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Manure, Methane, and Money: The Anaerobic Digester Disaster in California

Pegga Mosavi

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MANURE, METHANE, AND MONEY: THE ANAEROBIC DIGESTER DISASTER IN CALIFORNIA

By
Pegga Mosavi*

Abstract

The small, idyllic family farms that come to mind at the first mention of farming are all but gone, replaced by enormous factories that churn out animals at record speed, with little regard for their health and welfare. These factory farms produce a host of issues, including pervasive water and air pollution, particularly in vulnerable agricultural communities like those of the San Joaquin Valley in California. While the detriments of the factory farm model are numerous, contribution to climate change in particular has garnered significant attention. Animal agriculture in the U.S. produces 36% of the country's methane, a greenhouse gas significantly more potent than carbon dioxide. Despite the myriad of problems posed by factory farms, industry has focused its attention on the climate change impacts of these enormous operations, and now purports to have the solution—anaerobic digesters. This technology captures methane from animal waste and produces biogas, an energy source that can be used much like natural gas. States like California heavily incentivize this otherwise cost prohibitive technology. This Article argues anaerobic digesters are a false solution to factory farms. It posits that by promoting them, California fails to acknowledge the greater environmental threat factory farms pose to the environment and the environmental justice concerns surrounding the expansion of animal agriculture spurred by digesters. Accordingly, this Article examines a number of possible solutions to the recent growth of anaerobic digesters in California, including potential improvements to California's environmental justice legislation, possible redress using environmental litigation, and a possible challenge to the funding driving anaerobic digester growth in California. Ultimately, this Article concludes that California should cease supporting anaerobic digesters and should focus instead on funding holistic solutions to factory farm issues in order to safeguard California's most vulnerable communities.

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GLOSSARY OF TERMS

AB: Assembly Bill

AD(s): Anaerobic Digester(s)

AMMP: Alternative Manure Management Program

CAA: Clean Air Act

CAFO(s): Concentrated Animal Feeding Operation(s)

CalEPA: California Environmental Protection Agency

CARB: California Air Resources Board

CCI: California Climate Investments

CDFA: California Department of Food and Agriculture

CEQA: California Environmental Quality Act

DDRDP: Dairy Digester Research and Development Program

EIR: Environmental Impact Report

EJ: Environmental Justice

GGRF: Greenhouse Gas Reduction Fund

GHG: Greenhouse Gas

LCFS: Low Carbon Fuel Standards Program

LCJA: Leadership Counsel for Justice & Accountability

NJDEP: New Jersey Department of Environmental Protection

NOx: Nitrogen Oxides

R-CNG: Renewable Compressed Natural Gas

RNG: Renewable Natural Gas

SB: Senate Bill

SLCP: Short Lived Climate Pollutants

I. Introduction

At first glance, the San Joaquin Valley is a quaint agricultural area, dotted with orchards and dairies.¹ However, as community members like the Sanchez family can attest, those picturesque fields and dairies have left the Valley in turmoil, contaminating groundwater and polluting the local air.² Martha and her husband Jose spend \$60 per month on tap water they cannot use.³ The State Water Resources Control Board provides the Sanchez's with five, five-gallon jugs bi-weekly, but it is never enough, as the Sanchez's are forced to buy more out of the scarce income they earn as agricultural workers.⁴ On top of this burden, Jose, a supervisor in the fields, pays out of pocket for clean water for the employees he manages as the farm refuses to. At home, Martha carefully ladles bottled water into pots and pans to wash dishes.⁵ As she cooks, she does the same, even soaking beans in bottled water out of fear of exposing her family to the contaminated tap water.⁶ These hardships are commonplace for the families of the San Joaquin Valley and current industrial animal agriculture mitigation strategies seem unlikely to improve their situation.

¹ The information in this paragraph comes from the article: Jose A. Del Real, *They Grow the Nation's Food, but They Can't Drink the Water*, N. Y. TIMES (May 21, 2019), <https://perma.cc/3A5M-ESDY> (accessed Oct. 13, 2022).

² *Id.*

³ *Id.*

⁴ *Id.*

⁵ *Id.*

⁶ *Id.*

In the past few decades, animal agriculture has transformed from small- and medium-scale farms to crowded factory farms.⁷ These farms confine thousands of animals in tightly packed facilities that individually produce more sewage than large cities.⁸ The millions of tons of manure factory farms produce annually leads to pervasive water and air pollution that subsequently affects the health, enjoyment, and prosperity of nearby communities.⁹

Animal agriculture also substantially contributes to climate change, producing about 36% of the United States' methane—a greenhouse gas (GHG) that is about twenty-five times more potent than carbon dioxide.¹⁰ As the planet warms, experts agree governments must mitigate such pollution.¹¹ One proposed solution is anaerobic digestion.¹² California, the nation's largest dairy producer, has quickly adopted and incentivized the installation of anaerobic digesters (ADs) on farms.¹³ State initiatives make biogas—the end product of anaerobic digestion—a valuable commodity in California's transportation sector.¹⁴ Further, the state offers various grants to help offset construction costs.¹⁵

While many consider the influx of anaerobic digesters in California a marked success, as they reduce methane, this view does not acknowledge the greater environmental threat factory farms pose or the justice concerns perpetuated by industry growth.¹⁶ The San Joaquin Valley is home to much of California's dairy industry and, consequently, a growing number of anaerobic digesters. This highly impoverished area suffers from tremendous environmental degradation, enduring some of the worst air and water quality in the country.¹⁷ These environmental harms weigh heavily on the largely low-income communities of color, causing residents to suffer from asthma, nausea, headaches, nosebleeds, cancers, and respiratory and cardiovascular ill-

⁷ FOOD & WATER WATCH, *FACTORY FARM NATION: 2015 EDITION 2* (2015) [hereinafter FWW].

⁸ *Id.*

⁹ *Id.* at 5.

¹⁰ ALEXANDER WEISS ET AL., *LET'S TALK ABOUT BIOGAS . . . EVEN IF WE THINK IT STINKS* 3 (2020), <https://perma.cc/6RFS-H7G3> (accessed Oct. 13, 2022); *Importance of Methane*, EPA, <https://perma.cc/G77V-MR4E> (accessed Oct. 13, 2022).

¹¹ GLOBAL METHANE INITIATIVE, *GLOBAL METHANE EMISSIONS AND MITIGATION OPPORTUNITIES 1*, <https://perma.cc/6AES-ENK4> (accessed Oct. 13, 2022).

¹² WEISS ET AL., *supra* note 10, at 2.

¹³ *Id.* at 8; Catherine Keske, *Up in the Air: Will California's Methane Gas Mitigation Laws and Policies Lower Global Greenhouse Emissions?*, 21 VT. J. ENV'T L. 492, 496 (2020).

¹⁴ Keske, *supra* note 13, at 495; Sara Tanigawa, *Fact Sheet — Biogas: Converting Waste to Energy*, ENV'T & ENERGY STUDY INST. (Oct. 3, 2017), <https://perma.cc/Y4LC-NXYV> (accessed Nov. 3, 2022).

¹⁵ JULIA BRAMLEY ET AL., *AGRICULTURAL BIOGAS IN THE UNITED STATES* 74–75 (2011).

¹⁶ WEISS ET AL., *supra* note 10, at 3, 8.

¹⁷ Lupe Martinez, *Valley Legislators Need to Improve on Environmental Justice*, CAL. ENV'T JUST. ALL., <https://perma.cc/ZQ8M-M68U> (accessed Oct. 13, 2022).

nesses.¹⁸ Anaerobic digesters offer little prospect of relief and threaten to increase the burdens communities like the San Joaquin Valley face.

This Article argues the adoption of anaerobic digesters in California is a poor strategy to reduce methane emissions from dairy factory farms because it worsens the disproportionate environmental hardships California's San Joaquin Valley faces and is thus inconsistent with California's sweeping commitment to environmental justice (EJ). Section II provides background on factory farms and their associated issues. Section III details the anaerobic digestion process, the uses of resulting products, and the drawbacks of the technology. Section IV explores the grants, incentives, and legislation advancing the growth of anaerobic digesters in California. Further, it also discusses the flaws of the scheme and the EJ consequences of anaerobic digesters on the San Joaquin Valley. Section V analyzes the effectiveness of California's EJ legislation with regard to anaerobic digesters. Finally, Section VI investigates possible solutions moving forward. It considers how to improve California's EJ legislation, possible redress using environmental litigation, and the feasibility of challenging the funding driving the anaerobic digester industry in California. The Article concludes that California should cease supporting anaerobic digesters and rather focus funding on holistic approaches to manure management that address methane, groundwater quality, and air quality, ensuring EJ communities are not disproportionately affected.

II. Factory Farms

Factory farms, or concentrated animal feeding operations (CAFOs), "are a modern industrial method of raising farmed animals."¹⁹ CAFOs are a form of "intensive agriculture intended to maximize profit" by minimizing expended resources.²⁰ They confine and tightly pack thousands of cows, hogs, and chickens, and rapidly raise the animals with the aid of hormones, antibiotics, and corn-based feeds.²¹ Presently, CAFOs raise 99% of all animals farmed for human consumption.²² Dairy CAFOs have all but replaced small-scale dairy farms.²³ CAFOs produce enormous quantities of manure. In 2012, the largest CAFOs produced thirteen times more waste than the entire human population of the United States.²⁴ These vast quantities disrupt the use of manure as a fertilizer for adjacent farmland, a routine

¹⁸ *Id.*

¹⁹ *Factory Farming: What It Is and Why It's a Problem*, HUMANE LEAGUE (Nov. 30, 2020), <https://perma.cc/VZ7S-VFF3> (accessed Oct. 7, 2022).

²⁰ *Id.*

²¹ FWW, *supra* note 7, at 2, 6. To reach CAFO status, farms need a minimum of 500 beef cattle, 500 dairy cows, 1000 hogs, 500,000 broiler chickens, or 100,000 egg laying hens. *Id.* at 2.

²² Jacy Reese Anthis, *U.S. Factory Farming Estimates*, SENTIENCE INST. (Apr. 11, 2019), <https://perma.cc/64N6-NLJQ> (accessed Oct. 7, 2022).

²³ FWW, *supra* note 7, at 7.

²⁴ *Id.* at 5.

practice on smaller farms.²⁵ Instead, CAFOs store untreated manure in lagoons for as long as possible and only apply it to nearby fields when lagoons reach capacity.²⁶ These manure management practices endanger the environment and surrounding communities.

A. *Factory Farms' Effects on the Environment*

CAFOs are a major source of water pollution, contaminating lakes, reservoirs, ponds, and thousands of miles of rivers and streams.²⁷ Lagoons leak and are prone to bursting during storm events, both of which introduce waste into groundwater and surrounding waterways.²⁸ The overapplication of nutrient-rich manure saturates the soil and causes excess nutrients to leach into groundwater and run off into nearby waterbodies.²⁹ Nitrogen- and phosphorous-rich runoff causes devastating fish kills by deoxygenating the water.³⁰ Manure also introduces heavy metals, antibiotics, and pathogenic bacteria into waterways, contaminating drinking water sources.³¹

CAFOs similarly threaten air quality.³² The manure in lagoons releases ammonia, hydrogen sulfide, and particulate matter, often in quantities unsafe for human health.³³ Spraying waste onto nearby fields creates toxic aerosolized fecal matter.³⁴ In addition to lowering air quality, CAFOs contribute to climate change because wet manure management methods like lagoon storage create and release methane, a potent GHG.³⁵ Livestock operations produce approximately 7% of all U.S. GHG emissions.³⁶

B. *Factory Farms' Impacts on Surrounding Communities*

CAFOs also directly impact farmworkers and individuals in surrounding communities. Overexposure to air pollutants like hydrogen sulfide cause negative health impacts, including respiratory disturbances.³⁷ Children living near CAFOs are especially vulnerable and

²⁵ *Id.*

²⁶ *Id.* at 5, 8; Adam Skolnick, *The CAFO Industry's Impact on the Environment and Public Health*, SIERRA CLUB (Feb. 23, 2017), <https://perma.cc/2E8E-K69C> (accessed Oct. 7, 2022).

²⁷ FWW, *supra* note 7, at 21.

²⁸ *Id.*

²⁹ *Id.*

³⁰ *Id.* at 5; *Nutrient Pollution*, EPA, <https://perma.cc/FDG3-4Y7P> (accessed Oct. 7, 2022).

³¹ FWW, *supra* note 7, at 5, 21.

³² D. LEE MILLER & GREGORY MUREN, *CAFOs: WHAT WE DON'T KNOW IS HURTING US* 8 (2019).

³³ *Id.* at 8–9.

³⁴ Skolnick, *supra* note 26.

³⁵ WEISS ET AL., *supra* note 10, at 3.

³⁶ CARRIE HRIBAR, *UNDERSTANDING CONCENTRATED ANIMAL FEEDING OPERATIONS AND THEIR IMPACTS ON COMMUNITIES* 7 (Mark Schultz ed., 2010).

³⁷ FWW, *supra* note 7, at 22.

have a significantly higher likelihood of developing asthma.³⁸ Ingestion of manure-contaminated water causes frequent digestive disturbances.³⁹ The potent odors CAFOs discharge cause physical symptoms like headaches and nausea⁴⁰ as well as the diminished financial health of surrounding neighborhoods.⁴¹

While the CAFO model may maximize profit, it does so at the cost of environmental and community health. Despite the multitude of harms that CAFOs cause, the conversation of late has focused solely on solving their global warming potential.

III. Anaerobic Digesters and the Rise of Biogas

While there are several solutions to curb industrial animal agriculture's impact on climate change, anaerobic digester (AD) technology dominates the conversation.⁴² The use of farm manure to produce methane first gained traction in the 1970s but lost support due to a lack of technical understanding and investment incentives.⁴³ Now, state support for AD technology is growing rapidly as it promises to reduce GHG emissions from intensive animal agriculture and offers farmers a revenue stream.⁴⁴

A. Anaerobic Digesters on Factory Farms

A farm-based biogas plant can be segmented into a series of parts: “manure collection, anaerobic digestion, digestate storage, digestate use, and gas use.”⁴⁵ While various types of manure management can be compatible with a biogas plant, experts do not recommend manure management that produces a high solid content (more than 13%) manure.⁴⁶ Dairy farm manure may be a compatible feedstock if it has low solids content.⁴⁷ Suitable farm-based digester designs are covered lagoon, plug-flow, and complete-mix; covered lagoon digesters work best for liquid manure systems.⁴⁸

Within a farm-based biogas plant, the AD transforms the organic compounds in manure to methane and retains inorganic nutrients like nitrogen and phosphorus.⁴⁹ This process generates two primary prod-

³⁸ MILLER & MUREN, *supra* note 32, at 9.

³⁹ *Id.* at 8.

⁴⁰ HRIBAR, *supra* note 36, at 7.

⁴¹ Homes located near CAFOs have noticeably lower resale values. FWW, *supra* note 7, at 23.

⁴² See generally WEISS ET AL., *supra* note 10, at 2 (stating “State support for anaerobic digester technology is growing rapidly.”).

⁴³ BRAMLEY ET AL., *supra* note 15, at 12.

⁴⁴ WEISS ET AL., *supra* note 10, at 2, 5–6.

⁴⁵ BRAMLEY ET AL., *supra* note 15, at 15.

⁴⁶ *Id.*

⁴⁷ See *id.*

⁴⁸ *Id.*

⁴⁹ WEISS ET AL., *supra* note 10, at 4.

ucts: digestate and biogas.⁵⁰ Digestate is the residual material of the digestion process and contains both solid and liquid components.⁵¹ The solid components are suitable for composting, land application, and processing into soil and animal bedding, while the liquid portions are used as nutrient-rich fertilizer.⁵² The biogas is mostly methane (50–80%) with notable amounts of carbon dioxide (20–50%) and trace amounts of other compounds.⁵³

Like natural gas, biogas can provide heat and generate electricity, and produce renewable natural gas (RNG) after additional purification.⁵⁴ Until recently, farms combusted biogas on site for electricity, most commonly heat and steam.⁵⁵ Over the past decade, biogas-produced RNG has gained considerable traction as a biogas byproduct.⁵⁶ Producers sell RNG for injection into natural gas pipelines, compression for vehicle fuel, or for further processing to generate other advanced bioproducts.⁵⁷

B. The Critiques of Anaerobic Digesters as a Manure Management and Methane Solution

ADs reduce methane emissions, but their many deficiencies undermine their feasibility as a manure management solution.

1. Anaerobic Digester Dependence on Subsidies to be Financially Feasible

Agribusiness and policy makers market ADs as a renewable manure solution, but ADs are not economically feasible without government subsidies.⁵⁸ Upfront capital investment for ADs is high, while start-up, maintenance, and operating costs commonly reach into the millions.⁵⁹ Farms need to transport biogas from production sites to users, which requires substantial infrastructure investments to extend the grid to the farm.⁶⁰ ADs have volatile profits and variable financial viability because their output value, output prices, and expected life

⁵⁰ *How Does Anaerobic Digestion Work?*, EPA [hereinafter *Anaerobic Digestion*], <https://perma.cc/83NC-G5KE> (accessed Oct. 3, 2022).

⁵¹ WEISS ET AL., *supra* note 10, at 3.

⁵² *Id.* at 4.

⁵³ BRAMLEY ET AL., *supra* note 15, at 12; WEISS ET AL., *supra* note 10, at 4; *Anaerobic Digestion*, *supra* note 50.

⁵⁴ BRAMLEY ET AL., *supra* note 15, at 12; *Anaerobic Digestion*, *supra* note 50.

⁵⁵ BRAMLEY ET AL., *supra* note 15, at 18.

⁵⁶ S. Abanades et al., A Critical Review of Biogas Production and Usage with Legislations Framework across the Globe, 19 INT'L J. ENV'T SCI. & TECH. 3377, 3381–83 (2022).

⁵⁷ *Anaerobic Digestion*, *supra* note 50.

⁵⁸ FOOD & WATER WATCH, HARD TO DIGEST: GREENWASHING MANURE INTO RENEWABLE ENERGY 1–3 (2016), <https://perma.cc/8EWT-Y279> [hereinafter FWW] (accessed Oct. 9, 2022).

⁵⁹ *Id.* at 3 (2016); see also BRAMLEY ET AL., *supra* note 15, at 13, 35 (noting the significant costs associated with ADs).

⁶⁰ BRAMLEY ET AL., *supra* note 15, at 13.

are uncertain.⁶¹ Further, ADs suffer from asset specificity, meaning farms cannot recover costs through alternative uses if returns are low.⁶² Due to the complexities associated with AD investment and operation, “no methane digester in the United States has been an acceptable investment unless it was partially supported by a government subsidy.”⁶³

2. *The Manure Management Issues that Persist and the Unsolved Methane Emissions*

Anaerobic digestion does not reduce the volume of waste CAFOs produce.⁶⁴ Further, ADs do not reduce nutrient loads in manure.⁶⁵ As a result, when farmers spread nutrient-rich digestate as fertilizer, much of it leaches into the groundwater or runs off like liquid manure.⁶⁶ In fact, anaerobic digestion may make nutrients like nitrogen and phosphorus more water-soluble, meaning rainwater is even more likely to wash those nutrients from fields.⁶⁷ Additionally, covering and pressurizing the lagoons increases downward pressure which causes an increased likelihood of groundwater contamination from lagoon leaching.⁶⁸

ADs also frequently fail to prevent air pollution caused by manure management. Anaerobic digestion and biogas burning processes emit nitrogen, sulfur oxides, particulate matter, and carbon monoxide.⁶⁹ Odors from CAFOs also persist despite ADs.⁷⁰ Covering manure for digester use only reduces odors by about 45% and does nothing to curb the major source of CAFO odors—CAFO barn exhaust fans.⁷¹ Finally, proponents champion ADs for their effectiveness at reducing methane emissions, however, they do not address the significant methane emissions from enteric fermentation, more commonly referred to as cow belching.⁷² Methane emissions from enteric fermentation far exceed

⁶¹ Electricity prices are highly variable, and digesters have short life spans, often no more than ten years. WEISS ET AL., *supra* note 10, at 5–6; *Anaerobic Digesters*, ENERGY JUST. NETWORK, <https://perma.cc/N9D7-R6Y9> (accessed Oct. 9, 2022); see FWW, *supra* note 58, at 3 (noting the “economic failures of this technology”).

⁶² WEISS ET AL., *supra* note 10, at 6.

⁶³ *Anaerobic Digesters*, *supra* note 61.

⁶⁴ WEISS ET AL., *supra* note 10, at 4; *Anaerobic Digesters*, *supra* note 61.

⁶⁵ FWW, *supra* note 58, at 2.

⁶⁶ FWW, *supra* note 7, at 5.

⁶⁷ FWW, *supra* note 58, at 2.

⁶⁸ D. Lee Miller & Ryke Longest, *Reconciling Environmental Justice with Climate Change Mitigation: A Case Study of NC Swine CAFOs*, 21 VT. J. ENV'T L. 523, 540 (2020).

⁶⁹ Nicole G. Di Camillo, *Methane Digesters and Biogas Recovery—Masking the Environmental Consequences of Industrial Concentrated Livestock Production*, 29 UCLA J. ENV'T L. & POL'Y 365, 374 (2011).

⁷⁰ *Anaerobic Digesters*, *supra* note 61.

⁷¹ See *id.* (noting that CAFO fans account for 60% of all CAFO odors).

⁷² BRAMLEY ET AL., *supra* note 15, at 13; Georgina Gustin, *In California's Methane-Reduction Crosshairs, Dairy Industry Faces Regulation for the First Time*, INSIDE CLIMATE NEWS (Oct. 25, 2016), <https://perma.cc/4YJ4-BXBZ> (accessed Oct. 9, 2022).

those from manure storage; in 2016, they accounted for 2.5 times more methane emissions than manure.⁷³

3. *The Issues Created by Anaerobic Digesters*

ADs do not solve many CAFO manure management issues, and they introduce several new issues, as well. ADs commonly leak about 2–3% of the methane they create.⁷⁴ The escaped, or fugitive methane, offsets any GHG reductions and poses a fire risk.⁷⁵ Further, AD technology often entails significant economies of scale, meaning that for the high upfront costs to be worthwhile, the operation has to create enough waste to make the cost per animal reasonable.⁷⁶ As a result, cooperative digesters serving many farms often take precedence over farm-specific digesters.⁷⁷ While these digesters allow more—and often smaller—farms to reduce their methane emissions, trucking manure and digestate to and from surrounding farms incurs significant environmental costs like fossil fuel use and spill risks.⁷⁸ Economies of scale also perversely incentivize farmers to increase herd sizes to generate more methane.⁷⁹ Finally, ADs have led to an expansion of natural gas pipelines,⁸⁰ entrenching the fossil fuel system that renewable energy resources often aim to displace.

IV. The Dairy Biogas Industry in California

California is at the forefront of the digester experiment. Its many dairy farms offer ideal feedstock for ADs, and its incentive programs make digester projects financially lucrative.

A. *Factory Farms in California*

California dominates the U.S. dairy industry, with approximately 1.83 million cows on around 2,000 dairy farms.⁸¹ These cows account for 20% of all of America’s milk cows, making California the nation’s top milk-producing state.⁸² Due to the prevalence of dairies in the

⁷³ Di Camillo, *supra* note 69, at 378; U.S. ENV’T PROT. AGENCY, EPA 430-R-18-003, INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS: 1990–2016 5–4 (2018).

⁷⁴ *Anaerobic Digesters*, *supra* note 61.

⁷⁵ FWW, *supra* note 58, at 3. See FWW, *supra* note 7, at 24 (describing a methane leak from a digester on a dairy farm in Oregon that started a fire in 2012).

⁷⁶ WEISS ET AL., *supra* note 10, at 6.

⁷⁷ *Id.*

⁷⁸ *Id.*; FWW, *supra* note 58, at 2.

⁷⁹ Keske, *supra* note 13, at 503.

⁸⁰ Miller & Longest, *supra* note 68, at 540.

⁸¹ Deanne M. Camara Ferreira, *Global Warming and Agribusiness: Could Methane Gas from Dairy Cows Spark the Next California Gold Rush?*, 15 WIDENER L. REV. 541, 546 (2010).

⁸² *Id.* at 542; Tara Ritter, *Hidden Props for Factory Farms in California Climate Programs*, INST. FOR AGRIC. & TRADE POL’Y (Oct. 31, 2017), <https://perma.cc/P4H8-88BY> (accessed Oct. 4, 2022); see also LISA KRESGE & RON STROCHLIC, CLEARING THE AIR: MITIGATING THE IMPACT OF DAIRIES ON FRESNO COUNTY’S AIR QUALITY AND PUBLIC

state, California has long had the greatest potential for biogas production.⁸³ Nevertheless, prior to 2002, fewer than five ADs existed on California farms.⁸⁴

In the past few decades, despite aggressive and otherwise effective GHG emission reduction policies, California's methane emissions markedly increased because of its growing dairy industry.⁸⁵ Recognizing the danger such an increase posed to its climate change mitigation efforts, California took several actions to curb the increase, which has led to an explosion of dairy digesters in the state.⁸⁶

B. *The Programs and Financial Incentives Driving the Dairy Biogas Industry*

California's dairy digester explosion began with Senate Bill (SB) 605.⁸⁷ The Bill tasked the California Air Resources Board (CARB) with developing a strategy to help address short-lived climate pollutants (SLCPs) like methane.⁸⁸ The strategy recommended transitioning away from lagoon manure management systems without methane capture and provided possible pathways to do so.⁸⁹ Based on the costs associated with the other pathways, CARB identified pipeline-injected natural gas production using a centralized digester as the best strategy.⁹⁰ In 2016, with this guidance, California passed legislation limiting methane emissions in the agricultural sector.⁹¹

Senate Bill 1383 aims to reduce methane emissions from California livestock to 40% below 2013 levels by 2030.⁹² These required reductions do not begin until January 1, 2024, but the bill's pilot projects

HEALTH 3 (2007) (noting Fresno, California produced 2.5 billion pounds of milk between 2005 and 2006).

⁸³ BRAMLEY ET AL., *supra* note 15, at 70.

⁸⁴ *History: Anaerobic Digesters at Dairies in California*, CAL EPA, <https://perma.cc/L2BC-4RLW> (accessed Oct. 4, 2022).

⁸⁵ From 2000 to 2017, California's methane emissions increased approximately 16%, even though its overall GHG emissions declined by 10% over that same period. Keske, *supra* note 13, at 496–97.

⁸⁶ As of February 2022, California had 206 dairy digesters, and it plans to add many more. *Climate Smart Dairy Digesters*, DAIRY CARES (Feb. 7, 2022), <https://perma.cc/A2QT-VRSO> (accessed Oct. 4, 2022).

⁸⁷ CAL. HEALTH & SAFETY CODE § 39730 (West 2022).

⁸⁸ Lauren Neuhaus, *Recommendations for Reducing Methane Emissions from Agricultural Sources in the United States*, 43 ENVIRONS: ENV'T L. & POL'Y J. 207, 209–10 (2020).

⁸⁹ The pathways include: “1) scrape conversion and onsite digestion for pipeline-injected natural gas vehicle fuel; 2) scrape conversion and centralized digestion for pipeline injected natural gas vehicle fuel; 3) solar drying of manure onsite; 4) digestion for onsite renewable electricity; and 5) conversion of dairy operations to pasture-based management.” Hyunok Lee, *State Regulation on Livestock Methane and Challenges Faced by the California Dairy Industry*, 20 ARE UPDATE 1, 2 (2016).

⁹⁰ *Id.* at 2.

⁹¹ *Id.* at 1–2.

⁹² CAL. HEALTH & SAFETY CODE § 39730.5 (West 2022).

requirement and its robust grant and incentive programs mean dairies will follow the SLCP strategy recommendation to implement ADs.

California's Dairy Digester Research and Development Program (DDRDP) has provided over \$195 million in grants for 118 digester projects.⁹³ California's Cap-and-Trade program generates the DDRDP funds. Under the Cap-and-Trade program, regulated entities must pay a fee for their GHG emissions.⁹⁴ California places the revenue these fees generate into the Greenhouse Gas Reduction Fund (GGRF) and uses them to incentivize unregulated sectors like agriculture to voluntarily reduce emissions.⁹⁵ While this grant program has driven farms to adopt dairy digesters, California's incentive programs primarily drove digester expansion, accounting for the majority of revenue digesters generated.⁹⁶

In addition to funding grants like DDRDP, California's Cap-and-Trade program is an incentive scheme. Under the program, regulated entities must comply with a declining cap on GHG emissions.⁹⁷ These entities thus have several choices: reduce their own emissions enough to comply with the cap, reduce emissions by an amount greater than the cap and generate credits, or emit above the cap and purchase credits to cover the emissions.⁹⁸ Voluntary GHG emission reduction projects, like dairy digesters, can generate credits that farms can sell to regulated entities in need, providing these farms with a source of revenue beyond biogas sales.⁹⁹

The most lucrative incentive program for farms with dairy digesters is California's Low Carbon Fuel Standard (LCFS) program, with credits worth ten times those of Cap-and-Trade.¹⁰⁰ The LCFS program aims to decrease the carbon intensity of California's transportation fuels.¹⁰¹ It requires fuel suppliers to reduce the carbon intensity of their fuels over time.¹⁰² Suppliers can comply by blending in low-carbon fuels or purchasing credits from an entity with credits.¹⁰³

⁹³ *Dairy Digester Research and Development Program*, CAL. DEP'T FOOD & AGRIC. [hereinafter *DDRDP*], <https://perma.cc/H883-PT4X> (accessed Oct. 8, 2022); CAL. DEP'T FOOD & AGRIC., REPORT OF FUNDED PROJECTS (2015–2020) 4 (2021).

⁹⁴ ANNIE ACMOODY & PAUL SOUSA, INTEREST IN CALIFORNIA DAIRY MANURE METHANE DIGESTERS FOLLOWS THE MONEY 2 (2020).

⁹⁵ *Id.*; *California Climate Investments to Benefit Disadvantaged Communities*, CAL EPA, <https://perma.cc/E6U6-5K5Y> (accessed Oct. 11, 2022).

⁹⁶ ACMOODY & SOUSA, *supra* note 94, at 2; LEADERSHIP COUNS. FOR JUST. & ACCOUNTABILITY, A WORKING PAPER ON THE CDFA DAIRY DIGESTER RESEARCH AND DEVELOPMENT PROGRAM 11 (2019) [hereinafter *LCJA*].

⁹⁷ ACMOODY & SOUSA, *supra* note 94, at 2.

⁹⁸ *Id.*

⁹⁹ *Id.*

¹⁰⁰ Hyunok Lee & Daniel A. Sumner, *Dependence on Policy Revenue Poses Risks for Investments in Dairy Digesters*, 72 CAL. AGRIC. 226, 230 (2018).

¹⁰¹ *Low Carbon Fuel Standard*, CAL. AIR RES. BD. [hereinafter *LCFS*], <https://perma.cc/EFE6-YPJK> (accessed Oct. 11, 2022).

¹⁰² ACMOODY & SOUSA, *supra* note 94, at 2.

¹⁰³ *Id.*

Suppliers generate credits by creating fuel with a carbon intensity score below the benchmark carbon intensity.¹⁰⁴ The LCFS program determines carbon intensity scores by conducting a life cycle assessment that examines the GHG emissions associated with the production, transportation, and use of a given fuel.¹⁰⁵ Dairy digesters generate credits by producing electricity or RNG from biogas, which have low carbon intensity scores.¹⁰⁶ RNG for vehicle fuel—commonly referred to as RCNG—generates some of the highest LCFS credits.¹⁰⁷ Therefore, dairy digesters in California primarily produce RNG instead of electricity or heat.¹⁰⁸

Proponents believe the growing Californian AD and biogas industries are successful because they reduce methane emissions, but that view does not acknowledge their strategic shortcomings or negative consequences—namely, the EJ implications.

C. The Pitfalls of California's Current Scheme and its Impact on Vulnerable Communities

California commendably attempted to combat methane emissions, but it prioritized anaerobic digestion, a narrowly focused and financially motivated strategy. California's current strategy pigeonholes farmers and fails to offer robust assistance to the vulnerable communities of the San Joaquin Valley.

1. The Flaws in California's Regulatory Scheme

CARB recommended ADs as the primary strategy to combat methane emissions, but it made that determination in a vacuum—a fatal flaw. It considered only the best solution for combatting methane emissions. By doing so, ADs rose to the forefront as an effective and economically beneficial methane reduction strategy. ADs are ineffective at addressing the other issues California's industrial dairy farms posed, but that had no bearing on CARB's recommendation. Had CARB considered the cumulative impact of its solution, rather than focusing only on methane emissions, it likely would have supported an alternative strategy like pasture-based management.

California's regulatory scheme also risks locking farmers into an unsustainable model. As mentioned above, digesters in California primarily produce RNG. LCFS credits for RNG are lucrative, and electricity production in California is prohibitively expensive.¹⁰⁹ Biogas combustion is necessary for electricity generation, but it emits nitro-

¹⁰⁴ *LCFS*, *supra* note 101.

¹⁰⁵ *Id.*

¹⁰⁶ *AcMOODY & SOUSA*, *supra* note 94, at 1–2.

¹⁰⁷ *Id.* at 2.

¹⁰⁸ *Id.*

¹⁰⁹ *Lee & Sumner*, *supra* note 100, at 229.

gen oxides (NOx), an ozone precursor.¹¹⁰ The San Joaquin Valley is an ozone nonattainment area under the federal Clean Air Act (CAA), so the EPA heavily regulates its NOx emissions.¹¹¹ To comply with CAA regulations, farmers trying to produce electricity from biogas require expensive emission control technologies.¹¹² The San Joaquin Valley has not adopted ADs because biogas electricity production is expensive.¹¹³ While pipeline-injectable RNG provides San Joaquin Valley farmers with a biogas byproduct that does not have to meet the strict regulations of the CAA and is thus cheaper to produce, it does not make digester construction and operation economically workable.¹¹⁴ In today's market, RNG fuel sales only cover about 25% of the operating cost of an AD system.¹¹⁵ Biogas-derived RNG is economically viable because California offers LCFS credits.¹¹⁶ But LCFS credits for digesters are temporary.¹¹⁷

Once the regulatory requirements of SB 1383 go into effect, the availability and quantity of credits under the Cap-and-Trade and LCFS programs will change.¹¹⁸ Under both programs, farms will not obtain credits for reducing methane emissions because the reductions will not be *additional* to regulation.¹¹⁹ Post-regulation, farms can only obtain LCFS credits if they displace petroleum fuel.¹²⁰ While this change will not remove LCFS-based income entirely, it will undeniably lessen it, a cause for concern for farmers long wary of adopting AD due to its uncertain financial viability.

Without another government subsidy or an amended LCFS program, California would leave farmers with ADs incapable of supporting their operating costs and unsuitable for alternative use, like electricity production for onsite use, without costly upgrades. Compounding the issue, farmers will face the costs of compliance with environmental criteria for air and water quality seeing as AD technology will likely not remedy these issues. This reality is a serious threat to the long-term economic viability of many of California's dairy farms

¹¹⁰ *Id.*; Valerio Paolini et al., *Environmental Impact of Biogas: A Short Review of Current Knowledge*, 53 J. ENV'T SCI. & HEALTH 899, 901 (2018), <https://perma.cc/9SMK-KD7L> (accessed Oct. 10, 2022).

¹¹¹ *Ambient Air Quality Standards & Valley Attainment Status*, SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DIST. <https://perma.cc/RY23-RRRB> (accessed Oct. 10, 2022); Lee & Sumner, *supra* note 100, at 229.

¹¹² Lee & Sumner, *supra* note 100, at 228–29.

¹¹³ *Id.* at 229.

¹¹⁴ *Id.* at 231.

¹¹⁵ *See id.* (stating the total cost of a digester project that produces pipeline-injectable natural gas (\$588,000) and its revenue (\$149,000)).

¹¹⁶ *Id.* at 234.

¹¹⁷ CAL. AIR RES. BD., *SHORT-LIVED CLIMATE POLLUTANT REDUCTION STRATEGY* 69 (2017).

¹¹⁸ *Id.* at 69–70.

¹¹⁹ *Id.* at 69 (emphasis added).

¹²⁰ *Id.* at 70.

which already suffer from falling milk prices.¹²¹ While California will very likely choose to financially support ADs via a novel program when it enacts regulations, this dependency demonstrates ADs' inability to sustain itself.

2. *The Environmental Justice Implications of California's Growing Biogas Industry*

Eight counties, all of which are in California's San Joaquin Valley, house 89% of California's dairy cows.¹²² Unsurprisingly, all of the dairy digester projects the DDRDP funded are in the San Joaquin Valley.¹²³ As noted above, the San Joaquin Valley suffers from tremendous environmental degradation that negatively impacts community members. ADs offer little relief and threaten to increase the mounting burdens these communities face.

Incentivizing dairy digesters in the San Joaquin Valley does nothing to remedy the lagoon manure management system that threatens the Valley's compromised local air and water quality; rather, it risks entrenching it further. CAFO manure management causes the water quality issues that digesters fail to remedy. In fact, digesters may worsen the problem.

The Valley already ranks amongst the worst in the country for air quality, falling below federal standards for both ozone and particulate pollution.¹²⁴ The influx of dairy digesters threatens to exacerbate the problem. Due to SLCP findings, cooperative digesters have multiplied in the Valley, creating a need for manure-hauling and thereby increasing vehicle emissions in the area.¹²⁵ CARB encourages diesel trucks to transition to R-CNG-powered engines, but there is little evidence that trucks will make the shift, particularly in the San Joaquin Valley.¹²⁶ Dairy digesters do not improve the Valley's air quality. They worsen it. Additionally, while some farms have utilized a collaborative digester model to meet the economies of scale, dairy herd sizes are also increasing.¹²⁷ Increased herd sizes generate more waste, which benefits the digester, but harms the Valley. More waste exacerbates odors, water pollution, and local air pollution, which ADs cannot address. Many San Joaquin Valley residents rely upon bottled water to cook, drink,

¹²¹ Carol Ryan Dumas, *Dairy Farm Exits Reflect Low Milk Prices in 2019*, CAP. PRESS (Feb. 21, 2020), <https://perma.cc/GEY3-EREW> (accessed Oct. 9, 2022); Lee Mielke, *Will Milk Prices Keep U.S. Dairy Farmers in Business?*, FARMERS ADVANCE, <https://perma.cc/J7N9-WSYU> (accessed Oct. 18, 2022).

¹²² Cal. Dept. Food & Agric., *California's Top 10 Milk Producing Counties, Percent Share of California Milk Production, January–December 2013*, 18 CAL. DAIRY REV. 1, 1 (2014); LCJA, *supra* note 96, at 5.

¹²³ DDRDP, *supra* note 93.

¹²⁴ EPA Activities for Cleaner Air, EPA, <https://perma.cc/X9DD-NR9R> (accessed Oct. 9, 2022).

¹²⁵ LCJA, *supra* note 96, at 12–13.

¹²⁶ *Id.* at 2.

¹²⁷ See *id.* at 12 (detailing how the Open Sky Dairy, Maddox Dairy, and Bar 20 Dairy all increased herd sizes while adding digesters).

and even bathe, because nitrate has severely contaminated the groundwater.¹²⁸ Digesters never offered hope of improving the Valley's water quality; however, digesters may *worsen* it if they continue to cause increased herd sizes.

V. The Legal Implications of California's Environmental Justice Statute as Applied to Anaerobic Digesters

California is a major leader in the national EJ movement. It implemented EJ policies and encouraged EJ activism, which other states have modeled.¹²⁹ While commendable, California's EJ legislation has many weaknesses, including how it applies to dairy digesters.

A. California and its Commitment to Environmental Justice

In 1999, California passed Senate Bill 115 and became one of the first states in the nation to codify EJ.¹³⁰ Under SB 115, EJ is defined as "the fair treatment and meaningful involvement of people of all races, cultures, incomes, and national origins, with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies."¹³¹ SB 115 requires the California Environmental Protection Agency (CalEPA) to "[c]onduct its programs, policies, and activities that substantially affect human health or the environment in a manner that ensures the fair treatment of people of all races, cultures, and income levels, including minority populations and low-income populations of the state."¹³²

Above all, SB 115 offers a framework for EJ coordination in California.¹³³ It aims to avoid disproportionate impacts; however, SB 115 does not prohibit disproportionate impacts.¹³⁴ SB 115 and subsequent legislative efforts validate EJ consideration in environmental planning and require decisionmakers to include EJ groups.¹³⁵ But because the legislative scheme is largely procedural, it amplifies voices only to dismiss them. California made this plain when it adopted ADs in the San Joaquin Valley despite community opposition.

¹²⁸ Del Real, *supra* note 1, at 1–2.

¹²⁹ Jonathan K. London et al., *Problems, Promise, Progress, and Perils: Critical Reflections on Environmental Justice Policy Implementation in California*, 26 UCLA J. ENV'T L. & POL'Y 255, 260 (2008).

¹³⁰ Ellen M. Peter, *Implementing Environmental Justice: The New Agenda for California State Agencies*, 31 GOLDEN GATE UNIV. L. REV. 529, 540 (2000). See CAL. GOV'T CODE § 65040.12 (West 2022) (establishing a coordinating agency for EJ); CAL. PUB. RES. CODE § 71110 (West 2022) (codifying CalEPA's commitment to EJ).

¹³¹ CAL. GOV'T CODE § 65040.12(c).

¹³² PUB. RES. § 71110(a).

¹³³ Caroline Farrell, *SB 115: California's Response to Environmental Justice - Process Over Substance*, 1 GOLDEN GATE UNIV. ENV'T L. J. 113, 122 (2007).

¹³⁴ *Id.* at 123.

¹³⁵ Alan Ramo, *Environmental Justice as an Essential Tool in Environmental Review Statutes: A New Look at Federal Policies and Civil Rights Protections and California's Recent Initiatives*, 19 HASTINGS ENV'T L. J. 41, 60 (2013).

B. How California's Environmental Justice Legislation Fails

SB 1383 established a Dairy and Livestock Working Group to identify barriers to methane reduction projects, recommend methane reduction means, and sustain California's dairy and livestock industry.¹³⁶ The California Department of Food and Agriculture (CDFA), partner agencies, stakeholders, and experts comprised the Working Group.¹³⁷ The Group thus carried its EJ group participation burden. EJ advocates argue California should only incentivize practices without negative community impacts, such as alternative manure management.¹³⁸ Nevertheless California primarily incentivizes digesters. Digester projects have received approximately four times as much funding via DDRDP grants as alternative manure management projects have via their respective grant program, the Alternative Manure Management Program (AMMP).¹³⁹ Further, EJ advocates requested that the Working Group conduct more research to determine potential environmental impacts and make mitigation efforts when possible. It has done neither.¹⁴⁰ Finally, when EJ advocates voiced concern that dairy digester clusters have the potential to increase herd sizes and thereby further impact communities, the group downplayed the concern, deeming it unlikely to occur.¹⁴¹ The Working Group dismissed the disproportionate impact dairy digesters would have on EJ communities, and SB 115 does nothing to prevent such outcome. This circumstance is illustrative of the weakness of SB 115.

Today, California's EJ legislation reaches beyond SB 115; but many of California's subsequent efforts also suffer from flaws. As referenced above, the Cap-and-Trade program generates revenue that California places in the GGRF. California Climate Investments (CCI), a coordinated investment program, directs funds from the GGRF to projects aimed at reducing GHG emissions in California, especially in disadvantaged communities. SB 535, as amended and expanded by Assembly Bill (AB) 1550,¹⁴² requires CCI to make at least 35% of its investments in disadvantaged and low-income communities.¹⁴³ SB 535 aims the funds at "improving public health, quality of life and eco-

¹³⁶ Neuhaus, *supra* note 88, at 210.

¹³⁷ *Id.*

¹³⁸ CAL. AIR RES. BD., RECOMMENDATIONS TO THE STATE OF CALIFORNIA'S DAIRY AND LIVESTOCK GREENHOUSE GAS REDUCTION WORKING GROUP 7 (2018) [hereinafter CARB], <https://perma.cc/R4D3-73ZV> (accessed Oct. 9, 2022).

¹³⁹ LCJA, *supra* note 96, at 5.

¹⁴⁰ CARB, *supra* note 138, at 16; LCJA, *supra* note 96, at 2.

¹⁴¹ CARB, *supra* note 138, at 20.

¹⁴² CAL. HEALTH & SAFETY CODE § 39713 (West 2022).

¹⁴³ *California Climate Policy Fact Sheet: California Climate Investments*, BERKELEY L., <https://perma.cc/BY2Y-2TPK> (accessed Oct. 9, 2022).

conomic opportunity in California's most burdened communities, and at the same time, reducing pollution that causes climate change."¹⁴⁴

CCI claims most of the DDRDP funds it has distributed benefitted disadvantaged communities.¹⁴⁵ But these communities perceive little to no benefit from the digesters and have instead expressed concerns.¹⁴⁶ Such disregard for community perception reveals the inherent flaws in the EJ-conscious investment program. It is commendable that California supplies funding to aid these communities. But if California provides the funding regardless of whether the communities perceive the aid as beneficial, it fails to accomplish its aim of "improving public health, quality of life and economic opportunity in California's most burdened communities."¹⁴⁷

Since EJ safeguards lack the teeth to protect vulnerable communities, communities must find another way to combat the influx of dairy digesters.

VI. Solutions Moving Forward

California digester numbers will likely continue to grow without intervention, so it is worth considering what possible solutions exist to combat digester growth.

A. Fixing California's Environmental Justice Legislation

One consideration is improving California's EJ legislation. While undeniably expansive, California's procedural legislation lacks the power of many recent legislative schemes.

1. New Jersey's Environmental Justice Legislation as a Model

New Jersey's recent EJ legislation could be a model for California. New Jersey's landmark law, S232,¹⁴⁸ requires permit applicants to submit an EJ impact statement for specific categories of facilities sited in "overburdened communities[.]"¹⁴⁹ The statement must evaluate the potential cumulative environmental and public health impacts of the permitted activity.¹⁵⁰ The New Jersey Department of Environmental Protection (NJDEP) must deny permits for projects that disproportionately cause or contribute to an overburdened community's adverse

¹⁴⁴ *California Climate Investments to Benefit Disadvantaged Communities*, CAL EPA [hereinafter *Climate Investments*], <https://perma.cc/N6HB-DXRB> (accessed Oct. 9, 2022).

¹⁴⁵ *Dairy Digester Research and Development Program*, CAL. CLIMATE INVS. [hereinafter *DDRDP*], <https://perma.cc/3YT5-DHWM> (accessed Oct. 9, 2022).

¹⁴⁶ See *supra* Part V.B. (detailing EJ advocates' concerns regarding incentives, inadequate research, and impacts to communities).

¹⁴⁷ *Climate Investments*, *supra* note 144.

¹⁴⁸ N.J. STAT. ANN. §§ 13:1D-157–13:1D-161 (West 2022).

¹⁴⁹ Julius M. Reed & Hilary Jacobs, *The Evolving Landscape of Environmental Justice in 2020 and Beyond*, NAT'L L. REV. (Oct. 30, 2020), <https://perma.cc/TD6S-LHMC> (accessed Oct. 10, 2022).

¹⁵⁰ *Id.*

health and environmental burdens when those burdens are greater than those borne by communities elsewhere in New Jersey.¹⁵¹ NJDEP may impose conditions on the permit issuance if the project serves a compelling public interest in the community where it would locate it and if the conditions protect public health.¹⁵² Issuing permits only when projects serve a compelling public interest in the overburdened community ensures the legislation is entirely community centric.¹⁵³

The New Jersey law is not a perfect fit for California's situation, as the definition of 'facilities' would likely not include dairy digesters.¹⁵⁴ Nonetheless, it is an example of EJ legislation that mandates permit denial because of disproportionate impacts and allows exceptions only when the burdened community would benefit. Given the deficiencies in California's EJ legislation, state implementation of a law similar to New Jersey's, with alterations made to the definition of facilities, may well offer some relief to the vulnerable San Joaquin communities. Alternatively, rather than amending its current legislation, California could emphasize the importance of EJ under the California Environmental Quality Act (CEQA).

2. CEQA's Incorporation of Environmental Justice

CEQA is one of California's most important environmental laws.¹⁵⁵ It requires state and local agencies to disclose and analyze potential significant environmental impacts of proposed projects and mitigate or avoid those impacts if feasible.¹⁵⁶ CEQA mainly determines whether a project will have a significant effect on the physical environment. Nevertheless, CEQA may require projects to consider EJ issues as well.¹⁵⁷

While CEQA does not mention EJ, in a 2012 report, then-Attorney General Kamala Harris interpreted CEQA as imposing EJ obligations.¹⁵⁸ The report details that CEQA evaluates "whether a project may have a significant effect on the physical environment."¹⁵⁹ "Human

¹⁵¹ Samantha Maldonado, *How a Long-Stalled "Holy Grail" Environmental Justice Bill Found Its Moment in New Jersey*, POLITICO (Aug. 27, 2020), <https://perma.cc/LKF7-XFVY> (accessed Oct. 10, 2022).

¹⁵² Arlene Karidis, *The Impact of New Jersey's New Environmental Justice Law*, WASTE360 (Oct. 14, 2020), <https://perma.cc/4MXX-KQKZ> (accessed Oct. 10, 2022); N.J. STAT. ANN. § 13:1D-160.

¹⁵³ Karidis, *supra* note 152.

¹⁵⁴ See N.J. STAT. ANN. § 13:1D-158 (defining "Facility").

¹⁵⁵ *California Environmental Quality Act (CEQA)*, OFF. ATT'Y GEN. CAL. DEP'T JUST., <https://perma.cc/R2J2-3DKQ> (accessed Oct. 10, 2022).

¹⁵⁶ *Id.*

¹⁵⁷ *Attorney General Releases Report Interpreting CEQA to Require Consideration of Environmental Justice Issues at the Local and Regional Levels*, THOMAS L. GRP. (June 12, 2012), <https://perma.cc/B5C5-M7HU> (accessed Oct. 10, 2022).

¹⁵⁸ See KAMALA D. HARRIS, ENVIRONMENTAL JUSTICE AT THE LOCAL AND REGIONAL LEVEL: LEGAL BACKGROUND 1–3, 5 (2012) <https://perma.cc/F24U-KMNN> (accessed Oct. 4, 2022) (outlining the California Department of Justice's commitment to EJ).

¹⁵⁹ *Id.* at 2.

beings are an integral part of the environment.”¹⁶⁰ “An agency is required to find that a project may have a significant effect on the environment if, among other things, the environmental effects of a project will cause substantial adverse effects on human beings, either directly or indirectly.”¹⁶¹ Harris essentially “expanded CEQA’s explicit requirement to consider a project’s ‘social’ impacts into an implicit requirement to consider its environmental justice impacts.”¹⁶²

To date, Vice President Harris’ actions alone do not appear to have solidified a new interpretation of CEQA within California’s courts; however, her actions seem to have laid the foundation for formally acknowledging EJ review in California law. In *Golden Door Properties, LLC v. County of San Diego*, a California Court of Appeals stated “[w]hether CEQA may in some circumstances require an EJ analysis is at least reasonably arguable.”¹⁶³ If future California Attorneys General also advocate that CEQA requires agencies to evaluate EJ impacts, CEQA may stand a chance of formally incorporating EJ review.¹⁶⁴

Acknowledging EJ obligations under CEQA would bolster California’s current EJ legislation by drawing official attention to environmental injustices. That change to CEQA would not necessarily shift the required analysis; arguably, CEQA already requires agencies to evaluate EJ concerns because they must evaluate a project’s setting and its cumulative social and economic impacts.¹⁶⁵ But if California law acknowledged that CEQA incorporates EJ, it could frame the CEQA analysis more broadly. Agencies could consider a project’s environmental burdens and how the project might affect certain communities. Further, while the procedural requirements of CEQA already serve as a powerful tool to delay or halt projects,¹⁶⁶ establishing EJ as a formal part of the CEQA analysis would allow San Joaquin Valley communities the opportunity to delay or halt dairy digester projects while also actively raising awareness as to the negative social impacts of the projects that may on their face appear beneficial to the environment.

While those changes would strengthen California’s EJ legislation, records requests have revealed the government’s failure to adequately evaluate the effects of digesters.¹⁶⁷ Without first remedying this failure, changes in EJ legislation may make little difference.

¹⁶⁰ *Id.*

¹⁶¹ *Id.*

¹⁶² Mark Rutherford, *The Bureau of Environmental Justice and Change from the Top*, 37 UCLA J. ENV’T L. & POL’Y 123, 127 (2019).

¹⁶³ *Golden Door Props., LLC v. Cnty. of San Diego*, 264 Cal. Rptr. 3d. 309, 378 (Ct. App. 2020).

¹⁶⁴ Rutherford, *supra* note 162, at 128.

¹⁶⁵ See Ramo, *supra* note 135, at 63–64, 67, 76 (discussing the setting and the social, economic, and cumulative impact requirements in CEQA).

¹⁶⁶ *Id.* at 71.

¹⁶⁷ See LCJA, *supra* note 96 (reviewing CDFA’s approved digester applications in 2017).

B. Redress for the San Joaquin Communities via Environmental Litigation

To safeguard vulnerable communities, SB 859 burdens the CDFA’s review of DDRDP grant applications.¹⁶⁸ It requires the CDFA to review the potential impacts of proposed projects before it awards DDRDP grant funds, including ground and surface water impacts, truck traffic, odors, and increased air contaminants and pollutants.¹⁶⁹ Further, SB 859 makes grant funding contingent on applicants showing the CDFA that they have “(1) [c]onducted outreach in areas that will potentially be adversely impacted by the project, (2) [d]etermined potential adverse impacts of the project, (3) [c]ommitted to measures to mitigate impacts.”¹⁷⁰

A recent report by the Leadership Counsel for Justice & Accountability (LCJA) revealed the CDFA blatantly ignores many SB 859 requirements at worst, or weakly enforces them at best.¹⁷¹ DDRDP applicants are not sufficiently identifying “the potential negative impacts of their projects, identifying or committing to measures to mitigate negative impacts, or conducting adequate outreach.”¹⁷²

The LCJA argues these deficiencies persist because “digester applications . . . make it impossible to provide a true analysis of environmental impacts.”¹⁷³ Applications lack information on environmental impacts from digesters and only focus on the digester and its manure pits.¹⁷⁴ Applicants ignore other possible sources of dairy emissions and discharges like land-applied manure.¹⁷⁵ These deficiencies may offer the necessary legal hook for community members to pursue litigation opposing the dairy digester explosion.

Dairy digester projects must fully comply with CEQA.¹⁷⁶ CEQA requires agencies to disclose and analyze potential significant environmental impacts of proposed projects.¹⁷⁷ Agencies must prepare an Environmental Impact Report (EIR) for any project that may significantly affect the environment unless exempted by CEQA.¹⁷⁸ While unfortunately digesters on existing dairies are routinely exempted from

¹⁶⁸ CAL. GOV’T CODE § 16428.86 (West 2022).

¹⁶⁹ CAL. GOV’T CODE § 16428.86(a).

¹⁷⁰ CAL. GOV’T CODE § 16428.86(b).

¹⁷¹ See generally LCJA, *supra* note 96 (revealing the findings in the report are based on information gleaned from a public records act request).

¹⁷² *Id.* at 4.

¹⁷³ *Id.* at 1.

¹⁷⁴ *Id.*

¹⁷⁵ *Id.*

¹⁷⁶ CARB, *supra* note 138, at 17.

¹⁷⁷ See *supra* Part VI.B.2. (discussing agency permitting requirements under CEQA).

¹⁷⁸ CAL. PUB. RES. CODE § 21080(d) (West 2022); An EIR is “an informational document which will inform public agency decision makers and the public generally of the significant environmental effect of a project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project.” CAL. CODE REGS. tit. 14, § 15121(a) (2022).

CEQA, those built on new facilities do appear subject to it and thus a hook exists for perhaps some digesters.¹⁷⁹ A program EIR¹⁸⁰ was completed for the dairy manure digester and co-digester facilities in November 2010.¹⁸¹ Gaining access to the program EIR and any subsequent tiered EIRs was not feasible within the timeline of this Article; therefore, the analysis that follows speculates based on the findings from the LCJA report. Based on the inadequacies LCJA found in DDRDP applications with regard to the environmental impacts of digesters, it seems highly likely that the program EIR and future tiered EIRs completed for dairy digesters may be deficient.

The LCJA report notes that DDRDP applications only focus on the emissions and discharges from the digester component of the dairy and fail to consider the potential growth in herd sizes that digesters may cause.¹⁸² The EIR are likely also limited in scope because California agencies find no issue with the lacking environmental effects analyses in DDRDP applications which aim to evaluate environmental effects like EIRs would. If EIRs are similarly lacking, parties can challenge them as failing to evaluate the indirect effects and cumulative impacts of dairy digester projects, assuming a timely challenge is brought.

CEQA guidelines require an EIR to identify and describe “[d]irect and indirect significant effects of the project on the environment” and consider their “short-term and long-term effects.”¹⁸³ The guidelines also provide that when the economic or social effects of a project cause a physical change, “the physical change may be regarded as a significant effect in the same manner as any other physical change resulting from the project.”¹⁸⁴

In *El Dorado Union High School District v. City of Placerville*, a proposed apartment complex had the potential to increase student enrollment in an already overcrowded school—a social effect.¹⁸⁵ This proposal created a potential need to construct at least one new high school—a physical change.¹⁸⁶ Per the guidelines, this physical change was an environmental effect that required evaluation under CEQA.¹⁸⁷

¹⁷⁹ Staff Report, Waste Discharge Requirements General Order, Dairies with Anaerobic Digester or Co-Digester Facilities at 9-10, https://www.waterboards.ca.gov/rwqcb5/board_decisions/adopted_orders/general_orders/r5-2010-0130_wdr_go.pdf.

¹⁸⁰ “A program EIR is an EIR that may be prepared on a series of actions that can be characterized as one large project . . .” *Types of EIR Documents*, CALRECYLCE, <https://perma.cc/HJD7-HKLY> (accessed Oct. 10, 2022).

¹⁸¹ See *Archived Document Electronic Request Form*, CALRECYCLE, <https://perma.cc/8CNZ-9NCK> (accessed Oct. 10, 2022) (showing where a user can request the Dairy Manure Digester and Co-Digester Facilities Final Program Environmental Impact Report).

¹⁸² LCJA, *supra* note 96, at 9.

¹⁸³ CAL. CODE REGS. tit. 14, §15126.2(a) (2022).

¹⁸⁴ CAL. CODE REGS. tit. 14, §15064(e) (2022).

¹⁸⁵ *El Dorado Union High Sch. Dist. v. City of Placerville*, 192 Cal. Rptr. 480, 484 (Ct. App. 1983).

¹⁸⁶ *Id.*

¹⁸⁷ *Id.*

In *Bakersfield Citizens for Local Control v. City of Bakersfield*, proposed shopping centers had the potential to close existing stores—an economic effect.¹⁸⁸ This created potential urban decay—a physical change.¹⁸⁹ Per the court, this physical change was an environmental effect that required evaluation under CEQA.¹⁹⁰

Dairy digesters have the potential to increase herd sizes—an economic effect.¹⁹¹ These herd sizes will create potential increased emissions from dairy farms—a physical change. Thus, increased emissions should be an environmental effect that requires evaluation under CEQA. If the dairy digester EIR does not consider these potential emissions, groups can challenge it as inadequate. Further, parties can challenge the EIR based on its cumulative impacts assessment.

Under CEQA, agencies must consider whether a project's effects are "cumulatively considerable."¹⁹² Cumulatively considerable effects are "the incremental effects of an individual project . . . viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects."¹⁹³ To determine whether a project's effects are cumulatively considerable, the agency must undertake a cumulative impact analysis. The cumulative impact from a project is "the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects."¹⁹⁴ Thus, a proper cumulative impact analysis must evaluate "closely related past, present, and reasonably foreseeable probable future projects."¹⁹⁵

In *City of Bakersfield*, the court found two EIRs' cumulative impact analyses were inadequate because they did not analyze the environmental impacts of other present, closely related retail projects with the impacts of the proposed shopping centers.¹⁹⁶ Ultimately, the projects were closely related because they shared roadways and similarly affected ambient air quality.¹⁹⁷

Dairy digesters' EIR cumulative impact analyses are likely also lacking. Dairy farms seem to qualify as present, closely related projects to dairy digesters. Like the shopping centers in *City of Bakersfield*, dairy farms will share roadways with the digester projects and will affect the same ambient air quality as the digesters. Thus, if a dairy digester EIR fails to analyze the environmental effects of the

¹⁸⁸ *Bakersfield Citizens for Loc. Control v. City of Bakersfield*, 22 Cal. Rptr. 3d 203, 219 (Ct. App. 2004).

¹⁸⁹ *Id.* at 219–22.

¹⁹⁰ *Id.* at 225.

¹⁹¹ As established above, digesters are more profitable when herd sizes are larger. See *supra* Part III.B.3.

¹⁹² CAL. CODE REGS. tit. 14, § 15065 (2022).

¹⁹³ CAL. PUB. RES. CODE § 21083(b)(2) (2021).

¹⁹⁴ CAL. CODE REGS. tit. 14, § 15355(b) (2022).

¹⁹⁵ *Id.*

¹⁹⁶ *Bakersfield Citizens for Loc. Control*, 22 Cal. Rptr. at 227–228.

¹⁹⁷ *Id.* at 228.

dairy farm with the effects of the digester project, the cumulative impacts analysis is deficient.

Whether CEQA formally incorporates EJ or not, it may offer the San Joaquin Valley communities a tool to combat certain digesters. A more immediate strategy would eliminate the funding driving digester growth.

C. Challenging the Incentives and Grants Funding Anaerobic Digesters in California

Grants and incentive programs spurred the recent growth in dairy digesters. California's history with digesters exemplifies their inability to survive without subsidies. Between 2006 and 2018, only 10 of 24 digester projects survived.¹⁹⁸ Now, California has 118 new digester projects that show no signs of failing.¹⁹⁹

The LCJA's report details blatant violations of SB 859. An established violation of SB 859 could offer reprieve, as it would halt DDRDP grant funding until agencies engage in proper environmental analysis and take mitigation steps. Restricting access to LCFS incentives would even more effectively slow digester growth. If LCFS incentives disappeared, biogas sales alone would on average produce only 2.4% of digesters' current revenue, not even covering annual operation and maintenance costs.²⁰⁰ While a challenge to the LCFS incentive program appears to be the home run for countering AD growth at California dairies, how to mount a successful challenge remains to be seen.

VII. Conclusion

AD adoption is a poor strategy to reduce dairy farm methane emissions in California. They remedy one CAFO problem but worsen the other disproportionate hardships that California's San Joaquin Valley faces. California's AD scheme is inconsistent with its sweeping commitment to EJ and illustrates the weakness in their EJ legislation. San Joaquin Valley communities have few options to oppose the influx of digesters. California should reallocate grant funding to the AMMP and incentivize holistic manure management that addresses methane, groundwater quality, and air quality. As California works to reduce methane emissions and combat climate change, it has the opportunity to do so with its vulnerable communities in mind. However, the current system disregards those communities and instead favors financial gain.

¹⁹⁸ Lee & Sumner, *supra* note 100, at 230.

¹⁹⁹ *DDRDP*, *supra* note 145.

²⁰⁰ The federal government also provides incentives and would offer some financial stability if California reduced its LCFS incentives. Lee & Sumner, *supra* note 100, at 231.