



Gaslit by Biogas:

Big Ag's Reverse Robin Hood Effect

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GASLIT BY BIOGAS: BIG AG'S REVERSE ROBIN HOOD EFFECT

Executive Summary

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“Manure Biogas” or factory farmed gas (FFG) is now rapidly expanding and it has been structured by industry to produce a reverse Robin Hood effect: the increasing subsidies for FFG are supposed to incentivize green practices but instead fund greenwashing that promotes the growth of the largest factory farms, at the expense of the surrounding communities, the climate, and public health.

“Manure Biogas” is how Big Ag refers to the use of methane digesters—large sealed tanks with no oxygen—to capture gas emanating from the cesspools of waste that concentrate on factory farms. These costly and inefficient digesters process some portion of the waste from factory-farmed animals into fuel while also producing a polluting byproduct called digestate. “Biogas” is more accurately described as factory farm gas or FFG for short.

FFG functions exclusively as a greenwashing vehicle and does not actually help the environment. Our investigation—which includes data obtained through the Freedom of Information Act and analysis of federal and state policies, proposed legislation, and private investment deals—found *no exceptions to this rule*. There are no good FFG operations, but there are more and more of them each year.

FFG is Expanding Factory Farming (pages 8-9)

At a time when an increasing public consensus favors moratoriums on CAFOs and the replacement of factory farms with regenerative operations, FFG funnels billions of dollars into propping up industrial animal production. Industry implausibly denies that FFG investments are intended to expand factory farming, but there is no denying that this is their impact: in places where we have data like Wisconsin and Iowa, FFG growth has meant the growth of factory farms (see: [The ‘Biogas’ Plot: Fueling Factory Farms in the Midwest](#)).

Unprecedented Subsidies for FFG (pages 10-13)

In 2023, Federal subsidies for FFG began rapidly expanding and **exceeded \$150 million**. In one federal grant program alone there was a **2600 percent year-over-year increase** in federal grants to biogas. These public funds have

attracted private investments (this report considers the case of Aemetis) that further exacerbate the problem.

Subsidizing the Worst Offenders (pages 14-15)

Farm Forward’s analysis reveals that these subsidies flow almost exclusively to factory farm companies, and they flow disproportionately to the biggest, most destructive farms—rewarding the ones that do the most environmental damage.

Deceptive Math is an Additional Subsidy (pages 16-17)

The idea of capturing methane and converting it to fuel is good science, but the math used by industry to justify FFG is self-serving science fiction. In addition to grants, low-interest loans, tax deductions, and other free monies from public coffers, the justification of FFG involves a **blatant overvaluation of environmental credits**.

Doubling Down on Digester Deception (pages 18-19)

Despite these obvious problems being flagged by 15 members of the U.S. Senate and House, the Biden Administration has doubled down on support for FFG.

Greenwashing gas from factory farms is not a climate solution. It’s climate gaslighting. The real solutions to the problems of factory farming are well known: reducing our overall dependence on animal products and raising the remaining animals on farms that combine the best of traditional and modern models to reduce the many public health and environmental costs of large-scale animal agriculture.





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Introduction

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If everything else were held constant, an anaerobic digester over a cesspool could be just an extravagantly wasteful way to slightly lower methane emissions—a mere greenwashing flourish. In reality, factory farm gas (FFG) is **much worse: an excuse to justify new public subsidies of industrial farming and to allow the industry to better evade environmental regulations that have made expansion difficult.**

FFG Subsidizes Expansion When We Need Reduction

The modern model of industrial-scale anaerobic digesters producing FFG for wide distribution is incompatible with a serious understanding of the harms of factory farming. Even in the best case, digesters have major limitations, including undercounted methane leakage,¹ observed methane plumes,² and limitations to its supply that undermine claims that it is a serious replacement for typical natural gas.³

The greater problem, however, is how FFG supports the growth of factory farms and prevents investment in alternatives. A growing consensus recognizes the urgent need to transition from industrial animal agriculture to a more sustainable food and farm system to address climate change. The Intergovernmental Panel on Climate Change underscores the importance of shifting from diets high in meat and dairy to those centered on plant-based foods.⁴ Factory farming generates enormous amounts of methane, nitrous oxide, and other harmful pollutants while driving deforestation to make way for feed crops and grazing.⁵ **All food production has a climate impact, but factory farming has a disproportionate impact,⁶ and policies that promote the intensification and expansion of industrial animal agriculture directly counteract climate goals.⁷**

Cesspools are Cesspools

Many Americans have concerns about the manner in which factory farms are operated and heavily subsidized, and they find the polluting aspects of factory farming—like air and water pollution—similarly concerning.⁸ Among the greatest contributors to these forms of pollution are **manure cesspools**, vast pools of animal waste resulting from the mass confinement of thousands

of animals into small spaces. For years, industrial animal agriculture has been looking for ways to sidestep this problem.⁹ There is great value to factory farming interests¹⁰ in making the public—falsely—believe that the pollution issue has been solved.

Industry has long tried to distract the public from what these cesspools are—unlined dirt pits filled with liquified animal feces and urine—by calling them “lagoons” and pretending that the collection of waste into dirt pits is some kind of “management.” Most of the public, however, can see through such manipulations of words.



PHOTO BY JO-ANNE MCARTHUR / WE ANIMALS



Enter “manure biogas,” or factory farming gas (FFG). FFG is an attempt to convince the public that factory farming interests have, more or less, solved the problems associated with these cesspools, turning a problem into a solution. It would be a truly impressive story if it weren’t a blatant lie.

Factory Farm Gas Explained

FFG refers to a type of fuel produced from the digestion of animal waste—most often dairy cow manure, but also hog and poultry waste—as well as other agricultural waste products like animal carcasses.¹¹ During this process, bacteria break down waste under oxygen-free conditions, creating a mixture of methane and other gases. This gas is then refined and injected into gas pipelines or used as transportation fuel. The industry masks the polluting origins of the gas by using the misnomer “renewable natural gas” or “RNG” to refer to FFG.

Anaerobic digesters are commonly installed above the industry’s manure cesspools on factory farms to capture the gas. They may also be housed in separate facilities where waste is trucked in for gas capture.¹² Digesters can indeed reduce some manure-based methane emissions. **However, they do nothing to reduce dairy cows’ enteric fermentation, which is responsible for almost three times as much methane as manure.**¹³ They also do not make the animal manure disappear; instead, they put it through a chemical process that still leaves behind another byproduct: **digestate—a dangerous pollutant itself that requires careful handling.** This shifts but does not solve the basic environmental problem. However, FFG operations do not simply fail to solve all problems; they actively make the problems worse by pumping climate dollars into the expansion of factory farms.



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FFG is Expanding Factory Farms

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Significant evidence suggests that the FFG scheme is spurring the growth of factory farms as farmers begin to think of themselves as “farming methane.” For example, a report on Wisconsin dairy digesters states: “In Kewaunee County, our research shows that **on average, herd sizes at CAFOs with a digester grew by 58%**. This represents an astonishing annual year-over-year herd size increase of 5.2% and reflects national trends [among CAFOs with digesters].”¹⁴ Alarming, according to a recent review, “Iowa has permitted 15 new digester facilities [on dairy operations] since 2021, when the Legislature passed a law allowing animal feeding operations with digesters to exceed the state’s limit of 8,500 animal units.”¹⁵ **Of those 15 dairy farms, 7 subsequently expanded, resulting in a 23 percent increase in total herd size.**

In a joint report titled *Biogas or Bull****? The Deceptive Promise of Manure FFG as a Methane Solution*,¹⁶ Friends of the Earth and the Socially Responsible Agriculture Project explore the expansion question. They determined that herd sizes at dairies with digesters **grew an average of 3.7 percent per year, 24 times the growth rate of typical dairies.** A sustained 3.7 percent growth rate would cause a dairy to double in size in less than 20 years when the climate and environmental impacts demand that we reduce rather than increase dairy production.

Industry, of course, claims that factory farm expansion is not the purpose of FFG subsidies, but it is a clear outcome of investment in FFGs thus far. Our analysis leaves little room to doubt that FFG subsidies are doing exactly what they were intended to do: redirect public funds for private gain. “Biogas” is the latest excuse for prolonging the massively unpopular subsidies that have long allowed an industry that most Americans oppose¹⁷ to thrive.



PHOTO BY RAM DAYA / ANIMAL OUTLOOK / WE ANIMALS





GASLIT BY BIOGAS: BIG AG'S REVERSE ROBIN HOOD EFFECT

Unprecedented Subsidies for FFG

Unprecedented Subsidies for FFG

Massive and growing subsidies allocated to “biogas” inherently support this expansion of industrial animal agriculture. For decades, the government has supported factory farming through tax credits, loan guarantees,¹⁸ and other subsidies. FFG is no different—national and state policies are in place to incentivize and subsidize FFG operations. One such policy is the Inflation Reduction Act (IRA), passed by the Biden Administration in August 2022.

The Dark Side of the IRA: IRA Investments in FFG

The IRA is a groundbreaking piece of climate legislation with the potential to reduce harmful climate emissions and lay the groundwork for a transformation of the energy and transportation industries.¹⁹ Farm Forward broadly supports the IRA and similar initiatives, and we stand aligned with our climate movement allies, who recognize the imperative need for vast investments in renewable energy. **Nonetheless, the subsidies within the IRA promoting FFG production incentivize what amounts to an unprecedented investment in industrial animal farming, leading to a net expansion of its climate and environmental harms.** The IRA and similar legislation presented an opportunity to invest in a much-needed transformation of our food and farming system. Other proposed legislation, such as the Farm System Reform Act, laid out a clear vision for how we could build a secure, sustainable, humane, and economically just food system. The IRA could have invested in that vision.²⁰ The opportunity was missed: the IRA does not, for example, subsidize herd size reductions or the removal of manure cesspools.²¹ Instead, the IRA funnels millions of dollars to enrich factory farm companies.

Despite mammoth financial backing from federal and state programs, pollution from factory farms—with or without a digester—has a track record of lack of oversight and proper verification.²² Without stringent oversight, public funds for FFG subsidize industrial practices **without delivering the promised environmental benefits.**

REAP Reaps Profit for Big Ag: REAP’s Investments in FFG

Our analysis of USDA’s Rural Energy for America Program (REAP), which got a huge infusion of funds from the IRA, along with publicly available documents related to IRA tax credits, reveals that in 2023 alone, the IRA provided **over \$150 million in subsidies to biogas operations.**²³ Extrapolating from 2023 figures, we estimate that the IRA could channel **hundreds of millions of dollars in subsidies to factory farm companies over the next several years.**²⁴

The IRA allowed investment into FFG to qualify for renewable energy “Investment Tax Credits” or ITCs. FFG companies can take advantage of this and receive major tax breaks for investing in FFG projects, often at industrial dairies. Per a report from the Joint Committee on Taxation, the 2023 estimated value of these tax credits for biogas companies generally was \$100 million.²⁵

The IRA also provided nearly \$2 billion in additional funding to the existing Rural Energy for America Program (REAP), expanding its capacity to support numerous projects, including anaerobic digesters. While much of REAP’s funding supports truly renewable energy projects like on-farm solar and wind, our analysis of REAP grant data obtained via FOIA revealed a dramatic spike in biogas-related investments post-IRA. According to our review, **2023 set a record for REAP grants awarded to biogas and anaerobic digesters, reflecting a roughly 2,600 percent increase from 2022 to 2023.** The infusion of money into REAP via the IRA also made it possible for FFG producers to access government-backed loan guarantees to build digesters. These loan guarantees are critical since they lower the financial risk to private investors, who might otherwise shy away from these businesses.



USDA Grants for Biogas and Anaerobic Digesters

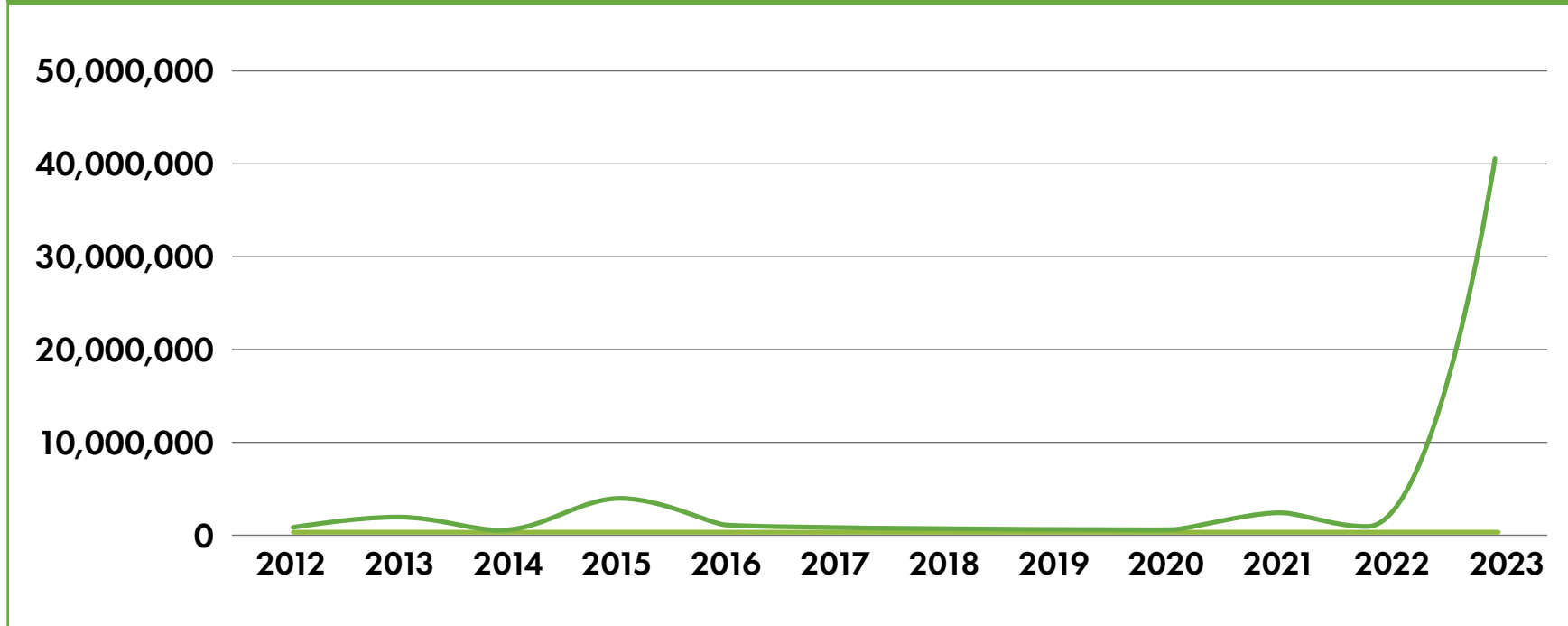


Figure 1: USDA Grants to Biogas and Anaerobic Digester Projects from 2012 to 2023, per our analysis of the REAP grants obtained via FOIA request.

Further, since the passing of the IRA, among REAP grant recipients FFG producers disproportionately benefit from access to the largest grants (\$1,000,000). Our analysis of FOIA records also showed that **REAP grants to biogas-related projects were roughly 40 percent of the highest-value REAP grants from 2012 to 2023**. This is despite relatively few REAP grants being provided for FFG pre-IRA.



Largest REAP Grants by Category 2012-2023

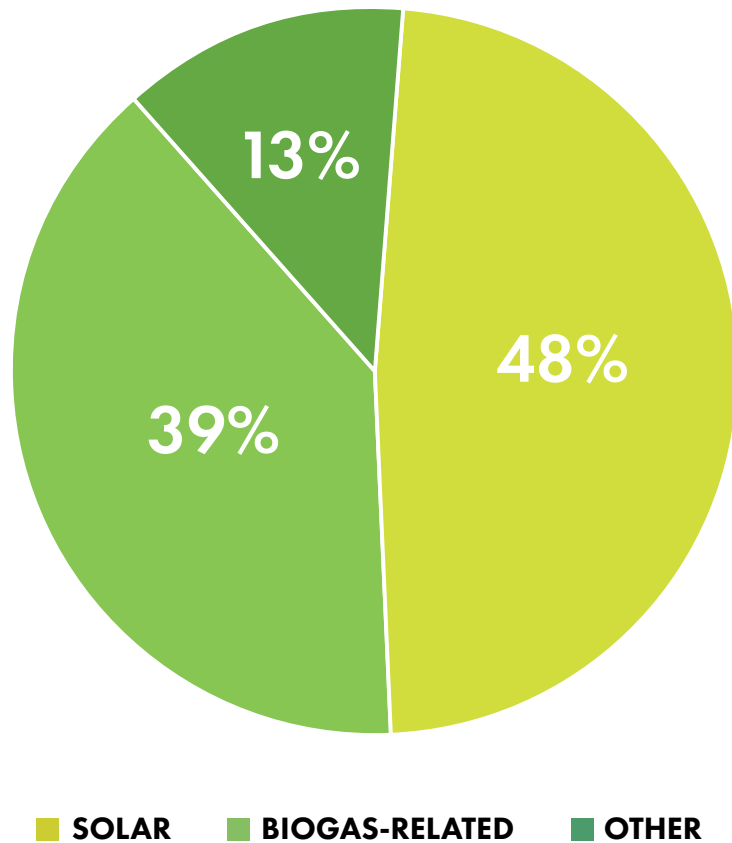


Figure 2: Proportion of top REAP grants by category per our analysis of the REAP grants obtained via FOIA request.

Private Investment Exacerbates the Problem

Coinciding with these unprecedented investments from public programs, private industry has invested heavily in FFG in recent years. These corporate investments are often accompanied by lobbying efforts aimed at shaping climate policy to favor FFG. The primary lobby of the biogas industry, the American Biogas Council, features meat companies like Smithfield in its membership, as well as fossil fuel companies like Shell.²⁶ By pushing for expanded subsidies and relaxed regulations, giant meat, dairy, and oil and gas companies ensure that government policies continue to support FFG projects, effectively locking in public funding for self-serving enrichment.

The year after the passage of the IRA, 2023, saw **record private investments into FFG, nearly \$750 million.**²⁷ Investments in FFG are growing nearly three times faster than in biogas produced from landfills.²⁸ It's also notable that Shell's²⁹ and BP's³⁰ announced acquisitions of other biogas companies happened just months after the passage of the IRA. Food and Water Watch notes that **these acquisitions cost around \$6 billion**³¹ and that "Before 2017, not a single one of these companies used the terms 'biogas' or 'renewable natural gas' in any of their corporate sustainability reports."³² This indicates that the FFG boom is relatively new—and that the new pro-FFG policy appears lucrative to big corporations. FFG is also, of course, highly deceptive. Presumably, public tolerance for this use of taxpayer dollars is related to the misperception that an environmental good is being achieved.

The Case of Aemetis, Inc

Agricultural biogas company Aemetis, Inc. provides a concrete case illustrative of the scale of private investment. In 2023, it announced "the receipt of \$53 million of cash, after transaction costs and buyer discount, from the sale of \$63 million of Inflation Reduction Act (IRA) investment tax credits" for dairy RNG projects.³³ It also notes that it expects to take advantage of more than "\$800 million of IRA investment and production tax credits during the next four years to support our biogas projects, CO₂ re-use by our ethanol plant, the construction of our sustainable aviation fuel plant and CO₂ sequestration."³⁴ In 2023, Aemetis also benefited from a \$25 million loan guarantee from the federal government—meaning that if Aemetis defaults on its debt, taxpayers will be left holding the bag.³⁵ In 2024, Aemetis announced it had "an additional US \$100 million of 20-year, USDA-guaranteed, REAP loan financings ... in process, with planned closings during 2024."³⁶





GASLIT BY BIOGAS: BIG AG'S REVERSE ROBIN HOOD EFFECT

Subsidizing the Worst Offenders

Subsidizing the Worst Offenders

The US agricultural system, particularly the dairy industry, has long been critiqued for its elimination of independent farmers in favor of corporate consolidation.³⁷ These troubling patterns are being exacerbated by the introduction of expensive “green” technologies such as anaerobic digesters and FFG production.

Subsidies for FFG digesters are going to the very largest dairy operations—the beneficiaries of the “reverse robin hood” effect. Indeed, given their financial and physical structures, anaerobic digesters only make sense on the largest and most polluting factory farms.³⁸ Recent dairy farms adopting digesters are some of the most massive on Earth, averaging between 4,000 and 7,000 animals.³⁹ To put this number in perspective, only about 6 percent of US dairies have more than 1,000 animals.⁴⁰ In 2022, the average American dairy herd had 337 cows.⁴¹ These numbers make clear that biogas subsidies are favoring the biggest and worst actors in agriculture.

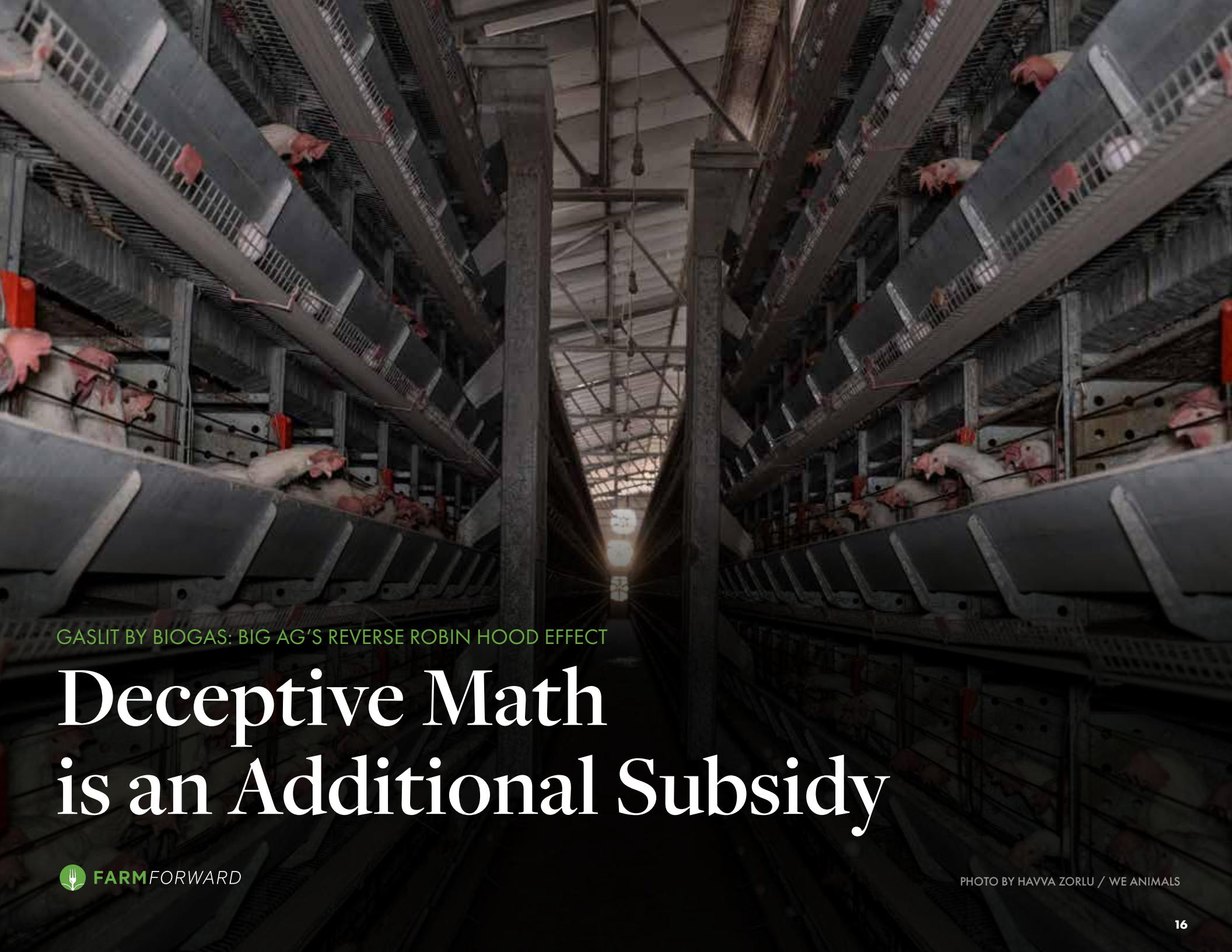
On the state level, we reviewed data from three years of grant funding from California’s Dairy Digester Research and Development Program, which provides grants for installing dairy digesters. Of those with available data via the EPA’s AgStar Database, we found that 100 percent of grants from 2015-2018 were to operations with digesters fed by cow populations so massive they are inherently polluting.⁴² The dataset had an average of **around 7,500 cows per digester**. We reviewed the Argonne National Lab’s database⁴³ of anaerobic digesters and found that **every single pig digester that was captured in their database was “fed” by pig populations so large they are inherently polluting**.⁴⁴ For biogas operations connected to pig CAFOs, the size of the population supplying the manure ranged from a massive 14,150 animals to a mind-boggling 79,500 animals per digester operation.

In sum, FFG incentivizes the maintenance and growth of large, intensively confined groupings of animals. **FFG functionally locks in the largest-scale factory farms and the most confinement-oriented practices.**



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Deceptive Math is an Additional Subsidy

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Big Ag makes anaerobic digesters appear functional not only by subsidizing the cost of their installation with public dollars (see above “Unprecedented Subsidies for FFG”)—funding that flows to the worst polluters (see above “Subsidizing the Worst Offenders”)—but by making the manifestly absurd claim that the costly and inefficient process of converting cesspool emissions into fuel actually produces the most efficient fuel on the market.

Through regulatory capture, factory farms have managed to create an upside-down system of carbon credit accounting that categorizes factory farm gas as carbon negative. That is, after getting the public to pay for the infrastructure of digesters, Big Ag has manipulated the accounting—using deceptive math—to make the polluting nature of factory farming show up in accounting as if it’s benefiting the environment. This allows polluters to claim valuable carbon credits. Digesters—which are purely a way for the industry to profit from greenwashing—end up not only being paid for by taxpayers but become an **indefinite source of revenue for industry.** The scale of the absurdity is monumental: the public is paying an industry claiming that magical machines make cesspools a solution to climate change. Let’s look at the details of how this trickery is made plausible.

Consider California’s LCFS

The clearest case of how the government artificially props up the FFG market through dubious carbon accounting is California’s Low Carbon Fuel Standard (LCFS). The LCFS program relies on a fundamentally flawed methodology that perversely rewards FFG as a climate solution. Through the program’s carbon intensity scoring system, **FFG is classified as carbon negative, earning it more credits than any other fuel in the market,** including those generated from landfills and wastewater.

This creates a perverse incentive: the more factory farms continue with the long-criticized practice of massive open cesspools, the more “environmental credits” can be generated. Major polluters like Chevron and Dominion Energy can then purchase these credits to offset their own emissions, leading to the greenwashing of the energy as well as the farming sector.⁴⁵ **For example, Dominion Energy claims it can achieve complete carbon neutrality for 96% of its fossil gas operations by injecting just 4% “renewable**

natural gas” into its pipelines.⁴⁶ The LCFS functions to legitimate such manifestly absurd claims by providing the motivated mathematics that treats FFG plants—plants that inefficiently convert gases emanating from massive cesspools—as highly efficient.⁴⁷ It’s a lie in mathematical form.

The LCFS has proven extremely profitable for industry players, generating over \$1.26 billion for FFG producers since its inception.⁴⁸ One third-party market verifier described it as “striking gold.”⁴⁹ Credits for FFG are an increasingly important part of the economics of the dairy industry. For example, on an industrial dairy, a single cow produces roughly \$5,000 worth of milk a year, but the fuel credit each cow earns can be \$1,800 per year;⁵⁰ increasing the value of each animal by 36 percent. In sum, a deceptive system of massively overvaluing carbon credits from FFG rewards greenwashing with massive profits.





GASLIT BY BIOGAS: BIG AG'S REVERSE ROBIN HOOD EFFECT

Doubling Down on Digester Deception

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Farm Forward isn't alone in our critique that public subsidies for FFG enable a reverse Robin Hood effect—members of Congress are, too. In February of 2024, 15 members of the U.S. Senate and House, including Senators Cory Booker (D-NJ) and Representative Alma Adams (D-NC), sent a letter⁵¹ to the Secretary of Agriculture, Tom Vilsack, expressing concerns regarding USDA's decision to allow FFG to qualify for conservation funding under the IRA.⁵²

These lawmakers argued that including FFG would “further consolidate the agricultural sector by **rewarding the largest firms and incentivizing farmers to increase herd size** in order to generate more manure” [emphasis added]. They also pointed out that incentivizing “resource intensive industrial practices that disproportionately harm disadvantaged communities” contradicts the IRA's attempt to lower greenhouse gas emissions and address environmental injustice.

In Secretary Tom Vilsack's response to the congressional letter, dated February 27th, 2024, which Farm Forward acquired via FOIA request, USDA doubled down on FFG. He stated, “USDA also ensures activities supported by its programs do not result in harmful localized impacts by supporting voluntary farmer-implemented conservation and ensuring public safety and environmental performance.” Secretary Vilsack must know that his assurance that FFG won't negatively impact local environments or public health holds no water. Reports and peer-reviewed research published by his own department⁵³ document the extensive harms of CAFOs, which FFG bolsters. It's clear that Secretary Vilsack is more interested in enabling the dairy industry with subsidies than protecting the climate or the water and air of agricultural communities.

Secretary Vilsack's position on FFG is unsurprising given his long history and potential future role as a Big Ag lobbyist. Between serving as Secretary of Agriculture for the Obama and Biden administrations, he was paid roughly \$1,000,000 a year as the head lobbyist for Dairy Management Inc., an industry trade group.⁵⁴ Vilsack's embrace of FFG is not a USDA aberration in recent Democratic administrations; the Biden White House, for example, worked with industrial agriculture interests and FFG proponents in the development of the 2021 Methane Emissions Reduction Action Plan, which relied heavily on funding anaerobic digesters to reduce methane emissions from agriculture.⁵⁵



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GASLIT BY BIOGAS: BIG AG'S REVERSE ROBIN HOOD EFFECT

Conclusion

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The solutions to factory farming's climate impacts are well known. Greenwashing factory farming with perverse incentives won't cut it. Propping up animal factories with public money won't cut it. Instead, we must reduce our reliance on animal-based foods and move to models of raising animals that leverage the best of traditional husbandry and complement them with modern science and technology. By doing this, we can move to reduce the many health and environmental risks and harms associated with large-scale animal agriculture.

At the federal level, we should push to pass legislation like the Industrial Animal Conversion Act, the Farm System Reform Act, and the Industrial Agriculture Accountability Act, which all chart the forward path of investing in farmers and ranchers as they transition away from industrial animal agriculture.

Farm Forward is not, in principle, against biogas. Perhaps there's a world where some focused and careful uses for the technology are perfectly compatible with a much more sustainable future. Our problem is not with the *idea* of using waste for energy but how we see it *manifesting*: **massive subsidies, little oversight, factory farm expansion, and industrial profiteering.** We object to a large-scale *doubling down* on a model—the CAFO model—that puts the climate and public's health at risk. Incentivizing and deregulating CAFO manure production puts us on the wrong path. Accordingly, the United States is undergoing a form of climate contradiction: on the one hand, genuinely promising ideas, policies, and initiatives at the federal and state levels could help move the US away from a model of runaway industrial animal farming and toward a more sustainable and humane system. On the other hand, the US is continuing the long tradition of propping up factory farms through tax incentives, credit trading schemes, and other subsidies. **It's time we end this reverse Robin Hood effect and support a better path forward.**

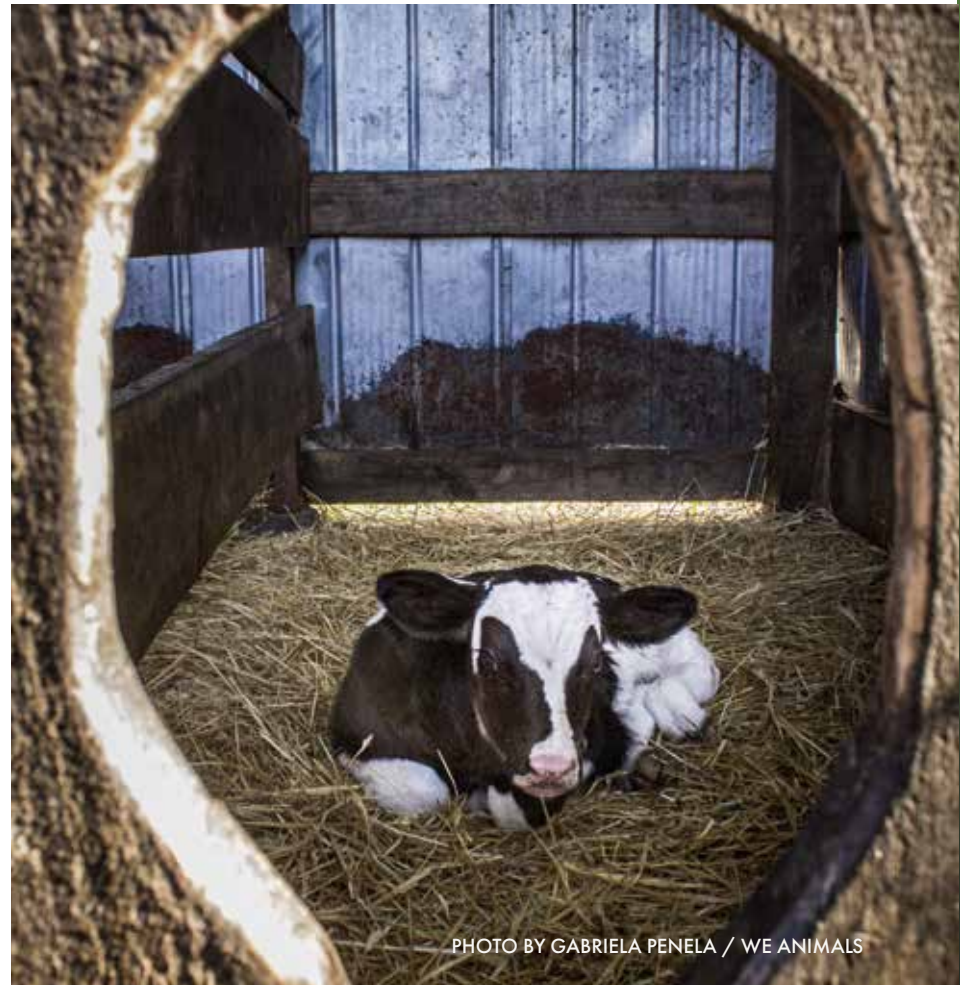


PHOTO BY GABRIELA PENELA / WE ANIMALS



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