February 20, 2024

California Air Resources Board (CARB)
1001 I Street, Sacramento, CA 95814
Submitted Electronically

RE: CALIFORNIA AIR RESOURCES BOARD PUBLIC HEARING TO CONSIDER PROPOSED LOW CARBON FUEL STANDARD AMENDMENTS

Dear California Air Resources Board Staff,

Center for Resource Solutions (CRS) appreciates this opportunity to submit comments in response to the March 21, 2024 Public Hearing to Discuss Potential Changes to the Low Carbon Fuel Standard (LCFS) and Proposed Amendments to the Low Carbon Fuel Standard Regulation (hereafter "Draft"). We support the LCFS Program and the Assembly Bill (AB) 32 Scoping Plan. Our comments pertain to a utility-specific carbon intensity (CI) value of electricity, the definitions of environmental attributes and book-and-claim accounting, and book-and-claim accounting best practices for biomethane and hydrogen.

BACKGROUND ON CRS AND GREEN-E®

CRS is a 501(c)(3) nonprofit organization that creates policy and market solutions to advance sustainable energy and has been providing renewable energy and carbon policy analysis and technical assistance to policymakers and other stakeholders in California for over 20 years. CRS also administers the Green-e® programs. For over 20 years, the Green-e® program has been the leading independent certification for voluntary renewable electricity products in North America. In 2021, the Green-e® Energy program certified retail sales of over 110 million megawatt-hours (MWh), serving over 1.3 million retail purchasers of Green-e® certified renewable energy, including over 309,000 businesses.[1] The Green-e® Renewable Fuels program was launched in 2021, initially as a standard and certification for biomethane products and associated environmental attributes. This program is in the process of expanding to certify green hydrogen transactions and programs and can serve as a guide for CARB as it helps accelerate the adoption of biomethane and clean hydrogen, while ensuring that they are from sustainable renewable resources and meet the highest environmental standards, and that customers are protected in their purchase and ability to make verified usage claims.

[1] See the 2022 (2021 Data) Green-e® Verification Report (soon to be published) here for more information: https://www.green-e.org/verification-reports

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COMMENTS ON THE DRAFT

Utility-Specific Carbon Intensity Value of Electricity

1. We recommend that the Lookup Table CI value for electricity be utility-specific CIs that represent retail electricity delivery.

The Lookup Table CI value for electricity should allow for entities to claim a utility-specific CI that reflects retail transactions instead of the California grid mix. This enables a more accurate reflection of the emissions associated with electricity use and is already part of the Oregon Clean Fuels Program.[2] To further improve the accuracy of this value, it should be updated to reflect electricity delivery to retail sales. The Lookup Table CI value for California grid electricity currently reflects the statewide grid average of electricity generation and does not reflect the sale of Renewable Energy Certificates (RECs) or voluntary electricity products. Since the LCFS allows for adjustments of CI scores based on contractual mechanisms like RECs and other contracts for specified power, the default CI should also reflect retail deliveries, not simply generation.

The California Energy Commission's (CECs) Power Source Disclosure (PSD) program would be the best place to start in determining this value. PSD calculates provider portfolio-specific emissions intensities that are intended to represent the emission intensity of electricity delivered to retail load. The PSD program requires that RECs must be owned and not sold.[3] The program also backs out voluntary renewable electricity product sales from provider's default emission intensity.[4] Using these emissions intensities could avoid double counting where voluntary green power programs and RECs are used to generate additional and incremental LCFS credits (i.e., the same renewable energy is included in the statewide grid average).

Environmental Attribute Definition

2. We recommend that CARB update the environmental attribute definition at § 95481 Definitions and Acronyms to: "*Environmental Attributes: Any and all impacts and benefits attributable to the generation from the Generating Unit, including but not limited to the fuel or resource type,*

[2] Oregon Clean Fuels Program Updated Electricity Carbon Intensity Values for 2021. Available at: https://www.oregon.gov/deq/ghgp/Documents/cfpUpdated2021CIs.pdf
[3] See Section 1393(c)(1)(B) of Power Source Disclosure Regulation in Title 20, CCR Available at: https://www.energy.ca.gov/programs-and-topics/programs/power-source-disclosure/power-source-disclosure-resources-retail
[4] See Section 1394.1 (a) of Power Source Disclosure Regulation in Title 20, CCR Available at: https://www.energy.ca.gov/programs-and-topics/programs/power-source-disclosure/power-source-disclosure-resources-retail

location, greenhouse gas emissions, greenhouse gas emissions avoided or displaced on the grid."

The definition in the Draft refers to all attributes as "emissions reductions,"[5] which is misleading as not all attributes of generation are reductions. For example, RECs reflect attributes of generation, including both the direct emissions and any avoided grid emissions associated with generation. But RECs are not carbon offsets and do not represent a quantity of emissions reductions.[6] We suggest using the above definition, which is consistent with the Western Renewable Energy Generation Information System (WREGIS)[7] and represents a more encompassing and accurate definition of environmental attributes.

Book-and-claim Accounting Definition

3. We recommend that CARB update the book-and-claim accounting definition at § 95481 Definitions and Acronyms to: "*Book-and-Claim Accounting is chain of custody model in which the administrative record flow is not necessarily connected to the physical flow of material or product throughout the supply chain. For example, the environmental attributes of low-CI electricity, biomethane or low-CI hydrogen may be separated from or matched with the use of grid electricity, fossil natural gas or hydrogen respectively.*"

The definition in the Draft describes book-and-claim accounting as "an indirect accounting system where a physical product and its environmental attributes can be separately traded."[8] The reference to "indirect accounting" may be misinterpreted as a reference to indirect emissions accounting. Indirect emissions, sometimes called avoided emissions, are the net changes in emissions on the grid due to the generation, while direct emissions are the emissions associated with the generation.[9] Since the emissions being tracked for LCFS are the direct emissions associated with electricity generation, this may be confusing. We recommend the above definition, which is based on the International Organization for Standardization (ISO)[10] 22095 Standard and reflects the broader use of the term in other sustainability accounting practices.

Book-and-claim for Biomethane

[5] Appendix A-1: Proposed Regulation Order (Proposed Sections for Amendments). § 95481 Definitions and Acronyms
[6] For more information on the difference between attribute certificates such as RECs and emissions reductions/offsets, see the U.S. Environmental Protection Agency Guide to RECs and Offsets. Available atL https://www.epa.gov/sites/default/files/2018-03/documents/gpp_guide_recs_offsets.pdf
[7] Western Renewable Energy Generation Information System (WREGIS) Operating Rules. Available at: https://www.wecc.org/_layouts/15/WopiFrame.aspx?sourcedoc=/Administrative/WREGIS%20Operating%20Rules%20October%202022%20Final.pdf&action=default&DefaultItemOpen=1
[8] Appendix A-1: Proposed Regulation Order (Proposed Sections for Amendments). § 95481 Definitions and Acronyms
[9] See Corporate and Voluntary Renewable Energy in State Greenhouse Gas Policy An Air Regulator's Guide. (pg.8). Available at: https://resource-solutions.org/learn/policy-solutions/
[10] ISO 22095:2020 Standard Chain of custody — General terminology and models. Available at: https://www.iso.org/obp/ui/#iso:std:iso:22095:ed-1:v1:en

4. We recommend that CARB remove the requirement that eligible pipelines must flow towards California at least 50% of the time.

CRS supports the LCFS program rules that biomethane use may be demonstrated via book-and-claim accounting. But we are concerned by the requirement that eligible pipelines must flow towards California at least 50% of the time. We request more information regarding the overall the purpose or need for this restriction, the rationale behind the 50% number, and how it will be verified and how often.

The use of book-and-claim accounting, without the pipeline flow restriction, is an appropriate and successful use of book-and-claim accounting as it recognizes the realities of common carrier pipelines—in which fossil methane and biomethane are blended and indistinguishable—and values incentivizing biomethane production without undue restrictions regarding physical traceability. Limiting book-and-claim accounting based on the physical flow of pipelines is inconsistent with its premise and the contractual basis for credible claims of biomethane use from common carrier pipelines that CARB has established. The direction of physical flow on the pipeline does not affect the biomethane use claim of the entity holding the attestation of environmental attributes.

Please refer to CRS's December 14, 2022, comments to the California Energy Commission[11] for suggestions regarding additional requirements for verification of credible use claims for book-and-claim accounting for biomethane using both Renewable Fuels Certificates and the Green-e® Renewable Fuels program.

<u>Book-and-claim for Hydrogen</u>

5. CRS supports allowing the purchase and retirement of attributes and use of contracts to demonstrate use of renewable energy for hydrogen production from both electrolysis and steam methane reforming (SMR).

Book-and-claim accounting practices for both renewable electricity and renewable natural gas (i.e., biomethane) rely on energy attribute certificates[12] (e.g., RECs and Renewable Thermal Certificates, RTCs, respectively) to demonstrate clean energy use. The sections below describe the importance of energy

[11] Comments on the California Energy Commission Clean Hydrogen Program under AB209 (Docket 22-ERDD-03). Section: "Hydrogen Produced by Steam Methane Reforming" Pg. 3-4.
Available at: https://resource-solutions.org/document/121422/

[12] Delivery of energy attributes may also be verified in contracts and attestations which specify which party retains the right to make environmental claims on the attribute, and that no other party may make claims on the attributes. Using established certificates (e.g., RECs and RTCs) and tracking systems facilitates verification of attribute ownership.

attributes for clean hydrogen produced by electrolysis or SMR. Allowing hydrogen production facilities to purchase attributes and use contracts to demonstrate use of renewable energy for hydrogen production (book-and-claim) is essential to the feasible implementation of a clean hydrogen pathway. Requiring the retirement of these attributes or verifying their contractual delivery for use in renewable energy for hydrogen production avoids double counting. Relying on existing market mechanisms and established best practices facilitates the growth of clean hydrogen.

Hydrogen Produced by Electrolysis

CRS supports CARB's requirement that "any renewable energy certificates or other environmental attributes associated with the energy are not issued credits or claimed under any other voluntary or mandatory program."[13] Verifying the use of renewable electricity for the production of hydrogen requires RECs. RECs are defined very clearly in California by the California Public Utilities Commission (CPUC) as including "all renewable and environmental attributes."[14] As such, RECs are required to substantiate delivery and use of renewable electricity and the specified CI of a renewable generation unit. Whether renewable electricity is procured for hydrogen production using onsite generation, a power purchase agreement (PPA), or a utility program, for example, the associated RECs should be retired to substantiate exclusive use of renewable electricity at that hydrogen production facility and prevent double counting. RECs may be retired in WREGIS by or on behalf of hydrogen production for registered generators. In the case that the renewable generator used is not registered with WREGIS, RECs or generation attributes should be transferred and retired contractually on behalf of hydrogen production.

Hydrogen Produced by Steam methane reforming (SMR)

In the United States, 95% of hydrogen is produced by SMR, a reaction between a methane source, such as natural gas, and high-temperature steam[15]. Biomethane, also known as renewable natural gas (RNG), is increasingly recognized for its lower lifecycle greenhouse gas emissions and presents an opportunity to lower the carbon intensity of Hydrogen produced by SMR. CRS support CARB's requirement for hydrogen produced from biomethane that "the entity claiming the environmental attributes has the exclusive right to claim environmental attributes associated with the sale or use of the biogas or biomethane."[16]

There are multiple pathways for producing RNG, each with their own environmental and social considerations. Many of the same factors that are relevant to producing high quality renewable energy,

[13] Appendix A-1: Proposed Regulation Order (Proposed Sections for Amendments). 95488.8. (i)(1)(C)5
[14] See CAL. PUB. UTIL. CODE § 399.12(h)(2).
[15] For further discussion see U.S. IRS (2020). HYDROGEN STRATEGY Enabling A Low-Carbon Economy. Available at: https://www.energy.gov/sites/prod/files/2020/07/f76/USIRS_FE_Hydrogen_Strategy_July2020.pdf
[16] Appendix A-1: Proposed Regulation Order (Proposed Sections for Amendments). 95488.8. (i)(1)(E)1

such as accounting for fuel delivery, using sustainable resources, credit vintage requirements, and facility age have bearing on RNG production as well. The Green-e® Renewable Fuels program can serve as a guide for the eligibility rules for the LCFS to ensure that RNG used in hydrogen production meets the highest standards and has positive impacts.

Please refer to CRS's December 14, 2022 comments to the California Energy Commission[17] regarding the use of both Renewable Fuels Certificates and the Green-e® Renewable Fuels program for additional information related to fuels certificates, time-matching, facility age, vintage requirements, and impact considerations for hydrogen.

We thank you for this opportunity to provide comments on the LCFS Program. Please feel free to reach out with any questions or comments.

Sincerely,
Lucas Grimes
Manager, Policy

[17] Comments on the CEC's Clean Hydrogen Program under AB209 (Docket 22-ERDD-03). Pg. 4-6. Available at: https://resource-solutions.org/document/121422/