



FACTORY FARM DAIRIES, BIOGAS, AND THE DANGEROUS PATH CALIFORNIA IS ON

I. INTRODUCTION

Industrial dairies in the San Joaquin Valley, packing thousands, and sometimes tens of thousands of cows into a single facility, are a major source of local air and water pollution, nuisance odor, groundwater overdraft, and greenhouse gas emissions. Over the last decade, California has created a regulatory landscape that pays this industry to continue these polluting practices while producing factory farm gas, otherwise known as dairy biogas. These policies favor large-scale industrial dairies over smaller operations and lock in the most environmentally harmful industry practices that disproportionately harm low-income communities of color. And these policies actually *encourage dairies to create* methane and only *appear* to succeed in achieving massive greenhouse gas emissions reductions as a result of an overly narrow life cycle analysis for the fuel's "well-to-wheel" climate impacts. The good news is that California can, and must, choose another path – one that aligns with our climate and environmental health and equity objectives.

II. BACKGROUND – THE EVOLUTION OF MASSIVE DAIRIES IN THE SAN JOAQUIN VALLEY DESPITE KNOWN CLIMATE AND ENVIRONMENTAL IMPACTS WAS A POLICY CHOICE

The expansion and concentration of the California dairy industry over the last several decades has occurred with policymakers' knowledge of the industry's climate and community impacts. The California dairy sector in the 1950s milked about 800,000 cows on almost twenty thousand pasture-based farms. California land use and environmental policy allowed for the dairy industry to transition into gigantic, full confinement, industrial-style operations that liquefy and manage manure anaerobically in gigantic so-called lagoons. Now, the industry milks between 1.7 and 1.8 million cows on about 1,100 farms – the vast majority of which, and the largest of which are in the San Joaquin Valley.¹

This shift to massive dairies concentrated in the San Joaquin Valley was a policy choice and business choice – it was neither accidental nor inevitable.

¹ <https://www.dairycares.com/post/keeping-cows-in-california-is-good-for-people-and-planet>.

In the late 1990s, water quality regulators drove the relocation of the southern California dairy herd from the Chino Basin in San Bernardino County to the San Joaquin Valley when groundwater pollution from manure affected water quality. Rising housing costs in the Inland Empire produced a windfall for those dairies as they sold their land to developers and raced toward cheaper land – and fewer regulations – in the San Joaquin Valley. San Joaquin Valley counties welcomed those Chino-based dairy operators with open arms and authorized hundreds of new dairies and dairy expansions as the California dairy industry increased in size dramatically to over 1.8 million in 2008.² By 2008, there were about 1,900 dairy farms in California not only producing milk, but massive amounts of manure. For context, a 2,000 cow industrial dairy produces approximately the same amount of fecal waste as a city of one million people.³ Many of the factory farms in the San Joaquin Valley are 3 to 5 times that size. Local county governments in the San Joaquin Valley supported this expansion as modern dairy operations overwhelmingly opted for liquefied manure management despite the known climate impacts from methane and known risks of groundwater contamination.⁴ Local governments and the dairy operators themselves *knew* that the liquefied manure model of dairy production relied on an externalization of climate and adverse local pollution impacts, and adopted statements of overriding considerations to approve those projects despite “significant and unavoidable impacts” as allowed by the California Environmental Quality Act (CEQA). Several counties adopted land use policies that facilitated dairy citing and expansion while others allowed (and are continuing to allow) dairy expansions without requiring CEQA environmental review.

III. MASSIVE DAIRIES HAVE SIGNIFICANT AND HARMFUL ENVIRONMENTAL IMPACTS

A. Industrial Dairies Contribute to Dangerous Air Pollution

Dairies emit large amounts of volatile organic compounds (VOC), ammonia, nitrogen oxides (NOx), and dust which all contribute to extremely poor air quality in the San Joaquin Valley, a region out of compliance with state and federal air quality standards.

- VOCs are a precursor to ozone formation. The San Joaquin Valley has been designated as Extreme Nonattainment for EPA’s 2008 8-hour ozone standard and 2012 8-hour ozone standard.⁵ The San Joaquin Valley is also Severe Nonattainment for the state one hour ozone standard.⁶ Dairies are the largest source of VOCs in the Valley.

² *Id.*

³ Agricultural Waste Management Field Handbook, USDA (March 2008), Table 4-5. Available at: <https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=31475.wba>. See: https://www.holsteinusa.com/pdf/fact_sheet_cattle.pdf. Also see: *The Characterization of Feces and Urine* (2015), available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4500995/>.

⁴ See, e.g. Kings County Dairy Element Program EIR at 4.2-83 to 4.2-85, available at <https://www.countyofkings.com/home/showpublisheddocument/4358/635277478494870000> (last visited October 24, 2022).

⁵ *Ambient Air Quality Standards and Valley Attainment Status*. Accessed January 9, 2022. Available at: <https://www.valleyair.org/aqinfo/attainment.htm>.

⁶ *Id.*

- Dairies also emit significant amounts of ammonia, a PM2.5 precursor. Recent research estimates that 1,690 people die in California annually as a result of agricultural ammonia emissions because ammonia and NOx create ammonium nitrate, the most prevalent form of PM2.5 in the San Joaquin Valley. The Valley is Serious Nonattainment for the Federal 1997 annual, the 2006 24-hour, and the 2012 annual PM2.5 standards.⁷ Dairies are the largest source of ammonia in the Valley.
- Dairies also emit large amounts of NOx from manure application on crop land, which contributes to increasing the ozone concentration and PM2.5.

Both Ozone and PM2.5 result in serious and long lasting health impacts. Ozone can trigger chest pain, coughing, throat irritation, congestion, worsen bronchitis, emphysema, and asthma. Ozone also can reduce lung function and inflame the lining of the lungs. PM2.5 can cause eye, nose, throat and lung irritation, coughing, sneezing, runny nose and shortness of breath. Both ozone and PM2.5 exposures are correlated to increases in hospitalization, emergency room visits, and premature death from cardiovascular and respiratory disease.

In addition to PM2.5 and Ozone, dairies cause significant odors. Many Californians glimpse the impacts when they drive through the San Joaquin Valley, catch a whiff of manure odors, and roll up the windows. However, for residents who live near these facilities, there is no driving away from these extreme odors. Even going inside their homes does not always provide respite. Residents report odors following them indoors, permeating their clothes, and causing headaches.

B. Industrial Dairies Degrade Water Quality

With the average dairy cow producing approximately 148 pounds of manure each day, California dairies contribute tens of millions of tons of manure each year. Untreated manure⁸ cannot be applied to crops for human consumption so there is limited acreage upon which manure may be applied. And there simply isn't enough. **Nitrate from manure leaches into groundwater and pollutes drinking water supplies.** Manure from lagoons, corrals, and, above all, applied to land leads to nitrate contamination.

The dairy industry's own report on nitrate pollution revealed the breadth and degree of groundwater contamination from dairies. The Central Valley Summary Representative Monitoring Report was prepared by the Central Valley Dairy Representative Monitoring Program, a nonprofit association of dairy owners and operators. It presents years of monitoring data from forty-two Central Valley dairies chosen to be representative of the industry in the region. Some findings of note:

⁷ See: https://www3.epa.gov/airquality/greenbook/knca.html#PM-2.5.2012.San_Joaquin_Valley.

⁸ Agricultural Waste Management Field Handbook, USDA (March 2008), Table 4-5. Available at: <https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=31475.wba>.

- **Elevated nitrate-N (i.e., as nitrogen) concentrations were present beneath all monitored dairies.**⁹
- "...approximately 94 percent of nitrogen loading on dairies (that is, the portion of nitrogen that enters the soil and is not recovered by plants) occurs on cropland."¹⁰
- Dairies produce an "excess supply of nitrogen" in the form of manure than the amount that can be safely applied to cropland without causing or contributing to nitrate pollution.¹¹

Larger, more concentrated herds mean more manure concentrated on the same or smaller land, thus exacerbating the issue of greater quantities of manure than cropland can absorb. A recent proposed dairy expansion in Merced notes that increased herd sizes (from under 3,000 to 7,300 cows) indicated in their environmental documents that manure exports would jump from about 9,000 tons to 49,000 tons annually. **No information was provided as to where that manure would be exported. Presumably, because there is nowhere for it to go.**

Nitrates in drinking water cause blue baby syndrome and have been linked to cancer.¹²

The cost to treat drinking water – if treatment is even available – can make water bills unaffordable for many households and can be cost prohibitive for private well owners.

C. Industrial Dairies Are Water Hogs

The San Joaquin Valley is ground zero for critical groundwater overdraft and water scarcity.¹³ Thousands of private and community water wells, upon which many Californians rely for drinking water, have already run dry.¹⁴ Overdraft also impacts water quality.¹⁵ As groundwater supply decreases, concentrations of contaminants, especially arsenic, increase.

⁹ CENTRAL VALLEY DAIRY REPRESENTATIVE MONITORING PROGRAM, SUMMARY REPRESENTATIVE MONITORING REPORT (REVISED*) at 6 (Apr. 19, 2019), https://www.waterboards.ca.gov/centralvalley/water_issues/confined_animal_facilities/groundwater_monitoring/srnr_20190419.pdf.

¹⁰ *Id.* at 10.

¹¹ *Id.*

¹² Ward MH, Jones RR, Brender JD, de Kok TM, Weyer PJ, Nolan BT, Villanueva CM, van Breda SG. Drinking Water Nitrate and Human Health: An Updated Review. *Int J Environ Res Public Health*. 2018 Jul 23;15(7):1557. doi: 10.3390/ijerph15071557. PMID: 30041450; PMCID: PMC6068531.

¹³ Critically Overdrafted Basins, CAL. DEP'T OF WATER RES., https://water.ca.gov/programs/groundwater_management/bulletin-118/critically-overdrafted-basins (last visited Mar. 22, 2022) (showing most groundwater basins and subbasins in the San Joaquin Valley are critically overdrafted); see ELLEN HANAK ET AL., WATER AND THE FUTURE OF THE SAN JOAQUIN VALLEY (2019), PUB. POL. INST. OF CAL., <https://www.researchgate.net/publication/331476376> Water and the Future of the San Joaquin Valley.

¹⁴ Groundwater Management and Drought: An Interview with the San Joaquin Valley Partnership, CAL. DEP'T OF WATER RES., (Mar. 8, 2022), <https://water.ca.gov/News/Blog/2022/March-22/Groundwater-Management-and-Drought-An-Interview-with-the-San-Joaquin-Valley-Partnership> (noting that groundwater overdraft is causing domestic well owners to "lose access to their primary source of drinking water," leaving them unable to "afford or obtain services due to drilling backlogs or financial challenges" and forcing them to seek out and rely on emergency sources of drinking water); see Jelena Jezdimirovic et al., Will Groundwater Sustainability Plans End the Problem of Dry Drinking Water Wells?, PUB. POL'Y INST. OF CALIFORNIA (May 14, 2020), <https://www.ppic.org/blog/will-groundwater-sustainability-plans-end-the-problem-of-dry-drinking-water-wells/>.

¹⁵ See: <https://environment-review.yale.edu/overpumping-california-groundwater-could-lead-dangerous-arsenic-water-and-food>.

Industrial dairies use massive amounts of water including groundwater in the extremely fragile San Joaquin Valley ecosystem. In addition to supplying large amounts of drinking water to cows, dairies need large amounts of water for liquefying and flushing manure and other pollutants for storage in lagoons, cooling animals, cleaning facilities, and irrigating crops. In addition, dairies rely upon water-intensive crops to feed dairy cows such as alfalfa. California's large dairies use an estimated 142 million gallons per day,¹⁶ or almost 52 billion gallons per year.

D. Industrial Dairies Cause Disproportionate Environmental Impacts

San Joaquin Valley residents are disproportionately Latino/a/e as compared to California as a whole. Seven central and southern San Joaquin Valley Counties (Kern to Stanislaus) have higher Latino/a/e populations than the state, with populations ranging from almost 50 percent to over 66 percent, as compared to the state population with 40 percent of residents classified as Latino/a/e. At least seven of eight San Joaquin Valley counties have a lower proportion of white residents as compared to the state as a whole.¹⁷ **Therefore, policies that entrench and exacerbate air and water pollution in these regions have a racially disparate impact on Latino/a/e communities.**

Similarly, San Joaquin Valley counties are lower income and have more residents facing economic insecurity than the state as a whole. While median household income in California is approximately \$84,000 countywide household median incomes in the central and southern San Joaquin Valley Counties range from approximately \$57,000 to \$68,000. The highest producing dairy counties in the state and in the San Joaquin Valley, Merced and Tulare, show median household incomes at \$59,000 and \$57,000, 70% or less of statewide median income. Poverty rates hover around 22% and 19% in Merced and Tulare, respectively.

IV. FACTORY FARM GAS – AN INADEQUATE CLIMATE SOLUTION AND A HARM-INDUCING STRATEGY

A. Industrial Livestock Operations Contribute Significant Greenhouse Gas Emissions to the Atmosphere

In addition to local and regional air and water pollution, dairies are a substantial source of California's greenhouse gas emissions. **Livestock methane emissions account for 6.1 percent of statewide GHG emissions.**¹⁸

¹⁶ Big Ag, Big Oil and California's Big Water Problem, Food and Water Watch. Available at:

<https://www.foodandwaterwatch.org/wp-content/uploads/2021/10/CA-Water-White-Paper.pdf>.

¹⁷ According to recent census data, 36.5 percent of the state population is classified as white, non-Latino, while 7 of the 8 counties in the San Joaquin Valley have white, non-Latino populations that range from only 26.5 to 33.2 percent. *Id.*

¹⁸ California Greenhouse Gas Emissions for 2000-2020, October 26, 2022, Page 9. Available at: https://ww2.arb.ca.gov/sites/default/files/classic/cc/inventory/2000-2020_ghg_inventory_trends.pdf.

Liquid manure-filled lagoons produce a significant amount, although not all, of livestock methane emissions. About half of a typical large dairy's methane emissions come from the cow's digestion processes (called enteric emissions). The industry's intentional decision to store manure in lagoons and subsequently apply wet manure to land is the direct cause of methane and nitrous oxide emissions from manure. Livestock operations remain free from regulation for greenhouse gas emissions despite their significant impact.

B. Dairy Digesters Do Not Adequately Address Climate and Other Pollutants from Livestock Operations and Perpetuate Dependence on Polluting Fuels

Dairy digesters purport to address methane emissions from massive amounts of liquefied manure stored anaerobically in lagoons. Digesters basically cover the intentionally-created manure pits, capture the various gasses, and deliver the gas to facilities that combust the fuel onsite or scrub out impurities leaving methane gas for off site combustion. Digesters do not do anything to address the roughly equal amount of GHG emissions from enteric fermentation (intestinal gasses) or from the composting and application of digested manure to land. The captured methane gas can be combusted onsite, used as a transportation fuel, combusted as a fuel, converted through steam reformation to produce hydrogen, or upgraded and injected into gas pipelines for transportation fuel, gas in buildings, generating electricity, and other uses. Some dairies have stand-alone digesters and some dairies participate in a factory farm gas cluster. A factory farm gas cluster connects several dairies and dairy digesters with an upgrading facility so that the gas from many dairies can be processed at one site and then injected into the gas pipeline. This "pipeline quality" gas, marketed as clean yet molecularly almost identical to conventional fossil gas, is subsidized by ratepayers and used to justify the continued operation of gas pipelines that otherwise should be phased out.

Digesters do not do anything to decrease overall air pollution or groundwater pollution from dairies.

C. The Relevant Regulatory History Has Exacerbated the Impacts from Industrial Livestock Operations

The Global Warming Solutions Act of 2006 (AB 32 [Nunez]) tasked CARB with developing a plan to reduce GHG emissions generally and in 2013, Senate Bill 605 (Lara) required CARB to develop a plan to reduce emissions of Short-Lived Climate Pollutants, including methane. In 2016, the legislature passed both SB 32 (Pavley) which built upon AB 32's GHG reduction mandates, and SB 1383 (Lara), which focused on methane and other short-lived climate pollutants. SB 1383 set methane emission targets and required CARB to develop and begin implementing a strategy to meet those targets. The bill specifically included a target for methane emission reductions from livestock manure and created both insulation from direct regulation of livestock methane and policies and incentives designed to increase production of factory farm gas. Notably, SB 1383 prohibited direct regulation of methane emissions from livestock manure until 2024 and required CARB to make significant findings of economic feasibility prior to instituting regulations and even further limited the state's authority to regulate enteric emissions.

Furthermore, it required CARB and the CPUC to develop financial mechanisms and incentives to support the production of dairy-produced energy.¹⁹ In so doing, California transitioned from allowing the dairy industry to expand and emit more unabated methane regardless of its impact to rewarding the industry for its polluting practices and incentivizing the creation of even more liquefied manure at ever larger dairies. Protection from regulation coupled with increased subsidies and incentives illustrate the preferential treatment the dairy industry has been granted compared to other polluting sectors.²⁰

In 2018, CARB updated the Low Carbon Fuel Standard (LCFS) program to incorporate “avoided methane” into the calculation of carbon intensity scores. The result: factory farm gas became the most carbon negative fuel in the LCFS market, and thus, the most valuable. The LCFS also allows dairies that are already being paid with public funds to reduce methane with dairy digesters to double-dip by claiming the LCFS incentive was the reason for the reductions, blatantly evading the AB 32 prohibition on “non-additional” reductions from being sold into market-based mechanisms.

D. Factory Farm Gas Production and Deployment is Significantly Subsidized and Therefore Highly Profitable for Large Dairies

The current regulatory landscape provides significant subsidies to dairies to install digesters and produce factory farm gas. This funding includes CDFA’s DDRDP, CPUC ratepayer funding, CEC’s PIER, EPIC, and Clean Transportation funding, and CARB’s Aliso Canyon Mitigation Funding. To date just these direct cash subsidies total close to \$700 million with the majority of this funding coming from legislative appropriations to the Dairy Digester and Research Development Program (DDRDP) and utility rate-payers. The Legislature, through annual appropriations from the Greenhouse Gas Reduction Fund and General Fund, has allocated over \$200 million to the DDRDP and the CPUC has directed almost \$400 million of rate-payer funds to support development and operations of dairy digesters and related infrastructure.

In addition to these direct subsidies along with credit sales available through California’s Cap-and-Trade offset program, the Low Carbon Fuel Standard (LCFS) creates a lucrative credit market for industrial dairies that install digesters. CARB designed a life cycle analysis that excludes upstream and downstream greenhouse gas emissions and **treats liquified manure lagoons (and the methane they create) not as an intentionally chosen cost-cutting measure but as a necessary, inevitable part of operating a dairy, which it plainly is not.**

¹⁹ See “Veto Request – Senate Bill 1383 (Lara) – Dairy Industry Exemptions from short-lived climate pollutants: methane emissions” (September 13, 2016)

<https://drive.google.com/file/d/1OhQ4bpGX6eNEhgC64Mneel2jpH6Ja5xl/view?usp=sharing>.

²⁰ The legislative hearing for Senate Bill 1383 sheds light on the unprecedented benefits the Legislature provided the dairy industry, provoking a lobbyist for the oil industry to warn that it would return to the Legislature for its version of special treatment. See Assembly Natural Resources Committee, Hearing on Senate Bill 1383, available at http://calchannel.granicus.com/MediaPlayer.php?view_id=23&clip_id=4009 (beginning at hour 1:12) (last visited October 24, 2022).

As noted earlier, CARB has determined that methane captured through the production of gas magically makes biomethane carbon negative, and thus generates far more credits for sale in the LCFS credit market than if CARB had treated it like every other fuel. The result has been a deluge of credits which creates a massive windfall for industrial dairies and factory farm gas producers.

The dairy industry is very aware of the monumental investment California made to support the production of factory farm gas and the lucrative LCFS credit market for gas. In fact, the dairy industry itself anticipates a future where “milk has become the by-product of manure production.”²¹

Studies project that larger dairies can enjoy a third to a half of their revenue from LCFS credit revenues,²² begging the question – what’s worth more, a cow’s milk or its poop?²³ And the necessary follow-up: if we’re even asking these questions, what perverse incentives have we created and to what consequences will they lead?

E. The Resulting Profit Incentive Favors and Entrenches Harmful Practices and Drives Industrial Dairy Expansions

The narrative echoed by the dairy industry and those that profit from buying and selling LCFS credits treats the methane pollution as some kind of inevitable consequence, a natural by-product of dairy production that demands a solution. This narrative entirely ignores the fact that the liquefied manure and the associated massive methane problem was the path that state and local governments and dairy operators themselves chose to follow despite knowing the environmental degradation those decisions would create. And now the state’s solution to our methane disaster has itself reinforced harmful manure management and industrial-scale dairy practices that entrench and intensify air and water pollution. Data show that all of these incentives have contributed to an intensification of dairy expansions as dairy operators and those profiting from the LCFS respond to the market demand for manure-based fuels and the lucrative credit markets by expanding dairy operations to produce more manure.

Merced County provides an apt example of the effect this regulatory landscape has on expanding industrial dairy operations. For instance, the Merced Planning Department posts recently prepared environmental documents on the Merced County website. Based solely on the information on this website, Merced County has permitted, or is in the process of permitting, two biogas pipeline and infrastructure projects, ten dairy expansions, and one new 28,000 cow dairy.²⁴

²¹ See: <https://hoards.com/article-30925-energy-revenue-could-be-a-game-changer-for-dairy-farms.html>. Also see: <https://twitter.com/drcrystalheath/status/1587320922578378752?s=20&t=sm90vQRFTh91HZ9zY4Yzgg>.

²² Younes, A. and Fingerman, K. (2021). Quantification of Dairy Farm Subsidies Under California’s Low Carbon Fuel Standard. Arcata, CA. Available at: <https://www.arb.ca.gov/lists/com-attach/24-lcfs-wkshp-dec21-ws-AHVSNIIMhVlpXNQRI.pdf>.

²³ Smith, Aaron (2021) “What’s Worth More: A Cow’s Milk or its Poop?” Ag Data News Blog. (February 2021) Available at <https://asmith.ucdavis.edu/news/cow-power-rising>.

²⁴ See Environmental Documents, available at <https://www.countyofmerced.com/414/Environmental-Documents> (last visited December 19, 2022).

The biogas cluster and pipeline projects facilitate dairy expansions to monetize and incentivize increased dairy herds and manure generation. The total additional number of dairy cows (milk cows and support stock) from the above-listed projects is 46,148 cows. It's important to note that several counties do not require environmental review for dairy expansions. In those counties, it is much harder – if not impossible – to assess the extent to which dairies have grown and/or consolidated.

Both the historical expansion of the California Dairy industry and the more recent perverse effects of the LCFS that drive herd expansions show how local land use and Senate Bill 1383 have encouraged both dairy industry expansion and dramatic increases in methane pollution. And instead of requiring the industry to limit its pollution, the Legislature rewarded the reckless expansion by paying operators to profit from the methane emissions they chose to create in the first place. As one study on the impacts of the LCFS notes, “in this instance the largest polluter is the one receiving a large subsidy.”²⁵

F. Factory Farm Gas Production Itself Exacerbates Existing Environmental Impacts from Industrial Dairies

Factory farm gas production requires liquified manure lagoons, a profit-maximizing practice that exacerbates water pollution and as discussed throughout this briefing paper, subsidies for factory farm gas incentivize the growth of herds and concentration of animals, which results in increased air and water pollution. Additionally, the very production and use of factory farm gas creates pollution of its own.

Anaerobic digesters increase ammonia emissions, which in turn react with oxides of nitrogen (NOx) to form ammonium nitrate, which significantly contributes to fine particulate matter (PM2.5) pollution.²⁶ One study found that use of an anaerobic digester increased ammonia emissions from manure as a result of changes in the composition of digested, as compared to undigested, manure.²⁷

Combusting factory farm gas on-site, including digester engines powering turbines to generate LCFS credits for electric vehicle fuel, emit significant and unabated additional NOx, PM2.5, and volatile organic compound (VOC) emissions in the air basin. Combined, both effects exacerbate the PM2.5 pollution crisis in the San Joaquin Valley. When upgraded to be used in place of fossil natural gas, it produces all the same emissions when combusted, whether as transportation fuel or used in buildings.

²⁵ Younes, A. and Fingerma, K. (2021). Quantification of Dairy Farm Subsidies Under California's Low Carbon Fuel Standard. Arcata, CA. Available at: <https://www.arb.ca.gov/lists/com-attach/24-lcfs-wkshp-dec21-ws-AHVSNIhVJpXNQRI.pdf>.

²⁶ Michael A. Holly et al., Greenhouse gas and ammonia emissions from digested and separated dairy manure during storage and after land application Agriculture, 239 ECOSYSTEMS AND ENV'T 410, 418 (Feb. 15, 2017), <https://doi.org/10.1016/j.agee.2017.02.007>.

²⁷ See Michael A. Holly et al., Greenhouse gas and ammonia emissions from digested and separated dairy manure during storage and after land application Agriculture, Ecosystems & Environment (2017).

Moreover, factory farm gas production relies upon methane digesters, which require “abundant water resources, with a ratio equal to 1:1 of the amount of water and manure to be loaded into the digester,”²⁸ to pump and dilute manure. In arid climates it may be necessary to pump groundwater for this purpose.²⁹

G. Factory Farm Gas Credits Facilitate Ongoing Pollution from Fossil Fuel Production and Combustion

As described above, transportation fuels derived from dairy and swine manure receive LCFS credits and the amount of those credits entering the market has been drastically inflated as a result of improper negative carbon intensity values and non-additional credits. In 2021, these fuels represented approximately 10 percent of all credits sold.³⁰ Because the LCFS authorizes fuel producers to purchase credits to meet the LCFS market-based compliance mechanism’s emission limits, the excessive and illegitimate credits generated by factory farm gas producers allow fossil fuel producers – oil companies – to refine and sell more of their fossil fuels. While communities in the San Joaquin Valley suffer the air, water, and nuisance pollution from factory farm gas fuel production, communities near refineries and near major transportation corridors endure racially disparate impacts from the production and combustion of fossil fuels benefitting from those credits. For example, Black Californians experience twice the PM2.5 burden of white Californians from Cap and Trade facilities, while “Black Californians experience PM2.5 concentrations from refineries that are three times greater than all other stationary source sectors combined that are covered by the Cap-and-Trade Program.”³¹ Further, “African American, Latino, and Asian Californians are exposed to more PM2.5 pollution from cars, trucks, and buses than white Californians. These groups are exposed to PM2.5 pollution 43, 39, and 21 percent higher, respectively, than white Californians.” Additionally, “[T]he lowest-income households in the state live where PM2.5 pollution is 10 percent higher than the state average, while those with the highest incomes live where PM2.5 pollution is 13 percent below the state average.”³²

In other words, as a result of CARB’s factory farm gas policies, communities on both sides of the LCFS credit transaction subsidize polluters with compromised health and well-being.

²⁸ Tatiana Nevzorova & Vladimir Kutcherov, Barriers to the wider implementation of biogas as a source of energy: A state-of-the-art review, 26 ENERGY STRATEGY REVIEWS 7 (Oct. 14, 2019), <https://www.sciencedirect.com/science/article/pii/S2211467X19301075#bib113>.

²⁹ ENVTL. PROTECTION AGENCY, AGSTAR, PROJECT DEVELOPMENT HANDBOOK: A HANDBOOK FOR DEVELOPING ANAEROBIC DIGESTION/BIOGAS SYSTEMS ON FARMS IN THE UNITED STATES 9-5, <https://www.epa.gov/sites/default/files/2014-12/documents/agstar-handbook.pdf> (3rd Ed.).

³⁰ See CARB, LCFS Quarterly Data Spreadsheet, available at https://ww2.arb.ca.gov/sites/default/files/2022-10/quarterlysummary_103122_1.xlsx (data available under “Feedstock” tab).

³¹ *Id.*

³² *Union of Concerned Sci., Inequitable Exposure to Air Pollution from Vehicles in California* (Feb. 2019), <https://www.ucsusa.org/sites/default/files/attach/2019/02/cv-air-pollution-CA-web.pdf>.

V. CHANGING COURSE: CREATING A NEW PATH FORWARD

We have the opportunity and need to reshape the regulatory framework for livestock methane and factory farm gas to effectively reduce greenhouse gas emissions from industrial livestock operations while cutting off profit motives for concentrating livestock and manure which intensify climate impacts, exacerbate environmental degradation, and perpetuate dumping on San Joaquin Valley communities. We lay out three approaches below for rectifying existing deficiencies: correcting inadequacies in the Low Carbon Fuel Standard program, regulating livestock methane emissions, and excluding factory farm gas from inclusion in our clean energy portfolio.

A. Fix the Low Carbon Fuel Standard Program

The legislature should step in to ensure an updating to the LCFS and other programs to account for full lifecycle emissions, prohibit claiming of non-additional reductions, prevent harm to lower income communities and communities of color, and eliminate windfall profits due to lack of regulation.

Although a number of regulatory actions are responsible for driving these troubling trends in California's dairy industry, the LCFS is currently the most directly responsible for incentivizing herd concentration and polluting manure management practices. CARB is preparing to open a rulemaking to update the LCFS yet, to date there has been no commitment to address the issues raised above. Although CARB staff have not released an official scope for the rulemaking, in a recent workshop CARB proposed continuing to issue the massively inflated credits until at least 2040.³³ Additionally, CARB has indicated that they will rely on the LCFS to ensure the ongoing profitability and viability of biomethane to facilitate its transition into industrial energy markets when its purported use as transportation fuels gives way to our electric vehicle future.

Given the urgency of the issue and CARB's demonstrated unwillingness to address the consequences of its failing regulatory approach, the Legislature is well-positioned to provide much-needed direction to CARB to ensure the program is in line with California's commitments to addressing GHG emissions and environmental injustice.

B. Eliminate Factory Farm Gas from Definitions of Renewable Energy

As brought to the forefront during hearings on SB 1020 last year, resources eligible to meet the requirements of the Renewable Portfolio Standard (RPS) and SB 100 (RPS plus zero carbon resources) include "digester gas" which includes factory farm gas.

³³ See presentation for CARB Low Carbon Fuel Standard Workshop November 9, 2022. Available at <https://ww2.arb.ca.gov/sites/default/files/2022-11/LCFSPresentation.pdf>.

The definition of factory farm gas as “renewable” supports its inclusion in existing climate programs, such as the LCFS³⁴ and emerging energy technologies, such as hydrogen³⁵ and opens up or expands markets and subsidies for the dirty fuel. By eliminating factory farm gas from the definition of renewable energy, California can ensure current and future efforts to transition California’s energy and transportation systems are real environmental justice solutions and not a polluting cash cow. Cleaning up our energy sector is challenging enough already without false solutions muddying the water.

C. Regulate Livestock Greenhouse Gas Emissions

As stated above, SB 1383 permits CARB to directly regulate livestock methane emissions starting in 2024 but provides CARB discretion and several off-ramps that provide ready justifications for CARB to continue the failing LCFS-centered strategy, including using the LCFS to subsidize factory farm gas for to support its growth in industrial sectors. The Legislature must direct CARB to adopt mandatory regulations and acknowledge the last-minute dairy methane provisions in Senate Bill 1383 were an unprecedented and ill-advised industry giveaway. California must treat the dairy industry like every other major source of greenhouse gas emissions. We cannot continue to treat the most climate-impacting practices as inevitable and force the public to pay polluters to stop polluting thereby rewarding the biggest and worst polluters.

**For more information contact: Jamie Katz, Staff Attorney,
jbkatz@leadershipcounsel.org**

³⁴ Cal. Code Regs. Tit 17 § 95481-95482.

³⁵ Pub. Res. Code § 25664.

