October 31, 2025

California Department of Food and Agriculture
1220 N Street
Sacramento, CA 95814

Submitted via email to climate@cdfa.ca.gov

RE: Comments in Response to Draft Climate Resilience Strategy for California Agriculture

Dear California Department of Food and Agriculture,

The Center for Biological Diversity, on behalf of itself and its 214,000 Californian members and supporters, submits these comments in response to the California Department of Food and Agriculture's (CDFA) draft Climate Resilience Strategy for California Agriculture (RSA).[1] The Center for Biological Diversity is a national 501(c)(3) nonprofit conservation organization dedicated to the protection of endangered species and wild places and the promotion of a healthy and sustainable food and agriculture system.

We thank CDFA for its proactive leadership in agricultural climate resilience. The prioritization of sustainable practices is critical to protecting the planet and our food system for generations to come. However, a resilient climate strategy that meets the RSA's objectives must reject false solutions promoted by the biggest industry polluters and focus instead on practices that promote and protect biodiversity, reduce emissions, and are rooted in agroecology, ultimately supporting secure food systems and the wellbeing of farmworkers, farmers, communities, and the environment.

I. Remove False Climate Solutions in the Ranching and Dairy Industries

California has set ambitious climate goals through legislation to achieve carbon neutrality by 2045 and reduce methane emissions by 40% below 2013 levels by 2030.[2] There is no way to meet these goals without shifting away from the overproduction of animal agriculture, since53% of methane emissions in California come from livestock.[3] However, the last two chapters in the RSA, Improve Ranching Sustainability and Rangeland Management and Increase Dairy Farming Sustainability, present false climate solutions that will exacerbate the environmental crisis the RSA aims to address. This misdirection further entrenches a heavily monopolized industry at the

[1] California Department of Food and Agriculture. (2025, October). *Climate resilience strategy for California agriculture.* https://www.cdfa.ca.gov/climate/docs/RSA_PublicCommentDraft.pdf
[2] *Ibid.*
[3] *Ibid.*

expense of small farmers, allowing agribusiness to greenwash their outsized pollution and environmental damage.

A. False Solutions in the Ranching Industry

California's 1.8 million beef cattle, 600,000 sheep, and 32 million acres of grazing land[4] are putting a tremendous burden on the state's ecosystems. In a state facing historic drought and the increasing impacts of a warming planet, the climate-intensive, water-intensive, and land-intensive production of livestock is neither resilient nor sustainable, even with theoretically improved rangeland management. Furthermore, livestock production is a leading threat to vulnerable and endangered species, creating key conflicts that harm the recovery of native species, such as tule elk in the Point Reyes National Seashore and the historic return of California's gray wolves in the Sierra Nevadas.

In California, the greater and bi-state sage grouse populations have declined as much as 70% over the past decades primarily due to livestock grazing.[5] The trampling patterns from livestock grazing harm native ecosystems by destroying biological crusts, increasing soil erosion, reducing soil fertility, and preventing water infiltration,[6] making it one of the leasing causes of species endangerment, habitat degradation, and biodiversity loss.[7] Overgrazing leads to desertification and sedimentation, reducing once-lush natural environments to flat, dry wastelands that can no longer sustain life.[8]

California is also a state vulnerable to intensified wildfires and livestock grazing will worsen this vulnerability, not improve it. The removal of fire-prone vegetation is an important issue for California. But grazing has been shown to increase the risk of wildfires due to the displacement of native fire-resistant grasses, allowing nonnative and highly flammable vegetation like cheatgrass to grow in their place and leading to more intense wildfires in the future.[9]

Proponents of improved grazing patterns emphasize "managed," "holistic, "or "rotational" systems. While improved practices are welcome and necessary, these efforts have not proven reliably effective at mitigating the severe ecological damages of widespread livestock grazing. One study found these managed systems to be just as damaging to plants, water, soil, and the

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[4] *Ibid.*
[5] Center for Biological Diversity. (n.d.). *Greater sage grouse.* https://www.biologicaldiversity.org/species/birds/Mono_Basin_area_greater_sage_grouse/index.html
[6] Carter, J., Jones, A., O'Brien, M., Ratner, J., & Wuerthner, G. (2014). Holistic management: Misinformation on the science of grazed ecosystems. *International Journal of Biodiversity, 1,* 1-10. http://dx.doi.org/10.1155/2014/163431
[7] Filazzola, A., Brown, C., Dettlaff, M.A., Batbaatar, A., Grenke, J., Bao, T., Peetoom Heida, I. & Cahill, J.F., Jr. (2020). The effects of livestock grazing on biodiversity are multi-trophic: A meta-analysis. *Ecology Letters, 23,* 1298-1309. https://doi.org/10.1111/ele.13527
[8] Center for Biological Diversity. (n.d.). *Grazing facts.* https://grazingfacts.com/
[9] Williamson, M.A., Fleishman, E., Mac Nally, R.C., Chambers, J.C., Bradley, B.A., Dobkin, D.S., Board, D.I., Fogarty, F.A., Horning, N., Leu, M., & Zillig, M.W. (2020). Fire, livestock grazing, topography, and precipitation affect occurrence and prevalence of cheatgrass (Bromus tectorum) in the central Great Basin, USA. *Biological Invasions, 22,* 663–680. https://doi.org/10.1007/s10530-019-02120-8

climate as conventional grazing systems[10] and another found that they require 2.5 times more land.[11] A study that compared traditional continuous grazing to adaptive rotational grazing over a five-year period found that rotational grazing did not improve quality, productivity, or density of vegetation of perennial grasses.[12]

The RSA's proposal to facilitate additional grazing on public lands (11.1.1) must be removed. This proposal will increase the negative environmental effects of grazing across lands that should be used for sustainable practices such as the planting of native vegetation. Increased grazing on public lands is counterproductive to the RSA's proposal to implement soil health and carbon sequestration practices (11.1.2). Managed pasture is unable to store as much carbon as natural grasslands[13] and soil on agricultural lands contain anywhere from 25% to 75% less carbon than soil in wild ecosystems.[14] In addition, efforts to restore native ecosystems, which effectively repair and rebuild soil health, are threatened by the grazing patterns and behavior of nonnative species like cattle and sheep.

Similarly, the RSA's proposal to improve rangeland biodiversity (11.2.1) and restore riparian areas (11.2.2) are benefitted most by the removal of livestock. While practices to improve natural ecosystems are a step in the right direction, doing so on current rangeland is a temporary, incomplete solution that will not have as many positive benefits as preventing and minimizing grazing altogether. The negative results of continued grazing will repeatedly cancel out the results of these conservation practices. For example, the positive effects of implementing "stock ponds" to create riparian habitats for endangered species (p. 229) will be mitigated as livestock consume the water from those ponds and pollute them with manure runoff.

In addition, the digestive processes of grazing livestock are responsible for an enormous number of methane emissions. But the proposed efforts to reduce enteric methane emissions from grazing livestock (11.3.1) are also false solutions. Such methods under research at California universities mentioned in the RSA include selective breeding, vaccinations, injecting a bolus device into cattle, and feed additives – all of which are very new, complex, and expensive strategies that have not been proven to be extremely effective at decreasing GHGs to the large extent needed in the long run, especially not when compared to the alternative of shifting away from this industry and toward more sustainable food systems. California should not be investing

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[10] Carter, J., Jones, A., O'Brien, M., Ratner, J., & Wuerthner, G. (2014). Holistic management: Misinformation on the science of grazed ecosystems. *International Journal of Biodiversity, 1,* 1-10. http://dx.doi.org/10.1155/2014/163431

[11] Rowntree, J.E., Stanley, P.L., Maciel, I.C.F., Thorbecke, M., Rosenzweig, S.T., Hancock, D.W., Guxman, A., & Raven, M.R. (2020). Ecosystem impacts and productive capacity of a multi-species pastured livestock system. *Frontiers in Sustainable Food Systems, 4,* 544984. https://doi.org/10.3389/fsufs.2020.544984

[12] Augustine, D.J., Derner, J.D., Fernandez-Gimenez, M.E., Porensky, L.M., Wilmer, H., Briske, D.D., & the CARM Stakeholder Group. (2020). Adaptive, multipaddock rotational grazing management: A ranch-scale assessment of effects on vegetation and livestock performance in semiarid rangeland. *Rangeland Ecology & Management, 73*(6), 796-810. https://doi.org/10.1016/j.rama.2020.07.005

[13] Chang, J., Ciais, P., Gasser, T., Smith, P., Herrero, M., Havlik, P., Obersteiner, M., Guenet, B., Goll, D.S., Li, W., Naipal, V., Peng, S., Qiu, C., Tian, H., Viovy, N., Yue, C., & Zhu, D. (2021). Climate warming from managed grasslands cancels the cooling effect of carbon sinks in sparsely grazed and natural grasslands. *Nature Communications, 12,* 118. https://doi.org/10.1038/s41467-020-20406-7

[14] Lal, R. (2010). Managing soils and ecosystems for mitigating anthropogenic carbon emissions and advancing global food security. *BioScience, 60*(9), 708–721. https://doi.org/10.1525/bio.2010.60.9.8

tens of millions of taxpayer dollars on uncertain practices when there is a much clearer and proven solution.

B. False Solutions in the Dairy Industry

California's dairy industry has a sizable impact when it comes to greenhouse gases and water use in particular. California's dairy industry is by far the state's largest emitter of methane, contributing 42% of methane emissions in 2022 and 70% of the state's total agricultural GHG emissions.[15] Meanwhile, despite unprecedented state drought, the dairy industry consumes 142 million gallons of water per day – more than the recommended daily water usage for every person in San Jose and San Diego combined.[16] Dairy is one of the largest water users in California, not only via direct consumption but also through the irrigation of dryland into pasture and the production of alfalfa hay, a dairy cattle feed.[17]

The dairy industry also creates serious public health threats. For example, livestock manure contributes 33% of nitrogen loading to California's groundwater,[18] causing contamination of the state's drinking water sources. Nearly 1 million Californians – primarily in communities of color – do not have access to clean drinking water.[19] Furthermore, the dairy industry has exacerbated the H5N1 bird flu epidemic with outbreaks in dairy cows that have spread to humans.[20] And the utilization of manure solids as inputs for soil amendment products (12.3.2) has been linked to foodborne illness outbreaks from pathogens, such as E. Coli, when crops where these amendments were applied are consumed.[21]

The proposed manure management strategies on dairy farms (12.1.1) will not effectively address these serious climate and public health issues. Manure management facilities are notoriously hazardous and difficult to manage, with USDA's Natural Resources Conservation Service (NRCS) warning that the risks are "quite high" and that workers face the potential for "explosion, poisoning, or asphyxiation."[22] They also pose the risk of accidental breach and spillage, which threatens downstream water sources and critical habitats.[23] Manure lagoons are

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[15] California Department of Food and Agriculture. (2025, October). *Climate resilience strategy for California agriculture.* https://www.cdfa.ca.gov/climate/docs/RSA_PublicCommentDraft.pdf
[16] Greenaway, T. (2022, June 30). *California dairy uses lots of water. Here's why it matters.* Civil Eats. https://civileats.com/2022/06/30/california-dairy-water-uses-climate-change-drought-pollution/
[17] Olson-Sawyer, K. (2022, October 21). *Dairy, drought, and the drying of the American west.* Food Print. https://foodprint.org/blog/dairy-water-footprint/#:~:text=California%20produces%20more%20milk%20and,form%20of%20feed%20and%20forage.
[18] Greenaway, T. (2022, June 30). *California dairy uses lots of water. Here's why it matters.* Civil Eats. https://civileats.com/2022/06/30/california-dairy-water-uses-climate-change-drought-pollution/
[19] Becker, R. (2024, June 25). *Drinking water of almost a million Californians failed to meet state requirements*. Cal Matters. https://calmatters.org/environment/2024/06/california-drinking-water-failing-systems/#:~:text=According%20to%20a%202024%20report%20by%20the,water%20systems%20considered%20at%20risk%20of%20failing
[20] Centers for Disease Control and Prevention. (2025). *H5 bird flu: Current situation.* https://www.cdc.gov/bird-flu/situation-summary/index.html
[21] Jensen, A.N., Storm, C., Forslund, A., Baggesen, D.L., & Dalsgaard, A. (2013). Escherichia coli contamination of lettuce grown in soils amended with animal slurry. *Journal of Food Protection, 76*(7), 1137-1144. https://doi.org/10.4315/0362-028X.JFP-13-011
[22] U.S. EPA. (2023, August). *Conservation practice standard: Waste storage facility (code 313).* https://www.nrcs.usda.gov/sites/default/files/2023-08/313_NHCP_CPS_Waste_Storage_Facility_2023.pdf
[23] *Ibid.*

highly susceptible to overflow during extreme weather events, causing the flooding of millions of gallons of liquid fecal waste into surrounding communities and spreading toxins and pathogens.[24] Manure storage can also increase nitrous oxide emissions,[25] and one study found that a manure lagoon on a dairy farm was the largest on-farm source of emissions.[26]

CDFA should remove two more false solutions for dairy in the RSA: increased adoption of anaerobic digesters (12.1.2) and incentivizing methane capture and conversion to biogas to participate in low carbon fuel programs (12.3.1). Anaerobic digesters can only be used by large operations, further advantaging conglomerate agribusinesses, and require significant management and operation time and resources, including very high start-up costs.[27] [28] NRCS cautions that biogas is "flammable, highly toxic, and potentially explosive,"[29] and biogas facilities and pipelines are prone to leakage at a rate as high as 15%, endangering nearby communities.[30] Meanwhile, their effects are questionable, and methane emissions continue to skyrocket despite implementation of more digesters across operations in recent years.[31] In fact, these false solutions may actually be contributing to this increase: Government investment in biogas production in California has created a dangerous new industry which some have called a "manure gold rush," in which companies are incentivized to produce massive quantities of liquid manure to convert to gas.[32]

Anaerobic digesters only capture and partially convert waste, but they do not reduce or eliminate it; this means that their byproducts, called digestate, still pollute the environment.[33] Digesters can also increase the amount of nitrogen converted to ammonia in effluent (liquid waste byproduct), causing additional air pollution in the form of nitrous oxide that endangers human health and counteracts GHG emissions reductions.[34] Two studies of American facilities that convert swine manure to biofuel found that ammonia emissions increased 46% and 47%, respectively,

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[24] Pierre-Louis, K. (2018, September 19). *Lagoons of pig waste are overflowing after Florence. Yes, that's as nasty as it sounds.* The New York Times. https://www.nytimes.com/2018/09/19/climate/florence-hog-farms.html
[25] U.S. EPA. (n.d.). *Practices to reduce methane emissions from livestock manure management.* https://www.epa.gov/agstar/practices-reduce-methane-emissions-livestock-manure-management
[26] Leytem, A. B., Dungan, R. S., Bjorneberg, D. L., & Koehn, A. C. (2011). Emissions of ammonia, methane, carbon dioxide, and nitrous oxide from dairy cattle housing and manure management systems. *Journal of Environmental Quality, 40*(5), 1383–1394. https://doi.org/10.2134/jeq2009.0515
[27] USDA NRCS. (2023, August). *Conservation practice overview: Anaerobic digester (code 366).* https://www.nrcs.usda.gov/sites/default/files/2023-08/366_NHCP_PO_Anaerobic_Digester_2023.pdf
[28] US EPA. (n.d.). *Practices to reduce methane emissions from livestock manure management.* https://www.epa.gov/agstar/practices-reduce-methane-emissions-livestock-manure-management
[29] USDA NRCS. (2023, August). *Conservation practice overview: Anaerobic digester (code 366).* https://www.nrcs.usda.gov/sites/default/files/2023-08/366_NHCP_PO_Anaerobic_Digester_2023.pdf
[30] Grubert, E. (2020). At scale, renewable natural gas systems could be climate intensive: the influence of methane feedstock and leakage rates. *Environmental Research Letters, 15,* 084041. https://www.doi.org/10.1088/1748-9326/ab9335.
[31] Murphy, S., & Lilliston, B. (2022, July 27). *True or false? Evaluating solutions for agriculture and climate change.* Institute for Agriculture & Trade Policy. https://www.iatp.org/true-or-false-climate-solutions
[32] Dvorak, P. (2022, February 19). California's green-energy subsidies spur a gold rush in cow manure. The Wall Street Journal. https://www.wsj.com/business/energy-oil/californias-green-energy-subsidies-spur-a-gold-rush-in-cow-manure-11645279200
[33] DiFelice, M., & Ruane, K. (2023, April 12). *We can't let this gas greenwash factory farms.* Food and Water Watch. https://www.foodandwaterwatch.org/2023/04/12/we-cant-let-this-gas-greenwash-polluting-factory-farms/
[34] Murphy, S., & Lilliston, B. (2022, July 27). *True or false? Evaluating solutions for agriculture and climate change.* Institute for Agriculture & Trade Policy. https://www.iatp.org/true-or-false-climate-solutions

compared to the control emissions from conventional farms.[35] [36] Meanwhile, a study on the life cycle environmental impacts of generating electricity from biogas found that electricity from biogas was worse for the environment than natural gas for seven of 11 measured impacts and had greater negative impacts than hydro, wind, and geothermal power.[37] Another study examined the potential of biogases to replace the current energy system and found that biogases are "unlikely [to]…deliver GHG-negative, or even zero GHG, energy at scale," because of the inability to capture enough waste methane and the common occurrence of leakage.[38]

California's existing low carbon fuel program, mentioned as a solution in the RSA, has already backfired tremendously. A recent report found that 28 California mega-dairies with anaerobic digesters that participate in the Low Climate Fuel Standard program to convert manure to biogas are emitting enough methane to be seen from satellites and imaging aircraft.[39] The visible methane plumes all appeared at significant rates after the digesters were installed,[40] indicating that the program is making the air pollution worse, not better. One hour of pluming at these rates is equivalent to carbon dioxide released by driving a passenger car over 2 million miles.[41]

One proposal in Chapter 12 of the RSA that we do support is research to better quantify emissions from dairies (12.2.4). More data collection is essential to transparency, accountability, and building real climate solutions in the animal agriculture industry. It is important for California to be a leader in this data collection, as the federal government has taken steps to drastically reduce GHG reporting requirements in recent months.[42]

C. False Solutions Inhibit the RSA's Major Objectives

Many of these false solutions in the ranching and dairy industries are directly counterproductive to the RSA's stated objectives. They allow large, polluting agribusinesses to greenwash their practices, further entrenching an already heavily monopolized animal agriculture industry, which goes against the objective to "foster a robust and sustainable agricultural economy." Animal agriculture actively contributes to the overconsumption and pollution of critical water sources

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[35] Harper, L.A., Flesch, T.K., Weaver, K.H., & Wilson, J.D. (2010). The effect of biofuel production on swine farm methane and ammonia emissions. *Journal of Environmental Quality, 39*(6), 1984-1992. https://doi.org/10.2134/jeq2010.0172

[36] Weaver, K. H., Harper, L. A., & Brown, S. M. (2012). Effects on carbon and nitrogen emissions due to swine manure removal for biofuel production. *Journal of Environmental Quality, 41*(5), 1371–1382. https://doi.org/10.2134/jeq2011.0374

[37] Fusi, A., Bacenetti, J., Fiala, M., & Azapagic, A. (2016). Life cycle environmental impacts of electricity form biogas produced by anaerobic digestion. *Frontiers in Bioengineering and Biotechnology, 4,* 26. https://doi.org/10.3389/fbioe.2016.00026

[38] Grubert, E. (2020). At scale, renewable natural gas systems could be climate intensive: the influence of methane feedstock and leakage rates. *Environmental Research Letters, 15,* 084041. https://doi.org/10.1088/1748-9326/ab9335

[39] Food and Water Watch. (2025, October 16). *Carbon monitoring shows massive emissions at CA's mega-dairies.* https://www.foodandwaterwatch.org/2025/10/16/carbon-monitoring-shows-massive-emissions-at-californias-mega-dairies/

[40] *Ibid.*

[41] *Ibid.*

[42] Detterman, B.J., Schachter, C., & Smith, R.J. (2025, September 25). *EPA proposes to eliminate Greenhouse Gas Reporting Program*. National Law Review. https://natlawreview.com/article/epa-proposes-eliminate-greenhouse-gas-reporting-program

and air pollution, countering the objectives to "ensure a water system for food resilience in a hotter, drier future" and "enhance agricultural practices to support clean air communities." Ranching and grazing systems overconsume farmland, kill native ecosystems and soils, and endanger wildlife, antithetical to the objectives to "conserve productive farmland," "advance climate-smart and healthy soil practices," and "boost biodiversity on farmlands." The dangers that manure management and biogas conversion pose to workers contradict the objective to "support agricultural workforce wellbeing and health." And the current industrial agriculture system is terrible for animal health, another stated objective.

We therefore urge the removal of any strategies that are false and ineffective solutions, including managed grazing, novel technologies to reduce enteric methane, manure management, and biogas conversion. Additionally, we request that other true strategies that can have positive effects on their own, such as range planting and silvopasture, not be used to prop up the ranching and dairy industries and further entrench their bad practices. We also urge CDFA to strengthen GHG emissions reporting requirements.

II. The Only Real Climate Solutions are Agroecological, Reduce Intensive Animal Agriculture, and Prioritize a Just Agri-Food Transition for Workers and the Planet

CDFA must prioritize real climate solutions that promote wellbeing for all stakeholders in the agriculture system, including workers, marginalized communities, consumers, small farmers, animals, wildlife, and the environment. Such solutions are agroecological and prioritize human and ecosystem wellbeing over the interests of industry, promoting plant-rich regenerative systems, environmental justice, human and labor rights, public health, and food sovereignty and security. They support sustainability and equitability in the context of climate change, environmental stewardship, and biodiversity loss, with attention to the ecological and sociocultural dimensions of food systems.[43] They also prevent exploitation in the food system by protecting workers' rights, securing the health and wellbeing of vulnerable groups, promoting equality, and improving animal welfare.[44]

Many agroecological practices that we support are already included in the RSA, such as increasing biodiversity on farmland, investing in specialty crops, supporting clean air communities, promoting soil health, protecting natural systems and animals, decarbonization, water conservation, and so forth. We strongly urge CDFA to prioritize these practices instead of animal agriculture's false climate solutions in the final two chapters of the RSA. We further encourage CDFA to fill the gaps where the federal government has failed to protect workers, consumers, and the country. For instance, the administration has persecuted farmworker immigrants, ended DEI and environmental justice programs, cut funding for critical food programs, and gutted USDA climate initiatives.[45] California can build a better agriculture system that works for all people – not corporations – while preserving its natural ecosystems.

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[43] UN Environment Programme. (2020, October 15). *Agroecology – a contribution to food security?* https://www.unep.org/news-and-stories/story/agroecology-contribution-food-security

[44] Center for Biological Diversity, World Animal Protection, Global Forest Coalition, Brighter Green, Aquatic Life Institute, et al. (2024). *Just food transition: White paper and roadmap.* https://justfoodtransitionroadmap.com/

[45] Kelly, L. (2025, July 28). *How the USDA is advancing Trump's culture war at the expense of Americans and the nation's food system.* Medium. https://medium.com/center-for-biological-diversity/how-the-usda-is-advancing-trumps-culture-war-at-the-expense-of-americans-and-the-nation-s-food-934fd36115d8

Thank you again for leading a more resilient and sustainable future for California agriculture.

Respectfully submitted,

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