Dairy Cares Comments on the California Air Resources Board's March 29, 2022 Workshop on Methane, Dairies and Livestock, and Renewable Natural Gas in California.

April 12, 2022

Dairy Cares[1] appreciates the opportunity to provide the following comments on the California Air Resources Board's ("CARB" or "the ARB") March 29, 2022 Workshop on Methane, Dairies and Livestock, and Renewable Natural Gas in California ("the Workshop"). These comments also provide feedback on the ARB's Final *Analysis of Progress toward Achieving the 2030 Dairy and Livestock Sector Methane Emissions Target* (the "Final SB 1383 Dairy Analysis").[2]

INTRODUCTION AND SUMMARY

These comments supplement our prior comments on the Draft SB 1383 Analysis. Senate Bill ("SB") 1383 (Stats 2016, ch. 395) establishes CARB as the agency with responsibility for developing a comprehensive SB 1383 strategy, including a focused and responsible expansion of proven, "technologically feasible" and "cost effective" incentives and regulatory strategies.[3] Since the release of the Draft SB 1383 Dairy Analysis, the ARB has continued to develop a record of the achievements and funding needs for greater investment in emission reductions. Dairy Cares agrees with the ARB's comprehensive strategy represented in the various findings of the Final SB 1383 Dairy Analysis. Investing in proven technology, evaluating new cap-and-trade offset protocols for enteric emission strategies, expanding research, and improved information and analysis will best ensure the statutory requirements of SB 1383 are met. By focusing on expanding existing programs with strong track records of success, the ARB will maximize the near-term climate benefits of methane reduction. The comprehensive strategy will also enable California to realize its status as a world leader by doing more than simply adopting goals to reduce methane. California is leading the world and its success is documented in the Final SB 1383 Dairy Analysis and many of the presentations at the Workshop.

These comments encourage the anti-dairy activists in this proceeding to acknowledge and value local environmental benefits of digester projects that have been documented at numerous

[1] Dairy Cares represents the California dairy sector, including dairy producer organizations, leading cooperatives, and major dairy processors. For more information about Dairy Cares, please visit www.dairycares.com.

[2] See Final SB 1383 Dairy Analysis (March 2022), available here.

[3] Dairy Cares Comments on Draft SB 1383 Dairy Analysis (July 14, 2021), available here.

points in this proceeding and others. Presentations at the Workshop by the U.S. Department of Agriculture ("USDA"), the U.S. Environmental Protection Agency ("EPA") AgSTAR Program, the California Department of Food and Agriculture ("CDFA"), and others provided helpful information and quantification of these benefits.[4] Dairy Cares reiterates concerns with efforts to exclude dairies from voluntary emission reduction programs. Anti-dairy activists continue to call for the exclusion of dairy from successful programs without offering an alternative, comprehensive solution that will achieve the ARB's statutory requirements.

Dairy Cares supports the achievement of voluntary emission reduction measures combined with projects that improve baseline environmental conditions. As discussed at the Workshop, emission reduction projects have and will continue to improve baseline environmental conditions. The ARB, the air districts, California State Water Resources Control Board, Regional Water Quality Control Boards and other responsible agencies are working to improve baseline environmental conditions and achieve the requirements of SB 1383. There is much work to still be done and Dairy Cares looks forward to working with CARB on the achievement of the SB 1383 reduction targets in a way that protects local communities and state and local economies.

DISCUSSION

These Dairy Cares comments are intended to accomplish the following:

- Describe the clear progress that has been made to reduce dairy methane emissions;
- Lay out a clear vision and comprehensive strategy, consistent with CARB priorities, to achieve the desired 40% reductions in dairy and livestock methane by 2030;
- Respond to misleading claims by anti-dairy activists that California dairies lack adequate environmental regulation;
- Respond to disingenuous and cynical statements by anti-dairy activists that digesters are "false solutions" and are harmful to local communities;
- Highlight the ongoing efforts by dairy, livestock, farming, and other dischargers to ensure safe drinking water for local residents.

METHANE REDUCTION - DAIRY PROGRESS TO DATE

California's dairy sector continues to make significant progress toward achieving SB 1383's target of a 40% reduction in manure methane. Analysis and reporting performed by both CDFA and CARB have documented this progress. CDFA alone has funded 231 dairy manure methane reduction projects to date, and more projects will be funded in 2022 and 2023 with additional support from the State Budget. Additional support has also come from the California

[4] See presentations of U.S. EPA here, USDA here, CDFA here, and Neil Black of California Bioenergy here.

Energy Commission ("CEC") and the California Public Utilities Commission ("CPUC"). It has only been five years since the enactment of SB 1383 in 2016 and the progress is nothing short of amazing. Consider the following:

- In 2016, only about a dozen dairy digesters were operating in the state.
- At the end of 2020, that number exceeded 40 operating digesters.
- By the end of 2021, there were 89 digesters operating in California.
- Sixteen separate dairy digester clusters (existing dairies) are currently being developed that will support upwards of 200 or more digesters by the end of 2024/2025.
- More than 200 miles of gas-gathering lines have been developed as well as 16 separate hubs where dairy biogas is cleaned, conditioned, compressed, and injected into natural gas pipelines as biomethane or renewable natural gas ("RNG").
- State funding is being matched on approximately a 2-to-1 basis and the total investment is rapidly approaching over $2 billion.

It should also be noted, this tremendous progress was accomplished during the COVID-19 pandemic despite considerable workforce and supply chain constraints. With 8 years remaining through 2030, the California dairy sector is well positioned to achieve the 40% reduction in manure methane targeted by SB 1383. Moreover, California's dairy farm families have embraced the goal and look forward to continuing to work with CARB and CDFA toward its achievement.

COMPREHENSIVE DAIRY METHANE REDUCTION STRATEGY

As part of the workshop, Dairy Cares' testimony provided a clear vision and comprehensive strategy for achieving California's dairy methane reduction goals, as follows:

This strategy is fully consistent with CARB's priorities outlined in its recent analysis of progress. According to CARB's Final SB 1383 Dairy Analysis, "a combination of dairy digesters, alternative manure management, enteric strategies, and dairy herd size population decreases will be needed to meet the 2030 target."[5] Each of the following five proven

[5] See Final SB 1383 Dairy Analysis (March 2022) at p. 13, available here.

components will be needed to achieve the State's targeted reductions. Following is a brief discussion of the importance and ongoing role of each component:

1. **Efficiency**

Efficiency has played a significant role in reducing dairy methane production per gallon of milk produced to date. According to UC Davis research published in the Journal of Dairy Science, the carbon footprint of each gallon of milk produced from 1964 to 2014 decreased by 45%.[6] These reductions have occurred in large part from the ability to produce more milk with fewer cows. Milk production efficiency is continuing to improve due to improved cow comfort and health, improved feed and nutrition practices, and advances in animal breeding. These benefits will continue, and efficiency can be expected to provide about 1% benefit annually. These important gains in efficiency will allow production to remain relatively constant over the remainder of this decade, as dairy herd attrition is expected to continue in California. California's dairy herd reached a peak of 1.85 million milk cows in 2007, and since that time has shrunk to an estimated 1.7 milk cows in 2021, or about ½ of 1% reduction annually over this period. Dairy herds are expected to continue to decline in California by at least the same annual rate and, more likely, cow numbers could decline even faster due to the following factors:

- High and increasing operating costs in California;
- Significant and increasing environmental regulatory burdens;
- Ongoing drought and increasing water scarcity.

Increases in labor costs due to minimum wage and overtime requirements, skyrocketing energy and fuel costs, and high feed costs are all taking a toll on California's family dairy farms. Regulatory burdens have always been significant in California and additional water quality protections will undoubtedly lead to the loss of even more, particularly smaller, dairies in the next several years. Finally, the lingering effects of the ongoing drought and anticipated impacts associated with the Sustainable Groundwater Monitoring Act will also limit dairy farm acreage and lead to the loss of even more dairies due to the extreme lack of water. All totaled, these factors could lead to a more likely scenario where California's dairy herd size could be reduced a full 1-2% annually as production remains relatively flat.

2. **Methane Avoidance**

Methane avoidance will continue to be an important, but limited, contributor to dairy methane reduction targets. Alternative Manure Management Projects will continue to be implemented, particularly on smaller dairies, with continued funding by CDFA remaining critical. However, despite significant investments by CDFA (114 projects funded to date), these projects are only providing roughly 10% of total reductions. As CARB documents in the recently published Final SB 1383 Dairy Analysis, alternative manure management practices alone cannot achieve the targets. Converting non-pasture dairies to pasture-based, for example,

[6] Naranjo, A., Johnson, A., Rossow, H., & Kebreab, E. (2020). Greenhouse gas, water, and land footprint per unit of production of the California dairy industry over 50 years. Journal of Dairy Science. 103, 3760-3, available at https://www.journalofdairyscience.org/article/S0022-0302(20)30074-6/fulltext.

may decrease manure methane but lead to increases in enteric methane emissions due to reduced efficiency (more cows and more feed to produce the same amount of milk) and diet and nutrition implications. Pasture-based solutions are also not feasible in a water scarce and climate-impacted San Joaquin Valley moving forward. Pasture-based dairies are largely on California's north coast where weather is milder and rainfall is higher, but even that region is struggling under the current drought conditions.

3. Method Capture and Utilization (Digesters)

Dairy digesters continue to represent the central element in any successful dairy methane reduction strategy. The Dairy Digester Research and Development Program ("DDRDP") implemented by CDFA is well documented as the State's leading climate investment, providing one ton of CO2e reduction for each nine dollars invested by the state. Equally important, the DDRDP accounts for nearly 29% of all reductions from all California Climate Investments despite receiving just over 2% of all funding under the Climate Investment Program.[7] Moreover, dairy digesters are accounting for a full 90% of all manure methane reductions achieved to date.

Dairy digesters are widely recognized by the United Nations, US EPA, USDA, CARB, and leading environmental organizations as a primary and optimal dairy methane reduction strategy. According to the United Nations ("UN") "treatment in biogas digesters" is a targeted livestock manure management strategy.[8]

CARB's Final SB 1383 Dairy Analysis also recognizes the role and importance of dairy digesters toward achieving the State's livestock methane reduction goals. The Analysis identifies the need for continued and increased funding for dairy digesters in California to achieve the 40% manure methane goal. Put simply, the State's targets cannot and will not be met without continued and accelerated dairy digester development.

4. Enteric Strategies

The need for enteric emission reduction strategies and solutions is also critical to achieving CARB's targeted livestock methane reduction. Like digesters, the State's livestock targets cannot and will not be achieved without enteric solutions. This central role is recognized by the UN, CARB, and other organizations. The role of enteric reduction strategies was also recognized by SB 1383, which requires that enteric solutions be commercially available, cost-effective, safe for animals, and accepted by consumers. As recent CARB studies and reports have documented, a number of promising feed additives are in development and should be available in time to meet the State's 2030 targets. Dairy Cares supports additional research into enteric strategies and solutions, and we are confident that enteric solutions can be implemented quickly in livestock herds once they are tested and approved for commercial use. Finally, Dairy

[7] California Climate Investments 2021 Annual Report, available here.

[8] United Nations Environment Programme and Climate and Clean Air Coalition (2021). Global Methane Assessment: Benefits and Costs of Mitigating Methane Emissions. Nairobi: United Nations Environment Programme at p. 16, available here.

Cares strongly supports the development of an enteric methane reduction protocol to incentivize reductions and offset the costs of feed additives and other strategies utilized in the future.

5. **Research and Innovation**

Research and innovation will continue to play an important role moving forward. Additional research into feed additives will be especially critical. Innovation, particularly the development of advanced manure management practices that can both reduce methane and improve water quality, should be piloted and adopted as appropriate. Advanced manure management practices represent an important and needed technological advancement, especially as digesters achieve their full build-out on suitable dairies.

EXTENSIVE DAIRY REGULATION IN CALIFORNIA

Dairy farms across California face extensive environmental regulations – a fact which was well documented during the Workshop. In the San Joaquin Valley (roughly Bakersfield to Stockton), where about 90 percent of the state's dairy herd is located, dairy farms are regulated by the San Joaquin Valley Air Pollution Control District ("SJVAPCD"), the Central Valley Regional Water Control Board ("RB5"), and the land use and/or environmental health departments in eight different counties. Specific rules and requirements include:

Air pollution prevention: All dairies with 500 or more cows must comply with the SJVAPCD's Rules 4550 and 4570, which are designed to reduce emissions of fugitive dust, other particulate matter, and ozone-forming emissions related to manure and feed storage. Dairies are also regulated under Rule 4702 (stationary engines emission control), Rule 4103 (restricting burning of agricultural residues), and various additional rules specific to process heaters and similar equipment. Dairies must apply for and receive a Permit to Operate, and they undergo on-site inspections to ensure they comply with the aforementioned applicable rules. In rare occasions when dairies expand, or – even more rarely – new dairies are constructed, those projects must first receive an Authority to Construct permit, which requires going through an extensive additional process known as Rule 2201 (New Source Review), under which the SJVAPCD determines and requires Best Available Control Technology for any new emissions sources. Permits undergo a public review process and must comply with the California Environmental Quality Act ("CEQA"). Control measures under the various rules listed above include management practices such as frequent manure removal from barns, covering silage piles, reduction of dust on unpaved roads, preventing standing water in canals, precision farming and/or reduced tractor passes to reduce dust and smoke, and the requirement to maintain and utilize equipment with emissions controls.

Water quality regulation: All dairies in the Central Valley (roughly Redding to Bakersfield) are subject to regulation by RB5, most (more than 95 percent) under General Order R5-2013-0122, "Reissued Waste Discharge Requirements for Existing Milk Cow Dairies." The remaining fraction are regulated under General Order R5-2010-0130, "Dairies with Anaerobic Digester or Co-Digester Facilities," Individual Order Waste Discharge Requirements, or by other means. Requirements under the General and Individual Orders include prohibitions of certain activities, such as offsite discharge of waste. They also prescribe specific requirements, such as

"application of waste at rates which are reasonable for the crop, soil, climate, special local situations, management system, and type of manure" and which "does not unreasonably degrade and does not pollute the waters of the state or create a nuisance condition." All dairies are required to have and implement a Nutrient Management Plan (prepared by a certified professional) to "maximize harvest and minimize leaching of wastes," and are required to apply no more than 1.4 times the amount of manure or fertilizer nitrogen that their crops are expected to consume. The orders also require dairies to implement salt minimization strategies. Dairies are further required to develop and implement a Waste Management Plan (prepared by a licensed engineer or hydrogeologist) to ensure that they have constructed adequate (in both size and structural integrity) capacity to store liquid manure and wastewater until it is applied to crops or exported from the dairy. In the relatively rare instances where dairies choose to expand, or new dairies are constructed, wastewater/manure retention ponds must be constructed to a Tier 1 standard, which includes double synthetic liners with leachate collection.

The General Orders also include significant monitoring and reporting requirements, and all dairies are subject to routine inspections by RB5 staff to determine compliance. All dairies must annually test their wells, using state-certified laboratories, to identify any contaminants. In addition, all dairies must conduct additional groundwater monitoring by either installing monitoring wells at several locations around the dairy (e.g., near forage fields where manure is applied, manure retention ponds and animal housing areas) or participate in a Central Valley-wide representative monitoring program. Dairies must submit detailed reports annually to RB5, which include information on their herd size, manure and fertilizer applications to all crop fields, manure exports, sample results from both applied manure and harvested crops (to calculate application and removal ratio of nutrients) and results from well tests.

Providing drinking water through alternative compliance programs: In addition to the requirements of the General Orders as summarized above, dairies are also subject to the State Water Resources Control Board's ("SWRCB") Nitrate Control Program. Under these programs, dairies which cannot individually demonstrate that their discharges are fully protective of water quality are participating in Nitrate Management Zones. Management Zones offer free well testing to all rural residents who depend on wells for their drinking water. If tests confirm nitrate contamination, Management Zones provide those residents safe replacement drinking water, free of charge. Testing and replacement of drinking water contaminated by nitrates are funded by dairies, farmers and other water quality permit holders participating in the Management Zone. About 2/3 of all Central Valley dairies are inside the borders of six "priority one" Nitrate Management Zones and are already contributing to providing free well testing and replacement drinking water wherever it is needed.

Dairies supporting broader drinking water efforts: Dairy-funded Nitrate Management Zones are also working with and strengthening broader efforts to provide safe drinking water. The Valley Water Collaborative, representing the Modesto and Turlock Nitrate Management Zones, recently entered into a grant agreement with the SWRCB's SAFER (Safe and Affordable Funding for Equity and Resilience) Program. Although the Nitrate Management Zones are already required to test wells for nitrate contamination, under this new agreement these Nitrate Management Zones test for nearly a dozen constituents including pesticides, chromium, arsenic, uranium, bacteria, and others, and they provide safe drinking water when other contaminants

besides nitrates make water unsafe. This synergy of local "boots on the ground" working with state funding has significantly strengthened the effort to ensure all rural residents with wells have safe water.

It is also important to understand these efforts are a part of a larger statewide effort that is making rapid progress toward ensuring safe drinking water for all. Senate Bill 200 (Stats. 2019, ch. 120) established the Safe and Affordable Drinking Water Fund ("SADW Fund" or "Fund") and requires the annual adoption of a Fund Expenditure Plan ("Plan"). Expenditures from the Fund complement other funding sources as part of the broader SAFER Program, which includes General Fund appropriations, general obligation bond funds, and funding available through annual Drinking Water State Revolving Fund capitalization grants. The SAFER Program also encompasses regulatory efforts to protect drinking water, community engagement to identify needs and solutions, data collection and assessment to promote sound decision-making, and information management to provide transparency and accountability.

In fiscal year ("FY") 2021-22, up to $130 million is available from the Fund for local assistance and State operations, to address funding gaps (i.e., where other funding sources cannot be used or are not sufficient) and to expedite priority projects (e.g., where other available funding resources have additional constraints that result in longer timelines for completing a funding agreement or providing reimbursement). A similar amount was expended in FY 2019-20, and the SWRCB is currently developing its spending priorities for FY 2022-23.

The SADW Fund is only a fraction of the State resources devoted to short-term, mid-term and long-term solutions for drinking water. Overall, over $2.1 billion, at least $1.1 billion of which is available for capital projects, was made available for use in FY 2021-22 from complementary funding sources that make up the larger SAFER Program.

Salt: In a similar alternative compliance program for salt, dairies and other water quality permit holders contribute funds to support studies (overseen by the Central Valley Salinity Coalition) to develop long-term solutions to address salinity buildup across the valley.

Other regions: While the water quality regulations above apply only in the Central Valley, similar requirements are in place under the authority of several Regional Boards.

Additional requirements in development: Although the regulations described above are extensive and recognized as the strictest requirements for dairies in the U.S. and possibly the world, it is important to recognize that these represent only the *current* regulations, and they are evolving. The SWRCB is actively preparing a precedential order – expected to be adopted in 2022 or early 2023 – that would further increase the regulation of dairies. The SWRCB is contemplating changes such as requiring seepage testing of existing manure retention ponds, requiring dairies to export all surplus manure nutrients, and more stringent application limits for manure nitrogen on crops.

Local land use/environmental health: In addition to the extensive state and regional requirements described above, local (county-level) land use and environmental health authorities also regulate dairies. Although new and expanding dairies are relatively rare these days, when

they do happen, conditional or special use permits are generally required. This makes approval of a land use permit for a dairy a discretionary process, for which local agencies typically take the lead in ensuring CEQA compliance. The CEQA review process must consider all potential environmental impacts of a project, not just impacts to air quality and water quality. Additional impacts typically considered include vectors (flies/mosquitoes and other nuisances), traffic, water consumption, impacts to endangered species, odors, and more. Local agencies must include permit conditions to mitigate any negative effects and issue a statement of overriding considerations for any impacts not mitigated to the "less than significant" level. Local agencies also review projects to make sure they are consistent with the county's zoning and general plan, and in most cases, counties have land use policies that ensure adequate separation, or buffer zones, between dairies and sensitive sites, such as urban boundaries, large housing tracts, schools or wetland/riparian areas.

Local agencies may also impose additional requirements beyond those associated with traditional land use policy. For example, after the passage of Assembly Bill 32 in 2006, Tulare County determined that its General Plan Update must include a strategy to further reduce greenhouse gas ("GHG") emissions from dairies. Tulare County was the first county in the U.S. to prepare and adopt a Dairy Climate Action Plan, requiring new or expanding dairy projects to adopt measures to reduce climate-related emissions. Despite those landmark requirements, Tulare County was sued by the Sierra Club and other environmental activists, who demanded specific numeric targets for GHG reductions. In a consent agreement with those activist groups, Tulare County agreed to encourage anaerobic digester projects on new and existing dairies in the county and set a target to reduce emissions from the county's dairies by more than 1 million metric ton CO2e by 2023.

Summary: In summary, California dairies face extensive environmental regulation, which includes permits, restrictions and prohibitions, requirements to implement specific management measures and practices, hiring of certified professionals to assure compliance, payment of regulatory fees, inspections by multiple agencies, and frequent reporting and monitoring.

MISLEADING CLAIMS BY ANTI-DAIRY GROUPS

While the presentation from Brent Newell at the Workshop raised concerns about increased ammonia emissions from digester projects and increased emissions from on-site electrical generation, these concerns are not applicable to California dairy digester operations. For example, the Holly study referenced by Mr. Newell found increased ammonia emissions from the composting of digestate post digester. However, digestate is NOT composted on California dairies. In fact, composting of the liquid effluent from California's covered lagoon digester technology is not even possible. The liquid digestate is either applied immediately as fertilization on local feed crops or is stored in a separate storage pond until it can be effectively used for crop fertilization.

Mr. Newell also raised specific concerns about the air quality impacts associated with on-site electricity production at some California dairy digester projects. This analysis is flawed since it looks at "permitted" emissions rather than the much lower actual and "reported"

emissions from the small handful of projects utilizing on site electricity generation. More importantly, these projects are not being built in California. Nearly all recent dairy digester installations do not include on-site generators since they are capturing methane and sending the biogas to a local hub where it is cleaned, conditioned, compressed, and injected into a natural gas pipeline and utilized for hydrogen or RNG transportation fuel, replacing diesel and other fossil fuels. The bottom line is that California dairy digester projects are designed to greatly reduce, not increase, criteria pollutant emissions.

These two primary claims raised by Mr. Newell either demonstrate a complete lack of understanding of California dairy digester operations and development, or more likely, a complete disregard for an honest, fact-based, discussion of the important efforts to continue reducing dairy methane in California.

Contrary to the false claims of Mr. Newell and other anti-dairy activists, dairy digesters provide substantial environmental benefits to local, regional, and state residents. As was well documented by CARB, the SJVAPCD, and other groups testifying, dairy digesters not only provide substantial reductions in methane, a critical short-lived climate pollutant, they also provide important environmental co-benefits, including but not limited to the following:[9]

- Hydrogen sulfide (H_2S) reductions
- Nitric oxides (NOx) reductions
- Volatile Organic Compound reductions
- Water quality benefits (lagoon liners)

These benefits are significant, particularly the H_2S and NOx reductions. The H_2S reductions provide well documented reductions in local community nuisance and odor control. The replacement of diesel with RNG in heavy-duty trucks also provides significant reductions in NOx and other criteria pollutants in local communities and important regional air quality benefits.

SUMMARY

The science is clear. Reducing methane is an urgent step needed to limit and begin to reverse the impacts of climate change. Effectively and efficiently reducing dairy methane in California is also critical to achieving our State's ambitious climate goals.

California's initial incentive-based efforts to reduce dairy methane emissions have been highly successful. Continuing, expanding, and accelerating these efforts will prove critical to State climate goals. Dairy Cares has outlined a comprehensive strategy for achieving these goals, which is fully consistent with UN, federal, and CARB policies and priorities.

Workshop participants also identified the need for expanded State investment in digesters and other dairy methane reduction projects and strategies between now and 2030. Doing so will

[9] CARB Dairy Digester Emissions Matrix and Assumptions here.

achieve significant local environmental co-benefits, protect local rural economies, maximize methane emission reductions and provide a short-term hedge against long-term climate change.

Dairy Cares appreciates the opportunity to comment on CARB's Workshop on Methane, Dairies and Livestock, and Renewable Natural Gas in California.

Respectfully Submitted,

/s/

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