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H2B2 USA, LLC – SoHyCal

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June 5, 2026

California Air Resources Board
Low Carbon Fuel Standard
1001 I Street
Sacramento, CA 95814

RE: H2B2 USA, LLC Tier 2 Pathway No. B0858; Response to Defensores del Valle Central para el Aire y Agua Limpio, Leadership Counsel for Justice & Accountability, Food & Water Watch, and Animal Legal Defense Fund (collectively, “Commenters”)

H2B2 USA, LLC (“H2B2”) writes on behalf of the SoHyCal Renewable Hydrogen Production Project (“the project”) to provide a response to the comments received regarding the Tier 2 Pathways Application – B0858. The response falls within the scope of the Low Carbon Fuel Standard (“LCFS”) program Title 17, California Code of Regulations (“CCR”) § 95488.7(d)(5)(A), requiring all applicants to respond to public comments related to the pathway application.

H2B2 appreciates the opportunity to respond to stakeholder input and is committed to providing a transparent and accurate explanation of the application process and its technology. H2B2

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acknowledges and supports the California Air Resources Board (“CARB”) and the LCFS program and the monitoring of the CA-GREET life cycle analysis framework.

The coalition of groups (“Commenters”) that have submitted comments challenges the application, arguing that it should be rejected, as summarized below. The statements made by the Commenters' claims and assumptions are addressed as inaccurate, and assumptions are made for decisions that have many outsourced factors. The Project promotes a form of renewable hydrogen production through electrolysis and has displaced emissions not only from the dairy but also from the mobility sector, improving air quality in Central California.

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1. CI Score calculation

H2B2's SoHyCal project primarily focuses on hydrogen production through renewable energy sources. The focus now and in future projects will continue to be on hydrogen production through electrolysis and on utilizing renewable energy sources to the best of our ability to maximize performance and energy efficiency. The carbon intensity value that has been associated with the pathway was calculated using the CA-GREET model established by the California Air Resources Board (CARB) using methodologies, assumptions, and accounting frameworks already established.¹

The Commenters also note that the CA-GREET 3.0 Model Inputs document is incomplete and partially replicated from an existing application. The questions about the version and the latest version's dates are highlighted. Thus, the incorrect dates along with the application version numbers will be removed in the final version.

The Commenters assert that data and its parameters on hydrogen production are omitted. Hydrogen production uses a calculation framework that shows the electricity inputs from biogas to power the plant's electrolyzer. The project pathway uses operational data and production efficiencies to measure carbon intensity. The submitted Life Cycle Analysis (LCA) report describes the six stages of the pathway, including biogas production from dairy manure, biogas-to-electricity production, electrolyzer hydrogen production, hydrogen transportation, compression and dispensing, and hydrogen used as a transportation fuel.

The LCA report provides a description of the calculation of the carbon intensity, starting with the CI score of biogas-derived electricity and proceeding through the electrolysis process. The LCA report also identifies the H2 production components, demonstrating the conversion of biogas to electricity, rather than assuming it is lossless. (Life-Cycle Analysis Report, Tables 1 and 2, pg. 5-6.)

H2B2 provides expertise in renewable hydrogen production by utilizing renewable electricity generated from biogas produced by an existing anaerobic digestion system at Bar 20 Dairy. This project was developed from what already existed at the collocated Bar 20 dairy and from the existing renewable energy generation infrastructure. The hydrogen production side is currently in phase one of production, but the final phase will not depend on any increase in livestock from the Bar 20 dairy.

¹ California Air Resources Board (CARB), *Low Carbon Fuel Standard (LCFS) Life Cycle Analysis Model – CA-GREET Model*, Title 17, California Code of Regulations §§ 95488.1, 95488.3

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Approval of the hydrogen production pathway, hydrogen facility, or associated infrastructures does not alter, amend, replace, or expand any permits, approvals, or regulatory requirements applicable to the dairy's operations.

Additionally, the commentators insist that the pathway calculations are incomplete or incorrect, or contain hidden values. However, the pathway carbon intensity was developed using CARB-approved lifecycle assessment methodologies, and the application includes supporting calculations and the Tier 2 pathway process. The calculation starts with the renewable electricity generated from biogas produced at the Bar 20 dairy, as mentioned in the life-cycle assessment. The values that this microgrid electricity provides for the CA_GREET 3.0. provides a low-carbon-intensity score through electrolytic hydrogen production. This has not only been reviewed internally through H2B2 but also by third-party verifiers, during which all data must be provided and reviewed.

The document accounts for emissions from the reciprocating engine used to generate energy from biogas, and this information can be found publicly in the LCFS guidance 19-06 ([guidance document](#)).

The CI for our pathway is obtained by multiplying the biogas CI (-700+) by the water electrolysis process efficiency. The process efficiency is about -83+ kWh/kg H₂, meaning that -83+ kWh of power is required to produce 1 kilogram of Hydrogen. In order to apply this efficiency to the biogas CI, the units should be MJ/MJ instead of kWh/kg H₂; therefore:

- As 1 kWh = 3.6 MJ (mega joules)
- As the hydrogen Lower Heating Value (LHV) is 120 MJ
- Then we get that the efficiency is, in units MJ/MJ:
- $83 \text{ kwh/kg H}_2 \times (3.6 \text{ MJ/1kWh}) \times (1 \text{ kg H}_2/120 \text{ MJ}) = 2.5 \text{ MJ/MJ}$

This value of 2.5 MJ/MJ is then multiplied by the CI biogas score, and thus, results in the CI score described.

Accordingly, the resulting CI score generated is not derived from any undisclosed data or calculations and are aligned with the CARB lifecycle assessment methodologies.

2. Availability of Information and Confidential Business Information

The Commenters also assert that information supporting the Tier 2 application has been mishandled. In fact, H2B2 has submitted the required supporting information for CARB's review of the Tier 1 pathway, including engineering information, operational data, full life-cycle assessment coverage, and any related documentation CARB requires to evaluate.

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Notably, information that contains proprietary technology, operational, commercial, and process-specific information that is not required was not submitted to protect confidential commercial information.

Any confidential information not released does not prevent CARB from evaluating the application, and the same applies to any third-party verifiers. All materials needed for the application are available to CARB for evaluation under the applicable LCFS requirements.

The Commenters also question the information regarding the project methane emissions from venting and fugitive methane from upgrading, which is not publicly disclosed.

Noting that § 95488.8(c) of the regulation contains requirements for the submittal of documents containing confidential business information and redacted versions for posting on a public LCFS website. The relevant aspects of the pathway application, including the LCA report and CA-GREET site-specific inputs, which are not considered trade secrets, have been posted to CARB’s website to be made available to the public.

3. LCFS Incentives

The SoHyCal project is a renewable hydrogen production facility designed not only to use existing biogas and its infrastructure but also to incorporate 15 megawatts of solar power. Given limitations in integrating manure production, photovoltaic (PV) energy has always been part of the project's plans since its inception. H2B2 focuses on producing renewable hydrogen and has done so by utilizing renewable electricity generated from biogas produced by an existing anaerobic digestion system at Bar 20 dairy. H2B2 does not create a need for additional manure to meet existing or future production needs, but is taking already existing generated biogas to collaborate with the reduction of emissions on the existing dairy digester to produce renewable energy. The established manure management practices are determined by the Bar 20 dairy and its staff.

This project was developed based on what already existed at the collocated Bar 20 dairy and the existing renewable energy generation infrastructure. The pathway application was submitted in accordance with CARB’s approval of LCFS requirements and evaluated under the regulatory framework applicable to renewable fuels derived from biogas and other renewable energy sources.

4. Dairy Expansion Concerns

All statements implying that the SoHyCal project would expand the Bar20 dairy are incorrect. H2B2 has simply utilized an already existing digester to produce renewable hydrogen in the Central Valley. What the commentators also failed to mention is the investment and efforts made to consolidate, aiming to be more efficient and independent, with emissions reductions as one of the most forward-thinking aspects, as this dairy produces renewable energy through two different pathways.

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All changes to dairy operations will be monitored and implemented through Bar 20 alone. The further expansion of hydrogen production does not depend on increasing manure but rather would consist of energy derived from new solar constructed neighboring the plant. H2B2 and the SoHyCal project will continue to focus on hydrogen production and will leverage PV energy to meet the remaining power requirements. H2B2 does not create a need to generate more manure for the existing or future production needs.

5. LCFS System and Greenhouse Gas Reductions

The Commenters challenge the carbon Intensity value associated with the pathway that is determined by the CARB approved lifecycle assessment tool and methodologies given the CA-GREET model and related pathway evaluation procedures². Under the LCFS regulations, H2B2, as a pathway applicant, and CARB evaluate fuel pathways based on life-cycle greenhouse gas emissions per unit of energy, which are then measured against predetermined pathway eligibility and values.

The SoHyCal project seeks certification under the existing framework already established and evaluated under the CARB requirement for the Tier 2 application and its pathway applicants³.

The LCFS pathway application accounts for the methane emissions that would have occurred in the absence of the project, including those from the digester and the electrolysis process. The positive impact for the use of existing methane to produce electricity feeding the hydrogen plant is reflected in the final value of the carbon intensity score.

6. Lifecycle Assessment Review

The SoHyCal project has undergone multiple internal evaluations, as well as the CARB revision that determined the LCFS pathway certification process. Multiple revisions were included, such as the Life Cycle Analysis, supporting documentation, and applicable regulatory requirements. The carbon intensity developed using the approved lifecycle assessment methodology, including the California Greenhouse Gas Model, was subject to independent third-party verification as requested and required by the LCFS program. Concerns regarding emissions reduction associated with methane captured projects have been addressed previously.⁴

² California Code of Regulations, Title 17, Section 95488.3, *Calculation of Fuel Pathway Carbon Intensities* – CARB requires lifecycle greenhouse gas emissions to be evaluated using CA-GREET or equivalent approved models.

³ California Air Resources Board (CARB), *LCFS Pathway Certified Carbon Intensities* – CARB's pathway certification process includes pathway review, public comment procedures, and certification requirements.

⁴ California Air Resources Board (CARB), *Response to Petition Regarding Dairy and Swine Biomethane Pathways*.

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7. Groundwater Concerns

The groundwater Standards are not established by the solar cell project or administered water quality programs; otherwise, compliance applications related to can you treat management. The pathway certification process does not replace or supersede existing groundwater protection requirements. Compliance with groundwater quality is regulated through separate federal, state, and regional regulatory programs administered by agencies with jurisdiction over the project's location. In this case, SoHyCal does not alter the regulatory requirements applicable to hydrogen production or the existing groundwater protection programs.

Furthermore, approval of the LCFS pathway does not change any existing environmental compliance obligations related to groundwater protection.

8. Low-income and Latino Communities

The pathway application focuses on the lifecycle carbon intensity of the renewable hydrogen produced from qualified renewable energy sources. This project aims to promote the use of renewable hydrogen for mobility and to advance the adoption of zero-emission fuels in the surrounding area.

The SoHyCal Project represents a significant private investment in Fresno County that contributes to the development of renewable hydrogen in California. This project has provided both direct and indirect employment opportunities throughout construction, operation, and maintenance, which naturally fall within the project's scope of work. This project also supports the development and upscaling of positions associated not only with hydrogen production but also with renewable energy generation, electrical systems operations, and maintenance, through a versatile role required to maintain and operate the hydrogen plant.

The agricultural and industrial region within Fresno County is significant and contributes to investment in renewable energy, advanced manufacturing, and clean transportation. Projects such as SoHyCal count align with the contribution to the workforce development and renewable energy investments associated with California's transition to a low-carbon economy.⁵

9. Existing Environmental Permits

The scope of this project and the tier 2 application do not aim to replace, modify, or exempt the project from existing regulatory obligations. This project has met the environmental permits required by the San Joaquin Valley Air Pollution Control District (SJVAPCD) for the biogas-to-energy process and electrolysis production. Generation of renewable energy through the biogas engine operates under the issued permits that regulate the biogas-to-energy process through permit conditions, monitoring requirements, and authority inspections that

⁵ U.S. Census Bureau; California Department of Finance; California Employment Development Department

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are enforced by SJVAPCD.⁶ All regulatory approvals applicable to the dairy operations were already in place, which we leverage to produce renewable energy for a hydrogen production plant through electrolysis.

Permits issued by the County of Fresno include construction permits, conditional use permits for hydrogen production, and conditional use permits for the installation of 15MW of PV.

⁶ San Joaquin Valley Air Pollution Control District Authority to Construct and Permit to Operate for the biogas engine; SJVAPCD Rules and Regulations.