This adjustment provides appropriate time for existing fuel producers to meet the twenty percent eligibility limitation and adjust their operations and/or feedstock supplies.

**Comment:** Adding sunflower oil is a significant positive step. But all vegetable seed oils and corn oil — which CARB regards as a residue from production of ethanol—should be included. The original purpose of the LCFS was to correct for the negative externalities of petroleum fuels; yet the program has for the most part ignored the many negative externalities of crop-based fuels. In general, CARB’s overall ruling on crop-based biofuels provides far less adequate protection than that of the European Union’s Renewable Energy Directive for biofuels, including the Indirect Land Use Change provisions.<sup>10</sup>

#### **Modifications to Section 95488.3. Calculation of Fuel Pathway Carbon Intensities.**

1. **In subsection 95488.3(b),** staff proposes to specify that the “associated data sources” of the CA-GREET 4.0 model referenced are the data sources specified in the CA- GREET4.0 Model Documentation, which is incorporated by reference into the regulation.
2. **In subsection 95488.3(d)(2), staff proposes to remove the word “crop” in the context of feedstocks not listed in Table 6.** This clarification ensures that non-crop feedstocks, such as woody biomass, may also be assessed by the Executive Officer to determine and assign an appropriate land use change value, based upon empirical land cover data, yields, and emission factors.

**Comment:** Thank you for making woody biomass eligible for land use change assessment.

#### **Modifications to Section 95488.8. Fuel Pathway Application Requirements Applying to All Classifications.**

1. **In subsection 95488.8(i)(1)(C), staff proposes to remove the word “electrolytic”** to clarify that indirect accounting of low-CI electricity used as process energy may be used for hydrogen produced through other production methods besides electrolysis (steam methane reformation, gasification, and more). Staff also proposes to clarify that the matching period is three quarters, consistent with updates to subsection 95488.8(i)(1)(C)(4) in the first 15-day change period.

**Comment:** Removing “electrolytic” may be consistent with the LCFS general approach—but it is wholly inconsistent with developing a truly green, electrolytic hydrogen industry built on the three pillars.

2. **In subsection 95488.8(i)(2), staff proposes to allow for book-and-claim accounting of biomethane to produce electricity for electric vehicle charging, provided the electricity is generated using a fuel cell.** This proposal is apparently intended to increase flexibility for biomethane projects to

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<sup>10</sup> [https://energy.ec.europa.eu/topics/renewable-energy/bioenergy/biofuels\\_en](https://energy.ec.europa.eu/topics/renewable-energy/bioenergy/biofuels_en)

produce low-CI electricity and support California's zero emission vehicle goals, while also prioritizing electricity generated using non-combustion technology.

**Comment:** The residents near booking dairies will thank you. However, it appears that this provision is not being required of California dairies. There is only one digester using a fuel cell today (according to the CARB *workshop* August 22, 2024). According to LCFS data there are a total of 9 dairies producing electricity in California. Existing dairies should be given two years to switch to fuel cells and using a fuel cell should be a requirement for new pathways. It is hard to imagine you would apply this requirement outside the state and not in the Central Valley which is an air-pollution non-attainment zone.

#### **Modifications to Section 95488.9. Special Circumstances for Fuel Pathway Applications.**

1. **In subsection 95488.9(f)(3)(A),** in response to public comment, **staff proposes to significantly lengthen the crediting periods for digester-based avoided methane emissions.** If a project is certified before the effective date of the regulation, staff proposes that it will be allowed three consecutive 10-year crediting periods. If it is certified on or after the effective date of the regulation and before January 1, 2030, then it will be limited to two consecutive 10-year crediting periods. The Executive Officer may renew crediting periods for fuel pathways that were certified before the effective date of the regulation, for up to three consecutive 10-year crediting periods, as well as fuel pathways representing projects that have broken ground on or after the effective date of the regulation and before January 1, 2030, for up to two consecutive 10-year crediting periods. These provisions maintain the rules for crediting periods described under the current regulation while providing clarity for projects developed between the effective date and January 1, 2030.
2. **In subsection 95488.9(f)(3)(B),** the existing regulation states that if a law, regulation, or legally binding mandate requiring either greenhouse gas emission reductions from manure methane emissions from livestock and dairy projects or diversion of organic material from landfill disposal, comes into effect in California during a project's crediting period, then the project is eligible to continue to receive LCFS credits for those greenhouse gas emission reductions for the remainder of the project's current crediting period, although it may not request any subsequent crediting periods. Staff is proposing to focus this provision on fuel pathways associated with biomethane projects that break ground after December 31, 2029. This proposed change purportedly supports California's SB 1383 methane reduction goals by providing incentive certainty for project developers for methane capture projects.

**Comment:** Dairy methane from manure needs to be regulated and biomethane should be controlled by market forces if California is to have any chance of meeting our emissions reduction goals. CARB appears to view its primary duty as serving the biomethane industry its previous policies have helped create—rather than reducing methane and nitrous oxide.

Specifically, these provisions:

- a. Ignore the fact that only ten years of incentive payments is necessary for dairies using digester to break even.<sup>11</sup> The other 20 years being proposed is unearned profit. These profits are not

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<sup>11</sup> Smith, Aaron. "Effects of "How Much Should Dairy Farms Get Paid for Trapping Methane?" *Energy Institute Blog, UC Berkeley*, October 14, 2024, <https://energyathaas.wordpress.com/2024/10/14/how-much-should-dairy-farms-get-paid-for-trapping-methane/> ; <https://blog.ucsusa.org/jeremy-martin/something-stinks-california-must-end-manure-biomethane-accounting-gimmicks-in-its-low-carbon-fuel-standard/>

justified for California dairies, but even less are they justified for all the dairies in states where there are no regulations on dairy methane.

- b. Ignore the fact that other industries are not paid for reducing their emissions. If, in order to impose regulations on a powerful industry, the state wants to provide incentives that will help dairies reduce emissions in various ways (not just by overfunding digesters) then the incentives should be carefully designed and recognize that the large dairies with the resources to install a digester are profitable enough to absorb many of the costs of mitigation.
  - c. Ignore the fact that digesters favor large dairies. Providing them with the huge profit opportunities inherent in the LCFS puts smaller dairies at an extreme disadvantage.
  - d. Ignore the fact that other methods of manure management – from liquid-solid separation to vermifiltration – are equally as effective as digesters.<sup>12</sup> Why is CARB fixated on this method? It appears to reflect the influence of the biomethane industry you have created.
  - e. Ignore the fact that biomethane has supplied nearly one-fifth of the program's total credits despite it being used in less than 1 percent of the state's transportation fleet. Incentivizing dairy biomethane costs California drivers; and by perpetuating diesel engines, it is undermining our goal to electrify transportation.
3. **In subsection 95488.9(g)**, staff proposes to clarify that crop or forestry feedstocks are subject to either the specified source feedstock requirements in Section 95488.8(g)(1)(A) or the Sustainability Requirements in 95488.9(g). As an alternative to third-party certification, staff also proposes in subsection 95488.9(g)(1)(B) to allow forestry biomass that is sourced from land harvested and managed according to the sustainable forestry management practices included in CARB's US Forest Offset Protocol.

**Comment:** It is worth remembering that “As of 2022, global fossil fuel combustion and industrial processes account for approximately 90% of these [GHG] emissions, whereas land-use change, primarily deforestation, accounts for approximately 10%.”<sup>13</sup> That is a very large amount of carbon that has to be re-sequestered. The CARB US Forest Offset Protocol has been criticized recently for a number of apparent loopholes. Our concern is more central: Trees are only required to be left to grow for one hundred years, which the regulations ironically term “permanent.” One hundred years is one 20<sup>th</sup> the lifespan of many redwoods. If we want to regrow our redwood forests, they need to be 500 to 700 years old to be “mature” and capture the maximum amount of carbon. We don't usually think beyond next year or the next election cycle, but climate change works on a different time scale. CO<sub>2</sub> remains in the atmosphere for 300 to 1,000 years.<sup>14</sup> We are going to need the carbon sequestration of these trees at least as long as the CO<sub>2</sub> we are emitting (at undiminished pace) stays in the atmosphere. So neither option suggested by staff even begins to be adequate. In addition, since these insufficient sequestration

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<sup>12</sup> Aguirre-Villegas, Horacio A., Rebecca A. Larson, and Mahmoud A. Sharara. "Anaerobic digestion, solid-liquid separation, and drying of dairy manure: Measuring constituents and modeling emission." *Science of the total environment* 696 (2019): 134059. Miito, Gilbert J., Femi Alege, Joe Harrison, and Pius Ndegwa. *Influence of earthworm population density on the performance of vermifiltration for treating liquid dairy manure*. 2024.

<sup>13</sup> Ripple, William J., Christopher Wolf, Jillian W. Gregg, Johan Rockström, Michael E. Mann, Naomi Oreskes, Timothy M. Lenton et al. "The 2024 state of the climate report: Perilous times on planet Earth." *BioScience* (2024): biae087.

<sup>14</sup> <https://science.nasa.gov/earth/climate-change/greenhouse-gases/the-atmosphere-getting-a-handle-on-carbon-dioxide/>

projects are in essence traded for CO2 emissions, all such transactions perpetrate a fraud on the public and the environment.

4. **In subsection 95488.9(g)(7)(H), staff proposes to add an additional basis for adjusting certifications.** The addition specifies that CARB may modify certifications if appropriate for consistency with the removal or suspension of certification systems in other programs such as the European Union Renewable Energy Directive, or Environment and Climate Change Canada's Clean Fuels Regulations.

**Comment:** A good idea.