Dairy Cares Comments on the Cap-and-Trade Auction Proceeds Draft Fourth Investment Plan for Fiscal Years 2022-23 through 2024-25

September 17, 2021

Dairy Cares appreciates the opportunity to provide the following comments. Dairy Cares represents the California dairy sector, including more than 1,200 family dairy farms, leading cooperatives, and major dairy processors.[1] Dairy Cares looks forward to continuing to work with CARB on dairy methane reduction efforts and achievement of the state's Short-Lived Climate Pollutant (SLCP) Plan and overall climate goals. However, these goals cannot be met without continued investment from the state. Based on recent analysis by the California Air Resources Board (CARB)[2] and our knowledge of ongoing dairy methane reduction efforts, **Dairy Cares believes funding in the range of $180 million to $225 million over the three fiscal years covered in this plan will be necessary.**

California family dairy farms are leading change and making significant progress in reducing greenhouse gas (GHG) emissions. Producing a glass of milk from a California dairy cow generates 45% less GHG emissions today than it did 50 years ago. Significant advancements in farming efficiency, feed crop yields, veterinary care, sustainable food practices, and animal nutrition have helped reduce the environmental footprint of individual cows. More can and is being done to lower the climate footprint even further. California dairy farm families are working closely with the California Department of Food and Agriculture (CDFA) and CARB to further reduce the state's methane emission inventory. As detailed below, the state's investments are resulting in tremendous progress and are providing substantial climate, economic, social, public health, and environmental benefits to the state and to local communities. Continued funding of both CDFA dairy methane reduction programs will prove critical for California as the state seeks to maintain its leadership position and achieve its ambitious goals.

CARB's recent draft Analysis of Progress toward Achieving the 2030 Dairy and Livestock Sector Methane Emissions Target (Analysis) shows that the dairy sector is projected to achieve significant additional reductions toward the SB 1383 target by 2030 through modifications to manure management systems –

[1] For more information about Dairy Cares visit www.dairycares.com.

[2] CARB Draft Analysis…, p. ES-2.

primarily using anaerobic digesters – and additional reductions through decreases in animal populations.[3] Manure management projects completed or in development are already projected to account for more than 2 MMTCO2e of reductions annually. The Analysis also shows that herd population reductions are expected to annually account for an additional 2 MMTCO2e of reduction by 2030. Achieving additional reductions will require the dairy and livestock sector to implement additional manure management projects and proven enteric mitigation strategies over the next few years. The reductions in manure management are dependent on continued funding.

CARB's desired target of 9 MMTCO2e reduction cannot, and will not, be met without significant state funding and incentives. Additional investments are necessary, as pointed out in the Analysis, to both facilitate and accelerate additional methane reductions in the dairy and livestock sector.

Documented Need for Additional Funding

As is well documented in the Analysis, challenging sector economics, insufficient availability of public funds, and underdeveloped markets for value-added manure products are ongoing and persistent market barriers for both digester and alternative manure management projects.

Additional reductions will require development of dairy digesters or certain types of Alternative Manure Management Program (AMMP) projects on smaller dairies in the state. While the total capital cost of these projects on smaller dairies is less, the cost per cow is much higher due to diminished economies of scale. Many of these future projects may not be in proximity to one of the existing dairy biogas clusters already in development, resulting in additional costs to interconnect the project to the state's electric or gas transmission grids. Smaller dairies are also less attractive to dairy digester project developers due to their higher costs, greater risk and longer pay-back periods. As CARB is well aware, dairy digester developers can build projects in other states with far lower capital and ongoing operations and maintenance costs while still receiving similar financial benefits from California's Low Carbon Fuel Standard (LCFS) Program and the federal Renewable Fuels Standard program. California's higher costs and competition from out of state projects further justifies the need for additional investments and incentives to achieve greater reductions as sought by the state.

While a continued focus is needed on policies that will broaden adoption of digesters on California dairies, including smaller dairies, it is also essential to consider, prioritize, and provide funding for non-digester projects – especially those that can provide significant methane reduction while also managing surplus manure nitrogen and other surplus nutrients. Projects that divert manure away from anaerobic lagoons with the intent of denitrifying the manure via vermiculture (worm composting) or similar biological denitrification, and projects which otherwise divert manure from anerobic storage for processing and export to other farms provide a huge potential to reduce methane at levels approaching the effectiveness of digesters, while also reducing energy use and GHG emissions related to fertilizer production. Further, these types of projects provide significant promise to not only greatly reduce methane, but also to significantly reduce water quality impacts associated with dairies.

Over the past six years, the California Climate Investment (CCI) Program has offset some capital costs of both dairy digester and alternative manure management projects. Approximately $268 million in CCI funds has been instrumental in funding 233 dairy manure methane reduction projects. CARB's recent analysis documents the "insufficient availability of public funds" as a leading market barrier for manure management project expansion in the dairy sector.[4] The SLCP plan recommended a minimum funding

[3] CARB Draft Analysis…, p. ES-2.
[4] Id, p. ES-3.

amount of at least $100 million per year for five years as necessary to accelerate project development by offsetting capital costs and economic risks for manure management methane emissions reduction projects.

As stated above, just $268 million has been provided to date, an insufficient amount to achieve the 2030 target. The FY 2019-2020 CCI allocation of $34 million was considerably lower than the $99 million available in FY 2017-2018 and FY 2018-2019, falling $66 million short of annual funding needs. The proposed FY 2020-2021 allocation of $20 million did not materialize due to budget cuts. The FY 2021-2022 allocation has not been finalized. As the Analysis points out, "while dairy digesters offer significant and cost-effective methane emissions reductions, without large-scale public incentives, the rate of adoption would likely decrease greatly."[5] Additional funding for dairy manure methane efforts must be provided if the state is to meet the dairy and livestock sector methane reduction goals sought by CARB.

Dairy Cares estimates that an additional $60 million to $70 million in funding will be needed annually, with a total investment $450 million to $600 million in CCI investments, to achieve further dairy methane reductions sought by CARB. This level of funding will provide grants for 300-400 additional manure management projects. The exact number of additional projects needed will depend on the availability of feed additives or other enteric methane reduction strategies and the level of methane reduction they can achieve toward CARB's desired target. The higher end of this funding range is consistent with CARB staff estimates that are necessary to achieve the expanded emission reductions sought by CARB. This level of funding is generally consistent with original estimates in the Short-lived Climate Pollutant Plan of $500 million. This investment is also fully consistent with the legislative intent and voluntary incentive-based approach mandated by SB 1383.

Finally, further investment in dairy methane reduction is fully consistent with the intent of the state's Cap and Trade and CCI Programs. Dairy methane reduction projects represent important cost-effective investments to significantly reduce GHG in California. The California Department of Food and Agriculture's Dairy Digester Research and Development Program (DDRDP) is the state's most cost-effective investment, at just $9 per ton of reduction. The DDRDP is also responsible for achieving 29% of all GHG reductions from all CCI funded programs while receiving just 2.1% of total funds (implemented to date).[6] Put simply, investments in dairy digesters provide 29% of the State's return with just 2.1% of the investment dollars, a tremendous mitigation opportunity and solid investment for the State.

As CARB pointed out in the Analysis, "reducing or eliminating CCI or other public funding for dairy and livestock methane emission reduction projects may eliminate prioritization of projects that deliver important environmental and public health co-benefits."

Critical Need to Reduce Methane

The short-term climate benefits of reducing SLCPs, including methane, are well documented. SLCP reductions account for about one-third of the cumulative GHG emissions reductions the state is relying on to achieve the statewide 2030 GHG emissions target established under SB 32.[7] SLCP reductions are also necessary to achieve the state's mid-century carbon neutrality goal.[8]

[5] Id, p. 16.
[6] CCI Annual Report for 2021.
[7] CARB Draft Analysis…, p. ES-1.
[8] Id, p. 3.

Short-lived climate pollutants, including methane, are powerful climate gases but have a relatively short atmospheric lifetime. In the case of methane, that lifetime is approximately 10-12 years. As a result, methane reductions achieved now have a short-term beneficial impact on climate change. Accordingly, leading climate scientists, NGOs, and the United Nations Intergovernmental Panel on Climate Change (IPCC) are now recognizing that moderate reductions in methane emissions can quickly stabilize the climate pollutant's powerful impact, and further reductions can offset the far more persistent warming impacts of carbon dioxide, which accumulate in the atmosphere for hundreds of years.

It is also important to differentiate fossil methane and biogenic methane. Fossil methane, such as natural gas, is carbon that has been locked in the ground for millions of years and is extracted and combusted for use in homes and businesses. The burning of fossil methane directly transfers carbon that was stored in the ground (geologic carbon) into the atmosphere as carbon dioxide (CO2). That carbon continues to accumulate and persist in the environment, contributing to climate change for hundreds of years, driving climate warming.

Biogenic methane from cows is part of a natural carbon cycle, where after about 10-12 years it is removed from the atmosphere (short-lived) and does not continue to contribute to warming. As part of photosynthesis, plants capture CO2 from the atmosphere, absorbing the carbon and releasing oxygen. That carbon is converted into carbohydrates in the plant, which are then consumed by cows, digested, and released from the cows as methane (CH4). After about 12 years in the atmosphere, that methane is oxidized and converted into CO2 – the same molecules that were consumed by cows in the form of plants. The biogenic carbon cycle returns the carbon that was originally utilized by the plant to the atmosphere, contributing no net gain of CO2.[9]

The biogenic carbon cycle of dairy methane is depicted in the following diagram, provided by the UC Davis CLEAR Center:

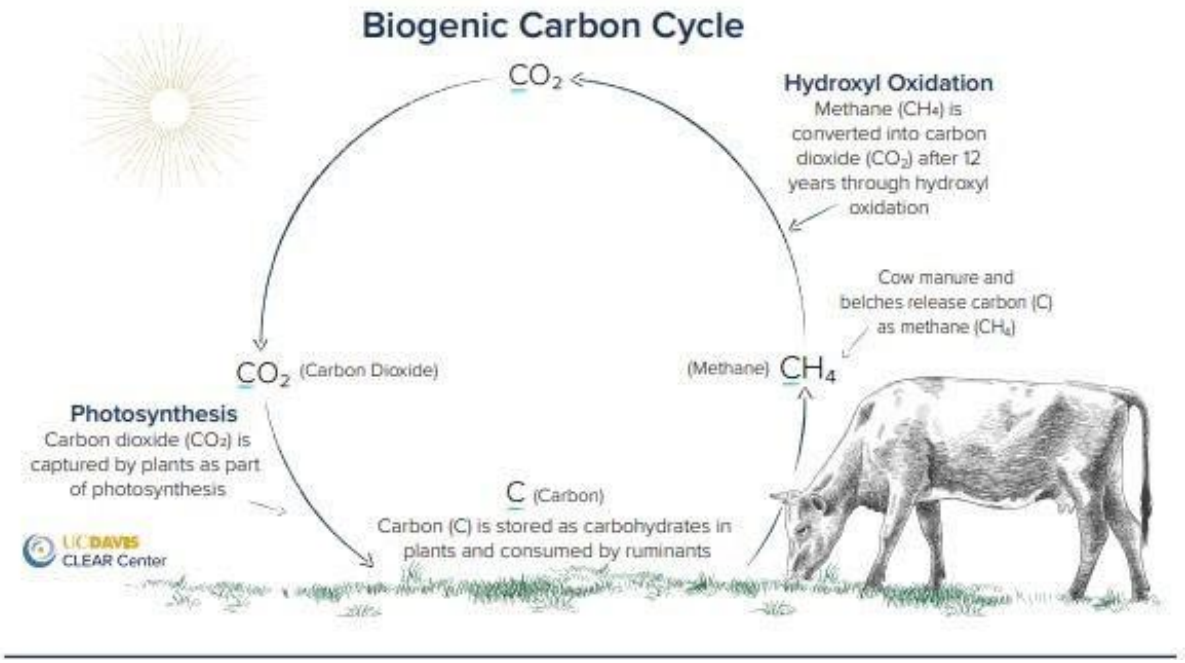

Figure 1 As part of the biogenic carbon cycle, the carbon originally utilized by the plant is returned to the atmosphere, contributing no net gain of CO2. Diagram provided by the UC Davis CLEAR Center

[9] Methane Cow and Climate Change: California Dairy's Path to Climate Neutrality, p. 5, appendix.

CO2 produced by the combustion of fossil fuels is fundamentally different. CO2 makes up the overwhelming majority of GHG emitted in California and is far more damaging than methane due to its long atmospheric lifetime and its continued accumulation in the environment, adding to continued warming. For these reasons, carbon dioxide, not methane, is the true "super-pollutant" affecting climate change.

The short-lived atmospheric lifetime associated with methane reductions can result in a relatively quick drop in atmospheric concentration. As a result, reducing methane emission rates presents an important mitigation opportunity which can reverse some of the warming the planet has already experienced.[10] As the UN IPCC AR6 Report points out, additional methane reductions will also be needed to achieve overall climate goals. The value of these mitigation opportunities should be carefully analyzed and prioritized in the Investment Plan.

Proven Environmental and Community Benefits of Methane Reduction Projects

Dairy digester and other livestock methane reduction efforts provide well-documented direct and indirect benefits to the state and to local communities. Despite these benefits, digester projects and other emission reduction efforts have faced opposition by various environmental justice advocates such as the Disadvantaged Communities Advisory Group (DACAG) and other parties before the California Public Utilities Commission (CPUC) and other state agencies.[11] While Dairy Cares does not agree with the opposition of these groups to methane reduction efforts, we do appreciate CARB's responsibility to evaluate the impacts and benefits of various climate strategies on front-line communities.

Three recent reports from CARB and CDFA document the significant environmental, climate, social, and economic benefits of dairy digesters and dairy methane reduction efforts. These benefits include significant direct and indirect benefits to local disadvantaged communities and priority populations.

1. **California Climate Investments - 2021 Annual Report**
   - **Documents that the dairy digester program is responsible for achieving 29% of all GHG reductions from all programs invested in by the state with just 2.1% of total funds implemented.**
   - Identifies the dairy digester program as the state's most cost-effective program, at just $9 per ton of reduction.
   - Reports that 66% of funds expended on dairy digesters benefit priority populations.

2. **California Department of Food and Agriculture - Report of Funded (Dairy Digester Research and Development Program) Projects**
   - Estimates the cumulative reduction from the dairy digester program as 21.12 MMTCO2e over 10 years or 2.1 MMTCO2e annually.
   - Documents the environmental protection of water and air quality.
   - Identifies significant air, water quality, and nuisance (odor) benefits provided to local communities.

[10] Lynch, J. (2019). Agricultural methane and its role as a greenhouse gas. Food Climate Research Network, University of Oxford.

[11] See for example, CPUC Application 19-02-015, DACAG December 2, 2020 Letter to California Public Utilities Commissioners. See also, CPUC OIR 13-02-008, Comments of Leadership Council for Justice and Accountability, Food & Water Watch, pp. 4 -9 (June 30, 2021), available at: https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M389/K957/389957229.PDF.

3. **California Air Resources Board Analysis of Progress toward Achieving the 2030 Dairy and Livestock Sector Methane Emissions Target**
    - Documents the progress toward the targeted livestock sector methane reductions.
    - Identifies the need for additional incentives and grant funding.
    - Confirms the societal benefits of reducing methane.
    - Confirms the 40% targeted reduction in dairy and livestock methane cannot be achieved without significant additional digester development.
    - Recognizes that the voluntary, incentive-based approach has helped fund projects that provide additional environmental benefits, including improved air quality and water quality protection.

In addition, a recent Global Methane Assessment[12] conducted by the United Nations Environment Programme emphasizes the need to further abate methane as a short-term hedge against the more damaging and long-term impacts of CO2, the primary GHG causing global warming. The UN report recognizes the importance of improved farm management efficiency and productivity. It also specifically identifies livestock manure management, including treatment in biogas digesters and improvements in manure storage covering as critical targeted measures for the agriculture sector.[13] Notably, the target measures identified by the UN are fully consistent with CARB's own SCLP policies, including the important role of dairy methane reduction and utilization of dairy digesters.

Conclusion

In summary, Dairy Cares fully supports the continued investment in CDFA's Dairy Livestock Methane Reduction Programs. Significant funding for fiscal years 2022-2023 through 2024-2025 totaling at least $180 million to $225 million ($60 million to $70 million annually) will be needed to achieve the state's dairy methane, overall SLCP and overall 2030 climate goals.

[12] United Nations Environment Programme and Climate and Clean Air Coalition (2021). Global Methane Assessment: Benefits and Costs of Mitigating Methane Emissions, available at: https://www.unep.org/resources/report/global-methane-assessment-benefits-and-costs-mitigating- methane-emissions.

[13] Id, p. 16