NOYES LAW CORPORATION
FUEL & CARBON LAW

June 6, 2023
Liane Randolph
Chair, California Air Resources Board

Steve Cliff
Executive Officer, California Air Resources Board

1001 I Street
Sacramento, CA 95814

Comment submitted electronically

RE: Low-CI Power Coalition Comments on Low Carbon Fuel Standard Rulemaking – Sourcing Low-Carbon Intensity Power.

Dear Chair Randolph and Executive Officer Cliff,

Our diverse group of low carbon fuel producers and developers including Blue Arrow, Fulcrum BioEnergy, H Cycle, Infinium, Velocys, and World Energy (collectively, the "Low-CI Power Coalition") appreciates the opportunity to offer comments on the Low Carbon Fuel Standard ("LCFS") rulemaking. As reflected in the attached Appendix 1, these leading-edge companies utilize a diverse range of low carbon feedstocks and advanced process technologies to produce the low carbon fuels of the future including electrofuels, hydrogen, renewable diesel and naphtha, and sustainable aviation fuel.

These comments address the need for certain program refinements to enable the sourcing of low carbon intensity ("Low-CI") power under the LCFS program. Currently, the LCFS regulations contain unduly restrictive limitations that make it generally infeasible for low carbon fuel production facilities to source Low-CI power. Section 95488.8(h) creates strict limits on power sourcing unless expressly allowed elsewhere in the LCFS Regulation. The California Air Resources Board ("CARB") should amend this rule in the upcoming rulemaking because this limitation has unnecessarily limited the development and procurement of new, additional clean energy resources. These comments propose revisions to the LCFS program that would achieve additional GHG reductions by promoting the integration of new, additional clean energy resources. Our proposed regulatory text is set forth in Appendix 2. As low carbon fuel production continues to expand to decarbonize and defossilize California's energy supply, the proposed LCFS program modification would create demand for new low carbon energy sources, rather than expanding fossil-based power demand.

Low-CI Power Proposal Overview:

CARB should create additional flexibility for the sourcing of Low-CI power set forth in Section 95488.8(h). In particular, CARB should allow for review of new Low-CI power sources that are contracted by fuel pathway holders and delivered via the grid. The fuel pathway holder would be required to submit documentation as part of a Tier 2 Application process that it has contracted for one or more new Low-CI power sources under a power purchase agreement ("PPA") or ownership agreement. The contract or ownership agreement would need to meet certain threshold requirements discussed below and be subject to CARB review and approval. If approved, the fuel pathway holder would have two unique carbon-intensity ("CI") scores for its project: one using the Low-CI power source and another using grid average CI where the fuel production facility is located. During the quarterly reporting process, the fuel pathway holder would align its energy use with the production of energy from the Low-CI power source(s). Any energy use that cannot be aligned with production from the Low-CI power source would be reported under the grid average CI score. The power sourcing would also be subject to annual reporting and verification. We have designed the proposal to leverage existing LCFS processes and minimize the time needed to ensure that Low-CI power sourcing meets CARB's program requirements. We have also designed this proposal to ensure that all aspects of the LCFS program adhere to CARB's priorities for real, additional, verifiable and enforceable emission reductions.

The Low-CI Power Proposal Will Result in Significant, Additional Greenhouse Emission Reductions.

The proposal is intended to ensure that emission reductions attributable to sourcing new, additional Low-CI power sources when compared to the status quo. Under existing LCFS regulations, a fuel production facility energy demand would be served with grid electricity, which in many jurisdictions would be met by a combination of existing resources and new resources in the retail electric resource plans. Due to limitations in Section 95488.8(h), a new fuel production facility has no practical alternative other than source power from the utility, which is likely to increase GHG emissions on a marginal basis. Marginal emission rates vary by market, and are generally the greatest during peak conditions. Since utilities typically plan their systems to serve the peak need, in many jurisdictions, the incremental resource on the system to serve a new fuel production process would be served by fossil-fueled resources.

To avoid this, a fuel pathway holder should be able to enter into contracts for new, additional Low-CI power sources that are not already contracted to a utility or another market participant. The fuel pathway holder would be permitted to contract for a portion (or phase) of a larger power source, so long as the fuel pathway holder's share of the power or capacity is not encumbered to another buyer and the resource is a new resource. Finally, the fuel pathway holder would need to be able to demonstrate that the environmental attributes of the power source (howsoever defined) are in no way committed or used by another entity but solely claimed by the fuel pathway holder for LCFS and federal Renewable Fuel Standard ("RFS") compliance.

The proposal is commercially feasible because it enables fuel pathway holders to contract for new resources consistent with how power and environmental attributes are contracted in various energy markets throughout California, as well as throughout the world. In most organized energy markets, power sources are dispatched based on reliability needs and least-cost bidding principles. Consequently, the output of a power source connected to the grid cannot be directly managed or controlled by a retail purchaser in real time. For this proposal to be successful, buyers need to be able to structure their PPA or ownership agreement consistent with how power and environmental attributes are normally transacted in the applicable market. Otherwise, a fuel pathway holder will not be able to compete for new energy projects.

This flexibility in PPA and ownership structures would not compromise the environmental integrity of the LCFS program. By setting a strict additionality requirement, CARB would ensure that there are additional clean-power sources available for dispatch that would not have otherwise been available to the grid operator. The requirement for new, incremental Low-CI power sources is a core aspect of this proposal and ensures that the sourced Low-CI power results in real, additional emission reductions. The fuel pathway holder would need to demonstrate that the Low-CI power source is new and has a commercial online date for the project sometime after the application date. The environmental attributes, however defined, could not be committed to any other buyer and the project could not be accounted for in the plans of a retail electricity provider or other market participant. This aspect of the proposal ensures that a pathway holder is not relying on zero-carbon power that would have been generated irrespective of the energy demand specifically from the fuel production facility. Put differently, by procuring a new resource, the contract or ownership agreement is not shuffling emission reductions attributable to already-planned resources.

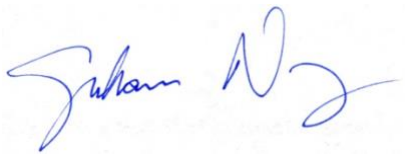
During the Pendency of Federal Discussions Concerning Power Sourcing, CARB Should Follow Existing LCFS Processes for Matching Power Supply and Demand.

Consistent with existing LCFS provisions, the Low-CI power source must be interconnected or directly delivered to the same geographic market as the fuel production facility. In light of the fact that retail providers cannot typically control the dispatch of power plants and cannot always anticipate the actual energy demand for producing Low-CI fuels, the proposal provides flexibility in the quarterly reporting process by utilizing existing processes already in the LCFS Regulation, such as indirect accounting of Low-CI power sourcing in Section 95488.8(i)(1)(A). This section provides that book-and-claim accounting of Low-CI electricity may only span three quarters, meaning that the electricity use must be matched to generation occurring during the same reporting period or in the previous two quarters. This provision provides a reasonable amount of time for matching generation and demand and, in particular, provides enough time for the power source to provide verifiable documentation (e.g., Renewable Energy Certificates) to the buyer. Since the actual timing and amount of energy demand will not be known with certainty until the fuel production process is operational, the three quarter matching process enables fuel pathway holders to account for fluctuations in demand for fuel products. The three quarter matching process also acknowledges that the buyer in a PPA cannot directly control the actual dispatch of

the power source. This flexibility enables the expanded sourcing of Low-CI power and is commercially and operationally feasible.

Finally, we are aware of and sensitive to the ongoing policy discussions at the federal level concerning the requirements for matching energy generation and demand (e.g., Inflation Reduction Act, Section 45V Hydrogen Production Credit). We do not believe an hourly matching requirement would be commercially or administratively feasible. We appreciate the need to demonstrate that emission reductions are real and have developed an additionality requirement described above that would meet this objective. Moreover, by adhering to existing accounting mechanisms in the LCFS Regulation that are already proven to be commercially and administratively feasible, CARB will enable actual emission reductions through this program modification. This is the best way to enable a workable method of for Low-CI power sourcing that will further the fundamental objectives of reducing GHG emissions through the LCFS program. We are available to continue engaging with CARB regarding the policy design of this proposal, and very much appreciate CARB's engagement on this important topic.

Sincerely,



Graham Noyes
Noyes Law Corporation

APPENDIX 1

Low-CI Power Coalition member companies:

Blue Arrow is the exclusive technology licensee in Mexico, Brazil and elsewhere of Fulcrum Bioenergy, Inc. Blue Arrow's and Fulcrum's plants combine multiple proven and established industrial processes into a patented system that converts waste into zero-carbon synthesis crude. The syncrude is then upgraded at a refinery to zero-sulfur SAF.

Fulcrum BioEnergy, headquartered in Pleasanton, California, Fulcrum BioEnergy is a clean energy company pioneering the creation of renewable, drop-in transportation fuels from landfill waste using Gasification and Fisher-Tropsch synthesis. Beginning with the Sierra BioFuels Plant in Reno, Nevada, Fulcrum is advancing its large commercial growth program of low carbon waste-to-fuels plants across North America and in select international markets. Fulcrum, a privately held company, has aligned itself and entered into strategic relationships with industry leaders in the waste, aviation and energy sectors to further strengthen and accelerate the Company's patented and proprietary process.

H Cycle is a developer of low-cost, low-carbon hydrogen production facilities that deploy a proven waste-to-hydrogen thermal conversion technology. Our solution is capable of utilizing a diverse composition of waste feedstocks (municipal, agricultural, forest) to produce valuable renewable gas product, allowing us to displace methane emissions from landfill disposal and support California's waste diversion targets under Senate Bill 1383.

Infinium is an electrofuels provider on a mission to decarbonize the world. Electrofuels are a new class of synthetic fuels made using renewable power-derived green hydrogen and waste carbon dioxide that would be otherwise emitted to the atmosphere. Infinium electrofuels can be dropped into existing trucks, planes and ships, significantly reducing harmful carbon dioxide emissions compared to fossil-based fuels.

Velocys is an international Sustainable Aviation Fuel (SAF) technology company with offices in the US and UK. Velocys' technology enables the conversion of various cellulosic feedstocks, including woody biomass residues and municipal solid waste, into low or negative carbon intensity transportation fuels. Velocys broadly offers its technology to the marketplace, and is developing the Bayou Fuels project in Natchez, MS as a commercial reference plant. Velocys has secured offtake commitments for 100% of the SAF from Southwest Airlines and IAG (parent of British Airways) with plans to supply this fuel for uplift in California.

World Energy is a low-carbon solutions provider focused on helping the world's leading companies make their net-zero commitments real. Our solutions Include sustainable aviation fuel, renewable diesel, and renewable naphtha, with plans to create renewable propane and green hydrogen.

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APPENDIX 2

LCFS Regulation §95488.8 provisions from 2020 CARB Version- Marked

§ 95488.8. Fuel Pathway Application Requirements Applying to All Classifications.

(…)

(h) *Renewable or Low-CI Process Energy.* Unless expressly provided elsewhere in this subarticle, indirect accounting mechanisms for renewable or low-CI process energy, such as the use of renewable energy certificates, cannot be used to reduce CI. In order to qualify as a low-CI process energy source, energy from that source must be ~~directly consumed in~~**supplied to** the production process as described in (1), ~~and~~ (2)**, (3), or (4)** below:

(1) ***Direct Electrical Connection.*** Low-CI electricity must be supplied from generation equipment under the control of the pathway applicant. Such electricity must be able to demonstrate:

(A) Any renewable energy certificates or other environmental attributes associated with the energy are not produced, or are retired and not claimed under any other program with the exception of the federal RFS, and the market-based compliance mechanism set forth in title 17, California Code of Regulations Chapter 1, Subchapter 10, article 5 (commencing with section 95800).

(B) The generation equipment is directly connected through a dedicated line to a facility such that the generation and the load are both physically located on the customer side of the utility meter. The generation source may be grid-tied, but a dedicated connection must exist between the source and load.

(C) The facility's load is sufficient to match the amount of low-CI electricity claimed using a monthly balancing period.

(2) ***Physical Supply.*** Biogas or biomethane must be physically supplied directly to the production facility. The applicant must submit the attestation set forth below in section 95488.8(i)(2)(C)2.

(3) ***Thermal Supply.*** Solar steam or heat generation must be physically supplied directly to the production facility, and any environmental attributes associated with the energy are not produced, or are retired and not claimed under any other program with the exception of the federal RFS, and the market-based compliance

mechanism set forth in title 17, California Code of Regulations Chapter 1, Subchapter 10, article 5 (commencing with section 95800).

(4) ***Approved Power Purchase Agreement.*** **Through the Tier 2 application process, a pathway applicant may seek Executive Officer approval for the sourcing of Low-CI electricity for all or a portion of a facility's electricity demands.**

(A) ***Low-CI Electricity Sourcing via Power Purchase Agreement.***

1. ***Low-CI Electricity Supplied via Power Purchase Agreement.*** **The Executive Officer may determine whether the sourcing of Low-CI Electricity via Power Purchase Agreement or ownership agreement qualifies as a Low-CI process energy source for a specific facility provided the conditions set forth below are met:**

a. Additionality.

i. The facility providing Low-CI Electricity (or portion thereof) is not accounted for or otherwise contracted with another buyer and has not been included in the resource plan of the utility serving retail electricity in the balancing authority or other organized market where the facility is interconnected and delivered.

ii. The commercial online date of the facility providing Low-CI electricity (or portion thereof) occurs after the execution date of the Power Purchase Agreement or ownership agreement.

iii. The environmental attributes of the facility (or portion thereof), howsoever defined, including but not limited to all greenhouse gas attributes, Renewable Energy Credits, or similar rights, attributes and products, cannot be contracted, sold or transferred to any other buyer except the fuel pathway holder or its designee.

(i) *Indirect Accounting for Renewable or Low-CI Electricity and Biomethane.*

(1) *Book-and-Claim Accounting for Renewable or Low-CI Electricity Supplied as a Transportation Fuel or Used to Produce Hydrogen.* Reporting entities may use indirect accounting mechanisms for low-CI electricity supplied as a transportation fuel or for hydrogen production through electrolysis for transportation purposes (including hydrogen that is used in the production of a transportation fuel) **or as part of a Tier 2 Fuel Pathway**, provided the

conditions set forth below are met:

(A) Reporting entities may report low-CI electricity used as a transportation fuel, as an input to hydrogen production delivered through the grid **or as part of a Tier 2 Fuel Pathway** without regard to physical traceability if it meets all requirements of this subarticle. The low-CI electricity must be supplied to the grid within a California Balancing Authority (or local balancing authority for hydrogen produced outside of California) ~~or alternatively~~, meet the requirements of California Public Utilities Code section 399.16, subdivision (b)(1), **or have been approved by the Executive Director pursuant to Section 95488.8(h)(4).** Such book-and-claim accounting for low-CI electricity may span only three quarters.

If a low-CI electricity quantity (and all associated environmental attributes, including a beneficial CI) is supplied to the grid in the first calendar quarter, the quantity claimed for LCFS reporting must be matched to grid electricity used as a transportation fuel, for hydrogen production, or as part of a Tier 2 Fuel Pathway no later than the end of the third calendar quarter. After that period is over, any unmatched low-CI electricity quantities expire for the purpose of LCFS reporting.

(B) Low-CI electricity can be indirectly supplied through a green tariff program (including the Green Tariff Shared Renewables program described in California Public Utilities Code Section 2831-2833) or other contractual electricity supply relationship that meets the following requirements:

1. Electricity is generated by, or supplied under contract to, the pathway applicant for all environmental attributes of the claimed electricity. In order to substantiate low-CI electricity claims, the applicant must make contracts available to the Executive Officer, upon request, to demonstrate that the electricity meets the requirements of this subarticle. Generation invoices or metering records are required to substantiate the quantity of low-CI electricity produced from the renewable assets. Monthly invoices must be unredacted copies of originals showing electricity sourced (in kWh) and contracted price;

2. All electricity procured by any LSE for the purpose of claiming a lower CI must be in addition to that required for compliance with the California Renewables Portfolio Standard (described in California Public Utilities Code sections 399.11-399.32) or, for hydrogen produced outside of California, in addition to local renewable portfolio requirements;

3. Renewable energy certificates or other environmental attributes associated with the electricity, if any, are retired and not claimed under any other program with the exception of the federal RFS, and the market-

based compliance mechanism set forth in title 17, California Code of Regulations Chapter 1, Subchapter 10, article 5 (commencing with section 95800). Retirement of renewable energy credits for the purpose of demonstrating Green Tariff Shared Renewables procurement to the California Public Utilities Commission does not constitute a double claim