

Via email

October 30, 2015

Mary D. Nichols, Chair
California Air Resources Board
1001 I Street
Sacramento, CA 95814

Re: Draft Short-Lived Climate Pollutant Reduction Strategy

Dear Chair Nichols:

Dairy Cares appreciates the opportunity to submit these comments on the California Air Resources Board (CARB's) September 2015 "Draft Short-Lived Climate Pollutant Reduction Strategy" (Draft Strategy).

Dairy Cares (www.dairycares.com) is a coalition of California's dairy producer and processor organizations, including the state's largest producer trade associations (*Western United Dairymen, California Dairy Campaign, Milk Producers Council, California Farm Bureau Federation* and *California Cattlemen's Association*) and the largest milk processing companies and cooperatives (including *California Dairies, Inc., Dairy Farmers of America-Western Area Council, Hilmar Cheese Company, and Land O'Lakes, Inc.*), and others. Formed in 2001, Dairy Cares is dedicated to promoting the long-term environmental and economic sustainability of California dairies.

Dairy Cares continues to recognize the importance of reducing greenhouse gases (GHGs) in California and elsewhere, and that reductions of short-lived climate pollutants (SLCPs) provide an opportunity to "jump start" efforts to slow global warming. In our previous comment letters, we've discussed the significant progress California dairy farms have made to date on these issues and identified several policies – such as significant financial incentives for dairy manure biogas digesters – that will effectively and efficiently reduce emissions of SLCPs from the dairy sector. We have also suggested promising areas for research to continue and expand our abilities to reduce SLCPs from dairy farms while preserving the economic and social benefits of a healthy dairy community.

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915 L Street, #C-438, Sacramento, CA 95814 ~ PHONE (916) 441-3318 ~ FAX (916) 441-4132

www.DairyCares.com

We incorporate our previous comments by reference and stand behind our previous suggestions. We write today in support of some concepts in Draft Strategy as enumerated below, particularly CARB's continued support for voluntary, incentive-based measures to reduce SLCP, primarily methane, emissions. However, we also must express our serious concerns with what we see as an overly ambitious schedule toward achieving voluntary reduction goals, and an impractical or potentially counterproductive approach toward achieving reductions on new or expanding dairy farms.

Summary of comments

Following is a summary of the comments in this letter:

- I. **Dairy Cares opposes CARB's proposal to regulate new or expanding dairy farms.** Doing so could seriously harm the economics of the nascent dairy digester industry by:
 - a. Potentially¹ eliminating the opportunity for dairies to sell offsets resulting from reductions following adoption of a regulation (as noted in footnote 102 on p. 45 of the Strategy), and
 - b. Incentivizing dairies to relocate to other states when expanding, consolidating or otherwise investing in modernization of their facilities.

We recommend instead that CARB implement effective policies to incentivize voluntary methane reductions from new or expanding dairy facilities.

- II. **Reduction goals are overly ambitious and unrealistic.** Dairy Cares appreciates CARB's support of achieving reductions from existing dairies and livestock facilities via voluntary measures through at least 2025. We support this approach, and are fully committed to making substantial progress, but feel the targets may be setting the industry up for failure with unrealistically ambitious manure management methane reduction goals for 2020, 2025 and 2030. We suggest CARB revisit these goals to set targets that are more practical and achievable.

- III. **Progress cannot be made without a sustained coordinated effort and significant funding.** Dairy Cares strongly supports an incentive-based approach but recognizes that the success of this approach hinges on continued efforts by CARB, other state agencies, the dairy industry and other partners to address significant economic and other barriers to wider adoption of dairy digesters. We enumerate a list of actions

¹ We do not necessarily agree with CARB's apparent conclusion that regulating new emissions sources necessitates that offset credits may not be granted for future emission reduction projects located on existing dairies that are producing existing emissions. However, any negative impact to the offset program resulting from regulation, such as reduced revenue from offset for any future digester projects, should be seriously reconsidered. If CARB curtails the eligibility of existing dairies to obtain offsets from future digester projects it will have the unintended consequence of reducing the number of existing dairies who would develop methane-reducing projects, thus limiting future reductions of methane.

needed, including significant initial investment of at least \$500 million from the Greenhouse Gas Reduction Fund and other sources.

- IV. More research is needed to identify, quantify, validate and strengthen potential strategies to reduce SLCPs from California dairy farms.** These include gathering more data on alternative or enhanced manure management technologies such as scrape systems and flushed solids separation. More work is needed to develop additional products and markets from digester-related by-products, such as fertilizers, compost and other nutrient products. Research is also needed to verify and/or improve the accuracy of methods for calculating the inventory of GHG and SLCP emissions from California dairies.
- V. Goals for reductions of enteric methane do not have a scientific basis that is applicable to California.** Dairy Cares is concerned with the lack of analysis and scientific basis for the Draft Strategy's goal of a 25 percent reduction by 2030. Achieving such a goal seems unlikely without counterproductive actions, such as either greatly reducing the number of dairy cattle in California, or eliminating most pasture and organic dairies, or both. We suggest that more basic scientific information, data and analysis relating to California-specific conditions is needed before any realistic enteric emissions goal can be set. Setting a goal before such analysis is complete is counterproductive and will undoubtedly lead to unrealistic performance expectations.

Detailed comments

I. Dairy Cares opposes CARB's proposal to regulate new or expanding dairy farms

Dairy Cares recognizes CARB's goal to reduce emissions of methane from both existing dairies and from any new dairy sources that may develop, such as new dairies, expanding existing dairies, or consolidations and modernizations of existing dairies.

Dairy Cares supports the voluntary, incentive-based approach proposed by CARB for existing dairy facilities and their existing emissions. Given sufficient investment and a coordinated effort by the state, dairy industry and private partners, and given that those efforts cover the issues identified in Section III below, we expect this to be an effective pathway to significantly reducing manure management-related emissions from California's dairy industry while preserving the economic health of dairy farms and the agricultural communities in which they operate. Importantly, an incentive-based approach would avoid "leakage" of California dairies and/or milk-producing capacity, to other states. Indeed, by incentivizing the voluntary capture of manure management-related methane emissions, and avoiding leakage, we believe emissions reductions will be greater than with regulation.

For new and expanding dairies, Dairy Cares believes that such a program would be more effective in accomplishing the above goals than mandatory reductions of manure methane within regulation. Reasons for this include:

- Regulation would likely require new, expanding or consolidating dairies to make significant investments to reduce methane from manure management – perhaps by building digesters or designing dry scrape collection, storage and nutrient management systems – without assuring that funds are available to cover the extra costs associated with these systems. This will create significant economic uncertainty around future dairy consolidation and modernization projects, in turn sending an economic signal that investment in such projects would be less risky if made in areas outside California.
- Even worse, CARB suggests that post regulation of new and expanding dairy farms, the agency may be unable to approve offset credits for methane reduction projects on any dairies. While Dairy Cares does not agree with this conclusion, we do agree that that mandatory regulations on new and expanding dairies would very likely harm or eliminate the ability of regulated dairies to receive such offsets. Unfortunately, this would put such new or expanding dairies in the difficult position of having to incur extra costs to reduce methane emissions from manure management, while simultaneously taking away important revenue streams that could help make such projects economically viable. At the same time, a modernization, consolidation or expansion project is by definition capacity that has not yet been constructed and it is the easiest to locate outside of California. Presenting dairy operators with this difficult choice will force them to seriously consider locating their projects outside of California, where manure methane reductions will likely not be realized. To the extent milk supply demands are not met by California dairies because of the unwillingness to invest in new or expanding dairies, those demands will inevitably be satisfied by an increase in capacity outside of the state. Milk production from California dairies is not driven solely by the California market but also by the national and international market, so the relative ease with which milk – producing capacity can be moved from one state to another will result in significant leakage, frustrating CARB’s goals rather than advancing them.

In short, regulation presents significant risks of leakage. Fortunately, there is a better alternative: Treat new, expanding and/or consolidating dairies much as CARB contemplates to treat the existing dairies, with a voluntary, incentive-based approach. Because overall growth is not expected in California dairy farms in the future, existing dairies will continue to represent, by far, the vast majority of dairy-related emissions.

In contrast, new and expanding projects have not yet been constructed, so there is perhaps an even greater opportunity for them to consider incentive programs going in, and design the dairy “from the ground up” (rather than potentially expensive retrofits) to use methane reduction technology. Relying on a voluntary, incentive-based approach assures that the dairy has the opportunity to customize an approach that provides the best overall environmental and economic outcome, and relies on resources and funding that are available when the project is constructed.

In previous comments and submissions to CARB, we have noted and provided growth projections for the dairy industry in the U.S. and California, and we continue to stand by projections that the industry will remain flat and likely shrink slightly over the next decade. For example, the U.S. Department of Agriculture predicts that the national population of dairy cows

will decrease from approximately 9.325 million in 2015 to 9.215 million by 2024.² Due to California’s increasing business costs, stringent regulations, water scarcity issues and stiff competition with other crops such as nut trees for available agricultural land and water, we would assert that California is not likely or well-positioned to buck the forecasted national trend of decline. As such, while we recognize that CARB is concerned with capturing “new” emissions in its “Draft Strategy,” we assert that in terms of number of dairy cows on balance, there will essentially be no “new emissions” overall. Those emissions coming from consolidations or expansions of individual facilities will almost certainly be offset by closing facilities, and in any case can be managed in the same manner as existing dairies, via a voluntary approach.

Finally, we would note that in the unlikely event that significant growth in the California dairy industry does begin to occur for future unforeseen reasons, and CARB feels that emissions from that new growth are not effectively controlled through voluntary incentives, then CARB retains the opportunity to regulate in the future. We would suggest that scheduling future regulation now – when all signs point to the fact that it is not needed – will not only potentially harm the dairy and biogas digester industries, but will likely result in a misapplication of scarce resources for CARB.

II. Reduction goals are overly ambitious and unrealistic.

As stated above, Dairy Cares appreciates CARB’s continued recommendation of a voluntary, incentive-based approach for reductions from existing dairy farms. We believe such an approach, properly supported and coordinated (again as discussed in Section III below), can be extremely successful in reducing emissions while preserving an economically healthy dairy industry and rural agricultural economy in California. As we have stated in previous submittals, we believe investment of incentive funding in dairy digesters via the Greenhouse Gas Reduction Fund (GGRF) and other sources represents an excellent return on investment, reducing up to one ton of methane emissions (carbon dioxide equivalent basis or CO₂e) per \$2 invested, when short-term global warming potential and a digester project life of 20 years are considered.

With a significant but reasonable investment, it is possible and even likely to build dozens and perhaps several hundred dairy digester projects in the state over the next 15 years. However, significant barriers and challenges lie ahead and we are concerned that the reduction targets for manure management are overly ambitious and will require dizzying success nearly every step of the way to be achieved. As such, these targets are likely setting up the dairy industry for failure by setting goals that are not reasonably achievable but characterizing them as achievable.

To illustrate, relying on digesters alone Dairy Cares estimates it will take:

- Nearly 80 digesters (on the state’s largest dairies, meaning these would be multi-million dollar, complex projects) to reach to 2020 goal of a 20 percent reduction in manure management emissions
- 250 to 300 digesters to reach the 2025 goal of 50 percent

² USDA Agricultural Projections to 2024, Long-Term Projections Report OCE-2015-1, February 2015 (previously submitted to CARB).

- More than 600 digesters to reach the 2030 goal of 75 percent

To put this in perspective, after years of effort there are approximately 13 dairy digesters operating in the state today (some of them quite small and not of the scale contemplated above). To reach the goal above, a coordinated effort would have to build more digester capacity than exists today every year for the next five years. Then that effort would have to be stepped up and accelerated to nearly double the rate to achieve the 2025 goal. And then nearly doubles again to reach the 2030 goal.

It is possible that part of the targets could be achieved with other methods than digesters, such as conversions to scrape systems with dry solids storage/composting, or improved solids separation in flush systems. However, these too will require significant time and investment, and it is not clear if they will economically pencil out as well as digesters, nor is their real potential to reduce methane emissions yet known.

All in all, we recommend that CARB consider reducing these voluntary goals very significantly, to levels that would be more likely to be achievable.

III. Progress cannot be made without a sustained coordinated effort and significant funding.

Dairy Cares strongly supports an incentive-based approach but recognizes that the success of this approach hinges on continued efforts by CARB, other state agencies, the dairy industry and other partners to address significant economic and other barriers to wider adoption of dairy digesters. Below we enumerate a list of actions that are needed to achieve success through the voluntary, incentive-based approach.

Incentive funding

Extensive GGRF and other incentive funding will be required. We believe the \$500 million figure proposed by the California Department of Food and Agriculture (CDFA), that is, \$100 million per year for five years, represents an appropriate and significant down payment on incentivizing broader adoption of digester technology in the dairy community. Without incentive funding, these projects are not economical and will not be built. However, with incentive funding, dairy digesters represent a highly efficient GHG reduction technology, returning up to one ton of CO₂e reduction for each \$2 of investment. As a result, dairy digesters are a sound investment strategy not only to reduce GHG but to reduce methane, an important SLCP.

An initial \$500 million commitment would send a strong message to the dairy industry and the digester development community that the state is serious about broadening dairy digester adoption as a means to control manure methane. It would also allow the industry to begin to create economies of scale and establish the network of contractors, vendors and service providers to efficiently and effectively broaden adoption.

Incentive programs

Existing incentive programs should be reviewed and redesigned to more effectively provide grants and other incentives to qualified projects. To achieve any significant level of adoption, incentives will need to be well-designed and readily available to projects to facilitate project financing. The dairy industry looks forward to working with CARB, CDFA, and the dairy digester development community to structure appropriate grant and other incentive programs.

Energy contracts

Energy contracts, power purchase agreements and other off-take agreements must be readily available to project proponents. While the Senate Bill 1122 BioMAT FiT program will soon be available for electrical energy generation projects, similar long-term energy contracts must be made available for biomethane injection and transportation fuel projects. Creation of a properly structured biomethane FiT program for dairy digester projects could provide greater incentives for biomethane (RNG) injection projects and encourage their development. Similar programs will need to be designed and implemented for RNG transportation fuel as well, to ensure long-term off take agreements from financeable partners are available.

Interconnection barriers

Barriers to electricity and pipeline injection projects continue to limit project development due to high costs and extensive gas conditioning requirements. Reduction of cost and appropriate relaxation of gas injection standards will facilitate project development and enable and encourage pipeline biomethane opportunities.

Utility culture change

CARB and California Public Utilities Commission officials must also ensure Investor-Owned Utilities (IOUs) are prepared to work with, and not against, project developers to provide timely, efficient and cost effective opportunities to facilitate development.

SB 1122 Biomat FiT reform

While the SB 1122 program will soon begin providing electrical energy procurement contracts, additional program improvements will be necessary to maximize its effectiveness to achieve broad dairy digester project development. Improvements to timely contract availability, price escalation, annual inflation adjustments and IOU megawatt distribution will be required to ensure an effective program that enables project financing and rapid project development.

Efficient credit production

The ongoing availability of GHG and LCFS credits represent important revenue streams to enhance dairy digester projects economics. Establishing a guaranteed 20-year crediting period would also enhance project viability and long-term economic stability. Enhancing and streamlining credit accounting and verifications could also greatly enhance project viability.

Continued electrical energy project opportunities

Due to potential concerns with emissions related to electrical energy projects utilizing low NO_x engines, effective alternatives must be developed. Not all projects will have access to natural gas pipelines for RNG or transportation fuel project development. As a result, research and development must be done to continue to provide cost-effective and workable electrical energy

opportunities. Electrical energy production will remain the only viable option for some dairy projects.

Fertilizer product development

Additional research will also be necessary to fully monetize the benefits of manure compost and digestate. Fertilizer and amendment products and markets must be developed to realize this potential revenue stream and enhance project economics.

IV. More research is needed to identify, quantify, validate and strengthen potential strategies to reduce SLCPs from California dairy farms.

Dairy Cares believes a robust research program is necessary to identify, validate and quantify additional opportunities to reduce methane from manure management, and to improve the economics and cross-media impacts of these technologies. While a comprehensive SLCP research strategy has not been developed, we believe one is needed and should be coordinated in partnership with the dairy industry, CARB, CDFA and potentially others.

Although not an exhaustive list, we believe a research strategy must consider at least the following factors:

- **Scrape systems:** Research is needed to identify and quantify the methane reduction potential of converting to scrape systems. Models suggest that on a broad scale, manure that is scraped and then stored as slurry and/or dried emits less methane than manure that is flushed and stored in an anaerobic treatment lagoon. However, the exact amount of reductions achieved are not supported by site-specific data under California conditions, nor by an approved protocol. A case study evaluating measured emissions changes in a before-and-after conversion would be helpful. Research is also needed to calculate the costs not only of operation and maintenance of the system itself, but other changes in dairy management that may be required as a consequence of converting to scrape, such as changes in labor requirements, workplace safety, animal health, construction and/or changes to manure storage, and application and management of nutrients and irrigation water. Research should evaluate cross-media environmental impacts including nuisance odors and vectors, changes in emissions related to regional air quality, energy and fuel use on the dairy or transporting manure from the dairy, and impacts to groundwater quality. Development of a protocol for offset credits or other information supporting incentive programs should be pursued if it is shown that emission reductions can be achieved this way.
- **Solids separation:** Research is needed to verify under what conditions improved separation of manure solids, and diversion of those solids from the flushed waste stream, will reduce emissions of methane from manure process water retention ponds (storage lagoons). Development of a protocol for offset credits or other information supporting incentive programs should be pursued if it is shown that emission reductions can be achieved this way.

- **Co-products:** Because technologies that change manure management, such as digesters, compost operations, scrape systems, etc., can be expensive and capital intensive, research that supports creating, improving or enhancing market conditions for co-products (composted manure, manure-based fertilizer products and soil amendments, biofuels, etc.) should be pursued to increase the economic incentives for wide-scale deployment of these technologies.
- **Inventory:** Some in the academic community and NGO community, as well as in the dairy industry, have concerns about the accuracy of the CARB inventory, especially as it relates to total manure management emissions of methane and the ratio of such emissions to enteric emissions from dairy cattle. Research to independently verify the accuracies (or to support modification of the inventory if appropriate) will be helpful to support the credibility of incentive and offset programs, as well as allowing both CARB and the dairy industry to track progress on reductions in the inventory and to direct investment and effort where it is most appropriate.

V. Goals for reductions of enteric methane do not have a scientific basis that is applicable to California.

Dairy Cares is concerned with the lack of analysis and scientific basis for the Draft Strategy's goal of a 25 percent reduction in enteric methane by 2030. Achieving such a goal seems unlikely without either greatly reducing the number of dairy cattle in California, or eliminating most pasture and organic dairies, or both. We suggest that more basic scientific information, data and analysis relating to California-specific conditions is needed before any enteric emissions goal can be set. Setting a goal before such analysis is complete is counterproductive and will unfairly set unrealistic performance expectations.

Unlike manure management emissions, there are no known and trusted methods for reducing enteric emissions other than increasing feed digestibility and milk production per cow. CARB appropriately cites historical dramatic reductions in enteric emissions on a methane-emitted-per-unit-of-milk-produced basis. Those reductions of approximately 65 percent were realized over a more than 70-year period (from 1944 to present).

However, in its Draft Strategy on page 47, CARB inappropriately cites information from the Innovation for U.S. Dairy as including a target "reducing the GHG intensity of fluid milk by 25 percent" between 2008 and 2020 as well as reducing "enteric fermentation emissions by 25 percent" as a basis for setting California targets.

Importantly, in the same document cited by CARB, the Innovation Center also said:

"Today, many producers already reduce enteric methane emissions by maximizing feed efficiency and increasing production per cow. No clear best management practices exist and there is an opportunity to develop solutions

that significantly reduce enteric methane emissions per hundredweight of milk.”

Applying a 25 percent reduction in enteric emissions to California by 2030 doesn't make sense for the following reasons:

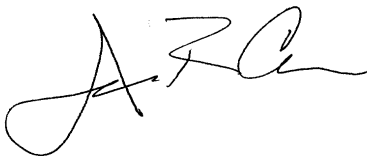
- The goal stated by the Innovation Center applies to the entire United States, rather than just California. In California, where feed efficiency and milk production are already 6.9 percent higher than the U.S. average (23,785 lbs. annually per cow in California in 2014 versus a U.S. average of 22,258 in the same period) many of the improvements called for by the Innovation Center have already occurred, thus the opportunity for additional reductions is minimal.
- The best opportunity for reductions in California presently available to reduce enteric emissions would be to convert pasture/organic dairies to feeding operations using total-mixed rations (TMR) delivered to the cows. While this would certainly reduce enteric emissions on a per-gallon-of-milk basis, and increase milk production, it would remove a type of milk and milk production very desirable to consumers while making little overall impact on the overall industry's methane emissions.
- Further reductions in enteric methane per gallon of milk produced are likely to occur through improved breeding and other research but it is unreasonable to assume these will or can have the effect of a 25 percent reduction by 2030.

As such we recommend that CARB either consider a smaller, more realistic target (noting that the U.S. has achieved about a 1 percent annual improvement over the past seven decades) or avoid setting a target and instead conduct research to better evaluate the realistic opportunity for enteric reductions in California.

Conclusion

As always, we appreciate your consideration of these comments and look forward to continuing our important working relationship with CARB as you work to realize the reductions in GHG and SLCPs called for by the Legislature. Please do not hesitate to contact us with any questions you may have.

Sincerely,

A handwritten signature in black ink, appearing to read 'A. McCarthy', with a stylized flourish at the end.

Program Coordinator

C: Ryan McCarthy, California Air Resources Board

Craig Segall, California Air Resources Board
Mike Tollstrup, California Air Resources Board
Dan Weller, California Air Resources Board
Kevin Eslinger, California Air Resources Board
Patrick Nevis, Governor's Office of Permit Assistance
Carla Sanchez, Special Assistant to California Department of Food and Agriculture
Secretary Karen Ross, Climate Change Projects
Charles "Chuck" Ahlem, Chairman, Dairy Cares
Michael Boccadoro, Executive Director, Dairy Cares
Anja Raudabaugh, CEO, Western United Dairymen
Paul Sousa, Environmental Services Director, Western United Dairymen
Kevin Abernathy, Director of Regulatory Affairs, Milk Producers Council
Lynne McBride, Executive Director, California Dairy Campaign
David Cranston, Greenberg Glusker
Dr. Ermias Kabreab, University of California at Davis
Dr. Frank Mitloehner, University of California at Davis