

The Low Carbon Fuel Standard:

Unintended Consequences and Missed Opportunities



COMMUNITIES
FOR A BETTER
ENVIRONMENT
established 1978



The Cleanest Fuel?

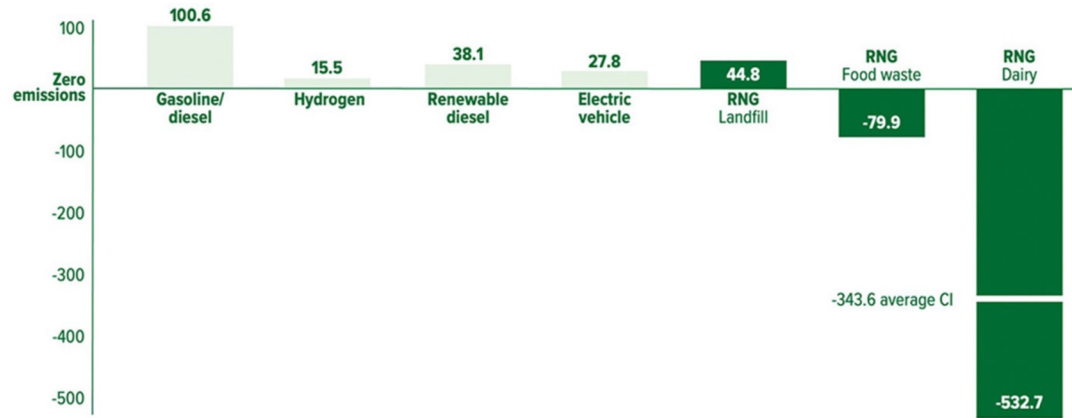
According to the LCFS, factory farm gas is the lowest carbon fuel

By the Terms of the Low Carbon Fuel Standard, Factory Farm Gas Appears Clean and Cleaner

RNG is the lowest carbon alternative fuel



Carbon emission by fuel type (gCO₂e per MJ)



Source: California Air Resources Board, Q4 2021 LCFS data, and certified pathways as of April 19, 2022.

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In fact, we are now seeing carbon intensity scores for factory farm gas that are *lower than negative 750!*

However...

Avoided Methane in the LCFS

Faulty assumptions, perverse incentives,
harmful rewards



A Flawed Baseline and Inaccurate Assumptions

Carbon negativity relies on several faulty assumptions:

Liquid manure management systems are a necessary component of dairies

(When dry manure management prevents creation of methane in the first place and liquid manure management systems—as opposed to dry—are a relatively recent profit-maximizing development in the industry)

Livestock methane will not be regulated

(When in fact CARB has the authority to regulate livestock methane starting on January 1, 2024)

The only option other than converting methane from wet manure into gas is to vent the methane into the atmosphere.

(“If the methane can be captured for RNG production, it can be captured for diversion to a flare, and it is unrealistic to assume that capturable methane would be vented under a GHG conscious policy regime.” (Grubert, 2020))

Overcounting Alleged Emissions Reductions

Double counting and counting reductions that would have happened without LCFS incentives



Avoided Methane Crediting Double-Counts Alleged GHG Reductions

Dairies Participating in LCFS Fuel Pathways		Carbon Intensity	Approximate Herd Size	DDRDP Grant
K & M Visser	Pixley	-417.35	9,600	\$1.5 million
Riverview	Pixley	-417.27	7,300	\$1.32 million
Little Rock	Tipton	-418.9	6,700	\$2.1 million
4K	Pixley	-392.44	9,000	\$1.78 million

Most digesters in California that participate in the LCFS were *also* funded by taxpayer and ratepayer funds:

- Dairy Digester Research and Development Program (GGRF and General Fund)
- Aliso Canyon Mitigation Settlement
- CPUC ratepayer funds and cap and trade account
- California Energy Commission

Digesters Were Already Installed, Digesting Manure

Dairy	Carbon Intensity	County	Year Digester Operational	LCFS Credits Certified
ABEC Bidart-Old River LLC Dairy Farm	-562.5	Kern	2013	2021
Coronado Dairy Farm	-525.14	Tulare	2017	2020
Hilarides Dairy	-758.46	Tulare	2004	2021
Open Sky Ranch Dairy	-352.89	Fresno	2016	2019
Van Steyn Dairy	-630.72	Sacramento	2015	2019
Van Warmerdam Dairy	-592.68	Sacramento	2013	2019
Verwey-Madera Dairy Digester	-758.4	Madera	2017	2023

Many LCFS participants were digesting manure from manure lagoons prior to their participation in the LCFS (meaning “methane capture” was an existing practice and the LCFS provides no new emissions reductions)

Undercounting of GHG Emissions from Livestock Gas

CARB's life cycle greenhouse gas assessment of factory farm gas leaves out significant climate impacts

The LCFS Ignores GHG Emissions Associated with the Production of Factory Farm Gas

CARB's calculation of lifecycle GHG emissions from the production of factory farm gas only includes methane emissions from manure in lagoons pre digestion - as if manure lagoons were the beginning and end of the story of GHG emissions from manure.

Exclusion of upstream emissions:

e.g. enteric emissions, feed production

Exclusion of downstream emissions:

e.g. post digestion methane emissions from stored manure and nitrous oxide from applied digestate

Note: research shows there is *more* nitrous oxide emitted from digested manure than undigested manure

ENVIRONMENTAL RESEARCH LETTERS

LETTER • OPEN ACCESS

At scale, renewable natural gas systems could be climate intensive: the influence of methane feedstock and leakage rates

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An EJ Disaster

Are we A-OK with ongoing & worsening pollution in the San Joaquin Valley?

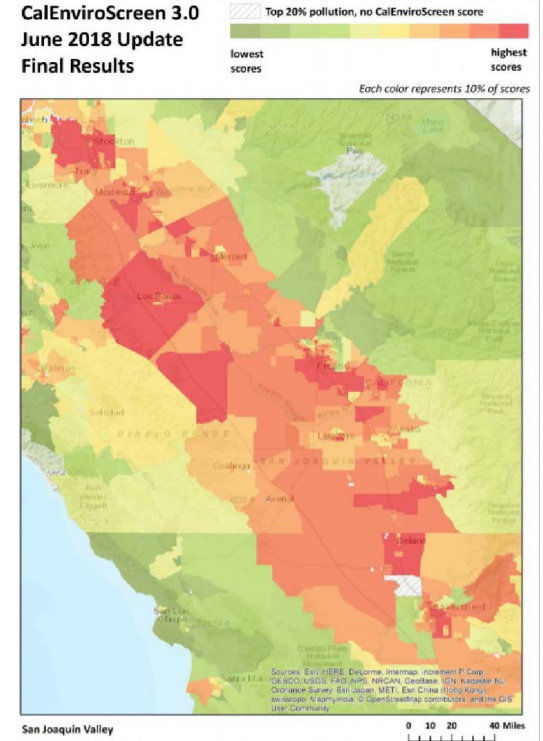
Production of Manure for Fuel Negatively Impacts Vulnerable Communities of Color

Nitrate pollution in drinking water leads to birth defects, blue baby syndrome, diabetes, bladder and ovarian cancer

Nitrate is a leading cause of eutrophication of streams and lakes, endangering wildlife and community access to water

Air pollution from large livestock operation causes severe health harm and even death. Ammonia from livestock kills over 1,000 people a year in the San Joaquin Valley alone

Odors and flies create severe mental and emotional distress in part because people cannot enjoy being outside



Digesters depend on the same management strategies (confinement, consolidation) that cause human and planetary harm.



The New York Times



[PLAY THE CROSSWORD](#)

They Grow the Nation's Food, but They Can't Drink the Water

Manufacturing Manure: a Money Making Venture

Lavish subsidies distort the dairy industry and favor massive livestock operations

HOARD'S DAIRYMAN

"The profit generated by manure and energy is a new dynamic... The profits from manure-generated energy could likely exceed the profit from milk. **At that point, milk has become the by-product of manure production.**"

– Michael McCully
Dairy industry consultant



"Generous subsidies for dairy-derived methane... **could persuade dairies to expand.** This is particularly worrisome because cows also release methane during digestion, and **those emissions can't be captured.**"

– Aaron Smith
UC Davis economist

SCOOP

THE
Solutions For The Farmer's Advisor

"[I'm] seeing some of the most innovative dairy producers across the country who are less than two years away from **making more money off the carbon contracts they sell than the dairy products they produce.**"

– Jeff Simmons
Elanco president and CEO

The Guardian

"Once you pay a cattle producer for their manure, you are effectively subsidizing the production of that manure. **You've altered the economics of cattle production.**"

– Richard Plevin
UC Berkeley researcher

"...**revenue from methane capture alone** could, in some cases, make up **almost 40% of total profits** for mid- and large-sized dairy farms in California... this could end up incentivizing farms to **increase herd sizes to produce more manure.**"

– Kevin Fingerma
California State Polytechnic University, Humboldt

Environmental Research Letters

LETTER

At scale, renewable natural gas systems could be climate intensive: the influence of methane feedstock and leakage rates

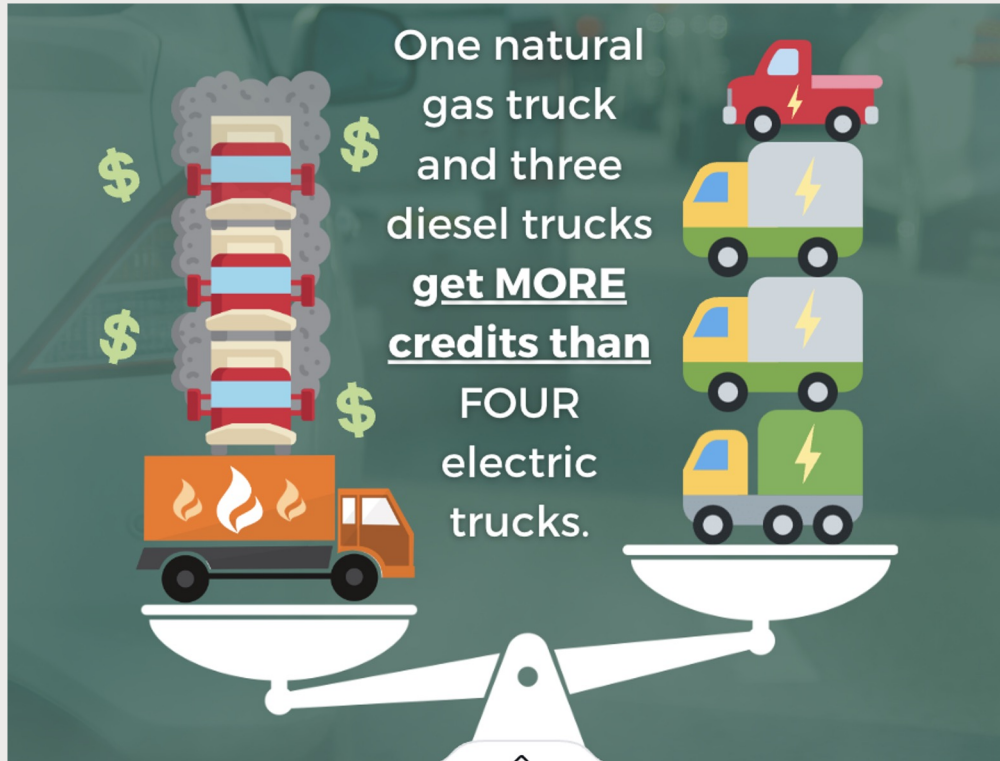
Emily Grabert

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digestion process does not completely convert carbon wastes to methane. Rather, digestion produces biogas, a blend of methane and CO₂ that can then be upgraded into near-pure biomethane, a form of RNG. **Crucially, in part because biogas and biomethane can generate revenue, it is not only possible but expected to intervene in biological systems to increase methane production beyond what would have happened anyway when there is an incentive to do so (Hijazi et al 2016, Ferreira et al 2019, Garcia et al 2019).** Thus, a single facility might produce both Path 1 (GHG-

Factory Farm Gas: The Cleanest Fuel?

Low carbon intensities mischaracterize factory farm gas as environmentally superior - thus more valuable - than EVs



“...natural gas engines are not lower emitting than diesel.”
-Paul Arneja, CARB
(In the Context of the Advanced Clean Fleet Rulemaking)

“Replacing just 25% of a fleet’s diesel trucks with negative carbon intensive RNG from dairy manure can reduce a fleet’s carbon emissions by 100%.”
Greg Roche, VP at Clean Energy Fuels

In Summary....

We're on the wrong path, but it's not too late to correct course



The LCFS as Currently Implemented:

Distorts the dairy industry by creating significant revenue streams for fuel derived from wet manure

Risks increasing air and water pollution (by rewarding increased methane production) and condones existing water and climate pollution from wet manure production and management

Undermines clean transportation goals

Jeopardizes climate goals (by over-counting alleged emissions)

Perpetuates environmental injustice throughout the state

Fixes:

- Discontinue credit for avoided methane venting, starting on Jan 1, 2024
- Prohibit livestock gas producers from producing LCFS credits for emissions reductions that would have occurred without LCFS subsidies (digesters were already installed and / or other funds have paid for the same emissions reductions)
- Consider all greenhouse gases emitted in the process of producing factory farm gas
- Prohibit livestock operations that participate in the LCFS from growing their operations to capture more credits
- **Initiate rulemaking to address methane emissions from livestock**