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

RE: Gevo, Inc.'s Comments on "Proposed Amendments to the Low Carbon Fuel Standard"

Dear Chair Randolph:

Thank you for the opportunity to comment on the California Air Resources Board's (CARB) Proposed Amendments to the Low Carbon Fuel Standard (LCFS).

Gevo, Inc.'s (Gevo) mission is to produce low-carbon, renewable energy-dense liquid hydrocarbons for drop-in transportation fuels such as gasoline, jet fuel, and diesel. Gevo's alcohol-to-hydrocarbons production process uses a combination of decarbonization technologies and sustainably farmed feedstock to produce fuels with substantially reduced carbon intensity (CI) compared to fossil fuel equivalents. We broke ground on our first alternative jet fuel (AJF)/sustainable aviation fuel (SAF)¹ production facility, "Gevo Net-Zero 1" (NZ1), in Lake Preston, South Dakota, in September 2022. This facility will use a three-part strategy to produce low-CI SAF: 1) use locally-sourced corn feedstock from farmers engaged in sustainable agriculture to both reduce on-farm greenhouse gas (GHG) emissions and sequester CO₂ in the soil; 2) decarbonize the fuel production process by replacing conventional fossil fuel inputs with wind energy, renewable natural gas, and green hydrogen; and 3) use carbon capture and sequestration (CCS) technology to reduce emissions from the production process further. The Gevo approach is aimed at decarbonizing every step in our SAF's life cycle,

¹ Gevo typically uses the term "sustainable aviation fuel" or "SAF" to refer to our fuel. This fuel meets the definition of "alternative jet fuel" (AJF) as set forth in the LCFS regulations. Accordingly, our references to SAF in this comment letter should be deemed synonymous with AJF.

which we track all the way from the farm field through to the aircraft using our Verity Tracking platform.

Gevo intends to submit a Tier 2 LCFS Provisional Pathway application for the SAF, renewable diesel, and renewable naphtha fuels produced at the NZ1 facility, utilizing our field corn starch feedstock and alcohol-to-jet (ATJ)/alcohol to hydrocarbons production process.

I. Overview of Gevo's Comments

Gevo greatly appreciates the role that the LCFS is playing in reducing GHG emissions by incentivizing the replacement of fossil fuels with low-carbon alternatives. We currently are participating in the LCFS through our production of renewable natural gas (RNG) and, given our prospective SAF offtake agreements with major airlines operating in California, we expect to deliver SAF into the state from our NZ1 facility and sequential net-zero SAF facilities in the future. Our comments on the current LCFS proposal are focused accordingly. Although we provide detailed comments below keyed to specific sections of the proposal, we note the following by way of summary:

- Gevo strongly supports CARB's intent to strengthen the overall compliance curve. CARB's analysis clearly shows that this is needed to support California's emission goals. While we support CARB's proposal of a 30% reduction in fuel CI by 2030 and a 90% reduction in fuel CI by 2045 from a 2010 baseline at a minimum, as detailed below, we believe CARB can and should adopt an even more aggressive curve.
- Gevo also supports CARB's proposal for a CI stepdown in 2025 and for adoption of an Automatic Acceleration Mechanism (AAM). However, as detailed below, we urge CARB to consider a significantly greater stepdown than the 5% that has been proposed and to further strengthen the AAM.
- In various places in the proposed regulations, CARB proposes to enumerate certain feedstocks and/or production processes, rather than retaining the feedstock- and technology-neutral approach that has typically been taken under the LCFS. In our comments, Gevo raises concerns with these proposed changes, as they imply unnecessary barriers to feedstock and technological innovation.
- Gevo supports the "true-up" concept for all pathways, although, as detailed below, we recommend that this be expanded to include true-ups between temporary and provisional pathways.
- While Gevo supports CARB's recognition of the important role that crop-based biofuels play in reducing GHG emissions and we are committed to strong

sustainability and tracking provisions, we have significant concerns regarding CARB’s current open-ended proposal to require third-party “sustainability certifications” for crop-based feedstocks. In our comments below, we encourage CARB to convene a stakeholder process to flesh out an appropriately tailored approach to sustainability certifications for feedstocks that would include crediting the emissions reductions from climate-smart agriculture.

- Gevo strongly supports avoided methane crediting recognizing RNG project benefits that reduce global methane emissions regardless of location or end use. In our comments, Gevo recommends changes to the current RNG proposals so the LCFS can continue to deliver emissions benefits and maintain project developer and investor confidence in continuing to advance these important methane abatement projects.
- Gevo also provides comments on several compliance-related and administrative provisions set forth in the proposal.

Also, in addition to providing our own comments, Gevo is a member of and supports and incorporates by reference the comments of the Coalition for Renewable Natural Gas (RNG Coalition) and the Low Carbon Fuels Coalition (LCFC).

II. Gevo’s Detailed Comments on the Proposal

§ 95484 “Annual Carbon Intensity Benchmarks” (i.e., Compliance Curve), Stepdown, and Automatic Acceleration Mechanism

a. Gevo supports strengthening the overall compliance curve

CARB affirmed rigorous emissions reduction goals in the 2022 Scoping Plan update. CARB’s analyses and that of various outside parties, including ICF,² have confirmed not only that the LCFS is a critical tool for emissions reduction in the State, but that the LCFS carbon intensity (CI) benchmarks and compliance curve therefrom must be strengthened to in order for the State’s emissions goals to be met. Accordingly, Gevo supports CARB’s proposal to update the annual CI benchmarks through 2030 and establish more stringent post-2030 benchmarks in alignment with the 2022 Scoping Plan. Notably, the analysis undertaken by ICF demonstrates that CARB could go even

² ICF’s prior analysis, captured in the report, “Analyzing Future Low Carbon Fuel Targets in California,” was previously submitted to CARB by the Low Carbon Fuels Coalition. See Letter from the Low Carbon Fuel Coalition to CARB Chair, Liane Randolph (Sept. 28, 2023) (attaching the ICF report).

farther, as ICF's LCFS analysis found that a 2030 target for the program greater than 40% is achievable, when all low carbon fuels are allowed to contribute fully under the program's technology-neutral, performance-based design.³ Thus, while supporting CARB's benchmarks/compliance curve proposal, we urge CARB to view the proposed targets as a minimum, and to continue to consider ways to further advance emissions reduction through LCFS emissions targets.

b. The proposal for a stepdown in 2025 and for the auto accelerator mechanism are warranted and support California's emissions reduction goals, though CARB should further strengthen these proposed mechanisms

In addition to adjusting the overall compliance curve, CARB has also proposed a near-term, one-time 5% stepdown of the CI benchmark in 2025 and an Automatic Acceleration Mechanism (AAM). While Gevo supports the adoption of these mechanisms, we urge CARB to adopt a greater stepdown than proposed and to further strengthen the AAM.

The LCFS is clearly a successful program, exceeding its initially projected carbon reductions through what CARB has referred to as "overperformance." Although the LCFS has supported the production of a greater quantity of low-carbon fuels during a certain timeframe than originally projected, Gevo notes that labelling this phenomenon as "overperformance" is a bit of a misnomer. In actuality, given the State's aggressive carbon emissions reduction and climate goals, and the challenges associated with meeting them, the situation might better be referred to as underperformance of the CI targets and implementing mechanisms. As CARB has recognized, because the volume of low-carbon fuel has exceeded projections, the credit prices have been reduced and the credit bank is unduly large, thereby threatening continuing success. Implementing an appropriately calibrated near-term CI stepdown and automatic acceleration mechanism alongside the compliance curve/benchmarks revisions can address this. Indeed, a near-term CI stepdown can provide near-term market improvements while the accelerator mechanism will provide California with the tools to monitor the LCFS program and adjust it when needed. In addition, the accelerator mechanism will also help meet the State's interest in spurring additional emissions reductions from SAF by supporting expansion of SAF production (and other renewable fuels) by providing investors and industry with confidence that the LCFS can support the crediting of additional gallons without the long delays that would be required by future rulemakings.

³ ICF, "Analyzing Future Low Carbon Fuel Targets in California," (September 2023).

While Gevo supports adoption of these mechanisms, we are concerned that setting the stepdown at the proposed 5% level will be insufficient to achieve the intended results. As established in the ICF report accompanying comments submitted by the Low Carbon Fuels Coalition,⁴ a stepdown in 2025 of at least 6.5% appears necessary to ensure that the LCFS credit bank does not continue to build. And that analysis also shows that a stepdown of at least 10.5% in 2025 likely is needed to ensure that the credit bank reverses and is drawn down to the level necessary to continue to incentivize LCFS-driven emissions reductions, i.e., with the credit bank holding approximately two to three quarters' worth of deficits. By contrast, ICF's analysis indicates that if CARB retains the proposed 5% CI stepdown for 2025, the credit bank will build in 2025, 2026, and 2027, with the credit bank reaching 45-50 million credits in 2027. In turn, this would trigger the AAM in 2028 and again in 2030, and yet the AAM would not be able to sufficiently adjust to correct the imbalance.

While ICF's analysis demonstrates that a greater 2025 stepdown is needed, it also demonstrates that this should be done in tandem with an adjustment to the proposed threshold for triggering the AAM so the AAM will be triggered when the credit bank is more than 2.5 times greater than the quarterly deficits generated in a given year. These changes would result in a tighter credit-deficit balance and would provide sufficient flexibility to respond to market conditions in the near-term future (pre-2030), while enabling California to achieve its long-term GHG reduction targets. Accordingly, Gevo recommends that CARB revise the stepdown and AAM proposals consistent with this analysis.

§95481(a): Revised Definitions of "Renewable Diesel" and "Renewable Naphtha"

Gevo is concerned about the proposed revision to the definition of "renewable diesel" and the proposed definition of "renewable naphtha" in the LCFS package. CARB's proposals would import specific feedstocks and production pathways (i.e., hydrotreated lipids and biocrudes or from gasified biomass that is converted using the Fischer-Tropsch process and portions from co-processing) into these definitions. As written, the proposed definitions would presumably exclude feedstocks and production pathways that are not enumerated. We urge CARB to reconsider this approach and to instead revert to the technology and feedstock neutral approach for these definitions.

⁴ See, ICF "Analyzing Future Low Carbon Fuel Targets in California: Response to Staff Report," February 2024, available at <https://www.lfcoalition.com/comment-letters-reports> (tagged there as "ICF Analysis: Updated Results for Accelerated Decarbonization, Initial Statement of Reasons (ISOR) Case").

With specific respect to Gevo, our production process – the alcohol-to-hydrocarbons conversion process – apparently would be excluded from these definitions, as would our feedstock, corn starch (or other such biomass not expressly included in the proposed definitions).⁵ Yet, renewable diesel and renewable naphtha are hydrocarbon fuels that are produced alongside our SAF (i.e., alternative jet fuel) in alcohol-to-hydrocarbons production facilities. There is no rational reason for excluding such truly renewable naphtha and diesel from the CA-LCFS program and to do so would unnecessarily limit the effectiveness of the LCFS. Moreover, by enumerating specific technologies and feedstocks (and in this case, so few), CARB would be creating an administrative barrier to the types of innovations the State wants to encourage, as regulatory revisions would have to be made each time a new feedstock or production process (or new combination thereof) were introduced. Accordingly, as noted, we urge CARB to make these definitions neutral as to non-petroleum feedstocks and production processes.

§95488.1(d)(4): Tier 2 Classification

As discussed above with respect to the proposed renewable diesel and naphtha definitions, we believe it is critical that CARB include – or not appear to exclude – the alcohol-to-hydrocarbon conversion process from LCFS eligibility. While Gevo understands that the Tier 2 pathway classification is not limited to the production processes listed in this section of the proposed regulation, we are concerned that the omission of the alcohol-to-hydrocarbon conversion process might be misread as an exclusion. Therefore, for clarification and transparency, we suggest revising the language associated with Tier 2 classification to explicitly mention alcohol-to-hydrocarbon conversion technology, as follows (proposed addition underlined and bolded, while the strikethroughs are in CARB's proposal):

*(4) Drop-in fuels (~~renewable biomass-derived hydrocarbons using processes such as gasification and pyrolysis, synthetic hydrocarbons,~~ **and alcohol to hydrocarbon conversion**) except for renewable diesel-hydrocarbon fuels produced from feedstocks described in section 95488.1(c)(3). This category includes fuels produced from low carbon feedstocks co-processed with fossil feedstocks in petroleum refineries;*

§95488.8(h)(2): Renewable or Low-CI Process Energy

In this section of the LCFS package, CARB has proposed the following physical limitation on biogas/biomethane: "Biogas or biomethane must be physically supplied directly to

⁵ In addition to our NZ-1 facility, Gevo is planning additional facilities that would employ the alcohol-to-hydrocarbons process and there are other companies that also use such processes.

the production facility. The applicant must submit the attestation set forth below in section 95488.8(i)(2)(C)2.”

The proposed requirement for physical delivery of biogas or biomethane, i.e., RNG, to a production facility would add significant cost burden and environmental impact as truck transport of RNG apparently would be required to decarbonize thermal energy. In addition to unduly burdening RNG suppliers like Gevo, it would be counterproductive to the State’s emissions reduction goals.

To avoid these results, we encourage CARB to allow for biogas or biomethane to be supplied as process energy using the book-and-claim provisions under the regulation. This will bring the CA-LCFS into alignment with the recent changes in the Renewable Fuel Standard (RFS) Biogas Regulatory Reform – which now allows for biogas to be delivered via commercial natural gas pipelines and used to decarbonize thermal demands.

CARB recognizes the benefits of the book-and-claim approach and provides for book-and-claim of biomethane for hydrogen production/use in a production facility. As CARB has confirmed that book-and-claim approaches work well under the LCFS, such an approach should be authorized for natural gas thermal heating.

§95488.9(b) Temporary Fuel Pathways

Gevo applauds CARB’s proposal to include alternative jet fuel (i.e., SAF) temporary pathways in Table 8. This will allow new ATJ production facilities to send initial batches of fuel to the State while awaiting approval of a provisional pathway.

We respectfully request that CARB expand the ATJ temporary pathways to include corn starch feedstock processed using an alcohol-to-hydrocarbon production process. As noted above, the alcohol-to-hydrocarbon pathway is well established, with multiple ATJ/SAF facilities using this production process coming online. Inclusion of the corn starch feedstock to alcohol-to-hydrocarbon process as a temporary ATJ pathway will further incentivize its production, helping to meet the State’s emissions reduction goals and will avoid the delay that would be occasioned by deferring its addition until later.

§ 95488.10(b): “Credit True Up after Annual Verification”

Gevo supports a credit true up in the LCFS program for all pathways and believes it should be expanded to also include true ups between temporary pathways and provisional pathways.

Temporary LCFS pathways offer production facilities an opportunity to generate LCFS credits while awaiting full provisional pathway approval. While these temporary

pathways are vital to supporting the start-up and build out of new production facilities, the credits generated are much more conservative than actual carbon intensity reductions the fuel is offering to California.

Example: RNG Pathways

We note that the RNG temporary pathway score of -150 CI for swine and dairy manure biomethane projects is more than 50% higher than the actual CI of Gevo's operating facility. Provisional pathways undergo the same rigorous validation and verification process as operational pathway CI scores undergo. By allowing "true ups" between temporary and provisional CI's, CARB would be supporting the successful start-up of these production facilities and recording actual GHG emission savings as part of the program.

A significant amount of capital is invested to ensure the success of methane emissions abatement through RNG projects. RNG projects are critically important because they mitigate methane (a potent GHG) from entering the atmosphere that would normally be released through standard agricultural operations. Yet the lack of a true-up mechanism between temporary and provisional pathways results in significantly discounting the real emissions reduction value of an RNG project simply due to regulatory process and associated timelines, thereby disincentivizing such projects. By contrast, a true-up mechanism would allow operators like Gevo to be rewarded for the entirety of their project and the real-world climate value these projects bring, thereby supporting and promoting investment in climate mitigating projects like Gevo's.

§ 95488.9(g): "Sustainability Requirements for Crop-Based and Forestry-Based Feedstocks"

Gevo is committed to providing low-carbon, sustainable SAF, which starts at the field and goes all the way into the aircraft. As noted, we plan to source sustainably-grown, low-CI field corn from the Lake Preston, South Dakota area and use Verity Tracking to measure and verify carbon intensity and all farm activities to the field level. The Gevo Growers' Program is already enrolling farmers under our \$30 million USDA Climate-Smart Commodities grant, which allows us to pay farmers more for implementing climate-smart agriculture practices such as cover crops, reduced tillage, organic fertilizers, and nutrient management.

These practices are critical to producing sustainable feedstock. In addition to sequestering carbon in soil, they provide significant additional ecosystem benefits such as better soil health, better water quality, higher water use efficiency, more resilient crops, and long-term land fertility. These practices are a significant component of Gevo's approach to sustainable SAF production and we fully support crediting them under the LCFS.

Gevo also supports and is committed to fully meeting appropriate sustainability criteria. Unfortunately, what CARB has proposed misses the mark. CARB has not set out specific sustainability requirements that it would expect to be met, instead deferring to unspecified third-party schemes. CARB's failure to set out specific requirements calls into question not only how one might comply, but also whether CARB has the legal and regulatory authority to import into the LCFS undefined substantive provisions within outside schemes.

Indeed, the provisions under (1)(B) are too vague to be implemented appropriately and consistently across production facilities and by various certification bodies. For example, the provision that "the certification must consider environmental, social, and economic criteria" could be interpreted in a variety of ways. It is unclear from the proposed language which specific environmental, social, and economic criteria would be deemed essential for the CA-LCFS program and how they might align with program goals. Further, CARB's failure to establish clear criteria calls into question why the current analytical, science-based methodologies used by CARB are assumed to be insufficient to provide the necessary controls on crop-based (and forestry) feedstocks to ensure environmental integrity.

Moreover, it is unclear why crop and forestry-based fuels are being singled out for meeting social and economic criteria, which have implications for any fuel pathway participating in the program. These additional criteria have the potential to add substantial administrative burden to both farmers and fuel producers, potentially creating barriers to participation in the LCFS, and as such should be carefully considered in the context of what the program hopes to achieve with these criteria.

Accordingly, we implore CARB to remove this section from the rulemaking and continue to mature the development of specific program requirements with multi-stakeholder input and workshop feedback to align whatever substantive requirements CARB might impose with specific LCFS goals and to make the provisions practicable. Critically, this stakeholder input must bring farmers and others who work in agriculture to the table. Farmers are more often than not omitted from the development of program standards, despite being the most critical actors in implementation of those standards. Specifically, while we are members of and work with the Roundtable on Sustainable Biomaterials (RSB) and the International Sustainability and Carbon Certification (ISCC) initiative, in our experience, despite being well intentioned regarding stakeholder input, these entities have not actively included farmers in the development of standards and only seem to consult such stakeholders after standards have already been formalized, if at all.

Notably, in establishing specific sustainability criteria that are expected to be met for crop-based feedstocks, CARB should include provisions that allow for climate-smart agriculture practices to be credited under the LCFS. These practices represent significant additional effort on the part of the farmer to implement and are a departure from business-as-usual feedstock production. Moreover, these practices can bring significant GHG emissions reductions, as recognized by the U.S. Department of Agriculture, the National Academy of Sciences, the IPCC, and others.⁶⁷⁸ Hence, they should be incentivized through crediting to drive adoption of these important practices.

By focusing in on what the State of California seeks to achieve through additional sustainability criteria, and delineating those criteria with appropriate inputs, CARB can ensure that program requirements are fit for purpose, clear, transparent, applied fairly across feedstocks and fuel production processes, properly credit GHG emissions reductions from agricultural feedstocks, and align with LCFS-specific program goals. And such a process need not take long, as CARB could set up a process with a specified time frame (e.g., six months) as it has in other instances where program requirements need to be refined.

Biomethane Projects

Gevo applauds CARB for progressing the LCFS to encourage the mitigation of GHG emissions, increase the production and consumer optionality of clean fuels, and facilitate investments of such clean fuels. To continue to meet those objectives, Gevo urges CARB to continue its progressive stance on biomethane projects, rather than create limitations for methane avoidance projects. Accordingly, Gevo recommends that CARB continue to support biomethane projects that benefit the climate, regardless of location, pipeline flow directionality or end-use, thereby providing a level playing field for projects that provide the same GHG mitigating practices. Much like carbon capture and sequestration (CCS) is not limited by its location in the U.S. and is judged by the

⁶ J. Rosenfeld, J. Lewandrowski, T. Hendrickson, K. Jaglo, K. Moffroid, and D. Pape, 2018. A Life-Cycle Analysis of the Greenhouse Gas Emissions from Corn-Based Ethanol. Report prepared by ICF under USDA Contract No. AG-3142-D-17-0161. September 5, 2018.

⁷ National Academies of Sciences, Engineering, and Medicine. 2019. Negative Emissions Technologies and Reliable Sequestration: A Research Agenda. Washington, DC: The National Academies Press. doi: <https://doi.org/10.17226/25259>.

⁸ Nabuurs, G-J., R. Mrabet, A. Abu Hatab, M. Bustamante, H. Clark, P. Havlík, J. House, C. Mbow, K.N. Ninan, A. Popp, S. Roe, B. Sohngen, S. Towprayoon, 2022: Agriculture, Forestry and Other Land Uses (AFOLU). In IPCC, 2022: Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, P.R. Shukla, J. Skea, R. Slade, A. Al Khourdajie, R. van Diemen, D. McCollum, M. Pathak, S. Some, P. Vyas, R. Fradera, M. Belkacemi, A. Hasija, G. Lisboa, S. Luz, J. Malley, (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA. doi: 10.1017/9781009157926.009.

fact that GHG emissions are removed from the atmosphere, these same principles should be applied to biomethane projects throughout the U.S., without the limitations proposed in the current round of LCFS revisions and as outlined below.

Book-and-Claim and Deliverability Requirements

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

§ 95488.8.(i)(2)(B)(1) Book-and-Claim Accounting for Pipeline-Injected Biomethane Used as a Transportation Fuel

Gevo urges CARB to continue to expand book-and-claim and deliverability requirements within the LCFS in general, and to not place book-and-claim (or other) restrictions on biomethane projects. CARB's proposals in the LCFS package that would place restrictions on biomethane projects risk the LCFS program's ability to decarbonize through biomethane projects. In particular, Gevo opposes CARB's proposal for biomethane projects breaking ground after December 31, 2029, which would mandate that "[s]tarting January 1, 2041...the entity...must demonstrate that the...pipelines along the delivery path physically flow from the initial injection point toward the fuel dispensing facility at least 50 percent of the time on an annual basis." Instead of singling out certain biomethane projects for such restrictions, Gevo supports consistency in LCFS pathways and believes biomethane projects be evaluated and credited on the science-based merits of GHG emissions reduction, rather than the project location or directionality of biomethane flow in U.S. pipelines.

Gevo supports CCS projects across the U.S. for the GHG reducing merits and believes this same concept should apply to existing and future biomethane projects. In the same way that carbon dioxide does not have to be transported and injected into California's geologic pore space to provide value to the climate, biomethane projects should not be geographically limited. In sum, Gevo supports the expansion of book-and-claim accounting mechanisms, rather than restrictions, promoting the tangible reductions in GHG reductions that result from this type of program flexibility.

Crediting Periods – Avoided Methane Emissions

§ 95488.9(f): "Carbon Intensities that Reflect Avoided Methane Emissions from Dairy...Manure..."

§ 95488.9(f)(3)(A) Crediting Periods

As noted, Gevo strongly believes that RNG projects that remove methane, a potent GHG, from the atmosphere should not be limited in their eligibility or approval within the LCFS program, for existing or future projects. To realize the level of emissions

benefits needed to meet California's climate targets, all projects that bring demonstrable emissions benefits should continue to be credited on a performance basis. Thus, Gevo urges CARB to decline to adopt the limits on the crediting periods that it has proposed under the LCFS.

Missing Data Provisions

§ 95491.2. Measurement Accuracy and Data Provisions.

CARB, like many regulatory bodies, has recognized the use of "reasonable temporary methods" to address data gaps, recognizing that operational realities result in such gaps and can be reliably filled in alternative ways. Accordingly, Gevo urges CARB to continue to allow those participating in the LCFS to be able to use "a reasonable temporary method," rather than being shoehorned into the limited data substitution tactics specified under 95491.2(b)(2)(B)'s Table 13. CARB has not provided a reasoned basis for eliminating the "reasonable temporary method" option, which provides needed flexibility to Gevo and others with current and anticipated pathways in locations that are remote and with intermittent communication outages. While Gevo typically does not experience significant outages, we appreciate flexibility in filling in for missing data periods using the data immediately before and after an outage period, which has been established as a statistically valid approach to addressing such data gaps. And such flexibility is important for RNG and other renewable fuel facilities because such operations tend to have variability in operations. For example, Gevo's RNG facility has variability due to cow herd counts, associated manure volumes, drastic changes in weather conditions that can drive utility usage, and cold weather events that can cause occasional freezes/shutdowns.

The data immediately before and after an outage is able to account for such operational variability and would be expected to be more accurate than averages across a 30-day before/after-, year-to-date- or two-year- period, as would be required under 95491.2(b)(2)(B)'s Table 13. As another example, the amount of natural gas Gevo uses in the summer is nominal to what Gevo will use in the winter on a 0-degree Fahrenheit day. In such cases, incorporating averages outside of the missing data period as apparently would be required under Table 13 often would not align accurately with actual operations.

Thus, Gevo advocates for maintaining flexibility in approach and supports the current approach of being able to use a "reasonable temporary method." Gevo currently documents our "reasonable temporary" methods thoroughly and has confirmed their reliability. Indeed, this approach allows for unique downtime events to be addressed with realistic data directly before and after the event. Additionally, being forced to utilize Table 13 would be expected to negatively – and unduly – impact Gevo's CI score as the substituted values would not be representative of operational events around

each missing data event. Due to the operational parameters described above, the values that would fall in the 10th or 90th percentile or the highest and lowest values in a given year or two would be *too* conservative to reflect actual operations. This would have a significant negative impact on Gevo's actual CI score by forcing much higher or lower values compared to real operating values during missing data events.

Lastly, Gevo believes even if we were able to resort to an "Executive Office approved alternate method," this would pose a significant burden on not only Gevo, but on CARB, as CARB will be called on to review each unique method for approval. Gevo is also concerned that this proposed approach will unnecessarily delay pathway certification. In our experience, verifiers are well qualified to ensure that data substitution under "reasonable temporary" methods are robust. Accordingly, we encourage CARB to retain this option for data substitution.

§ 95491.2(b)(2)(C) Force Majeure Events

Gevo respectfully requests that CARB provide more definition and specificity around "Force Majeure Events," especially regarding what might be deemed a "facility shutdown" or "disruption drastically affecting production." As noted above, alternative fuel production facilities can face shutdowns and disruptions (and typically more frequently than their petroleum-based counterparts) given the expected variability in bio-feedstocks and processing conditions. Thus, to the extent that CARB seeks to impose further requirements for what it defines as "shutdowns" and "disruptions," it will be critical to Gevo and other alternative fuel producers that these terms are fleshed out and understood.

Overall, Gevo believes the types of events CARB is implying in this section are already captured in shutdown logs provided to the verification body along with the data captured during the events (typically null or zero values). Thus, it seems unnecessary and unduly burdensome to require special reporting for such events within 90 days, given the remote nature and geographic location of many alternative fuel facilities and especially given that production during these events is minimal to zero, which is readily captured in the reported dataset(s).

Tier 1 CI Calculator for Dairy and Swine Manure Biomethane: Retention Time and Drainage

Gevo reasserts here the comments we submitted on July 12, 2023, regarding the proposed changes to the "Biomethane from Anaerobic Digestion of Dairy and Swine Manure" Tier 1 calculator. As before, CARB has proposed a change regarding the "Retention Time and Drainage" instructions for Tier 1 calculators. Currently, an applicant can select from the options that are applicable to their farms in the "Manure-to-Biogas (LOP Inputs)" tab without having to select a particular month where the

system is completely emptied. CARB has now proposed a standardized requirement that: "If there is no regular storage/treatment system clean schedule, must select 'System Emptied in This Month' each September. The applicant only needs to select one 'System Emptied in This Month' for each year."

Gevo appreciates what we perceive to be CARB's approach to standardize the Tier 1 Calculator's inputs for swift processing. Nonetheless, we are concerned that by setting this specific "System Emptied" timeframe, this requirement can result in a forced increase in the CI of a project, causing a penalty to farms that retain a certain level of volatiles in their storage system throughout the year. Accordingly, we urge CARB to retain the current approach rather than adopting this amendment.

In any event, although the proposal appears to seek to standardize, and only apply to, Tier 1 applications, to the extent CARB proceeds with the proposed change, we respectfully request that CARB continue to assess site-specific optionality in Tier 2 applications. This will ensure unnecessary penalties aren't assessed for farm-specific circumstances in which the farm does not completely empty their storage systems in any year.

Removal of "business days" and overall shortening of response timelines

In several sections of the rulemaking proposal, CARB has proposed shortening the fuel pathway applicant response timeline from "business" days to "calendar" days, effectively reducing the amount of time allowed for responses. In some sections response time has been reduced even further (for example: reduction from 15 business days to 14 calendar days). This includes sections:

- §95488.5(c) Completeness Check for lookup table fuel pathway applications
- §95488.7(d) Certification process for Tier 2 pathway applications

Although the proposed changes might seem trivial to CARB, in application the reduction in response times will put significant additional strain on compliance program staff dedicated to supporting LCFS pathway compliance. And yet there is no compelling reason for CARB to make these changes. Accordingly, we recommend that CARB maintain the current regulatory language and timelines, including specifying "business" days and providing appropriate and needed time for fuel applicant response.

Tier 1 and Tier 2 application data interval requirements

With respect to the proposed application data intervals, Gevo recommends specifying a six (6) month timeline, rather than a three (3) month timeline as outlined below.

The LCFS proposal has added language in the following sections:

- *§95488.6(a)(1) "Tier 1 applications must not have an interval of greater than 3 months between the end of the reported operational data month and the date of submission"*
- *§95488.7(a)(1) "Tier 2 applications must not have an interval of greater than 3 months between the end of the operational data month and the date of submission."*

The process to collect data, prepare the Tier 1 or 2 calculator and supporting documentation package is significant and, in our experience, requires the support of dedicated internal staff resources and outside consultants. Imposing a three-month timeframe on the preparation and submission of an LCFS application package will cause a significant cost burden and may not be feasible for all projects. In addition, there does not appear to be a compelling reason for limiting the intervals to only three months. Thus, Gevo recommends that CARB specify six (6) month timelines instead.

III. Conclusion

Thank you for the opportunity to comment on the "Proposed Amendments to the Low Carbon Fuel Standard." Please let us know if you have any questions regarding our comments. We look forward to continuing to participate in this program with our RNG and as Gevo begins commercial scale production of SAF and other biofuels.

Respectfully,



Kent Hartwig
Director of State Government Affairs



Nancy N. Young
Chief Sustainability Officer



Gevo, Inc.