

Newtrient Comments Pertaining to the Low Carbon Fuel Standard and the Potential Future Changes to the LCFS Program as requested by the CARB Public Workshop: December 07, 2021.

As stated by the California Air Resources Board (CARB) staff during the December 7, 2021, Public Workshop, the Low Carbon Fuel Standard (LCFS) is a critical part of California's climate change portfolio to reduce GHG and incentivize the transition away from fossil fuels in transportation, growing the alternative fuels market in California and across the United States.

CARB's mission is to promote and protect public health, welfare, and ecological resources through effective reduction of air pollutants while recognizing and considering effects on the economy. In its capacity as the lead agency for climate change programs in California, CARB has taken great strides to improve and maintain health-based air quality standards. In this capacity CARB should be recognized, not only for its importance to California, but also for delivering a successful policy model to other jurisdictions. Because of the success of the CARB model, additional jurisdictions across the United States are adopting or are considering Clean Fuels Standards of their own.

Because CARB is charged with "considering effects on the economy" it is totally reasonable that CARB has considered the importance of how dairy products and the dairy industry have delivered positive nutrition and economic impacts to communities, the state of California and globally.

- In the 2020 crop year, California's top valued commodity was listed as "Dairy Products, Milk" with \$7.47 billion in sales or approximately 15% of the state's farm and ranch cash receipts.¹
- According to "Contributions of the California Dairy Industry to the California Economy in 2018" a total of 179,900 California jobs were derived from the California dairy industry in 2018.²
- The dairy industry in California represents a stable and non-transitory workplace and thereby benefits the families working in this industry by supporting education and social stability in the communities where this industry is prevalent.
- Casein and whey protein, both derived from dairy, are considered two of the most complete and digestible proteins currently available.³
- A balanced diet with a variety of foods is important to get essential nutrients and milk is an affordable source of 13 essential nutrients, and dollar for dollar, three servings of

¹ CDFA. (2021) California Agricultural Statistics Review 2019-2020, <https://www.cdfa.ca.gov/statistics/>

² Matthews, W. and Summer, D. (April 2019) Contributions of the California Dairy Industry to the California Economy in 2018, Department of Agricultural and Resource Economics, University of California, Davis . https://cail.ucdavis.edu/wp-content/uploads/2019/07/CMAB-Economic-Impact-Report_final.pdf

³ Ibid.

milk only costs about 60 cents, making it one of the most economical sources of nutrition.⁴

Reducing greenhouse gas emissions is also a top priority for the U.S. dairy community. Though dairy farms are responsible for only about 2% of total U.S. GHG emissions¹, the impact of emissions on climate change has generated an opportunity for U.S. dairy to lead in addressing reductions.

In 2008, the U.S. dairy industry was the first agricultural sector to commission a life cycle assessment on fluid milk, which included all the emissions from the production of dairy products and dairy beef including all the field and all the manure management emissions as part of this footprint. This initial work was later followed up by peer-reviewed LCA's of milk, cheese and the dairy delivery system completed in 2011. All of these LCA's used a similar methodology and included enteric and manure emissions as part of the carbon footprint of milk and meat produced by dairy operations. It is clear that CARB understood this when designing the LCFS livestock protocols and determined that the only emissions to be attributed to the renewable energy projects from dairy manure are those that are created by the actual process of converting the manure into renewable energy. As such, these calculations are included in the GREET 3.0 model as well as being set out in the "system boundaries" of the livestock protocols and the LCFS manure-to-RNG pathways. Not only does this diagram, but also Table 4.1. "Description of all GHG Sources, GHG Sinks, and GHG Reservoirs" lists the sources sinks and reservoirs for livestock projects, indicating which gases are included or excluded from a project. The content of the list makes it clear that CARB did consider that there are feed production and enteric emissions from dairy operations, but that these were outside the boundary of the livestock protocol because they are part of the natural emissions from the dairy operation which are covered under the carbon footprint of the milk and meat produced. Manure, although it has value to dairy operations as a source of renewable nutrients for feed production is not a "product or by-product" of the dairy operation in the traditional sense of being sold for its own value.

Consequently, U.S. dairy farmers are actively investing resources in research and actions to reduce emissions from all sources in order to reduce the carbon footprint of dairy products. The California Dairy Industry, as well as the industry nationwide, has been a partner in these efforts and has been advocating for better environmental sustainability from its members.

Anaerobic digestion has been one critical solution by converting manure carbon to methane for energy production as electricity, heat, and renewable natural gas. This technology provides the ability to capture emissions before entering the atmosphere while reducing the need for fossil fuels.

⁴ Drewnowski, A. (2010, April) The Nutrient Rich Foods Index helps to identify healthy, affordable foods, The American Journal of Clinical Nutrition, Volume 91, Issue 4, Pages 1095S–1101S, <https://doi.org/10.3945/ajcn.2010.28450D>

- In the U.S., there are 700,000+ cows contributing to digesters today, and approximately 341,336 cows are currently contributing to gas-related digester projects. That's approximately 48% of the cows contributing to RNG projects¹.
- According to a 2020 study published in the Journal of Dairy Science, greenhouse gas emissions per gallon of milk produced in California have decreased by more than 45 percent over the last 50 years.⁵
- There are more than 172 dairy digester projects located throughout the California—capturing methane from 177 dairies and creating renewable energy. About 78 digesters are currently active around the state, with another 94 digester projects in various stages of development. The goal is to have 140 operational digesters by 2023 and another 100 by 2030.⁶
- Over the next 25 years, collective dairy methane reduction projects across California, including both digesters and alternative manure management projects, are estimated to reduce more than 55 million metric tons of greenhouse gases. That's an annual emissions reduction equal to taking more than half a million cars off the road, while also providing heat and electricity for homes and fuel for transportation.⁷
- California is home to 14 clusters of dairy digesters that share a centralized gas cleaning, conditioning, and injection site. For example, Calgren Dairy Fuels in Pixley uses a digester pipeline cluster to collect biogas from 20 central San Joaquin Valley dairy farms, gas that eventually ends up as carbon-negative transportation fuel for heavy duty trucks. Not only does the project remove GHGs from the environment, but it also displaces more than 3 million gallons of fossil fuel annually. And, based on a carbon intensity score from the California Air Resources Board, Calgren's dairy biofuel is nearly 10 to 15 times more effective at reducing carbon than electric vehicles.⁸
- California dairy farmers' efforts to both eliminate and capture methane emissions are further reducing the footprint of every glass of milk produced. Through the implementation of digesters and other technologies, California dairy farms will reduce an estimated 2.5 million metric tons of greenhouse gases each year.⁹

The LCFS program allows digester projects from both within and outside the state of California to qualify for incentives. Thus, allowing agriculture projects within the state to leverage grant programs and other capital sources has been instrumental in incentivizing digester projects within California, and thus realizing additional local environmental benefits beyond those realized strictly from the displacement of fossil fuel. These additional funding sources are critical given the inherently higher cost of developing projects within the state of California relative to other states.

⁵Talbot, J. (2021, June 21) California dairy's journey toward climate neutrality. GreenBiz. <https://www.greenbiz.com/article/california-dairys-journey-toward-climate-neutrality>

⁶ Dairy Cares, (2022, January 3). Tackling the Climate Challenge, <https://www.dairycares.com/post/tackling-the-climate-challenge>

⁷ Talbot (2021)

⁸ Ibid

⁹ Ibid

Despite the LCFS incentives and other funding available, the average number of milk cows in California in 2019 was 1.73 million, down 0.5 percent from 2018 and 3 percent from the record production in 2014. This means that despite the substantial benefits that anaerobic digestion provides to the Central Valley, including reduced volatile organic compounds (VOC), reduced ammonia emissions, reduced pathogens in the digestate, reduced odor and increased nutrient availability in the digestate, the additional benefits of avoided emissions from displaced conventional fossil fuels from the transportation sector is dependent on a diminishing number of dairies.

Newtrient would propose that Low Carbon Fuel Standard Program be amended to clarify the rules for those animal agriculture operations making production related changes which would normally result in a change in manure handling and increase their GHG emissions. In these cases, a conversion of a dairy from dry-lot to freestall, for example, it would seem appropriate that the baseline be set at that of a typical freestall operation rather than using the dry-lot as the baseline for the LCFS calculations.

Additionally, Newtrient would propose that the LCFS allow the use of beef manure as part of digester feedstock, to increase the number of projects, increase the amount of renewable fuel produced and increase the additional environmental benefits that result from these projects. Beef operations in California, including dairy beef, traditionally are dry-lot operations, but by being included in the LCFS would be encouraged to manage their manure differently and thereby reduce their environmental impact and improve air quality.

The success of the Low Carbon Fuel Standard Program encourages dairy operations to adopt significant operational changes that benefit the environment and the air quality of the Central Valley, while maintaining this important source of economic vitality, is a perfect blueprint for the positive benefits that this program could have if expanded and applied in other regions.