



December 21, 2022

VIA ELECTRONIC FILING

Cheryl Laskowski
California Air Resources Board
1001 I Street
Sacramento, California 95814

Re: Low Carbon Fuel Standard November 2022 Workshop

Dear Dr. Laskowski:

The Coalition for Renewable Natural Gas (RNG Coalition) is a California-based nonprofit organization representing and providing public policy advocacy and education for the Renewable Natural Gas (RNG) industry.¹ We advocate for the sustainable development, deployment, and utilization of RNG, so that present and future generations have access to domestic, renewable, clean fuel and energy in California and across North America.

RNG Coalition respectfully submits these comments to the California Air Resources Board (CARB) in response to the Low Carbon Fuel Standard (LCFS) workshop held on November 9, 2022 (the Workshop). As we've long stated, the LCFS program has been a key driver of growth in the RNG industry, and we appreciate CARB's commitment to continuous improvement of the underlying regulatory framework—both overall and with respect to the program's RNG-specific features.

Unfortunately, some of the RNG-related concepts raised by CARB staff at the Workshop have created significant uncertainty that is beginning to undermine investments in greenhouse gas (GHG) reduction based on the LCFS (including, but not limited to, RNG projects). We recommend that CARB swiftly correct any misperception of these issues and restate a commitment to RNG development as a key low carbon fuel and methane abatement strategy.

Sincerely,

/S/

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Policy Driven Markets Like the CA LCFS Will Fail to Attract Investment if Regulators Create a Track Record of Uncertainty and “Stroke of the Pen” Risk

Given the almost decade-long history of LCFS credit being awarded to RNG projects from across North America and across a variety of feedstocks,² we were very surprised to see potential modelling scenarios floated at the Workshop that would imply significant shifts in the LCFS’s crediting framework for RNG as early as 2025. The changes hinted at in the Workshop have the potential to slow or halt a wide swath of RNG project investments, put already operating projects into bankruptcy, and increase greenhouse gases by at least one million metric tons CO₂e per year.

If CARB proceeds down this path, it will undermine prior efforts to convince investors to make long-term capital deployment decisions based on LCFS credit value. For the initial years of the LCFS, prospective low carbon fuel producers included anticipated credit revenue in financial models and the investors would ignore or heavily discount the LCFS line item, due to perceived change in law risk (colloquially called “stroke of the pen” risk).

As the regulatory framework for the program was stabilized, a track record of LCFS credits providing real value was established—and because the program has been operated by CARB since 2011 with the fundamental principle of trying to encourage investment in low carbon fuels—investors became more confident that the program could be relied upon, even in the face of volatile credit pricing.

Agricultural RNG projects are a clear example that tests the thesis that investments based primarily on LCFS revenue—and GHG emission reduction benefits in general—is a feasible business model. Agricultural RNG development is the first major low carbon fuel industry built primarily around the LCFS program.

As described in more detail below, prior to receiving avoided methane credit through the LCFS dairy digester to RNG development was extremely limited. The casual nature with which CARB staff raised the potential of dramatically altering LCFS crediting to such RNG projects at the workshop is extremely troubling. These projects are heavily dependent on LCFS revenue for profitability. Eliminating all credits in 2025 for some projects, as was implied at the workshop, would create a negative case study that would raise significant concerns for anyone contemplating making investments based on the LCFS.

Investor confidence in the program can easily be reversed and, once lost, is not easily recovered. We strongly caution CARB against any arbitrary and capricious “stroke of the pen” actions in the forthcoming rulemaking.

² Imported RNG from “non-Western” projects has played a role in the CA LCFS since at least 2013. Some of the early projects were sited in Texas, Michigan, and Tennessee. For example, see: <https://www2.cleanenergyfuels.com/release-archive/clean-energy-becomes-the-first-ever-commercial-distributor-of-transportational-fuel-made-from-waste>

Avoided Methane Crediting Makes Agricultural RNG Projects Possible, Incentivizes Maximum Greenhouse Gas Capture During RNG Production

Importance of Methane Reduction to Addressing Climate Change

The critical need to address methane as a potent short lived climate pollutant was well stated in CARB's 2017 Short Lived Climate Pollutant Reduction Strategy:

The science unequivocally underscores the need to immediately reduce emissions of short- lived climate pollutants (SLCPs), which include black carbon (soot), methane (CH₄), and fluorinated gases (F-gases, including hydrofluorocarbons, or HFCs).³

California is not the only governmental body that is prioritizing methane emission reductions. Short Lived Climate Pollutant reduction, of which methane is the most prominent, has risen to the top of the climate protection agenda around the world. Some examples include:

Global Methane Pledge:

Rapidly reducing methane emissions from energy, agriculture, and waste can achieve near- term gains in our efforts in this decade for decisive action and is regarded as the single most effective strategy to keep the goal of limiting warming to 1.5° C within reach while yielding co-benefits including improving public health and agricultural productivity.⁴

UNEP Global Methane Assessment:

According to scenarios analysed by the Intergovernmental Panel on Climate Change (IPCC), global methane emissions must be reduced by between 40–45 per cent by 2030 to achieve least cost-pathways that limit global warming to 1.5° C this century.⁵

Reducing human-caused methane emissions is one of the most cost-effective strategies to rapidly reduce the rate of warming and contribute significantly to global efforts to limit temperature rise to 1.5°C.⁶

International Energy Agency (IEA)

Tackling methane emissions is one of the most significant opportunities available for limiting the near-term effects of climate change. Reducing methane has a major and immediate climate benefit.⁷

³ CARB. Short-Lived Climate Pollutant Reduction Strategy. March 2017. Page 1, Executive Summary.

https://ww2.arb.ca.gov/sites/default/files/2020-07/final_SLCP_strategy.pdf.

⁴ <https://www.globalmethanepledge.org/>

⁵ UNEP Global Methane Assessment. Summary for Decision Makers. 2021, Executive Summary, p.6.

https://wedocs.unep.org/bitstream/handle/20.500.11822/35917/GMA_ES.pdf.

⁶ UNEP Global Methane Assessment (full report). 2021. Executive Summary, p. 8.

<https://www.ccacoalition.org/en/resources/global-methane-assessment-full-report>.

⁷ IEA. Curtailing Methane Emissions from Fossil Fuel Operations: Pathways to a 75% cut by 2030. October 2021. Page 10. <https://www.iea.org/reports/curtailing-methane-emissions-from-fossil-fuel-operations>.

US Environmental Protection Agency (EPA):

Because methane is both a powerful greenhouse gas and short-lived compared to carbon dioxide, achieving significant reductions would have a rapid and significant effect on atmospheric warming potential.⁸

Environmental Defense Fund:

Cutting methane emissions is the fastest opportunity we have to immediately slow the rate of global warming, even as we decarbonize our energy systems.⁹

The rationale for this uniform urgency to achieve methane emission reductions is simple: multiple international, national, and state authorities recognize that methane emission reduction is the best, most cost effective, near-term GHG reduction strategy that can create significant climate benefits in the next few decades.

Methane emission reduction is also critical considering that the concentration of methane in the atmosphere is increasing at an alarming rate.¹⁰ There is no more effective and immediate step we can be taking as a planet to address climate change now than to aggressively and rapidly reverse emissions of fugitive methane from all sectors, including society's organic waste streams.

EPA AgStar Data Shows Clear LCFS-Driven Project Growth, Clean Fuel Production, and Methane Reduction Benefits from Agricultural RNG Projects Across the US

Investment in manure digesters with productive energy use is one of the most effective and readily available opportunities to achieve immediate fugitive methane emissions reductions from agricultural projects. It should be considered a best management practice for methane reduction not only for that immediate benefit, but also because of its ability to produce a low carbon fuel that can be used to displace fossil fuels.

The US EPA has been tracking and attempting to incentivize digester installation with productive energy use since the inception of the AgStar program in 1994. California efforts to install dairy digesters dates back (at least) to 2002 and the first round of funding for the California Energy Commission's Dairy Power Production Program. Twenty to thirty years since the initial serious exploration of this approach, AgSTAR estimates that while biogas recovery systems are technically feasible for over 8,000 *existing*¹¹

⁸ EPA Website, Importance of Methane. <https://www.epa.gov/gmi/importance-methane>

⁹ Environmental Defense Fund. *Methane, A crucial opportunity in the climate fight.* <https://www.edf.org/climate/methane-crucial-opportunity-climate-fight>.

¹⁰ See "Increase in atmospheric methane set another record during 2021", National Oceanic and Atmospheric Administration, Press Release, April 7, 2022. <http://noaa.gov/news-release/increase-in-atmospheric-methane-set-another-record-during-2021>.

¹¹ We emphasize EPA's assessment of the number of *existing* farms that can support digesters to avoid unfounded concerns that avoided methane crediting somehow leads to expansion or consolidation of farms. Incentivizing anaerobic digestion as a clean fuel and manure management method does not incentivize manure production by dairy farmers or increases in herd size. Dairy RNG, especially at current transportation GHG market prices, generates only a small fraction of the gross revenue that is created by milk-sales. What is more, only a small share of that revenue goes to the farmer—the majority will be distributed to cover the costs of the digester developers, the gas marketer, the credit broker, end users (e.g., fleets adopting natural gas trucks), the investors, and the banks. The farmer does not make enough additional revenue from biomethane to justify increasing herd size.

large dairy and hog operations across the US, currently only 331 manure-based anaerobic digestion systems are installed and reducing methane emissions.¹²

For a long time, deployment of anaerobic digestion at farms was stalled (2013-2018), and methane emissions continued unabated, because government incentives were not sufficient to motivate new project development. Avoided methane crediting in the LCFS has clearly restarted growth in such projects and achieved millions of metric tons of emissions reductions since 2019, as can be observed from the US EPA AgStar data shown in Figure 1.

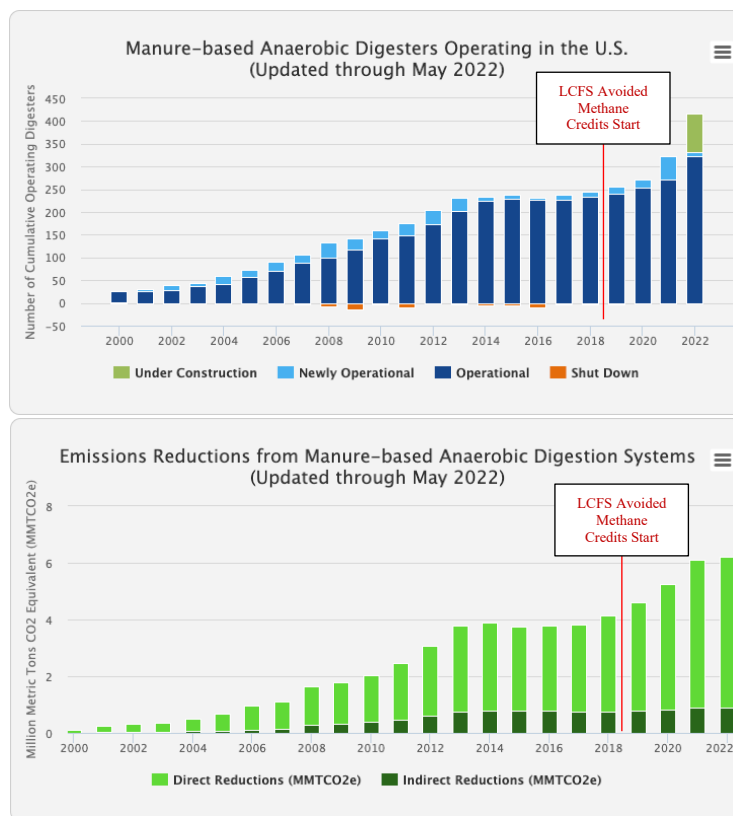


Figure 1. Growth in Ag Digesters and Methane Reductions due to CA LCFS is Clear from US EPA AgStar Data

Avoided Methane Crediting Should Continue in LCFS Unless and Until a Realistic and Proven Replacement Strategy is Implemented

At the Workshop, CARB staff did not fully explain why a phase-out of avoided methane crediting should be modeled. Section § 95488.9(f)(3)(B) of the current LCFS rule states that:

“...in the event that any law, regulation, or legally binding mandate requiring either greenhouse gas emission reductions from manure methane emissions from livestock and dairy projects or

However, the additional revenue from RNG production is critical to help defray the cost of an anaerobic digester to the farmers, produce clean fuel, and achieve reductions in methane.

¹² <https://www.epa.gov/agstar/agstar-data-and-trends>

diversion of organic material from landfill disposal, comes into effect in California during a project's crediting period, then the project is only eligible to continue to receive LCFS credits for those greenhouse gas emission reductions for the remainder of the project's current crediting period. The project may not request any subsequent crediting periods."

Almost all types of clean fuel production and emissions control technology come with a real cost that are higher than the status quo. "Economic leakage" in the environmental context occurs when a regulatory environment in one jurisdiction drives the migration of a key business sector to another region without similar regulations. This can lead to simply shifting the pollution location without any global reduction in GHGs. This is particularly likely to occur in markets with the demand for the product is steadily increasing, such as the dairy market.¹³ Although demand for liquid beverage milk is declining, and milk substitutes have emerged, US supply and demand for total milk products (both per capita and in aggregate) continues to grow.^{14,15}

These facts make it challenging for individual states, even large dairy states such as California, to require control of manure methane unilaterally. However, it is possible that a federal requirement to install digesters with productive energy use could occur in the timeframe considered in the workshop. Under the current rule this would appropriately trigger a phase-out of avoided methane crediting.

It is possible that such a federal mandate comes into effect in the 2030 timeframe. If that is what CARB meant to propose analyzing at the Workshop, we would support considering such a scenario. If CARB was intending to offer clarity to the RNG industry that avoided methane crediting phase out would not begin *prior* to 2030 but would still begin to sunset only upon the enactment of a law, regulation, or legally binding mandate requiring greenhouse gas emission reductions from manure methane emissions from livestock, we would support modification of the regulatory text to make this clear.

However, we do not support changes to the regulatory text that would *require* phase-out of avoided methane crediting *without* a suitable replacement policy. If CARB pursue such a path the outcome is very likely to be a halt to project development and backsliding to freely venting methane at some farms.

Recognition of Methane Benefits of RNG Projects Diverting Organic Material from Landfills Should be Revisited and Expanded. The Ability to Increase Methane Capture Rates Through Landfill RNG Projects Should be Included.

Landfills provide an interesting counter example to compare the agricultural case with. Both CARB and US EPA have mandatory emission control requirements for landfills that help reduce methane emissions, yet recent research suggests that many landfills still contribute methane emissions at rates that are much higher than previously estimated. A 2019 study by the NASA JPL estimates that landfills' contribution to the state's methane emissions is double current estimates – approximately

¹³ Office of Environmental Farming and Innovation, California Department of Food and Agriculture, March 29th Workshop Presentation, Slide 3, Dr. Amrith Gunasekara, Manager.

¹⁴ USDA, *Dairy Products: Per Capita Consumption, United States (Annual)*, last updated 9/30/22.
https://www.ers.usda.gov/webdocs/DataFiles/48685/pconsp_1.xlsx?v=4825

¹⁵ USDA, *US Milk Production and Related Data*, last updated 8/15/22.
https://www.ers.usda.gov/webdocs/DataFiles/48685/quarterlymilkfactors_1.xlsx?v=4825

41% of all methane point source emissions in California.¹⁶ RNG Coalition and a wide swath of other stakeholders have been raising these issues with CARB for more than two years.¹⁷

LCFS can help address methane from organic waste handling through better recognition of the benefits of RNG projects that divert organics from landfills and into dedicated digesters. Better quantification of the methane benefits of avoided landfilling in the LCFS should be a key focus for CARB, rather than considering arbitrary dates for eventual sunseting of such avoided methane crediting. Similarly, recognition of projects that improve methane capture efficiency at landfills beyond regulatory requirements in the LCFS could help improve capture efficiencies of the methane that results from the waste in place at existing landfills.¹⁸

CARB Should Continue to Promote a Harmonized Market for RNG as the Fastest and Least Cost Way to Transition the North American Gas System to a Decarbonized System

California RNG Production Has a Greater Relative Market Share than In-State Production of Many Other Types of Energy

The amount of in-state RNG production has been increasing rapidly in California over the past few years and now enjoys a greater proportionate market share than many other types of energy. California projects can now supply >20% of the RNG used in California CNG/LNG vehicles and this share is up significantly compared to the period prior to the 2018 LCFS rulemaking (which clarified both book-and-claim rules and avoided methane crediting for RNG).

<u>California RNG Supply</u> ¹	<u>GGE/Year</u>
Food Waste	8,268,191
Landfills	1,789,000
Livestock	33,109,360
Wastewater	4,984,088
<i>Total</i>	<i>48,150,639</i>
<u>2021 CA Demand for CNG/LNG</u> ²	<i>210,971,712</i>
% of CA Demand Served by In-state Supply	23%
¹ https://www.anl.gov/esia/reference/renewable-natural-gas-database	
² https://ww2.arb.ca.gov/sites/default/files/2022-10/quarterlysummary_103122_1.xlsx	

¹⁶ Duren, R.M., Thorpe, A.K., Foster, K.T. et al. California’s methane super-emitters. Nature 575, 180–184 (2019). <https://doi.org/10.1038/s41586-019-1720-3>

¹⁷ See our LCFS Workshop comment letter dated November 5, 2020 and Anaergia’s LCFS Workshop comments dated September 19, 2022 for examples.

¹⁸ For an example protocol evaluating the installation of an automated collection system that can increase landfill gas collection efficiency above that obtained with standard collection methods see: <https://americancarbonregistry.org/carbon-accounting/standards-methodologies/landfill-gas-destruction-and-beneficial-use-projects>

This >20% CA supply is a larger share than the approximately 9% of liquid biofuels that come from in-state production facilities (many of which source feedstock from outside of CA).¹⁹ In contrast to RNG, the share of in-state liquid biofuel production has *decreased* in the past few years.

Imported energy clearly serves an important role for California across many conventional fuels as well. For example, about 90% of California’s conventional natural gas is imported.²⁰ Approximately 70% of crude oil is imported.²¹ On the order of 30% of electricity is imported²²—one of the largest import shares of any state,²³ and much of the in-state electricity production is created through use of imported conventional gas.

Given that California clearly benefits from broad markets from other types of energy and the recent trend toward significant increases of the in-state supply of RNG, we question why CARB would suddenly want to eliminate eligibility in 2025 for non-Western RNG projects. The argument for not doing so and continuing to allow out-of-state supply for RNG is the classic “gains from trade” argument that holds for all fuels. It diversifies supply and gives California buyers access to a greater pool from which to try to find lower cost supply options.

The North American Natural Gas System is More Physically Integrated than the Western Electricity System

The Workshop slides raise the idea of harmonizing delivery requirements between electricity and RNG by limiting RNG supplies to the undefined “Western NG network”. We fail to see why this is warranted or desirable. The two energy carriers are produced and delivered in entirely separate ways, through independent infrastructure that is governed by separate physics, and are dispatched based on different market rules.

As shown in Figure 2, the gas system is more integrated across the country when compared to the electricity grid. Further, although the electric grid is comprised of three regions with limited interconnection between them, and the Western Interconnection in the electric system is more isolated than the gas system (see the gap in high voltage transmission spanning from Texas to Montana), transmission of even some electricity from east to west is possible. NREL and others have pointed out that increasing renewables would benefit from greater interconnection of the electric system.²⁴

In contrast to the physical limits on the Western power grid, the EIA Describes the U.S. Natural Gas Pipeline Network as a “highly integrated transmission and distribution grid that can transport natural gas to and from nearly any location in the lower 48 states.”¹ Pipeline capacity availability and prevailing directional flows on that system continue to shift over time to flexibly move gas from sources of supply to demand.

¹⁹ <https://ww2.arb.ca.gov/sites/default/files/2022-09/Fig10.xlsx>

²⁰ <https://www.energy.ca.gov/data-reports/energy-almanac/californias-natural-gas-market/supply-and-demand-natural-gas-california>

²¹ <https://ww2.arb.ca.gov/resources/documents/lcfs-crude-oil-life-cycle-assessment>

²² <https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2021-total-system-electric-generation>

²³ <https://www.eia.gov/todayinenergy/detail.php?id=46156>

²⁴ <https://www.nrel.gov/analysis/seams.html>

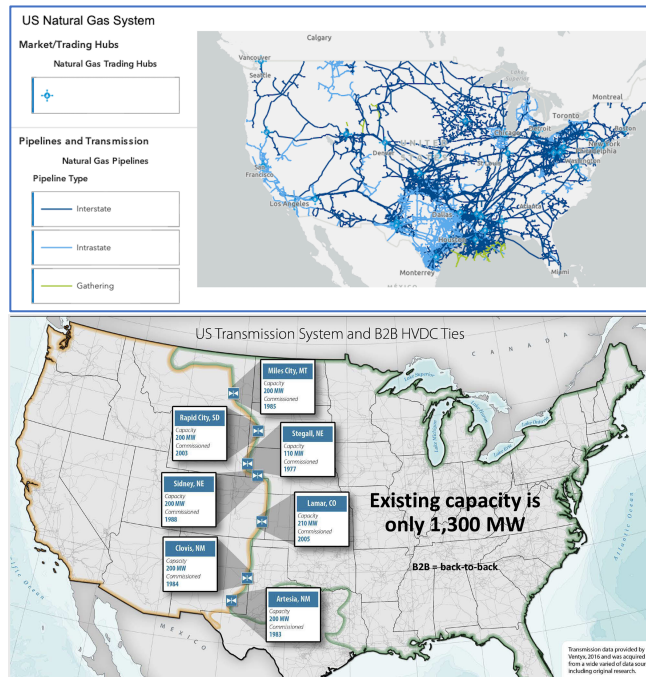


Figure 2. The US Natural Gas Grid and the Electric Grid have Different Geographic Coverage, Physics, and Market Rules.²⁵

There is no reason to treat the gas system as if it were the electric system or vice versa. There is currently a robust and liquid market for physical gas delivery across North America. That market already optimizes moving gas from supply to demand in a least cost (and lowest GHG)²⁶ fashion. The conventional gas market did away with point-to-point service long ago and created trading hubs and flexible receipt and delivery points to give suppliers a variety of options for getting gas to market. Generally, price signals are sent, and liquid trading occurs where the gas is produced, traded, and consumed without having to track individual gas sources throughout the value chain.

Any successful framework for RNG must build off existing gas system realities, but it does not need to assume that the gas system is static or that RNG supply should be limited to regions that currently supply conventional gas to California. Repurposing existing natural gas infrastructure to rapidly deliver a blend of low-carbon fuels, including RNG, across North America will complement initiatives to cut demand for gas through expanding energy efficiency and electrification. This will surely also create large changes in the gas system and the map of the system today is unlikely to match the map of the system in 2040.

²⁵ Figure sources: <https://atlas.eia.gov/apps/3652f0f1860d45beb0fed27dc8a6fc8d/explore> and <https://www.nrel.gov/analysis/seams.html>

²⁶ Moving gas requires additional energy and emissions from compression stations and potential methane leakage. These factors are already correctly accounted for in the LCFS CI modeling, which assumes physical gas flow from source to sink, regardless of the ability to trace actual molecule path. This provides a fair and appropriate disincentive that recognizes GHG disbenefits of moving gas from projects located farther from California, all else equal.

Pipeline Injection into the Gas System Allows RNG to Be Shifted to Various Uses Over Time

At the workshop, staff expressed the opinion that the long-term best end use for renewable gases may prove to be outside of the transportation sector. While we feel that this conclusion may be premature—especially if it used as a justification to reduce RNG opportunities for LCFS crediting without creating analogous new incentives in other sectors—the use of the existing gas system does allow RNG to be a flexible resource that can be shifted over time toward end uses that prove difficult to decarbonize using other methods (e.g., electrification).

The RNG Coalition supports the sustainable development, deployment, and utilization of renewable gases from all available feedstocks, indiscriminate of the competing, sustainable technologies used, and for all sustainable end-use applications. Our members have historically seen the LCFS as a clear and stable incentive framework that allows them to build RNG production facilities and, as described above, this pipeline-interconnected supply can be shifted to whichever end use needs it most in the long-term.

It is ultimately policy decisions, in programs such as the LCFS, that determine where RNG will be used. Instead of limiting RNG supply, CARB should consider LCFS changes that broaden the opportunity to use renewable gases and increase the pace of decarbonization. For example, CARB could adjust the rules to expand the use of book-and-claim accounting to allow RNG to be used for process energy in biofuel production facilities serving California.²⁷ RNG could essentially be deployed as an input into making other fuels, as is already allowed—but in a limited way—through the Renewable Hydrogen Refinery Credit Program and other similar existing provisions of the LCFS.

Recently proposed changes from US EPA to the Renewable Fuel Standard²⁸ are also likely to enhance the incentive for the biogas/RNG resource to be used as a bio-intermediate into liquid fuel production, hydrogen, or for electricity generation for electric vehicle use. CARB should actively consider how shifting and overlapping federal RFS incentives fit with LCFS incentives on this topic.

Finally, Canada’s regulation²⁹ for a Clean Fuel Standard allows low carbon gaseous fuels—such as RNG and hydrogen—to generate credits relative to a conventional gas baseline *regardless of the end use of the gas*. The retirement of these credits by obligated parties is limited to up to 10% of their liquid class reduction requirement. This limited amount of gaseous fuel crediting allows for a more leveled incentive for RNG across all end uses and more strongly prioritizes development of the projects to ensure methane reductions in the near term.

The concepts above align with CARB’s stated desire from the Workshop related to shifting RNG supply away from direct use in natural gas vehicles (NGV). There is no need to eliminate NGV eligibility, CARB’s vehicle rules are already putting a damper on the growth in NGV deployment and RNG supply growth is outpacing growth in NGV demand.

²⁷ We recommend building this option into the Tier 1 calculators.

²⁸ <https://www.epa.gov/renewable-fuel-standard-program/proposed-renewable-fuel-standards-2023-2024-and-2025#:~:text=Additional%20Resources-,Rule%20Summary,and%20expand%20the%20RFS%20program.>

²⁹ Canada Clean Fuel Regulations: SOR/2022-140, Canada Gazette, Part II, Volume 156, Number 14, Section 15(2). <https://www.gazette.gc.ca/rp-pr/p2/2022/2022-07-06/html/sor-dors140-eng.html>

Guarantee of Origin Systems (Book-and-Claim) and Recognition of Avoided Methane are the Industry Standard in Europe

Because it is not possible to physically segregate delivery of renewable gas once it is intermingled with fossil gas in the pipeline system, other chain of custody methods must be utilized. “Book and claim” is a guarantee of origin concept that was pioneered in the European Union’s renewable fuel policies. Its advantages include lowering barriers between matching sources of renewable fuel production to demand centers.

Given the physics of how gases quickly intermix in pipeline systems, no feasible alternative exists to book and claim accounting for RNG. Requiring redundant RNG-only pipeline infrastructure and/or physically segregated trucking/rail of gas would clearly increase GHG emissions and the non-climate environmental impact of RNG delivery. Requiring an RNG developer to hold long-term firm pipeline capacity from production source to end use does not ensure that the renewable molecules flow in that path. Instead, it only adds an extra layer of cost because it does not allow market participants to take advantage of liquid supply trading hubs and pipeline displacement, which can bring transportation costs down significantly.

The renewable gas strategies of leading European countries, such as Denmark³⁰ which currently have around 40% RNG in their gas system (and expect to reach 100% by 2034), should be more closely studied by CARB as it relates to these issues. Denmark’s Green Gas Strategy prioritizes free trade of green gases across borders and states that:

When a biogas plant feeds biogas into the gas system, it is mixed with other gas. In the gas system, both biogas and natural gas are mixed to form a uniform gas. In order for the gas supplier to prove the origin of the gas supplied to the final customer, guarantees of origin are used. Energinet issues guarantees of origin, thereby ensuring that it can be documented that a consumed volume of gas is matched by an equivalent production of green gas. This system prevents double counting of renewable energy, allowing companies and other consumers to pay for green gas.

There is now a European-wide registry to track RNG volumes using the book-and-claim concept. The European Renewable Gas Registry (ERGaR) was established as an independent, transparent and trustworthy documentation scheme for tracking RNG and other renewable gases distributed along the European gas network.³¹ Recently there was also a €3 million EU-funded project known as REGATRACE³² to develop an efficient trading system based on the issuance and trading of Guarantees of Origin (GO) for RNG.³³ The final report³⁴ from this process contains the following statements:

³⁰ https://ens.dk/sites/ens.dk/files/Naturgas/groen_gasstrategi_en.pdf

³¹ <https://www.ergar.org/about-us/>

³² <https://www.regatrace.eu/>

³³ Given the recent gas crisis in Europe, the EU now plans to increase biomethane deployment to displace 17 bcm of gas imports in the short-term (approximately equivalent to all natural gas demand for power production in California). https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal/repowerEU-affordable-secure-and-sustainable-energy-europe_en

³⁴ https://www.europeanbiogas.eu/wp-content/uploads/2022/11/EN_Renewable-GAs-TRAdE-Center-in-Europe_WEB.pdf

The European Renewable Gas Registry (ERGaR) was started by and continues to be composed of long-established registries and stakeholders of the biomethane and renewable gas industry. A growing imbalance between biomethane production and consumption in several countries necessitated crossborder transfers. Individual bilateral solutions were established, but in most cases member states refused to grant any benefits to imported biomethane. As such, it has been in its best interest to create a system in which the cross-border transfer of gas certificates could be both technically facilitated and recognised in the target country.

GOs serve only for consumer disclosure, which means that the “green gas” attribute is separated from the gas physical volume. This model is called “book and claim” and is useful for setting the path to the European biomethane market because the GOs help document the volumes being produced, distributed and consumed.

Further, the primary clean fuel policy in Europe, the Renewable Energy Directive, has long recognized the avoided methane benefits when assessing the lifecycle carbon intensity of various RNG pathways.³⁵ Embracing the true GHG performance of RNG projects and allowing the use of book-and-claim have been a recipe for successful RNG project buildout in both the CA LCFS and EU cases. CARB should continue both of these practices.

Other North American Clean Fuel Programs are Following California’s Example

Following California’s example, book and claim is emerging as the preferred method to track RNG in analogous North American Clean Fuel programs. For example, the U.S. Renewable Fuel Standard,³⁶ the Canadian Clean Fuel Standard, the Oregon Clean Fuel Standard, and the Washington Clean Fuel Standard all use some form of book and claim for RNG projects as well as for electricity and hydrogen. Gas utility procurement programs for RNG also primarily use similar concepts.³⁷

Creating an overlapping and harmonized system that allows RNG to freely flow between these markets will maximize the ability of RNG to quickly deliver the needed methane reductions. (In part because a system of overlapping incentives reduces the “stroke of the pen” risk.) However, none of these emerging systems currently delivers the same value as the CA LCFS, therefore, continued California leadership is needed.

CARB Should Promote a Unified North American RNG Registry System

Given that Europe is expanding RNG trade, built on a clear guarantee of origin system (book and claim), one centralized registry (the European Renewable Gas Registry (ERGaR)), and the same conceptual

³⁵ See Table 100 in *European Commission JRC Science for Policy Report, Solid and Gaseous Bioenergy Pathways: Input Values and GHG Emissions*, 2017

<https://publications.jrc.ec.europa.eu/repository/bitstream/JRC104759/Id1a27215enn.pdf>

³⁶ <https://www.biocycle.net/biogas-rng-projects/>

³⁷ *Potential State Regulatory Pathways to Facilitate Low-Carbon Fuels*, National Association of Regulatory Utility Commissioners (NARUC) in Partnership with the U.S. Department of Energy, December 2022.

<https://pubs.naruc.org/pub/895485A7-1866-DAAC-99FB-2F331818510F>

principles that CA LCFS currently uses, we think North America can achieve the same objective if leading jurisdictions such as California continue to support such a framework.

It is a better outcome for the climate if we start by setting up one well-functioning North American system for RNG, rather than create unnecessary delays with balkanized programs (that likely must be consolidated at some point in the future, in line with the European experience).

The RNG Coalition continues to support development of one North American registry (analogous to ERGaR system) for tracking RNG production and end use to ensure no double counting of RNG volumes. The leading registry system tracking RNG and other forms of renewable thermal energy is the Midwest Renewable Energy Tracking System (M-RETS).³⁸ The use of M-RETS to supplement LCFS reporting would reduce administrative burden on CARB staff and offer California a chance to harmonize the design of such systems with other jurisdictions who are now undertaking similar RNG-supportive policies. Use of M-RETS aligns well with the existing RNG accounting methods in the LCFS.

CARB Should Not Change Book and Claim Rules, Should Model Potential Competition for RNG Supply

CARB's Workshop material does not articulate CARB's underlying reasoning that would prompt a need to shift RNG geographic eligibility,³⁹ making it hard to provide substantive input on these issues with respect to modelling assumptions or potential regulatory changes. The Workshop slide on book and claim accounting in Alternative A and B lacked sufficient detail to be able to determine which projects are at risk of not receiving LCFS credits⁴⁰ and the Workshop material was not internally consistent about what RNG supply would be modeled as available.⁴¹

As discussed above, we recommend no changes to the book and claim mechanism for tracking all use of renewable gases. The current framework supports the optimized growth of a North American RNG market and allows RNG to contribute to both California's GHG emissions reduction goals and leadership on climate issues. Non-Western US RNG facilities have made good faith investments in the range of tens of millions of dollars for each project, totaling hundreds of millions of dollars in aggregate, based almost entirely on the LCFS. These facilities are reducing millions of metric tons of CO₂e per year.⁴²

That said, it is likely that other state and provincial climate programs (including outside of the West) will emerge and create demand for RNG in the modelling timeframe, so if CARB feels the need to limit RNG

³⁸ <https://www.mrets.org/m-rets-renewable-thermal-tracking-system/>

³⁹ At the workshop it was unclear why Western RNG projects should be favored given that liquid alternative fuel supply is sourced globally. It was also unclear why landfill gas should only be allowed to produce hydrogen if it can demonstrate ongoing strong low-CI performance as RNG.

⁴⁰ No definition of "Western NG Network" was provided at the Workshop. The FAQ document published subsequent to the workshop does not explain what regions CARB believes "currently supply the majority of fossil gas to California".

⁴¹ No explanation was given as to why the RNG supply curves in the preliminary documentation for the California Transportation Supply Model appear to be California only (derived from Jaffe et al. (2016), which is limited to California projects), despite the Workshop slides indicating that all supply from the "Western NG Network" would still be eligible post 2025. In contrast, feedstocks supply curves for virgin and waste oils for liquid biofuel production in the model appear to be developed without specifying any geographic limits.

⁴² This is clearly observable in the AgStar dataset cited above.

supply in the modelling exercise to account for this potential Eastern competition,⁴³ we recommend doing so by assuming that California’s population-weighted share of North American supply potential is available.⁴⁴

CARB should focus on continued leadership on RNG development—working with other jurisdictions on expanding and harmonizing RNG market rules—rather than attempting to create an artificial “Western” regional balkanization of the North American gas system. Creating consistency and fungibility between all North American RNG markets will increase competitiveness and lead to the sustainable growth of the clean gaseous fuel industry.

Appropriate Guardrails in Credit Markets Increase Investor Certainty

The RNG Coalition supports the creation of credit-price-band mechanisms in tradeable environmental credit markets—both generally and as preliminary discussed by stakeholders at the Workshop for LCFS. Such features can increase investor certainty in credit markets.

We propose that, in addition to tightening the stringency of the LCFS to achieve a minimum 30 percent reduction by 2030, CARB initiate work with stakeholders to develop a feature that dynamically responds in the event of future sustained and significant CI target reductions by further tightening the stringency.

Conclusion

RNG Coalition appreciates the opportunity for continued engagement on these topics. If CARB provides clarity and investment certainty in the LCFS, the production of renewable gas will help to reduce methane emissions, improve organic waste management, and decarbonize California’s transportation sector or any other sector that CARB deems appropriate. We thank CARB for your continued work toward this end and look forward to a robust and effective LCFS rulemaking.

⁴³ Emerging Eastern leaders, such as New York and Quebec, are beginning to consider significant RNG use.

⁴⁴ For an analysis of RNG potential in the US we recommend *Renewable Sources of Natural Gas: Supply and Emissions Reduction Assessment*. <https://gasfoundation.org/wp-content/uploads/2019/12/AGF-2019-RNG-Study-Full-Report-FINAL-12-18-19.pdf>