

February 20, 2024

The Honorable Liane M. Randolph, Chair
California Air Resources Board
1001 I St.
Sacramento, CA 95814

RE: 3Degrees Comments in Response to Proposed Amendments to the Low Carbon Fuel Standard Regulation

Dear Chair Randolph and Air Resources Board (ARB) Staff,

Thank you for the opportunity to provide comments in response to the Proposed Amendments to the Low Carbon Fuel Standard (LCFS) Regulation published December 19, 2023 (updated January 2, 2024). 3Degrees Group Inc. (“3Degrees”) is a global climate and clean energy solutions provider and is a strong supporter of the LCFS program. We participate in the program as a designated reporting entity on behalf of a variety of opt-in parties with light-duty electric vehicle (EV) chargers, electric forklifts, hydrogen forklifts, and heavy-duty EV fleets. We are also an active fuel pathway developer.

3Degrees appreciates the time and effort that Staff has put into engaging the public and crafting these updates to the program over the last few years. Our recommendations for the LCFS proposed rule are outlined below. Under each heading, we have organized our comments in order of what we view as the key priorities for this formal rulemaking process.

I. Carbon Intensity (CI) Reduction Targets and Credit Market Mechanisms

ARB should impose a more stringent near-term carbon intensity reduction schedule to ensure long-term credit price stability.

The LCFS program has been highly effective at achieving emissions reductions, and we understand that the final target for this rulemaking needs to be feasible as well as effective. The low carbon fuel industry has consistently exceeded the expectations of this program and with the right market signals, the total decarbonization of the transportation sector could be within reach. However, our market analysis shows that the proposed 30% CI target (§ 95484) is too low to provide the near-term price indicators that are necessary to spur the substantial industry investment in lower-CI projects, fuels, and vehicles required to reach the program’s long-term goals.

In our comments during the informal rulemaking process, 3Degrees advocated for at least a 35% CI reduction by 2030 and 90% by 2045 in order to align with the ambition of the 2022 Scoping Plan and other decarbonization objectives in California. With credit prices dropping from ~\$67 to ~\$55 since the publication of the proposed rule, the market reaction to the proposed CI schedule has evidenced a lack of confidence that the near-term target of a 30% reduction by

2030 will require more than minimal additional credit generation to attain. We therefore reiterate our support for at least a 35% target by 2030.

Our market analysis shows that under the proposed rule the credit bank will continue to grow until it peaks in 2030, followed by a sharp drawdown, potentially depleting the bank by as early as 2034. The auto-adjustment mechanism (AAM) would be triggered twice, making the CI reduction target in 2030 38% and reaching 90% reduction in 2043. We expect that prices will only begin to rise once the bank begins to draw down.

While lower near-term prices may achieve the objective of reducing total program costs, the post-2030 targets will only be achievable through significant investments in the low carbon fuel sector this decade. Low credit prices will not send an adequate market signal to drive the necessary investment. We are generally supportive of the AAM (§ 95484(b)) and 2025 step-down adjustment (§ 95484(d) - Table 1, footnote b), though we would suggest that the AAM should be able to be triggered earlier, in 2026. This design would lead to fewer surplus credits through the late-2020s and likely result in the higher prices needed to drive investment, thus mitigating pricing volatility with a smoother path towards more ambitious targets.

II. Changes to Forklift Crediting

3Degrees urges ARB to not phase out technology (e.g., zero-emission (ZE) forklifts) or fuel types from the program via energy economic ratio (EER) adjustments.

Staff's proposal to adjust the EER for forklifts with lift capacities less than 12,000 kg (§ 95486.1(a) - Table 5) to decrease credit generation opportunities for this technology introduces unnecessary regulatory risk to the LCFS program. In the Initial Statement of Reasons (ISOR), Staff explains that this adjustment is based on a re-evaluation of the forklift baseline; because ZE forklifts have replaced many combustion-fuel forklifts in the State, Staff is assuming that approximately 50% of new ZE forklifts purchased will be replacing older ZE forklifts, effectively neutralizing overall ZE forklift adoption rates. However, not only is this crediting limitation ill founded, it sets a precedent for the reduction of other credit generation opportunities that could threaten the ability to meet program targets, especially in the long-term.

In conjunction with the LCFS, other California policies aimed at decarbonizing vehicle types and fuels, such as the Advanced Clean Cars II Regulation, Advanced Clean Trucks Regulation, and Advanced Clean Fleets Regulation, will inevitably lead to similar situations in which some portion of ZEV purchases for those equipment types will be made to replace existing ZEVs. However, depending on the vehicle type, this does not necessarily mean that older ZEVs will be retired. For example, used light-duty ZEVs with a lower price point may replace fossil fuel vehicles that would not otherwise have been retired. The need for ARB to account for this kind of market dynamic while balancing decarbonization goals against program operability underscores the importance of establishing clear criteria for equipment phase outs.

Arbitrarily halving the EER, defined in the regulation as “the dimensionless value that represents the efficiency of a fuel as used in a powertrain as compared to a reference fuel used in

the same powertrain,” should not be used as the method to discount forklift credit generation, or that of other technologies or fuels. If ARB must phase out any credit generation opportunity, this should only occur via a well-defined, data-driven methodology that accurately accounts for market saturation and other relevant factors. As noted in our comments during the workshop phase of this rulemaking, the LCFS should provide an off-ramp or other provision geared at a smooth and predictable transition out of the program. A lack of clarity on how other equipment types will be treated under the LCFS as they gain traction may result in reduced investment in these technologies, making it more difficult for the Program to achieve its long-term goals.

A metering requirement for forklift credit generation calculations should be phased-in so that industry has time to adjust their equipment and processes.

While 3Degrees understands the benefits to data accuracy that metering provides, in order for the LCFS program to have an effective metered solution in place, facilities with e-forklifts need sufficient lead time to plan, pay for and install the external meters that are required to measure electrical dispensation into their fleets. The LCFS’s estimation methodology has been a cornerstone of the forklift credit generation process and businesses have relied on not needing meters for participation in the program for many years. Changing this rule without some provision of an offramp for estimation, coupled with any reduction to the forklift EER as discussed above, would be significantly disruptive to many current participants.

Should ARB move forward with an immediate metering requirement, we respectfully request that Staff consider a delayed effective date for forklifts that are currently registered in the program. This would allow time for owners of fueling supply equipment (FSE) to acquire the capital, engineering reviews, permits, and equipment necessary to comply.

III. Third-Party Verification Requirements

ARB should provide clarification within the new verification provisions for hydrogen and electricity transaction types to ensure that site visit requirements are feasible.

With the introduction of new third-party verification requirements for certain hydrogen and electricity crediting types, it is imperative that ARB does not take a one-size-fits-all approach to the site visit obligation. Although the sampling plan mechanism as described in the proposed rule would reduce the number of FSE that must be surveyed for a particular site, it would not be reasonable to expect individual site visits for the thousands of disparate sites containing FSE, particularly for designated entities. Furthermore, conducting site visits of all metered residential charging poses practical and privacy implications for homeowners that may outweigh assurances gained by a visual inspection of the meter.

The proposed text states that verifiers must "annually visit each facility; and, if different from the fuel production facility, the central records location for which the records supporting an application or report subject to verification are submitted" (§ 95501(b)(3)). We request that ARB make a revision to this section such that in the case of designated reporting entities or entities

with more than a certain number of registered FSE, verifiers need only visit the designated reporting entity's central location for recordkeeping plus a subset of facilities based on a carefully-crafted sampling plan. This would be a typical set of requirements for verification bodies to come to a *reasonable* level of assurance - the standard for a positive verification statement - as opposed to seeking an *absolute* level of assurance by visiting every parking lot in the state with a registered FSE. While we understand that ARB desires to apply verification requirements equally to all reporting entities throughout the LCFS program, the nature of EV charging equipment is such that the verification process could require multiple months of continuous travel to achieve 100% visitation of all sites with registered FSE. This impractical requirement would pose serious issues for verification bodies and designated entities alike. In addition, we ask ARB staff to exempt residential charging from site visit requirements. Failing to make these changes would discourage EV participation in the program, especially for entities with a large number of distributed FSE.

We further recommend that § 95500(c)(1)(E)(1) be revised to state, "EV Charging except as specified under 95491(d)(3)(A) and 95491(d)(3)(B)" (new text in *italic*). This captures both the metered and non-metered residential charging provisions under the exemption.

IV. Other Proposed Amendments

The deficit generation penalty for exceeding a predetermined CI score will disproportionately penalize the biogas sector and should be adjusted down.

According to the proposed rule, beginning in 2025, exceeding the CI score of a fuel pathway will result in both deficits being generated and a claw-back of credits, and the number of deficits per volume of fuel will be 4x the difference between the verified CI and the reported CI (§ 95486.1(g)). If this full penalty is enforced, many well-intending pathway operators will observe large swings in performance, particularly in digester-derived fuels processing organic wastes and newly-certified pathway operations that will likely have unavoidably variable CIs.

The proposed combination of credit clawback and 4x deficit generation effectively creates a 5x penalty for CI deviations. Combined with the fact that the LCFS regulation does not allow for retroactive credit generation for overperformance, this creates an incentive for projects with variable CI scores and/or operations to implement a dramatic safety factor that significantly reduces the benefits of the program for these projects. These projects provide real greenhouse gas benefits as compared to sending those organic materials to landfills, and the proposed penalty may discourage these projects from being built, effectively limiting California's realized greenhouse gas emissions reductions.

We propose either (1) reducing the 4x deficit generation policy and replacing with a 1x deficit penalty or (2) implementing a carve-out for all categories of digester-derived pathways that exceed their certified CI only as a result of organic variability in digester performance. A reduced deficit penalty would be a fairer and cleaner means of ensuring that participants make best efforts to meet assigned CI scores. Additionally, accounting for the operational differences that

digester projects face as compared to other LCFS activities is critical to maintaining the equitable treatment of fuels within the program.

ARB should continue to allow site-specific data to be used in the Tier 1 calculator for Renewable Electricity from Dairy and Swine Manure.

In the Tier 1 Simplified CI Calculator for Biomethane from Anaerobic Digestion of Dairy and Swine Manure Instruction Manual (DSM Manual), we ask that ARB revert to the original language requiring that site-specific data take precedence over values from Table A.9 of the Compliance Offset Protocol - Livestock Projects (LOP) as an input to the calculator for solid separation equipment. This change made by ARB in Table 2, L1.(1-6).13, Fraction of Volatile Solids Sent to Anaerobic Storage/Treatment System, and similar language in L4.5 and L4.6 of the Proposed Tier 1 Simplified Calculators, will lead to less precise calculations and an underrepresentation of emission reductions achieved.

Pathways that rely on site-specific values result in a far more accurate CI score than the default. Further, the LOP generally prioritizes site-specific data, also in favor of accuracy. 3Degrees has generated CI projections based on this site-specific data which now may suffer a material deterioration of their CI due to this modification of the DSM Manual. If ARB is not willing to revise the Tier 1 instructions, then we support maintaining the ability to utilize site-specific values for solid separation equipment in Tier 2 applications as a reasonable alternative.

We encourage ARB to add electric ground support equipment (eGSE) as an eligible credit-generating technology.

3Degrees recommends that ARB use this rulemaking opportunity to explicitly include eGSE as an eligible credit-generating technology type under the LCFS. eGSE are eligible for crediting under the programs in both Oregon and Washington, and incorporating eGSE into the LCFS would serve to incentivize an industry that is in the early stages of electrification. This would help ensure that the California LCFS remains a driving force for new technologies to transition away from fossil fuels. An EER for eGSE can be easily developed using a similar methodology to that of electric cargo handling equipment (eCHE). This category of electric off road equipment charging should, in line with other clean fuels programs, assign the owner of the FSE as the fuel reporting entity and the credit generator.

3Degrees recommends aligning the minimum charging capacity requirement for light-duty fast charging infrastructure (LD-FCI) crediting eligibility with current technological capabilities.

The proposed minimum charging capacity requirement of 150 kW for LD-FCI (§95486.2(b)(1)(D) and (b)(7)(A)) is higher than currently technically feasible for most EVs to charge. While this capacity standard may be forward-looking, 50 kW would be a more appropriate minimum in line with today's technological capabilities. We suggest a gradual

increase in the requirement, for example, ARB could institute a 100 kW minimum in a few years, followed by 150 kW once EV technology has evolved to reliably charge at this level.

3Degrees appreciates this opportunity to provide feedback and we look forward to continuing to work with ARB on the success of the LCFS program. Please reach out with any questions or for further discussion.

Sincerely,

/s/ Helen Kemp

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