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Re: Comments on February 22, 2023, Workshop

Summary of Earthjustice Recommendations

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- 5. Medium- and Heavy-Duty ZEV Refueling Infrastructure Capacity Credits Should Support Shared Private Equipment.
- 6. All LCFS Scenarios Should be Revised to Eliminate Credit-Generation for Carbon Capture and Sequestration Projects that Support Enhanced Oil Recovery.
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I. Introduction

Earthjustice appreciates the opportunity to provide feedback on the urgent need to update CARB's Low Carbon Fuel Standard so that it best aligns with the State's climate, air quality, and environmental justice goals. We urge CARB to amend the LCFS regulation so that the program no longer allows combustion fuels and polluting hydrogen production to over-generate credits.

Currently, the LCFS assigns inaccurate carbon-intensity scores to these fuels, leading to unjustified incentives for industrial activities that degrade air quality in California's environmental justice communities. Moreover, a glut of credits from these polluting fuels is driving down the LCFS credit price and weakening the incentives for both zero-emission vehicles and zero-emission hydrogen production. CARB can also help address fuel affordability concerns by reining in the over-generation of credits from polluting fuels with dubious carbon intensity scores. As one stakeholder eloquently observed: "By reducing the eligible pool of credit generation, the stringency of the program will not have to ramp up as quickly to achieve desired outcomes, thereby reducing the potential pass-through cost to remaining low-income consumers of fossil fuels."¹ Earthjustice's discrete recommendations in these comments will help align the LCFS with these crucial goals.

II. CARB Should Adopt Meaningful Deliverability Requirements for All Biomethane in 2024, Including Biomethane Claimed for Hydrogen Production.

A. To Achieve Staff's Stated Goals, the Revised LCFS Rule Must Explicitly Include All Deliverability Requirements That Apply to Biomethane in the Renewable Portfolio Standard Program.

As CARB Staff appear to recognize, deliverability is essential to ensuring California can decarbonize its gas use and achieve its climate goals.² Staff's proposed concept for achieving this goal is to align deliverability requirements of biomethane with requirements in California's Renewable Portfolio Standard ("RPS") and the California Public Utilities Commission's biomethane procurement program.³ This general concept would move the LCFS in the right direction and the Staff presentation correctly identified part of the RPS's deliverability requirements for biomethane delivered via a common carrier pipeline: the biomethane must flow within California or toward the end user in California and eligible pipelines must flow toward California for most of a given year.⁴

For CARB to successfully align the book-and-claim deliverability requirements with the RPS deliverability requirements, the LCFS must explicitly incorporate *all* RPS biomethane deliverability requirements. The workshop slide did not mention the following essential provision in the RPS biomethane deliverability requirements: "The applicant, or authorized party, of the facility must enter into contracts for the delivery (firm or interruptible) or storage of the gas with every pipeline or gas storage site operator transporting or storing the gas from the injection point to the final delivery point."⁵ This is how the RPS ensures that entities claiming to use biomethane can legally take delivery of the biomethane they claim to use. The provisions related to the direction of a pipeline's flow—in isolation—do not address this key concern.

As discussed in prior comments, the LCFS only allow entities to book-and-claim renewable electricity that is scheduled for delivery into a California balancing authority or that

¹ Comments of Jim Duffy (Dec. 21, 2022) at pdf p. 3, <u>https://www.arb.ca.gov/lists/com-attach/104-lcfs-wkshp-nov22-ws-Wj4BclE2UGUCfVMM.pdf</u>.

² Workshop slide 33.

³ Id.

⁴ Compare id. with CEC, Renewable Portfolio Standard Eligibility (9th ed. Rev.) (Jan. 2017) at p. 10.

⁵ CEC, Renewable Portfolio Standard Eligibility at p. 9.

has a contract to dynamically transfer electricity into a California balancing authority.⁶ The RPS deliverability rules for biomethane achieve a similar purpose by requiring contracts to deliver fuel via the infrastructure that connects the producer to the user. If CARB only applies the subset of biomethane deliverability requirements listed on the workshop slides, it would give biomethane fuels an improper advantage over electric fuel.

The deliverability requirements for the Public Utilities Commission's biomethane procurement program are just as strict as the deliverability requirements in the RPS. The Legislature required that any biomethane delivered to California through a common carrier pipeline for this procurement program must be injected into a pipeline that physically flows within California or toward the California end user.⁷ Even though the requirement to contract for delivery of the biomethane is not explicit in the statute, it is inevitable as a practical matter. SB 1440 authorized targets for biomethane procurement, not environmental attribute procurement.⁸ Once a utility procures biomethane, it can only legally take delivery of that fuel and provide it to its customers if it has legal access to the gas pipeline infrastructure that connects the biomethane supplier to the utility's customers. In implementing SB 1440, the Public Utilities Commission avoided double-counting environmental attributes by requiring the utilities that procure methane to "maintain exclusive ownership of all environmental attributes from contracted renewable fuel sources."⁹ However, the Commission never contemplated implementing SB 1440 by allowing utilities to purchase environmental attributes that were unbundled from the biomethane they procure and deliver to their customers.

Moreover, the biomethane eligibility provisions in both the RPS and SB 1440 require that biomethane delivered via a common carrier provide environmental benefits to California.¹⁰ Any efforts to align the biomethane requirements in the LCFS with those other state policies would naturally incorporate the requirement that the biomethane directly result in one of the specific kinds of environmental benefits that Legislature has demanded in those contexts.

B. Delaying Deliverability Requirements Until 2028 is Unnecessary and Inappropriate.

Earthjustice commends Staff for recognizing the need to improve the book-and-claim requirements for biomethane in the LCFS program. Once Staff recognizes a straightforward fix to a known problem, it should fix the situation promptly. Applying that common-sense principle

⁶ Earthjustice, Comments on November 9, 2022 Workshop at pdf p. 9 (discussing 17 CCR § 95488.8(i)(1)).

⁷ Cal. Public Utilities Code § 651(b)(3)(B)(i).

⁸ *Id.* § 651(a) ("The commission, in consultation with the State Air Resources Board, shall consider adopting specific biomethane procurement targets or goals for each gas corporation so that each gas corporation procures a proportionate share, as determined by the commission, of biomethane annually.").

⁹ Decision 22-02-25, Decision Implementing Senate Bill 1440 Biomethane Procurement Program at p. 57, Conclusion of Law 19, <u>https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M454/K335/454335009.PDF</u>.

¹⁰ Cal. Public Utilities Code § 651(b)(3)(B)(ii) (requiring the seller or producer of the biomethane to demonstrate that capure or production of the biomethane directly result in either (a) reduction or avoidance of criteria air pollution, toxic air contaminants, or greenhouse gases in California, (b) reduction or avoidance of water pollution in the state, or (c) alleviation of nuisance odors within California); *id.* at § 399.12.6(b)(3) (requiring the same for biomethane contracts executed after March 2012).

here, CARB should require all LCFS pathways that rely on book-and-claim for biomethane to meet its improved deliverability requirements in 2024.

It would be unnecessary and inappropriate to delay LCFS reform to give biomethane producers additional time to contract with new off-takers. The biomethane producers that would be affected by this rule are generally CAFOs that have long been capturing methane for other purposes, prior to diverting their biomethane for LCFS credit generation to take advantage of an arbitrage opportunity.¹¹

Delaying the application of meaningful deliverability requirements would needlessly undermine the integrity of the LCFS program by four years. Biomethane that does not meet the basic deliverability requirements in the RPS program does nothing to advance the primary purpose of the LCFS, which is to reduce the carbon intensity of transportation fuels in California.¹² Nor does the enormous transfer of wealth from Californians to biomethane producers who never send their fuel to California help this state achieve its short-lived climate pollutant goals. As the Public Utilities Commission has recognized, allowing "Utilities to purchase renewable attributes separate from physical RNG . . . would result in negligible to no direct environmental benefits to California, contradictory to the statutory and policy goals" of SB 1440.¹³

Finally, delaying common-sense reform would undermine California's critical public health and climate policies. The LCFS's current policy of applying weaker deliverability requirements to book-and-claim biomethane than book-and-claim electricity gives CNG vehicles an undue advantage over ZEVs. It would be improper for CARB to wait to put ZEVs on a level playing field with combustion vehicles. In addition, CARB's 2022 Scoping Plan recognizes that the limited supply of biomethane "will largely be needed for hard-to-decarbonize sectors."¹⁴ Achieving that policy will require a dramatic shift in California's biomethane market, which is now used almost entirely for on-road transportation due to the improperly inflated incentives from the LCFS. CARB should support the Scoping Plan's vision of migrating biomethane use to hard-to-decarbonize sectors by promptly ending book-and-claim policies that distort the biomethane market.

C. CARB Must Adopt Meaningful Deliverability Requirements for Biomethane Claimed by Hydrogen Producers.

CARB should apply appropriate revisions to its biomethane book-and-claim policies consistently for both CNG fueling and hydrogen production. Currently, the LCFS's failure to

¹¹ Earthjustice surveyed recent LCFS fuel pathway applications that used book-and-claim accounting to claim carbon-negative biomethane inputs and found that each application examined relied on biomethane from distant CAFOs that had installed digesters years ago, for reasons unrelated to the LCFS. Earthjustice Comments on November 9, 2022, Workshop at Appendix A.

¹² See, e.g., CARB, Low Carbon Fuel Standard, About, <u>https://ww2.arb.ca.gov/our-work/programs/low-carbon-fuel-standard/about.</u>

¹³ Decision 20-12-022, Decision Adopting Voluntary Pilot Renewable Gas Tariff Program at p. 20, <u>https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M356/K268/356268059.PDF</u>.

¹⁴ CARB, 2022 Scoping Plan for Achieving Carbon Neutrality (Nov. 16, 2022) at p. 190, https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp.pdf.

include meaningful deliverability requirements for biomethane represent an unjustified deviation from the requirements that apply to all other fuels.¹⁵ Due to the lack of reasonable deliverability requirements for biomethane, hydrogen producers generate LCFS credits for fuels that do not lower the carbon intensity of vehicle fuels in California—jeopardizing the integrity of the LCFS program and the achievement of the state's climate goals.

Failure to expeditiously adopt proper deliverability requirements for biomethane used in hydrogen production would harm California in multiple ways. First, continuing CARB's current approach to book-and-claim accounting for hydrogen production would encourage industry to invest in the build-out of new polluting facilities to produce hydrogen through steam methane reformation ("SMR"). These facilities emit health-harming pollution such as NOx, carbon monoxide, and fine particulate matter.¹⁶ SMR facilities are long-lived capital investments that lock in pollution for decades. Due to the significant investment necessary to construct these facilities, it is foreseeable that CARB will be reluctant to reign in credit generation opportunities for SMR later because the agency will be wary of stranding these assets. Ultimately, encouraging hydrogen production through SMR threatens the achievement of federal healthbased air quality standards in California's most polluted air basins, where regulators have noted that "there is no viable pathway to achieve the needed reductions without widespread adoption of zero emissions (ZE) technologies across all mobile sectors and stationary sources, large and small."¹⁷ These are precisely the kind of harms that the Legislature sought to avoid when it passed AB 197, requiring CARB to prioritize measures that directly reduce emissions from large stationary sources and mobile sources when it adopts climate rules.¹⁸

Second, the book-and-claim policies for hydrogen production cause such powerful distortions in the hydrogen transportation fuel market that they make it effectively impossible to develop a market for zero-emission hydrogen transportation fuel. Producers of renewable electrolytic hydrogen (that is, the only zero-emission hydrogen production technology available today) cannot compete on cost with hydrogen producers who rely on the steam methane reformation of fossil gas and book-and-claimed biomethane credits. Zero-emission hydrogen producers face a financial double-whammy: (1) their cleaner technology is newer and more expensive, and (2) the best CI they can achieve is 0, whereas SMR facilities that use book-and-claim can characterize their hydrogen as carbon negative. Taken together, the LCFS lavishes more credits on the dirtier technology, when the cleaner technology needs the policy support to get established in the market and drive down costs.

Moreover, by stymying the market for zero-emission electrolytic hydrogen, the LCFS's book-and-claim rules make it more difficult for CARB to perform its duties under SB 1505.

 ¹⁶ Sun et al, Criteria Air Pollutants and Greenhouse Gas Emissions from Hydrogen Production in U.S. Steam Methane Reforming Facilities, Env't Sci. & Tech., Vol. 53 (Apr. 2019), <u>www.osti.gov/pages/servlets/purl/1546962</u>.
 ¹⁷ South Coast Air Quality Management District, 2022 Air Quality Management Plan (Dec. 2022) at ES-5, <u>http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/final-2022-aqmp/final-2022-aqmp.pdf?sfvrsn=16.</u>

¹⁵ Entities that use low-CI feedstocks must generally comply with the chain-of-custody requirements in section 95488.8(g)(1)(B), while entities who book-and-claim low CI electricity must comply with the requirements related to delivering that electricity onto a California balancing authority in section 95488.8(i).

¹⁸ AB 197 (2016) (codified at Cal. Health and Safety Code 38562.5).

That statute requires CARB to institute a rulemaking to require at least one third of hydrogen dispensed at public fueling stations to be produced from renewable electric resources.¹⁹ Ending the LCFS's distortion of the market for hydrogen transportation fuels would align with the Legislature's direction to set minimum standards for producing this zero-emission hydrogen.

CARB should be laser-focused on ensuring that the nascent market for hydrogen as a transportation fuel aligns with California's air quality policies from its early days. Without reform, the LCFS will encourage the build-out of polluting SMR facilities that are dependent on unjustified subsidies.

III. CARB Should End Avoided Methane Credits in 2024.

A. CARB's Assumption that It Will Not Exercise Its Authority to Regulate Livestock Methane Emissions Is Inconsistent with Environmental Justice and Threatens to Stymy Regulatory Efforts that Would Protect Overburdened Communities.

It is inappropriate for CARB's carbon intensity estimates for livestock methane to incorporate the assumption that CARB will abdicate its authority to regulate livestock emissions. Foregoing regulation and relying on incentives to entice polluters to control methane emissions is causing environmental injustice in the San Joaquin Valley. It is problematic that CARB Staff's workshop slide on "Biomethane Crediting | Guiding Principles" did not acknowledge CARB's regulatory authority despite multiple parties raising the issue.²⁰ And it is unacceptable that neither public health nor environmental justice appear to be "guiding principles" in Staff's determinations, when the competing strategies for addressing methane emissions have profoundly different impacts on air and water quality. A strategy that excessively relies on the commodification of methane will encourage livestock operations to use the methane control practices with the greatest potential harm to the local environment and public health. CARB's incentives-only approach has also failed to assure effective methane mitigation and has potentially risked increased leakage by rewarding sustained or increased biomethane formation.

1. Continuing Avoided Methane Credits in the LCFS Would Reinforce Regulatory Inaction.

CARB's own failure to initiate a rulemaking for livestock regulations—despite repeated and vociferous urging by communities harmed by their operations—cannot justify the LCFS's decision to continue crediting avoided methane. Revising the baseline for what we should assume would otherwise happen to livestock manure methane does not require the presence of a final regulation—merely a recognition that CARB's authority to enforce methane regulations on or after January 1, 2024 renders a baseline assumption of free venting unjustified. As explained in previous comments, it is unrealistic to assume that capturable methane will continue to be vented under a GHG conscious policy regime. Indeed, even if CARB conclusively decided not to regulate livestock methane emissions, California's ambitious climate policies would render this

¹⁹ SB 1505 (2006) (codified at Cal. Health and Safety Code 43869).

²⁰ CARB, Low Carbon Fuel Standard – Potential Regulation Amendment Concepts (Feb. 22, 2022) at slide 31, https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/lcfs_meetings/LCFSpresentation_02222023.pdf.

assumption unrealistic because the State is committed to mitigating SLCP emissions through *some* mechanism by one third by 2030 and livestock manure is among the most readily mitigated sources of SLCPs. In the absence of information about how exactly CARB will implement SB 1383, the most sensible way to update the LCFS's carbon accounting is to assume CARB will regulate livestock methane because this conservative approach will avoid over-generation of credits that threaten achievement of California's climate goals.

CARB Staff's current proposal could effectively "decide the issue" on behalf of livestock polluters by effectively codifying freedom from regulation into the LCFS's assumptions. As CARB has repeatedly reassured industry, the Staff's goal is to provide a "long-term signal" and investment certainty. Adopting the Staff proposal would signal an intention to leave dairies unregulated for the foreseeable future, and industry's stated reliance on this signal will make it more difficult for CARB to take regulatory action. After the LCFS proposal is finalized, when communities continue to urge CARB to act on its authority to regulate livestock pollution, it is foreseeable that CARB may find that it cannot risk undermining investment certainty for livestock digesters. The matter is exacerbated by the fact that projects are granted a 10-year crediting period. Every year CARB fails to correct the baseline, more projects will receive 10 years of inflated credit values for taking the exact same action that CARB could simply mandate.

2. CARB Cannot Refrain from Regulating Based on Unproven Assertions of Industry Leakage.

Alarmingly, Staff's only reaction when parties questioned the apparent refusal to implement regulations was to vaguely restate the livestock industries' talking points that regulations risk leakage of the industry outside California. Setting aside that SB 1383 does not require eliminating the possibility of leakage as a prerequisite to regulation—it only requires CARB include provisions to mitigate leakage²¹—this unproven assertion is an inadequate justification to abandon regulatory action.

In no other context would a regulated party's fear-mongering about costs to industry be accepted as a sufficient rationale for inaction on the part of a regulator tasked with protecting public health and the climate. CARB has several options for providing regulated entities flexibility, when appropriate. For instance, CARB can target high-revenue operations, provide well-crafted exemptions, conduct phased-in enforcement, and adopt various other strategies to address legitimate industry concerns. It would be improper for CARB to continue with an incentives-only approach to agribusiness because it has accepted industry claims without a careful weighing of evidence.

3. CARB Has Already Over-Relied on Incentives to Achieve Methane Reductions it is Authorized to Require.

SB 1383 and CARB's SLCP strategy both recognize the need to employ a combination of strategies, including both incentive and regulatory action, to achieve livestock methane reduction

²¹ "The regulations include provisions to minimize and mitigate potential leakage to other states or countries, as appropriate." SB 1383 (Lara 2016),

https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB1383.

goals. CARB's initial, proposed SLCP strategy clearly articulates that the appropriate approach was to *first* "accelerate early action through incentives, collaboration, and market support," and to *then* develop regulations to ensure methane reduction. It is worth quoting CARB's own proposed strategy in full:

Develop Regulations to Ensure Emission Reductions

While the State will encourage early emission reduction actions by dairies through market support and financial incentives, regulations will be necessary to ensure manure management practices lead to lasting emission reductions. In 2017, and in coordination with CDFA and local air quality and water quality agencies, ARB will initiate a rulemaking process to reduce manure methane emissions from the dairy industry in-line with the objectives in this Proposed Strategy.²²

CARB omitted this language from the final SCLCP strategy, presumably because SB 1383 stretched the amount of time that CARB would need before it could enforce regulations. Now that CARB's renewed authority to enforce livestock methane regulations is close at hand, the agency should resume its long-delayed efforts to initiate the rulemaking it recognized was necessary for long-term emissions reductions. Conferring six years of regulatory immunity on livestock polluters was vehemently opposed by environmental and frontline community organizations. Nevertheless, SB 1383 passed, and the State went on to lavish multiple, overlapping sources of funding in its effort to subsidize an outcome it could have otherwise required. Millions of LCFS credits flowed to dairies as a result of the extremely negative, outlier CI score, resulting in roughly **\$185.7 million** in the second quarter of 2022 and an implied subsidy of \$4.27/diesel gallon equivalent – the largest of any feedstock.²³ In addition, overlapping State financial and policy incentives for dairy methane management include (but are not limited to):

- A cumulative **\$289 million** has been awarded in GGRF funds from both the AMMP and DDRDP programs, with \$195 million for dairy digester projects;²⁴
- Additional revenue from generating RIN credits under the Federal Renewable Fuel Standard, which, at an average RIN price of \$2 has a value of **\$23.40 per MMBTU**, or **roughly 5x the value** of the actual gas;²⁵
- **\$26.5 million** (plus an additional sum of **\$7.6 million** in reserves) from CARB's Aliso Canyon Mitigation Settlement awarded to dairy digester projects also receiving DDRDP funding;²⁶

https://asmith.ucdavis.edu/data/LCFS.

 ²² CARB, Proposed Short-Lived Climate Pollutant Reduction Strategy (Apr. 2016) at 68 https://ww2.arb.ca.gov/sites/default/files/2021-01/ProposedStrategy-April2016.pdf.
 ²³ Aaron Smith – UC Davis, Low Carbon Fuel Standard Data App, (Accessed Mar. 13, 2023),

²⁴ CDFA, DDRDP Report of Funded Projects (2015 – 2022) (Dec. 2022) https://www.cdfa.ca.gov/oefi/ddrdp/docs/2022 DDRDP Legislative Report.pdf.

 ²⁵ See Seeking Alpha, Renewable Natural Gas: Attracting Significant Investment (Oct. 4, 2022), https://seekingalpha.com/article/4544525-renewable-natural-gas-attracting-significant-capital.

²⁶ CARB, Summary of and Responses to Public Comments Received by the California Air Resources Board Regarding the Aliso Canyon Mitigation Agreement, (Oct. 10, 2018) at p. 12.

- Approximately **\$319 million** in infrastructure investments and operation expenses for pilot dairy biomethane projects through the CPUC's SB 1383 dairy biomethane pilot projects;²⁷
- Incentives **covering 50 percent** of costs and up to **\$5 million** for dairy digester biomethane production interconnection projects, administered by the IOUs, through the RNG Incentive Program.²⁸
- The Bioenergy Market Adjustment Tariff, which provides a standard contract with a fixed price for small-scale electric generators that utilize biomass and/or biomethane, including from dairy digesters; administered by the electric IOUs and overseen by the Commission;²⁹

For more than six years, California has taken an incentive-only approach, layering subsidy after subsidy on livestock operators to entice them to address their pollution. All this time, CARB could have been preparing the rulemaking it initially planned to undertake in 2017, so that regulations could come into force starting January 1, 2024. Now, the time has nearly come when regulations can be enforced, and CARB has taken none of the necessary steps to do so. Instead, CARB Staff's proposal suggests the agency is prepared to give polluters *at least another six years* free from any accountability and will instead rely on distorted incentives, declaring that new pathways may presume a baseline of vented methane through 2030.

In addition to being unjust, a strategy focused on incentivizing digester construction has not proven effective. The State remains off-track to meet its SLCP targets, and research suggests that methane emissions are actually higher than assumed in CARB's inventory. As an Assembly Budget Committee's oversight analysis of the State's approach asks: "How Much Should the State Gamble on Dairy Digesters?"³⁰ Digesters have had a high rate of failure and a poor rate of completion. Of the 43 projects funded by the DDRDP in 2019, only five are completed and operational as of 2023.³¹ By contrast, alternative manure management strategies highlighted in the oversight analysis, like aeration, are highly cost-effective and avoid the creation of methane in the first instance.³² Alarmingly, recent real-world measurements of methane from dairies with covered lagoons with digesters raise serious questions about their efficacy, given the researchers

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http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M246/K748/246748640.PDF.
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https://abgt.assembly.ca.gov/sites/abgt.assembly.ca.gov/files/April%2019%20-
%20Toxics%20Recycling%20Ag.pdf.
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²⁷ CPUC, Press Release: CPUC, CARB, and Department of Food and Agriculture Select Dairy Biomethane Projects to Demonstrate Connection to Gas Pipelines, (Dec. 3, 2018)

 ²⁸ Jay Dickenson, Assembly Committee on Appropriations Hearing on SB 1440 (Aug. 8, 2018), available at https://leginfo.legislature.ca.gov/faces/billAnalysisClient.xhtml?bill_id=201720180SB1440.
 ²⁹ Id.

³⁰ California Assembly Budget Committee, Subcommittee Hearing No. 3 on Resources and Transportation (Apr. 19, 2017), at p. 20, <u>https://abgt.assembly.ca.gov/sites/abgt.assembly.ca.gov/files/April%2019%20-%20Toxics%20Recycling%20Ag.pdf.</u>

³¹ CDFA, DDRDP Report of Funded Projects (2015 – 2022) (Dec. 2022),

https://www.cdfa.ca.gov/oefi/ddrdp/docs/2022_DDRDP_Legislative_Report.pdf.

³² The cost effectiveness of aeration leads the committee analysis to state: "One of the most striking finding in the UC Davis report is the massive reductions in emissions by improving the effectiveness of aeration. Why is this approach not more of a focus in the Department's efforts?" California Assembly Budget Committee, Subcommittee Hearing No. 3 on Resources and Transportation (Apr. 19, 2017), at p. 20,

found that "this practice was not observed to abate the emissions." The Assembly analysis asks, "what level of risk is appropriate and should so much of the total resources be devoted to such a narrow approach."³³ By continuing the same path of driving digester subsidization through outlier, negative CI values, CARB Staff forecloses answering any of these urgent questions and forges ahead with the status quo, despite its own recognition in the proposed SLCP that "regulations will be necessary to ensure manure management practices lead to lasting emission reductions."³⁴

B. The LCFS Jeopardizes the Achievement of California's Climate Goals by Falsely Assuming All Biomethane Would Otherwise Vent into the Atmosphere Under Current Laws.

The LCFS's avoided methane crediting allows industry to over-generate credits for livestock biomethane because it relies on inaccurate carbon accounting. Specifically, avoided methane crediting rests on the counterfactual assumption that all livestock biomethane would otherwise enter the atmosphere, even though the CAFOs that provide environmental attributes for LCFS credit generation frequently install digesters for reasons completely unrelated to the LCFS. Ultimately, this over-generation of credits threatens California's achievement of its climate goals because CARB is counting emissions reductions from the LCFS that are not real and additional.

As documented in prior comments, CARB routinely approves avoided methane credits for biomethane from facilities that installed digesters years before selling environmental attributes for LCFS credit generation.³⁵ Generally, these facilities originally installed their digesters to use biogas for onsite combustion. The LCFS presents an arbitrage opportunity that these facilities can take advantage of without capturing any additional methane. For instance, a CAFO that invested in a digester a decade ago to generate revenue from electricity generation has an incentive to divert its biomethane from on-site combustion to a common carrier pipeline if it can get more revenue from LCFS credits. In these situations, avoided methane credits do not accurately reflect a fuel pathway's impact on the climate.

Under current policies, the LCFS also inappropriately allows avoided methane credits for livestock methane that is captured because of the Aliso Canyon Mitigation Settlement and the suite of California incentives for dairy digesters. The Association of Irritated Residents, Leadership Counsel for Justice & Accountability, Food & Water Watch, and Animal Legal Defense Fund explain these issues in detail in their 2021 petition for rulemaking to amend the LCFS.³⁶ For instance, it is unjustifiable for the LCFS to provide avoided methane credits for

³³ CDFA, DDRDP Report of Funded Projects (2015 – 2022) (Dec. 2022), https://www.cdfa.ca.gov/oefi/ddrdp/docs/2022 DDRDP Legislative Report.pdf.

³⁴ CARB, Proposed Short-Lived Climate Pollutant Reduction Strategy (Apr. 2016) at 68 https://ww2.arb.ca.gov/sites/default/files/2021-01/ProposedStrategy-April2016.pdf.

³⁵ Earthjustice Comments on November 9, 2022, Workshop at Appendix A, <u>https://www.arb.ca.gov/lists/com-attach/155-lcfs-wkshp-nov22-ws-UTQCZQFyWX4LZQlj.pdf</u>.

³⁶ Petition for Rulemaking to Exclude All Fuels Derived from Biomethane from Dairy and Swine Manure from the Low Carbon Fuel Standard Program (Oct. 27, 2021) at pp. 18–23, <u>https://ww2.arb.ca.gov/sites/default/files/2022-01/2021.10.27%20Petition%20for%20Rulemaking%20AIR%20et%20al_.pdf</u>.

biomethane from facilities whose digesters were funded through the Aliso Canyon Mitigation Settlement—a legally binding agreement to mitigate methane emissions from the worst methane disaster in U.S. history. In that agreement, Southern California Gas Company claims and receives full credit for all methane reductions attributable to the dairy digesters it funds,³⁷ even when the digesters also receive DDRDP funding.

The fallacy at the heart of the LCFS's avoided methane credits is likely the false assumption that the CAFOs providing biomethane or environmental attributes for the LCFS program are no more likely than the average livestock owner to capture methane, but-for the LCFS. There is simply no basis for assuming that the CAFOs that provide biomethane or environmental attributes to LCFS fuel pathways are a representative sample of the state or nation's livestock owners. In fact, Earthjustice's examination of recent pathway applications reveals that LCFS participants frequently contract with out-of-state CAFOs that have long captured their methane without the LCFS incentives.³⁸

CARB likely lacks data on what portion of LCFS participants that are claiming avoided biomethane credits installed and operate their digesters because of the LCFS. Similarly, CARB likely lacks data on what portion of digesters may require multiple subsidies to be economical (e.g., projects that only move forward with funding from DDRDP and LCFS) and thus CARB cannot precisely apportion emissions reductions between these programs. Whenever there is uncertainty in the data, it is imperative that CARB respond to that uncertainty with a conservative approach to credit generation. Otherwise, credit over-generation will put California's climate goals at risk. Applying that principle here, CARB should end avoided methane credits for livestock biomethane.

C. CARB's Carbon Intensity Estimate for Livestock Biomethane Fails to Account for the LCFS's Incentive to Produce More Biomethane.

It is inaccurate to assume all biomethane that generates revenue through the LCFS would otherwise have vented into the atmosphere because the LCFS rewards CAFOs for producing more biomethane. A climate strategy focused on incentivizing biomethane production creates a high risk that methane emissions could actually increase. It is imprudent for CARB to ignore these risks. Several well-documented factors risk driving increased methane emissions, including:

08/aliso_canyon_2018_10_09_final_summary_and_responses_to_public_comments.pdf.

³⁷ *People v. Southern California Gas Company*, JCCP No. 4861, Mitigation Agreement (Aug. 8, 2018) p. 18 (stating that 100% of the methane reductions from the Mitigation Agreement Projects are counted toward SoCalGas's obligation to fully mitigate the 109,000 tons of methane); see also CARB, Summary of and Responses to Public Comments Received by the California Air Resources Board Regarding the Aliso Canyon Mitigation Agreement (Oct. 9, 2018) p. 20 ("SoCalGas's legal obligation to mitigate the leak's emissions will not be released until CARB certifies that all projects are operational and, collectively, projected to reduce 109,000 metric tons of methane emissions within ten years."), <u>https://ww2.arb.ca.gov/sites/default/files/2020-</u>

³⁸ Earthjustice Comments on November 9, 2022, Workshop at Appendix A.

- Digesters themselves increase methane formation relative to standard manure storage systems.³⁹ Depending on how much methane production has been intensified and how significant fugitive emission rates are, it is possible for the leaked methane to nullify or even exceed the methane emitted under the previous management regime.⁴⁰ Recent measurements show that fugitive emissions from biomethane and biogas supply chains exceed those in oil and gas roughly twice the amount used by the IEA's estimates.⁴¹
- Actual methane capture may fall well short of stated capture rates. Recent measurements of California CAFOs using remote sensing found CAFOs with covered lagoons for digesters emitted substantially similar levels of methane as those without lagoon covers.⁴² The study authors react to this by wondering whether the systems were not operational, which they lacked information on. Nevertheless, their findings reinforce the importance of critically examining whether digesters are achieving their promised capture rates in practice, and how frequently they are non-operational.
- **Digesters create powerful financial incentives to increase herd size.** As Dr. Emily Grubert explains, because 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 when there is an incentive to do so."⁴³ This has been corroborated by additional research commissioned by the Union of Concerned Scientists,⁴⁴ in analysis by both UC Davis researchers⁴⁵ and trade publications for the dairy industry,⁴⁶ and community review of permits for herd expansions where data was not redacted.⁴⁷ Not only does this mean that any

³⁹ Institute for Governance & Sustainable Development, A Primer on Cutting Methane: The Best Strategy for Slowing Warming in the Decade to 2030 (2023) at p. 119 <u>https://www.igsd.org/wp-content/uploads/2022/09/IGSD-Methane-Primer_2022.pdf</u>.

⁴⁰ See, e.g., Hambaliou Balde et al., Fugitive methane emissions from two agricultural biogas plants (Sept. 2022) <u>https://doi.org/10.1016/j.wasman.2022.07.033</u>; and Hambaliou Balde et al., Methane emissions from digestate at an agricultural biogas plant (Sept. 2016) <u>https://doi.org/10.1016/j.biortech.2016.06.031</u>.

⁴¹ Semra Bakkaloglu et al., Methane Emissions Along Biomethane and Biogas Supply Chains Are Underestimated (June 2022) <u>https://www.sciencedirect.com/science/article/pii/S2590332222002676</u>.

⁴² N.T. Vechi et al., Ammonia and Methane Emissions from Dairy Concentrated Animal Feeding Operations in California, Using Mobile Optical Remote Sensing (Jan. 2023) <u>https://doi.org/10.1016/j.atmosenv.2022.119448</u>.

⁴³ Emily Grubert, At Scale Renewable Natural Gas Systems Could Be Climate Intensive: The Influence of Methane Feedstock and Leakage Rates (Apr. 24, 2020) at p. 15 <u>https://iopscience.iop.org/article/10.1088/1748-9326/ab9335/pdf</u>.

⁴⁴ See Amin Younes and Kevin Fingerman, "Quantification of Dairy Farm Subsidies Under California's Low Carbon Fuel Standard" (Sept. 2021), at p. 19 <u>https://www.arb.ca.gov/lists/com-attach/24-lcfs-wkshp-dec21-wsAHVSN1MhVlpXNQRl.pdf</u>.

⁴⁵ Aaron Smith, "The Dairy Cow Manure Goldrush" (Feb. 2, 2022) <u>https://asmith.ucdavis.edu/news/revisiting-value-dairy-cow-manure</u>.

⁴⁶ Michael McCully, "Energy Revenue Could be a Game Changer for Dairy Farms" (Sept. 23, 2021) <u>https://hoards.com/article-30925-energy-revenue-could-be-a-game-changer-for-dairy-farms.html</u>.

⁴⁷ Leadership Counsel for Justice and Accountability, "A Working Paper on the CDFA DDRDP" (Apr. 3, 2019) at p. 12, <u>https://leadershipcounsel.org/wp-content/uploads/2019/04/A-Working-Paper-on-GGRF-Dairy-Digester-Program.pdf</u> ("In 2018, Fresno County approved Maddox Dairy's application for a dairy digester permit and a permit to increase its herd size by 700 cows from 3,309 to 4,000 -- a 24% increase. Open Sky also requested a

leakage from induced manure methane would be climatically "positive," but larger herd sizes would yield increased enteric emissions.

• At a minimum, digesters maintain emissions when they might otherwise be reduced. While low milk prices historically led dairies to reduce herd sizes (and concomitant emissions), biomethane contracts obligate dairies to maintain herd sizes even when it would otherwise be economical to cull cattle.⁴⁸

CARB's carbon accounting ignores all these market distortions and risks, improperly assuming the maximum conceivable benefit of each dairy digester project.

D. The Policy Outcomes of CARB's Proposal Run Counter to the State's Air Quality and Environmental Justice Goals.

Despite making up less than 1% of fuel energy used in the state, biogas received 15% of the credits generated under the LCFS in the most recent quarter, demonstrating the powerful effect of the extremely negative, outlier CI score for dairy biomethane.⁴⁹



Figure 1: Graphic from Clean Energy Highlighting the CI of Dairy RNG

The perverse effects of this policy run counter to the State's goals of cleaning up transportation pollution, reducing pollution in refinery communities, and addressing environmental injustice and pollution from the livestock industry. In each case, the LCFS favors the more polluting outcome, to the detriment of more sustainable or zero-emission options.

1. Polluting CNG Vehicles are Advantaged Over Electric Trucks.

permit to increase the size of their dairy by 700 milking cows following installation of a dairy digester. Bar 20 received approval for both a methane digester and an increase in herd size of up to 10,839 milking cows and 20,616 non-milking animals on 325 acres.").

⁴⁸ Michael McCully, "Energy Revenue Could be a Game Changer for Dairy Farms", *supra*.

⁴⁹ Greg Roche, "The Road to Net Zero with RNG" (Sept. 19, 2022)

https://greencarjournal.com/perspectives/industry-perspective/the-road-to-net-zero-with-

rng/#:~:text=RNG%20is%20the%20lowest%20carbon,fuel%20for%20the%20transportation%20market.

Contrary to the state's clear direction to achieve widespread deployment of ZE technology— embodied in CARB's recent approval of the State Implementation Plan—the current LCFS proposal would continue preferencing methane-burning vehicles and misdirect fleets to invest in combustion technology and infrastructure. The RNG industry has marketed the LCFS's distortionary impacts by arguing that RNG is the cleanest transportation option, and that "replacing just 25 percent of a fleet's diesel trucks with negative carbon intensive RNG from dairy manure can reduce a fleet's carbon emissions by 100%."⁵⁰ The flaws in the LCFS's carbon accounting create this opportunity for industry greenwashing: the LCFS allows a fleet with one methane-burning truck and 3 diesel trucks to generate more climate credits than a fleet with 4 electric trucks.

There is consensus across CARB's Scoping Plan, Mobile Source Strategy, and its State Implementation Plan that biomethane should not play a significant long-term role in roadtransportation. Yet CARB's current proposal would mean methane-burning trucks will continue to receive lopsided preference over electric trucks through the LCFS for another 20 years (until 2040 for any pathways approved by 2030). These vehicles last on the road for more than 15 years and require the expansion of bespoke methane-refueling infrastructure that risks being stranded.

This lavish support for methane-burning vehicles is counter-productive for air quality goals. It is unclear whether methane burning vehicles ever delivered their purported, incremental health benefits. Real-world health harms from methane-burning trucks are likely undercounted, because:

- Methane-burning trucks may reduce particle mass, but they increase particle number, meaning they emit more, smaller particles, potentially creating new health concerns.⁵¹
- Real-world performance of these trucks fall far short of their stated benefits. CARB's inuse tests found that 13 out of 15 gas trucks exceeded certification limits, and 5 out of 15 had emissions 3 times higher than the promised limit.⁵²
- Methane-burning trucks also emit high levels of ammonia. Worryingly, ammonia produced from catalysts used to control NOx emissions spikes under the same operating conditions that allow for the most NOx reductions, indicating a trade-off in pollution.⁵³

Whatever NOx benefits CNG trucks may have once had, further investments in methaneburning trucks are not consistent with California's air quality goals. Given the current and rapidly growing availability of electric trucks, and new standards for emissions from diesel

⁵⁰ Clean Energy, "RNG is Decarbonizing Trucking Today" (July 1, 2022) <u>https://www.freightwaves.com/news/rng-is-decarbonizing-trucking-today</u>.

⁵¹ Cenex, Dedicated to Gas: An Innovative UK Research Project to Assess the Viability of Gas Vehicles (Oct. 2019), <u>https://www.cenex.co.uk/app/uploads/2019/11/324-003-004-Dedicated-to-Gas-Assessing-the-Viability-of-Gas-Vehicles.pdf</u>.

⁵² CARB, In-Use Emission Performance of Heavy Duty Natural Gas Vehicles Lessons Learned from 200 Vehicle Project (July 2021), <u>https://ww2.arb.ca.gov/sites/default/files/2021-04/Natural Gas_HD_Engines_Fact_Sheet.pdf</u>.

⁵³ Rachel Muncrief, A Comparison of Nitrogen Oxide Emissions from Heavy-Duty Diesel, Natural Gas, and Electric Vehicles (Sept. 2021) at p. 5, <u>https://theicct.org/sites/default/files/publications/low-nox-hdvs-compared-sept21.pdf</u>.

trucks, there is no air pollution benefit to continuing investment in methane-burning vehicles.⁵⁴ CARB must end the absurdity of encouraging continued, long-lived investment in polluting road-transportation technology that harms public health. Reforming the LCFS to no longer favor methane-burning trucks over BEVs would help address the air pollution crises in the South Coast and San Joaquin Valley, where methane-burning trucks are concentrated. Even if CARB believes that subsidizing methane capture from dairies is a worthy strategy, it is clearly counter-productive to do so in a manner that undermines the agency's ZEV goals. CARB should not use transportation-sector program like the LCFS to create a market for livestock methane because encouraging the use of methane as a transportation fuel harms the environmental communities that are overburdened by tailpipe pollution.

2. Pollution-intensive Gray Hydrogen is Advantaged Over Zeroemission Electrolytic Hydrogen.

Currently, the LCFS counterproductively incentivizes status quo, polluting forms of hydrogen production. Due to the assumption that their methane feedstock is carbon negative, hydrogen producers that book and claim attributes from remote biogas projects can create significant revenue streams for gray hydrogen that harms communities near refineries. Green hydrogen produced from electrolysis powered by solar photovoltaics in Alameda County receive a carbon-intensity score of zero, while hydrogen produced from SMR of fossil gas in Wilmington coupled with the purchase of environmental attributes from dairy methane in Indiana receives a carbon intensity score of negative 287 gCO2e/MJ.⁵⁵ Fossil-derived hydrogen paired with biomethane credits from CAFOs is thus treated as "cleaner" and more generously subsidized than solar-powered electrolytic hydrogen. Neither the communities breathing the air pollution from the SMR plant in Wilmington or Richmond generating gray hydrogen, nor the communities living with the water pollution from the CAFOs generating the "environmental attributes," would agree that this hydrogen is "clean." Instead of acting as an engine for innovation and zero-emission green hydrogen deployment, Staff's proposal would make the most lucrative course of action continuing to produce hydrogen from fossil gas-emitting significant tons of VOCs, NOx, and fine particulates in refinery communities-and simply go shopping for biogas credits wherever they are cheapest across North America. At the same time that the State Implementation Plan requires reducing emissions from smokestacks and tailpipes—especially those like hydrogen SMR facilities, which are concentrated densely in communities of color near refineries and other major stationary sources of pollution-the LCFS sends the opposite signal.

3. Pollution-intensive, Industrialized CAFOs are Advantaged Over Dairies with Sustainable Management Practices.

 ⁵⁴ Rachel Muncrief, A Comparison of Nitrogen Oxide Emissions from Heavy-Duty Diesel, Natural Gas, and Electric Vehicles (Sept. 2021) at p. 7, <u>https://theicct.org/sites/default/files/publications/low-nox-hdvs-compared-sept21.pdf</u>.
 ⁵⁵ Sara Gersen, Reclaiming Hydrogen for a Renewable Future: Distinguishing Oil& Gas Industry Spin from Zero Emissions Solutions (at slide 5), <u>https://efiling.energy.ca.gov/GetDocument.aspx?tn=243619</u>.

The high capital costs of anaerobic digesters make economic sense only for the CAFOs that produce and store large quantities of wet manure,⁵⁶ and these CAFOs are the same ones that rely on management practices that increase emissions of VOCs, ammonia, nitrates, and other nuisances. Methane from manure does not inevitably occur from dairy production, and many dairies in the State and across the country manage their manure in a manner that results in little or no methane. But industrialized CAFOs that rely on confinement and consolidation of large herds do rely on wet manure lagoons to minimize costs and maximize profits. Out of a range of management strategies, wet manure lagoons have the highest per-cow global warming potential—about 20 times higher than solid manure storage.⁵⁷

These profit-maximizing practices that result in high manure methane production are the same practices that drive the greatest source of environmental harm in the form of nitrate pollution in the groundwater, eutrophication of streams and lakes, increased ammonia and other volatile organic compound emissions, and intense, distressing odors and flies.⁵⁸ Yet it is precisely these operations that are necessary to link to the LCFS's valuable credit generating opportunities. The Assembly oversight analysis presents cost curves that highlight how digester investments are heavily lopsided toward the largest operations, and "preference for dairy digester programs could provide the largest 225 dairies with a subsidized competitive advantage over smaller dairies."⁵⁹ The analysis raises alarms about the fate of hundreds of family-run dairies with smaller (less than 2,000 cows) herds, warning the State "may be going down a dangerous path for smaller dairies, where these projects don't seem viable."⁶⁰

⁵⁶ Markus Lauer *et al.*, *Making Money from Waste: The Economic Viability of Producing Biogas and Biomethane in the Idaho Dairy Industry*, Applied Energy, Vol. 222 (July 15, 2018), https://www.sciencedirect.com/science/article/pii/S0306261918305695.

 ⁵⁷ Justine J. Owen & Whendee L. Silver, Greenhouse gas emissions from dairy manure management: a review of field-based studies, Global Change Biology, Vol. 21, No. 2 (Feb. 2015), <u>https://escholarship.org/uc/item/5gg2r58c</u>.
 ⁵⁸ Ruthie Lazenby, Rethinking Manure Biogas – Policy Considerations to Promote Equity and Protect the Climate and Environment (Aug. 2022), <u>https://www.vermontlaw.edu/sites/default/files/2022-</u>08/Rethinking Manure Biogas.pdf.

⁵⁹ California Assembly Budget Committee, Subcommittee Hearing No. 3 on Resources and Transportation (Apr. 19, 2017), at p. 20 <u>https://abgt.assembly.ca.gov/sites/abgt.assembly.ca.gov/files/April%2019%20-</u>%20Toxics%20Recycling%20Ag.pdf.

⁶⁰ California Assembly Budget Committee, Subcommittee Hearing No. 3 on Resources and Transportation (Apr. 19, 2017), at p. 20 <u>https://abgt.assembly.ca.gov/sites/abgt.assembly.ca.gov/files/April%2019%20-</u>%20Toxics%20Recycling%20Ag.pdf.



Excessive payments to CAFOs that install dairy digesters can have the perverse effect of encouraging the dairy industry to consolidate into larger, more polluting operations. Even the dairy industry's own trade press warns of digesters disproportionately favoring large, industrialized CAFOs over smaller dairies that don't produce the same levels of pollution, noting that revenue from the LCFS are inaccessible to smaller farmers. Thus, they conclude that "the returns from energy generated by large farms may accelerate the growth of mega-dairy farms."⁶¹ Facilitation of this growth will further intensify local pollution impacts.

Further, as we have previously mentioned, the digesters themselves may increase local emissions of ammonia. Recent reporting claims that CARB is commissioning studies to understand the impacts digesters have on ammonia emissions. It would be inappropriate for CARB to continue allowing digester projects to over-generate LCFS credits without knowing the results of these studies.⁶²

A sensible and just climate strategy would target incentives toward the dairy farms using more sustainable management practices and herd sizes, while regulating the largest, highest-revenue generating, and/or most polluting operations. CARB takes the opposite approach. Small

⁶¹ Michael McCully, "Energy Revenue Could be a Game Changer for Dairy Farms" (Sept. 23, 2021), <u>https://hoards.com/article-30925-energy-revenue-could-be-a-game-changer-for-dairy-farms.html</u>.

⁶² Emma Foehringer Merchant et al., California Has Provided Incentives for Methane Capture at Dairies, But the Program May Have 'Unintended Consequences' (Sept. 19, 2020), .

or sustainably managed dairies are excluded from the LCFS, and large, industrialized CAFOs relying on manure lagoons stand to reap windfall profits.⁶³

IV. CARB Should Adopt a More Conservative Approach to Protect Against Social and Environmental Harm from Biofuels.

We appreciate that Staff continues to acknowledge some of the risks associated with crop-based biofuels and their willingness to explore limits on their use in the program. At the workshop, several parties raised examples of recent studies that provide evidence of biofuels such as corn-based ethanol having far higher-than assumed ILUC factors resulting in carbon intensities 24% greater than gasoline.⁶⁴ CARB Staff responded by pointing out that industry had provided other studies showing the LCFS over-estimates carbon emissions from ILUC associated with crop-based fuels. These uncertainties highlight why narrowly relying on CI estimates of ILUC to send signals is an inadequate protection against the harms that scaled or even continued biofuel consumption can drive. Moreover, as Earthjustice and other commenters have noted, there is a high risk that reducing land use change in effect increases food prices and reduces overall consumption, implying a regrettable trade-off between maintaining low climate impacts and low food security impacts.⁶⁵

We do not doubt that it is possible for genuinely sustainable biofuels to incrementally reduce emissions relative to the petroleum they displace. But these reductions are nearly impossible to verify and are likely less than what could have been achieved if land associated with their cultivation were instead left for natural revegetation⁶⁶ or producing solar or wind energy.⁶⁷ The harms of increased crop-based biofuels consumption are by contrast far more severe, and irreversible. Moreover, virtually all these fuels are being used for the on-road transportation sector, where they end up refined and then burned, harming air pollution in California's communities along the way. Given the availability of low-risk, zero-emitting alternatives that can create jobs building local infrastructure here in California, it is past time to halt the expansion of biofuels in the program, which have driven an unprecedented glut of credits in the past six quarters alone.⁶⁸

⁶⁶ Horst Fehrenback et al., Carbon Opportunity Costs of Biofuels in Germany – An Extended Perspective on the Greenhouse Gas Balance Including Foregone Carbon Storage (Oct. 2022), https://doi.org/10.3389/fclim.2022.941386.

⁶³ Amin Younes and Kevin Fingerman, "Quantification of Dairy Farm Subsidies Under California's Low Carbon Fuel Standard" (Sept. 2021), <u>https://www.arb.ca.gov/lists/com-attach/24-lcfs-wkshp-dec21-</u>wsAHVSN1MhVlpXNQRl.pdf.

⁶⁴ Tyler J. Lark et al., Environmental Outcomes of the US Renewable Fuel Standard (Feb. 14, 2022), <u>https://doi.org/10.1073/pnas.2101084119</u>.

⁶⁵ See, e.g. Jim Duffy, Comments on November 9, 2022 LCFS Workshop (Dec 21, 2022) at pdf pp. 5-6, https://www.arb.ca.gov/lists/com-attach/104-lcfs-wkshp-nov22-ws-Wj4BclE2UGUCfVMM.pdf.

⁶⁷ Aaron Smith, Should Farmers Plant Solar Panels or Corn? (Oct. 13, 2022), https://agdatanews.substack.com/p/should-farmers-plant-solar-panels.

⁶⁸ "New credits have exceeded deficits for six consecutive quarters...Renewable diesel remained the leading source of new credits." Argus Media, "California Posts New Record LCFS Credit Build: Update" (Jan. 31, 2023) https://www.argusmedia.com/en/news/2414974-california-posts-new-record-lcfs-credit-build-update.

We therefore urge CARB to take the immediate step of implementing a cap on all lipidbased feedstocks at their 2020 levels (or some average reference level between 2016-2019, as suggested by the Union of Concerned Scientists) and concurrently undertake an updated risk assessment which can be used to sort fuels and feedstocks into buckets of high, medium, and low risk. These categories can then be used to plan declining caps that ultimately phase out high-risk biofuels. Crucially, as CARB recognized in its workshop slides, "biofuel production must not come at the expense of deforestation or food production." Thus, it is essential that an updated risk assessment look holistically at potential harms from biofuel reliance, including risks to food prices and food insecurity, biodiversity loss, air and water pollution, and ecosystem degradation. In service of this risk assessment, Earthjustice suggests consulting the list of reports and studies in Appendix A to these comments. We are happy to continue working with Staff to contribute to a rigorous and holistic updated risk assessment.

V. Medium- and Heavy-Duty ZEV Refueling Infrastructure Capacity Credits Should Support Shared Private Equipment.

Earthjustice appreciates Staff's proposal to provide capacity credits for medium- and heavy-duty ZEV refueling infrastructure.⁶⁹ Expanding the availability of infrastructure incentives to medium- and heavy-duty ZEV infrastructure is another example of how the LCFS can evolve to support California's "wholesale transition to ZEVs in the trucking sector."⁷⁰ CARB should carefully craft eligibility requirements so that any provisions designed to ensure stations "service more than a single fleet" do not exclude shared private charging stations.⁷¹ Shared private charging stations are critical for small truck fleets to adopt ZEVs. Small fleets typically do not own their own truck depot facilities, making it impractical for them to install dedicated charging infrastructure. Instead, these fleets will likely rely on shared charging infrastructure at locations like warehouses and facilities near ports and rail yards, which may not be open to the public.

Further, as discussed in previous comments, pooling infrastructure capacity credits up to 10% of deficits will better address the chicken-and-egg challenge of chargers needing a pipeline of utilization to justify their upfront costs.⁷² In addition, CARB should provide additional incentives to encourage siting this infrastructure in disadvantaged communities and pairing it with zero-emissions distributed energy resources.⁷³

VI. All LCFS Scenarios Should be Revised to Eliminate Credit-Generation for Carbon Capture and Sequestration Projects that Support Enhanced Oil Recovery.

It is critical that CARB respond to the recent enactment of SB 1314 by ending all LCFS credit-generating opportunities for carbon capture and sequestration (CCS) projects that are used for enhanced oil recovery (EOR). The statute prohibits operators from injecting carbon dioxide

⁶⁹ CARB Staff, February 22, 2023, Workshop Presentation at slide 29.

⁷⁰ Id.

⁷¹ See id.

⁷² Earthjustice Comments on November 9, 2022, Workshop at pdf p. 13.

⁷³ Earthjustice Comments on July 7, 2022 LCFS Workshop at pp. 7-8.

produced from a capture or sequestration project into a Class II well for purposes of EOR.⁷⁴ SB 1314 declares that "the purpose of carbon capture technologies, and carbon capture and sequestration, is to facilitate the transition to a carbon-neutral society and not to facilitate continued dependence upon fossil fuel production."⁷⁵ Because the Legislature has recognized that EOR is incompatible with California's carbon-neutrality policies, it is would be inconsistent with State policy to provide incentives for these projects. CARB's current CCS protocol inappropriately ignores the harms of using the oil produced through EOR⁷⁶—the very problem that the Legislature passed SB 1314 to address. Therefore, the LCFS should eliminate the existing eligibility for CCS sites that include oil and gas reservoirs used for EOR.

VII. CARB Should Conduct a Dedicated LCFS Workshop on Environmental Justice and Develop an Environmental Justice Scenario for Consideration in the LCFS Rulemaking Process.

Earthjustice, often alongside other public interest and environmental justice partners, has participated in and provided comments on each of the LCFS pre-rulemaking workshops since 2020. Unfortunately, Staff's proposal presented in the February 22 workshop provided little recognition of matters of grave concern for climate and environmental justice stakeholders, creating the impression that our perspective is being overwhelmed in a process dominated by industry stakeholders. This omission, paired with the fact that frontline community participants waited hours to testify often to receive no direct responses from Staff, underscore the need for an environmental justice workshop dedicated to developing an environmental justice scenario for the LCFS rulemaking process. We echo this and the other points raised by our partners in the Climate Justice Coalition comments.

Conclusion

We thank CARB for considering these comments and look forward to working together to develop policies that will help California quickly and justly achieve the state's climate and air quality goals.

Sincerely,

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⁷⁴ Senate Bill 1314 (2022), § 2 (codified at Cal. Pub. Res. Code § 3132).

⁷⁵ *Id.* at § 1.

⁷⁶ CARB, Carbon Capture and Sequestration Protocol under the Low Carbon Fuel Standard (Aug. 13, 2018) at p. 21 ("Any emissions downstream of the sequestration site except entrained CO₂ in the case of CO₂-EOR) are excluded since they are associated with the downstream products rather than the CCS project."), https://ww2.arb.ca.gov/sites/default/files/2020-03/CCS Protocol Under LCFS 8-13-18 ada.pdf.

Appendix A: Suggested Resources to Consult for Updated Biofuels Risk Assessment

- 1. Comparing Climate Benefits of Land Use Alternatives to Fuel Crop Cultivation
 - a. Horst Fehrenback et al., Carbon Opportunity Costs of Biofuels in Germany An Extended Perspective on the Greenhouse Gas Balance Including Foregone Carbon Storage (Oct. 2022) <u>https://doi.org/10.3389/fclim.2022.941386</u>.
 - b. Aaron Smith, Should Farmers Plant Solar Panels or Corn? (Oct. 13, 2022) <u>https://agdatanews.substack.com/p/should-farmers-plant-solar-panels</u>.
 - c. Samuel G. Evans et al., Greenhouse Gas Mitigation on Marginal Land: A Quantitative Review of the Relative Benefits of Forest Recovery versus Biofuel Production (Jan. 12, 2015) <u>https://doi.org/10.1021/es502374f</u>.
 - d. IEEFA, India's Ethanol Roadmap Off Course Accelerating Electric Vehicle Uptake Would Achieve Similar Goals Using a Fraction of the Land (Mar. 2022) <u>https://ieefa.org/wp-content/uploads/2022/03/Indias-Ethanol-Roadmap-Off-Course March-2022.pdf</u>.
- 2. Food Price and Food Insecurity
 - a. Yogeeswari Subramanian, The Impact of Biofuels on Food Security (Dec. 2019) https://doi.org/10.1016/j.inteco.2019.10.003.
 - b. Tyler J. Lark et al., Environmental Outcomes of the US Renewable Fuel Standard (Feb. 14, 2022) <u>https://doi.org/10.1073/pnas.2101084119</u>.
 - c. Tim Searchinger et al., Creating A Sustainable Food Future (Dec. 2018) <u>https://research.wri.org/sites/default/files/2019-07/creating-sustainable-food-future_2_5.pdf</u>.
 - d. Transport Environment, Food Not Fuel: Part Two (June 2022) <u>https://www.transportenvironment.org/wp-content/uploads/2022/06/Food-vs-</u> <u>Fuel_-Part-2_Vegetable-oils-in-biofuels.pdf</u>.
 - e. Oxfam et al., Biofuels: An Obstacle to Real Climate Solutions (Mar. 2023) https://oxfam.app.box.com/s/mr9uh3m4rm4kzy1c9gyf2hy5zh20nreb.
- 3. Biodiversity and Ecosystem Impacts
 - Yu Feng et al., Doubling of Annual Forest Carbon Loss Over the Tropics During the Early Twenty-First Century (May 2022) <u>https://doi.org/10.1038/s41893-022-00854-3</u>.
 - b. Sophie Jane Tudge et al., The Impacts of Biofuel Crops on Local Biodiversity: A Global Synthesis (Jan. 19, 2021) <u>https://doi.org/10.1007/s10531-021-02232-5</u>.
 - c. Transport Environment, Fueling our Crises How Soy Biofuels are Pushing the Amazon Closer to the Tipping Point (Nov. 4, 2022) <u>https://www.transportenvironment.org/discover/how-soy-biofuels-are-pushing-the-amazon-closer-to-the-tipping-point/</u>.