March 15, 2023

VIA ELECTRONIC FILING

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

Re: Low Carbon Fuel Standard February 2023 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] 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 February 22, 2023 (the Workshop).

At the Workshop CARB staff explicitly acknowledged the importance of continued RNG growth, both inside and outside of California. However, the specifics discussed at the Workshop failed to fully alleviate stakeholder uncertainty about RNG's future role in the program. This uncertainty is currently undermining investments in projects that rely on LCFS credits to reduce greenhouse gases (GHG).

We recommend that CARB focus on swiftly enhancing program ambition in the forthcoming rulemaking, while postponing consideration of nonconstructive proposed changes to avoided methane crediting and reducing incentives for imported RNG use in natural gas vehicles. Delaying consideration of such issues until greater clarity emerges about substitute markets for RNG, national mandates for methane reduction, changes in federal support, and related issues, would be the safest path to ensuring that the LCFS continues to promote RNG development as a key low carbon fuel and near-term methane abatement strategy.

Sincerely,

/S/
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[1] For more information see: http://www.rngcoalition.com/

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RNG Investors Remain Confused and Concerned About the Proposed RNG-Related Changes. Uncertainty Risks Significantly Slowing Abetment of Methane Emissions.

Despite CARB staff's stated support for RNG at the Workshop, investors remain highly confused and concerned about the proposed shifts in the LCFS's RNG crediting framework. The simple fact is that many RNG projects in planning and construction across North America currently rely on LCFS revenues to be built and operated. Without clear rational for programmatic changes—and consistency in concepts between draft regulatory text, material presented in slides, modeling tools, and statements by CARB staff—investors do not fully know how to respond to regulatory signals sent by CARB staff's proposal.

It took an almost decade-long history of LCFS credit being awarded to RNG projects, clear recognition of the methane reduction benefits across a variety of feedstocks, and consistent positive statements from CARB leaders before investors begin to seriously rely on this program to construct a large number of RNG projects. If CARB continues down the path of the complex set of changes proposed at the workshop, it will undermine prior effort to convince investors to make long-term capital deployment decisions based on LCFS credit value. If confidence is lost in California's LCFS it will also harm other state's efforts to follow California's leadership on smart near-term policies that couple organic waste methane reduction and clean fuel production.

CARB Acknowledges the Importance of Methane Reduction to Addressing Global Climate Change and the Benefits of RNG in Promoting Methane Reductions, Regardless of Location or End Use

The critical need to address methane as a potent short lived climate pollutant was well stated in CARB's 2017 Short Lived Climate Pollutant (SLCP) Reduction Strategy and echoed by many other leading authorities.[2] The concentration of methane in the atmosphere is increasing at an alarming rate.[3] 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.

RNG is a well-recognized strategy to reduce emissions from these sectors that can work in conjunction with other strategies like waste reduction and promoting changes in food consumption patterns.[4] For example, the US EPA has been tracking and attempting to incentivize anaerobic digester instillation 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 US exploration of this approach, while biogas recovery systems are technically feasible for over 8,000

[2] See our December 9, 2022, comments for a more comprehensive list of expert bodies calling for near-term action on methane.

[3] 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.

[4] Ivanovich, C.C., Sun, T., Gordon, D.R. et al. *Future Warming from Global Food Consumption*. Nat. Clim. Chang. (2023). https://doi.org/10.1038/s41558-023-01605-8

existing[5] large dairy and hog operations across the US, AgSTAR estimates that currently only 331 manure-based anaerobic digestion systems are installed and reducing methane emissions.[6]

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

We continue to struggle to understand why CARB staff believe that a fixed phase-out of avoided methane crediting is smart policy. Agricultural and organic waste diversion projects are heavily dependent on LCFS revenue for profitability, driven by the avoided methane components of their CI scores. Since the November Workshop, many of our members have individually supplied CARB with detailed economics for the development of dairy RNG facilities that clearly demonstrate that avoided methane crediting for only 10-15 years is insufficient to meet capital repayment requirements for new projects, and that at current LCFS (plus federal RIN) credit prices, a framework without avoided methane crediting may not even cover operating costs for existing agricultural projects in some instances. For projects where that is true, absent some new market that covers the cost of operations, existing digesters will not continue operating after their avoided methane crediting periods expire.

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

Given the importance of the LCFS crediting in project viability, is unwise and irresponsible to propose an arbitrary (tied to a fixed year) phase-out of avoided methane crediting without a detailed plan for developing a supporting replacement policy. Because of this fact, although better than the November Workshop proposal, the February Workshop proposal would still lead to significant market and project uncertainty and increasing the potential for stranded assets—an issue correctly cited by CARB as a primary concern at the Workshop.[7]

It is possible that a federal mandate to control manure methane could be developed, promulgated, and in effect in the 2030 timeframe. RNG Coalition would likely support such federal action if it treated anerobic digestion with productive energy use as best available control technology. However, we currently see no signs that such a federal effort is even on the horizon.[8] We continue to support CARB analyzing phase-out of avoided methane crediting in such a scenario. However, we do not support changes to the LCFS regulation above that would *require* phase-out of avoided methane crediting *without* a suitable replacement policy. If CARB pursues such a path the outcome will be a halt to project development and eventual backsliding to freely venting methane at some farms.

[5] We emphasize EPA's assessment of the number of existing farms that can support digesters to avoid triggering 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.

[6] https://www.epa.gov/agstar/agstar-data-and-trends

[7] See Workshop slide 31.

[8] As discussed below, multiple states are moving to adopt LCFS policies that could provide a regional framework for addressing these emissions. Beyond expansion of LCFS-style policy no other serious state-level collaboration on manure management methane emissions has yet been proposed.

If CARB staff continues to treat RNG as a temporary solution that might be arbitrarily phased out—without regard to scientific analysis of ongoing emission benefits or development of a replacement strategy—investors will view RNG as a permanently "at risk" fuel, less favored by regulators and therefore not worthy of continued investment.

The Current LCFS RNG Framework Aligns with Fuel Use Reporting in the US Renewable Fuels Standard and with State-level Partners. This Alignment Should be Enhanced, not Dismantled.

Many fuels in the LCFS have a relatively high import market share and all fuel categories credited by the LCFS involve lifecycle emissions (and emission reductions) that occur outside of California. For example, a significant share of California's grid mix of electricity (~44%)[9] is produced from conventional natural gas, over 90% of which is imported.[10] Reducing *all* GHG emissions (including the upstream emissions performance) of *all* fuels (including imports) continues to be a critical advantage of the lifecycle approach taken by the LCFS. RNG imports should not be singled out from other fuels for different treatment, especially considering the critical importance of reducing methane to mitigate the effects of near-term warming.

California Renewable Portfolio Standard Language Creates a Barrier to Imports, Should Not be Adopted in the LCFS

The Workshop material suggests CARB is considering adopting language from existing California Renewable Portfolio Standard (RPS) requirements[11] that would, in practice, prohibit imported RNG from being used in California's Natural Gas Vehicles (NGVs). Despite what anti-RNG voices may have stated to CARB, this language is not an improvement in reporting that would somehow provide greater accuracy or certainty that imported RNG molecules can be traced to California NGV fuel tanks.

Instead, the RPS language is a set of complex tests that essentially serve to ensure that no imports can meet the requirements. The factual record from the RPS clearly demonstrates that this language creates a barrier to imports in practice. As shown in Figure 1,[12] no new importing facilities were built to serve the CA RPS, after the deliverability language was imposed through Assembly Bill 2196 (Chesbro) in 2012, despite in-state project development continuing.

[9] See Table 1-2 of CARB's 2023 *Carbon Intensity Values for California Average Grid Electricity Used as a Transportation Fuel in California and Electricity Supplied Under the Smart Charging or Smart Electrolysis Provision* https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/fuelpathways/comments/tier2/2023_elec_update.pdf?_ga=2.5711222.418438686.1678413739-188703561.1626734718

[10] https://www.energy.ca.gov/data-reports/energy-almanac/californias-natural-gas-market/supply-and-demand-natural-gas-california

[11] We believe the most relevant portion discussed at the Workshop is found in California Code, Public Utilities Code § 399.12.6(b)(3).

[12] Figure derived from California Energy Commission RPS data available here: https://rps.energy.ca.gov/Pages/Search/SearchApplications.aspx

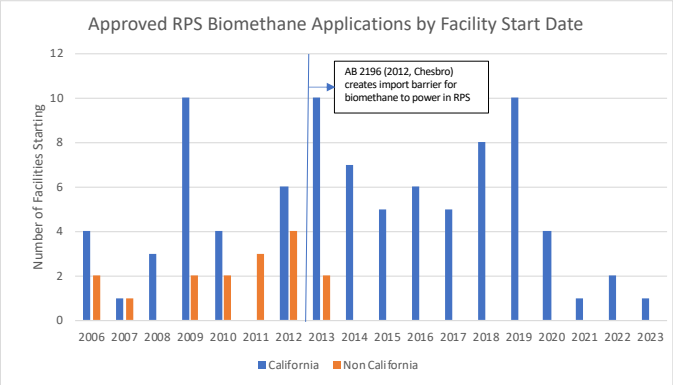

Figure 1. No New Importing Facilities Have Been Built to Serve the California RPS Since AB 2196 Deliverability Language was Established

Protectionist language in portions of the RPS program design—including the ban on imported RNG—have not succeeded in creating a well-functioning California-only electric grid, able to function entirely using only in-state renewable energy and without imports and exports. Instead, the California Independent System Operator is *currently trying to expand electricity markets regionally* to make it easier to adopt more renewables.[13] We encourage CARB to learn from this example, continue current LCFS practice, and not to close our boarders to imported RNG supply. Harmonizing RNG markets rules with other US states—just as California is now attempting to do to maximize the use of renewable electricity—is a better outcome for the climate and for California fuel consumers.

Unlike the RPS, the LCFS has been a strong driver of both in-state and out-of-state RNG project development. Because in-state projects have also been receiving support through grant programs,[14] the amount of in-state RNG production has been increasing rapidly in California over the past few years and now enjoys a greater proportionate domestic (in-California) market share than many other types of energy. For example, as stated above, we import more than 90% of our conventional gas in California but only ~77% of our RNG.[15]

Given that California clearly benefits from broad North American and global energy markets for other types of energy—and the recent trend toward significant increases of the in-state supply of RNG—we question why CARB would propose eliminating imported RNG eligibility for NGVs. We assume that it is an intentional strategy to disincentivize the use of NGVs, but that is both unnecessary and unwise. There is no need to eliminate RNG imports to reduce the attractiveness of NGVs, as CARB's vehicle rules (Advanced Clean Trucks, Innovative Clean Transit, Advanced Clean Fleets, etc.) are already creating a damper on the growth in NGV deployment. If heavy duty (HD) and medium duty (MD) Zero Emission Vehicle (ZEV) options emerge rapidly—due to CARB's vehicle rules—NGVs will begin to phase out, as

[13] The California Independent System Operator is "continually pursuing strategies to manage higher amounts of renewable energy into the electricity system. Studies by the ISO show that expanding the energy market across the western US region would accelerate California's efforts to meet the state's ambitious clean energy goals, while saving costs, lowering emissions, and promoting economic growth." See: http://www.caiso.com/informed/Pages/RegionalSolutions.aspx

[14] For example, see: https://www.cdfa.ca.gov/oefi/ddrdp/ and https://calrecycle.ca.gov/climate/grantsloans/organics/

[15] See our December 9, 2022, comments for more details on how this estimate was derived. We encourage CARB to publish import share of RNG using the LCFS data as they do for liquid biofuels in the LCFS Data Dashboard.

predicted by CARB's Scoping Plan analytics and the assumptions in the California Transportation Supply (CATS) tool.

If MD/HD ZEV penetration is slower than expected, NGVs should remain available as a viable backstop that will improve air quality relative to diesel vehicles.[16] If ZEV penetration occurs quickly, RNG providers will rapidly shift to making ZEV fuels (electricity and hydrogen). If that does not occur, imported RNG used in NGVs will likely remain an important mid-term strategy for air quality improvement.

CARB Should Be Clearer with RNG Investors as to How They See RNG Markets Evolving

The RNG Coalition supports the sustainable development, deployment, and utilization of renewable gases from all available feedstocks, indiscriminate of the 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 facilities. As described in prior RNG Coalition LCFS workshop comments, this pipeline-interconnected supply can be shifted to whichever end use needs it most in the long-term.[17]

It is ultimately the policy decisions made by CARB and other regulators, in programs such as the LCFS, that will determine where RNG will be used. Instead of limiting RNG supply to certain end uses, 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 produced near liquid biofuel production facilities serving California to be matched to those facilities.[18] 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. Such changes would align with CARB's stated desire from the Workshop related to shifting RNG use away from direct use in NGVs.

In the absence of level support for all sustainable end-use applications of RNG, CARB should be careful not to reduce existing markets for RNG projects (especially those that California has helped build) until substitute markets are established.

LCFS Should Harmonize RNG Tracking with Core Concepts in US EPA's Set Rule, Which Contains an Evolving Framework Promoting RNG Use Across Many Fuels

A key market reality today is that most RNG projects need both LCFS and RIN credits to be viable. Currently only NGV end uses offer full alignment between both programs, which is why that end use has been so popular for RNG thus far. Unlike California's RPS, the US EPA's Renewable Fuel Standard has

[16] *In-Use Emissions Testing and Activity Profiles for On-Road Heavy-Duty Vehicles: Summary of 200 Heavy-Duty Vehicle Emissions Testing Program* from the University of California, Riverside and West Virginia University, March 2023, CEC-500-2023-002. https://www.energy.ca.gov/publications/2023/use-emissions-testing-and-activity-profiles-road-heavy-duty-vehicles-summary-200

[17] Even pipeline flow directions can shift over time, if needed.

[18] We recommend building this option into the Tier 1 calculators.

consistently created a strong framework for RNG growth and is a much better model for CARB's LCFS to continue to align with.

Deliverability rules in the RFS program have long recognized that once RNG and fossil gas is co-mingled there is no way to ensure deliverability of just the subset of renewable molecules. For a recent example of EPA's analysis of this issue, the preamble[19] for the RFS "Set" rulemaking explicitly states that:

> When RNG moves through a pipeline system for distribution, the RNG is mixed with a much larger proportion of fossil natural gas using the same system. The two natural gases—one derived from renewable sources, the other from fossil sources—are fungible at that point. Consequently, by the time the natural gas is used to fuel a vehicle, there is no meaningful way to identify which molecules of methane were originally sourced from biogas and which came from fossil sources. As discussed above, and in light of this dynamic, when EPA introduced RNG as a transportation fuel in the RFS program in the Pathways II rule, we set up a system whereby the demonstration that RNG was used as transportation fuel relied on accounting protocols, recordkeeping requirements, and requirements for contracts and affidavits attesting that a specific volume of RNG was used as transportation fuel, and for no other purpose.

EPA correctly recognized that efforts to trace deliverability (e.g., based on securing gas transmission rights or tracing prevailing pipeline physical flows) still cannot guarantee that molecules flow along preferred paths. Therefore, any attempts to impose such tests simply increases compliance costs for parties creating and using RNG without achieving any additional environmental benefit.

While RNG opponents may desire to create such administrative complexities to artificially increase costs or impose barriers to RNG use, CARB should not be swayed by such arguments. The existing CA RPS language is simply a canard to disincentivize out-of-state RNG development, distract from the legitimacy of RNG's environmental benefits, and turn a key advantage of RNG (it's compatibility with the existing gas system) into a weakness.

The current LCFS's book-and-claim rules allow for consistent claims in RNG volume across the RFS and the LCFS. Deviating from this approach for imports into California's NGVs will inherently create misalignment in claims, administrative confusion at both reporting entities and CARB, and fewer financially viable projects. Recently proposed changes from US EPA to the RFS in the Set rule are likely to enhance the incentive for the biogas/RNG resource to be sent toward electricity generation for electric vehicle use (eRINs), eventual use in hydrogen production, and as a bio-intermediate to producing liquid fuels. We recommend that CARB consider even further alignment between the LCFS and RFS, especially with respect to matching biogas/RNG electricity pathways to EV fleets, if they wish to see these end uses for RNG grow.

Other North American Clean Fuel Programs Will Not Follow California's Example if that Example Proves Administratively Complex or Otherwise Unworkable

Following US EPA and California's currently positive example, book and claim has emerged as the preferred method to track RNG in all analogous North American Clean Fuel programs. For example, the

[19] Federal Register, Vol. 87, No. 250, Friday, December 30, 2022, Proposed Rules. See page 80637. https://www.govinfo.gov/content/pkg/FR-2022-12-30/pdf/2022-26499.pdf

Canadian Clean Fuel Standard, the Oregon Clean Fuel Standard, the Washington Clean Fuel Standard all use book and claim for RNG projects as well as for electricity and hydrogen. Gas utility procurement programs for RNG use similar concepts. Analogous accounting rules are also the industry standard in Europe. In fact, the term "book and claim" is a guarantee of origin concept that was pioneered in the European Union's renewable fuel policies.[20]

Given that the California LCFS pioneered such reporting in North America, it should not abandon it now. The fact that analogous programs are close to being established in other states reduces the likelihood of California being overly reliant on imported RNG in the long term. Each new state that adopts an LCFS-style policy creates a new demand center, which regional supply will likely consider serving first before California (assuming similar credit pricing).

If we look closely at the possible alignment between Clean Fuel Programs and the associated dairy RNG incentives, a striking story emerges. As shown in Table 1, LCFS-style programs are under consideration, or already in place, in states that represent 44% of total US dairy production.

Table 1. LCFS-style Programs Could Soon Cover States Representing 44% of Total US Dairy Production

Milk Production Rank	State	2022 Million Pounds of Milk Product	2022 Percent of U.S.	% Change 2022 vs. 2012	2023 Clean Fuel Leg Effort
1	California	41,787	18%	100%	Already in Place
5	New York	15,660	7%	119%	Y
6	Michigan	11,740	5%	131%	Y
7	Minnesota	10,477	5%	115%	Y
9	New Mexico	7,148	3%	88%	Y
10	Washington	6,239	3%	100%	Already in Place
18	Oregon	2,636	1%	105%	Already in Place
19	Vermont	2,554	1%	99%	Y
23	Illinois	1,714	1%	92%	Y
39	Massachusetts	188	0%	86%	Y

Conversely, as shown in Table 2, other large dairy states that have seen rapid growth in the last ten years are not currently considering an LCFS-style policy, or any other framework to ensure management of manure methane.

Table 2. Dairy Production is Growing Quickly in States Less Likely to Adopt GHG Manure Management Control Measures

Milk Production Rank	State	2022 Million Pounds of Milk Product	2022 Percent of U.S.	% Change 2022 vs. 2012	2023 Clean Fuel Leg Effort
2	Wisconsin	31,882	14%	117%	N
3	Idaho	16,628	7%	123%	N
4	Texas	16,524	7%	172%	N

[20] See our December 9, 2022, comment letter for more information.

Retaining imported RNG across all applications in CA maximizes California's ability to influence the needed methane reductions across the US—in both categories of dairy states. California can create harmonized rules with those who choose to follow, which will reduce implementation costs across all leading jurisdictions. Remaining open to imports from non-participating jurisdictions helps to build local constituencies for action and ensure we are still making progress on manure methane nationally.

Creating complex and poorly justified import rules for protectionist purposes (and beginning to walk back avoided methane crediting) diminishes California's ability to motivate action across the US, thus decreasing the likelihood that others will see the benefits of California's previously well-articulated SLCP strategy, emulate that approach, and lay the groundwork for a national solution to organic waste/manure management methane and clean fuel production.

As Many States Begin to Use RNG, a Shared Electronic Registry is a Critical Tool

As described in multiple prior comment letters, RNG Coalition continues to support use of one North American registry for tracking RNG from production to 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).[21] 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 best with the existing book and claim RNG accounting methods in the current LCFS regulatory framework, but should still be added in this rulemaking, even if book and claimed imports are eventually phased out for some applications.

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 discussed by stakeholders at the Workshop for LCFS. Such features can increase investor certainty in credit markets. CARB should adopt an accelerator mechanism feature that dynamically responds in the event of future sustained and significant CI reductions by tightening programmatic stringency.

Our first preference would be that any such mechanism use a moving average of prices (i.e., a price floor) as a trigger. However, triggers tied to the size of total banked credits relative to expected deficits could also function well, if properly designed.

We Support Continued Improvement to CARB's Analytical Work, note that Independent Modeling Demonstrates that Targets Beyond 30% by 2030 are Feasible

CARB Analytical Tools Must be Improved to be Capable of Modeling Proposed Regulatory Changes for RNG

The CATS model currently underrepresents supply potential for RNG and does not contain *any* representation of out-of-state RNG supply. It is extremely troubling to see major changes proposed to how imported RNG is treated in the program when analytical tools capable of quantitatively exploring

[21] https://www.mrets.org/m-rets-renewable-thermal-tracking-system/

what impact such changes would have on credit prices, compliance costs, impact on RNG producing and consuming businesses, and overall programmatic feasibility have not yet been developed.

We strongly recommend that the CATS model be improved to include a proper representation of all RNG, prior to using any CATS analysis as a basis for the Standard Regulatory Impact Analysis for the LCFS rulemaking. Cal. Gov. Code § 11346.3 requires that:

> (a)(2) The state agency, before submitting a proposal to adopt, amend, or repeal a regulation to the office, shall consider the proposal's impact on business, *with consideration of industries affected including the ability of California businesses to compete with businesses in other states*. For purposes of evaluating the impact on the ability of California businesses to compete with businesses in other states, an agency shall consider, but not be limited to, *information supplied by interested parties.* (Emphasis added.)

In our December 9, 2022, comment letter we provided a reference to a potential study and supply curve that exists for national RNG supply. We've also emailed this study directly to the CARB CATS modeling team. It appears that CARB has, thus far, declined to incorporate or consider that information. We request that it be considered, or that the CATS tool be revised to quantify availability of out-of-state supply in some other way.

As described in more detail below, we have also been participating in an effort by multiple clean fuel stakeholders to help CARB quantify appropriate programmatic ambition. In that effort, the technical advisor to the project, ICF, developed supply curves for RNG on a state-by-state basis using publicly available data on feedstocks for anaerobic digestion, including landfill gas, animal manure, wastewater, and food waste. The supply curves are derived from data from organizations including but not limited to the US EPA, the US Department of Energy, and US Department of Agriculture. The supply curves are accompanied by a levelized cost of gas (LCOG) analysis, which is calculated using capital expenditures, operational and maintenance expenditures, financing costs, and the amount of gas produced.

Our review of ICF's supply-cost curves indicate that there is significant potential for RNG deployment beyond what is currently included in the CATS's model. By 2030, ICF estimates around 700-1,100 tBtu could be available to meet expected demand from low carbon fuel markets like California's LCFS, while also meeting demand from emerging voluntary markets and utility procurement programs (e.g., SB 1440, Oregon's SB 98, Minnesota's Natural Gas Innovation Act, etc.). The most recently released CATS' scenario inputs considers RNG supply of only 58 tBtu (68 tBtu including electricity use) of in-state supply, clearly missing a large universe of the supply potential. Furthermore, ICF's LCOG analysis indicates that this RNG supply will be available to California at LCFS credit prices below the price trajectory that CARB presented from a preliminary CATS run at the Workshop.

Federal Interactions, Including RFS Support, Should not Be Overstated

In our prior comments in response to the November workshop we recommended that RNG pathways—and all other RNG-derived fuels—continue to be eligible for avoided methane crediting until such time as the methane reductions are no longer "regulatorily additional" (which the current LCFS regulation already explicitly requires). In response, anti-dairy-RNG voices continue to make unsubstantiated statements about perceived negative consequences related to the total tradeable credit value received by RNG projects.

Opponents somehow claim both that total compensation to RNG projects is too high and yet also that the program is largely compensating only non-additional RNG projects, which seems to be a direct contradiction in logic. How can the compensation be too high yet also not be strong enough to incent new entrants and therefore additional methane reductions?[22]

Further, in the specific case of dairy RNG, the number of legacy producers is small relative to the total potential of EPA's estimate of viable farms that can construct new projects. As stated above, US EPA's AgSTAR estimates that biogas recovery systems are technically feasible for over 8,000 large dairy and hog operations, and yet only 331 currently have such projects.[23] Of the 331 existing projects, 91 have been constructed since 2019—in large part due to LCFS incentives.[24] Therefore, excessive overcompensation to existing early actors should not be a primary concern.

Much of this confusion about the level of compensation continues to be driven by poor analysis of project returns conducted using inflated gas yields and unrealistic credit price projections. We, and other pro-dairy-RNG parties, addressed the flaws in the most visible of those analyses approximately a year ago in a separate CARB workshop process.[25] Our critique of the inflated credit prices used in the analysis from that time has proven correct, as prices have subsequently fallen in both the RFS and LCFS.

Despite our efforts to be transparent about RNG project economics, total financial support for RNG continues to be overrepresented by many parties. CARB's own analysis in the draft CATS model thus far is not immune to this problem. The current assumption in the primary scenario presented at the Workshop[26] of $3.00 RIN D3 pricing is not supported either by current prices or long-run historical average prices. It should be changed to reflect a more likely true level of future RFS support using a long-run historical average, or even a lower and more conservative value.[27]

CARB Should Use CATS Analysis to Quantitative Demonstrate that LCFS Revenues (and Other Sources of Government Support) are Appropriate Relative to RNG Production Costs

At the Workshop anti-dairy groups continued to perpetuate the fallacy that dairy RNG incentivizes farmers to expand their herds to increase manure production; however, there is no data that supports this claim. Many of our members have recently submitted additional information individually to CARB on the costs and revenues from Dairy RNG projects. Dairy RNG, at current RIN plus LCFS market prices,

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[22] In most fuel markets, as prices rise, new entrants bring production to the market to create new supply. Existing inframarginal producers still receive the market price for their preexisting supply. We believe the LCFS functions in a similar fashion to incent continuously increasing GHG reduction and supply of all low carbon fuels.

[23] The total universe of 8,000 are all existing farms that can abate existing methane emissions, without any need for expansion or consolidation. See: https://www.epa.gov/agstar/agstar-data-and-trends

[24] This is an extremely transparent dataset that can be reviewed to study the history of each existing operating facility, see: https://www.epa.gov/sites/default/files/2020-10/agstar-livestock-ad-database.xlsx

[25] See our April 12, 2022 comments on the March 29, 2022, Workshop on Methane, Dairies and Livestock, and Renewable Natural Gas in California, available here: https://www.arb.ca.gov/lists/com-attach/53-dairywkshp220329-ws-AmFUPVY6UG4EZwRq.pdf

[26] See *CATS California Transportation Supply (CATS) Model – Technical Documentation v0.2* page 21. https://ww2.arb.ca.gov/sites/default/files/2023-03/CATS%20Technical%20v0.2.pdf

[27] Many parties believe that the targets proposed in EPA's Draft Set Rule creates generally bearish signals for D3 pricing. Further, using lower values of federal support creates a more conservative scenario where LCFS contributions to project economics must be higher.

generates only a small fraction of the gross revenue that is created by milk-sales. Only a small share of that revenue goes to the farmer—the majority must be distributed to cover the costs of the digester developers/operators, the gas marketer, the credit broker, end users (e.g., fleets), the investors, and the banks. Meaning that the farmer does *not* make enough additional revenue from RNG to justify increasing herd size.

However, LCFS revenue from RNG production is critical to help defray the cost of an anaerobic digestor to the farmers and encourage the transition to a model of sustainable agriculture. The CATS modeling should correctly reflect this by modeling methane capture and RNG potential only at existing farms and not predict any expansion of farms driven by LCFS credit value in any scenarios.

Transparency of CATS Results Should be Improved to Better Demonstrate CARB's Desired RNG Shift to Investors

As discussed above, pipeline injection into the gas system allows RNG to be shifted to various uses over time (both between various transportation fuels and to uses outside of transportation) and CARB is explicitly trying to shift end uses of this resource. We would like to see the CATS modeling results be presented in a way that better demonstrates this shift.

Currently, with the material presented on Workshop slides 49 and 50, the RNG industry cannot see how the biogas/RNG resource is shifted from NGV use to other applications (hydrogen, electricity, as an input to liquid fuels). We ask that answers to straightforward questions be easily extractable from scenario results, including:

- Is the amount of biogas/RNG used in all pathways that generate LCFS credits (NGV, EV, H_2, etc.) expected to increase or decrease over time?
- What share of total potential is utilized?
- What is the current in-state vs. out-of-state supply split between all fuels that contain a biogas/RNG component, how is this split expected to change over time in each scenario?
- What are the total methane reductions associated with RNG use in LCFS pathways and are these expected to increase or decrease over time?

CARB Should Carefully Consider Independent Modeling from Clean Fuel Suppliers Before Setting Final Program Targets

As discussed above, RNG Coalition is participating in the analytical exercise initiated by stakeholders representing all low carbon fuels currently generating credits in the program. Our goal is to help inform CARB's public process about what level of increased programmatic ambition would be appropriate. We all know that we need a more ambitious target CI reduction, and this work is meant to present a well-researched analysis of what is truly achievable across all low carbon fuel options.

This clean fuel group has retained the consulting firm ICF as our technical partner who has independently prepared and submitted an initial description of their analytical approach and preliminary observations in a separate comment letter submitted today. ICF has extensive experience modeling supply and demand in analogous clean fuel programs, both for governments and organizations including the Colorado Energy Office, Great Plains Institute, Oregon Department of Environmental Quality, Puget Sound Clean Air Agency, and for private clients.

RNG Coalition believes this work will likely support:

- A "step down" in the near-term targets to address current oversupply issues,
- An "accelerator mechanism" to avoid similar future oversupply situations, and
- A 2030 target beyond the 30% goal currently being investigated in the primary scenario discussed at CARB's February 2022 workshop.

We encourage CARB to remain open to results of external analytical work and to continue to explore these topics with the CATS tool. We note that CARB analytics conducted for prior target setting work in earlier rulemakings have underestimated the availability of low carbon fuels and that has been a contributing factor to the currently oversupplied LCFS market. We also note that the November 2022 workshop expressed plans for CARB to explore targets higher than 30% in 2030—Alternative C from CARB's November 2022 workshop included a 35% target[28]—we request that this scenario be considered, and the CATS results shared with stakeholders in a transparent fashion as soon as possible.

Improvements in Pathway Processing and Updates to Tier 1 Calculators

We Support Revisiting Tier 1 Calculators and Focusing on Improving Pathway Processing Times

We were pleased to see a commitment from CARB staff at the Workshop to release improved Tier 1 calculators for this rulemaking. We support the majority of RNG pathways being Tier 1 in the future and we remain committed to working with CARB to help improve processing times and reduce administrative complexity for RNG pathways. We look forward to providing comments to CARB on the individual biomethane calculators once it is clear what technical changes are under consideration. We also note that simplification of pathway processing is critical for other jurisdictions to adopt LCFS analogs.

If CARB stops processing imported RNG to NGV pathways at some point, the lack of technical support for harmonization of such pathways across jurisdictions would be a concern. Currently, other jurisdictions rely on CARB's expertise as an initial quality screen for many facilities and, after CARB pathway approval, simply adjust the pathway for different delivery distances to other states. If CARB stops processing imported RNG pathways it cedes a clear opportunity to influence how other jurisdictions score each RNG pathway, thus significantly decreasing California's leadership nationally.

A Credit True-up Remains Necessary to Properly Recognize the True Environmental Performance of All Pathways

True-up crediting should be offered to improve clean fuel economics and help the program correctly account for the full GHG benefits all pathways produce. At the August 2022 Workshop CARB Staff proposed providing a credit true up to correct for under crediting to pathway holders who choose to use temporary CI scores at the outset of their credit generation. Such a limited true up would help reduce the pressure on CARB from developers to process LCFS applications quickly. We continue to support this concept, as well as a full true up to verified actual CI performance.[29]

[28] https://ww2.arb.ca.gov/sites/default/files/2022-11/LCFSPresentation.pdf

[29] See our comment letters from prior workshops dated January 7, 2022, August 8, 2022, and September 18, 2022.

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.

Both CARB and US EPA have mandatory emission control requirements for landfills that help reduce methane emissions, yet research literature 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 41% of all methane point source emissions in California.[30] RNG Coalition and a wide swath of other stakeholders have been raising these issues with CARB for more than two years.[31]

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 and incenting such reductions in the LCFS should be a key focus for CARB, rather than considering arbitrary dates for eventual sunsetting of avoided methane crediting. Similarly, LCFS recognition of projects that improve methane capture efficiency at landfills beyond regulatory requirements could help improve capture efficiencies of the methane that results from the waste in place at existing landfills.[32]

Conclusion

RNG Coalition appreciates the opportunity for continued engagement on these topics. If CARB provides clarity and investment certainty, 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.

[30] 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

[31] See our LCFS Workshop comment letter dated November 5, 2020 and Anaergia's LCFS Workshop comments dated September 19, 2022 for examples.

[32] For an example protocol evaluating the installation of an automated collection system that can increases 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