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Mr. Douglas W. O'Donnell
Deputy Commissioner for Services and Enforcement
CC:PA: LPD:PR (REG–117631–23)
Room 5203
Internal Revenue Service
P.O. Box 7604
Ben Franklin Station
Washington, DC 20044

Re: Docket-IRS-2023-0066: REG–117631–23, Section 45V Credit for the Production of Clean Hydrogen

Dear Deputy Commissioner O'Donnell:

Thank you for the opportunity to provide comments on the Internal Revenue Service (IRS) and Treasury Department proposed regulations for the Section 45V clean hydrogen production credit as established under the Inflation Reduction Act of 2022.

Gevo uses low-carbon renewable resource-based carbohydrates as raw materials and is in an advanced state of developing renewable electricity and renewable natural gas for use in production processes, resulting in drop-in transportation fuels such as sustainable aviation fuel (SAF) with substantially reduced carbon intensity compared to incumbent petroleum fossil-based fuels. Gevo's liquid hydrocarbons have potential to yield net-zero greenhouse gas (GHG) emissions when measured across the full lifecycle of the products.

Gevo's comments on the proposed regulations for Section 45V relate to our planned SAF production facility and to our biogas and renewable natural gas (RNG) production. While Gevo does not intend to produce hydrogen at our planned SAF production facility, the wind energy partner supplying our facility with clean electricity intends to also produce hydrogen for use in SAF production and for other transportation fuels. Gevo urges Treasury and the IRS to ensure any requirements for incrementality and temporal matching are based on pragmatic considerations and include needed flexibilities to prevent the unintended consequence of impacting much-needed clean energy investment and development due to unnecessary restrictions and timelines.

Gevo appreciates the intent of Treasury and the IRS to approve additional RNG pathways for hydrogen. However, the proposed requirement that RNG used in the hydrogen production process must originate from the "first productive use" of that RNG is unnecessary, unduly restricts market opportunities for RNG producers and would increase GHG emissions. We strongly urge Treasury and the IRS to reconsider this requirement.

Gevo's detailed comments on the Section 45V proposed rule follow.

CLEAN HYDROGEN PRODUCTION USING ELECTRICITY

While the Section 45V credit can help support new hydrogen production, the final regulations must also provide clarity and certainty for projects that are already significantly advanced. Clean energy producers that have been making investments, planning projects, purchasing equipment and supporting job creation should not be penalized for moving first and making progress. The final regulations should support, not stifle, their existing investment and development that is accelerating clean energy deployment. Therefore, we urge the IRS and Treasury to ensure a clear approach and rational rules for advanced projects that can achieve commercial operation before January 1, 2028.

The proposed regulations would require clean power generators to begin commercial operations within three years of a hydrogen facility being placed into service to be considered new incremental sources of clean power. It is not reasonable to require large-scale projects, especially projects already in an advanced stage of development, to be placed in service within three years to the date. Instead, Treasury and the IRS should permit greater latitude and permanent grandfathering for hydrogen electrolyzer projects that achieve commercial operation before January 1, 2028. If not, at minimum, Treasury and the IRS should permit incrementality to be met within calendar years. For example, if new clean electricity production achieved commercial operation at any point during 2023, that incremental clean power should be allowed to match with new hydrogen production that achieves commercial operation at any point by the end of 2026.

The proposed rule also requires time matching of clean electricity generation with clean hydrogen production, allowing annual matching until 2028. Because systems and technologies are currently lacking for hourly matching, we urge Treasury to allow hydrogen production projects that achieve commercial operation by January 1, 2028, to retain the option to continue to use annual matching throughout the project's lifespan. It is not reasonable that clean electricity and hydrogen producers with advanced projects today be required to design and deploy a system now that relies on mechanisms that do not exist and may not be known for years to come. Projects designed and deployed around annual matching systems and requirements today and until 2028 should retain the option to continue to rely on those systems and that design throughout the project lifespan.

Finally, the proposed rule requires clean electricity sourced for hydrogen production to come from the same region as the hydrogen producer, as defined by the Department of Energy's

(DOE) National Transmission Needs Study. Our planned SAF production facility, and the location for our partner's wind energy and hydrogen production, is in a South Dakata area served by both the Midcontinent Independent System Operator (MISO) and Southwest Power Pool (SPP) grids. We ask Treasury and the IRS to ensure a correct and consistent definition of these independent system operators and regional transmission organizations (ISO/RTO) and ensure all incremental clean electricity throughout the SPP region can be matched with hydrogen production in the SPP.

CLEAN HYDROGEN PRODUCTION and RENEWABLE NATURAL GAS

RNG is a beneficial pathway for accelerating the clean energy transition, producing energy from a waste product, reducing GHG emissions and growing the bioeconomy. Gevo generates biogas from anerobic digestion of dairy manure and upgrades the biogas to RNG. Partnering with dairy farms creates a circular economy, offering environmental benefits for the farms by capturing and utilizing methane from livestock waste that would otherwise be emitted and generating low carbon fuel and energy.

Gevo's RNG replaces fossil natural gas, is transported through the interconnected natural gas distribution system and is currently sold for transportation in low carbon fuel markets. As federal agencies have recognized, RNG can be used as a feedstock to produce renewable hydrogen, providing another avenue for low-carbon, zero-carbon, and carbon-negative renewable gas in the energy, transportation, and industrial sectors.

"First Productive Use" Proposal and Differences From Electricity

The proposed "first productive use" requirement is not authorized by statute and is overly strict to exclude viable RNG projects that could support clean hydrogen production today. Data from industry associations suggests domestic production of biogas and RNG can support both new hydrogen production and current end uses like transportation vehicles. There were 2,415 operational biogas systems in the United States in 2023, with the potential to develop 15,000 additional systems, a more than six-fold growth in biogas and RNG potential.

The proposed "first productive use" requirement ignores the fact that there are numerous reasons an existing biogas facility may switch "productive uses." Biogas producers require clear market signals to continue utilizing biogas to produce RNG, hydrogen, or other fuels. Currently much domestic RNG is used in the transportation sector for compliance with the Renewable Fuel Standard (RFS) and/or state clean fuel programs such as California's Low Carbon Fuel Standard (LCFS). If an existing RNG supplier leaves these transportation markets to send its RNG to new hydrogen production, the program requirements ensure the redirected RNG is backfilled with other compliant renewable fuels, not fossil fuels. Fossil fuels, including fossil natural gas, will not meet these programs' requirements and cannot replace that redirected RNG.

Furthermore, requiring the RNG project and the hydrogen production facility to come on-line in the same year (or for the RNG project to come on-line after the hydrogen project) is simply unworkable and should not be adopted in the final rule. Another option would be to allow a hydrogen producer to utilize the RNG from a RNG project that came online within the three calendar years prior to entering the off-take agreement with the hydrogen production facility. This approach is more aligned with the Section 45V proposed rule's 36-month look back for electricity. This approach or another more flexible approach would better ensure that both hydrogen and RNG investors and lenders support project financing, which will not only prevent emissions from being diverted from existing emission reduction programs, but will also allow additional methane emissions to be captured soonest, making the greatest cumulative impact towards reducing the effects of climate change from otherwise emitted methane.

It is important to note that the RNG/natural gas market operates very differently than the electricity grid. No evidence has been provided of any "induced" emissions that properly should be included in the lifecycle GHG emissions calculations for RNG, unlike the agency determination that it could be "reasonably determined" that the increased use of electricity for hydrogen could result in some induced emissions. Furthermore, there is no scientific or legal basis to impose incrementality, deliverability, or temporality requirements on RNG to account for "induced" emissions, including the proposed "first productive use" requirement for RNG used for hydrogen.

Because of the interconnectivity of the North American natural gas pipeline system and based on long-established delivery tracking systems, there is no need to impose regional geographic restrictions for RNG. The entire North American natural gas pipeline system is the proper geographic scope for the 45V tax credit. A key benefit of RNG for accelerated deployment of clean hydrogen is that it can be distributed across the country in existing infrastructure. It is not possible to physically segregate delivery of RNG once it is intermingled with fossil gas in the pipeline system and geographic limitations are therefore unnecessary.

Due to the operations of the natural gas market, where fossil natural gas is displaced by RNG injected into the same, interconnected pipeline, time-matching requirements are also unnecessary for RNG. Once injected into the gas grid, low-carbon gasses are freely storable and transmittable. The natural gas distribution system has significant storage capabilities and can track injections and withdrawals from those storage facilities. Moreover, the RNG industry has long operated on reporting injections and withdrawals from third-party pipeline measurements, which is usually done monthly. Strict time-matching requirements are simply unnecessary.

RNG-to-Hydrogen Pathways in GREET

Gevo appreciates the work DOE's Argonne National Laboratory has done to provide a Greenhouse Gases, Regulated Emissions, and Energy Use in Technologies (GREET) model targeted for the 45V tax credit. Moving forward, however, Treasury must include additional pathways for RNG to hydrogen beyond landfill gas, including a pathway for biogas from

anaerobic digestion of animal waste, which is already included within the 2023 R&D GREET model.

Gevo has consistently supported the use of GREET as a transparent and well-respected lifecycle model that follows science. The lifecycle GHG emissions analysis properly includes avoided emissions for RNG facilities where the biogas may otherwise have simply been flared or released into the atmosphere.

Consistent with GREET, any modeling used for determining lifecycle GHG emissions for pathways involving RNG or biogas directly should include avoided emissions. RNG is derived from the capture, cleaning, and conditioning of surface-level emissions from organic waste streams. Methane that otherwise would have been emitted into the atmosphere is refined into a clean, reliable energy resource. The GREET model has consistently included the quantification of avoided emissions benefits by various fuel pathways, including organic waste derived RNG. Accordingly, modeling of emissions avoidances – also referred to as counterfactual scenario analysis – is a well-established element of lifecycle analysis science. This approach is consistent with other domestic and international regulatory programs that consider lifecycle GHG emissions, including California's LCFS and the European Union's Renewable Energy Directive II.

RESPONSES TO SPECIFIC RNG QUESTIONS IN PROPOSED RULE

As a member of the Coalition for Renewable Natural Gas and the American Biogas Council, Gevo supports the responses to the specific questions in the proposed rule submitted by those organizations, in addition to our responses to select questions below.

***Question 2:** What conditions for the use of biogas and RNG would ensure that emissions accounting for purposes of the section 45V credit reflects and reduces the risk of indirect emissions effects from hydrogen production using biogas and RNG? How can taxpayers verify that they have met these requirements?*

The Treasury Department appears to be asking this question under the premise that incentivizing the use of RNG for hydrogen production will lead to an increase in emissions in other sectors. This premise is false because most RNG that has been produced to date is a result of regulatory incentive programs such the RFS and state clean fuel programs intended to displace fossil fuels.

Given that the methane is immediately captured/avoided at the source, all RNG introduced to the pipeline displaces an equivalent volume from fossil fuels regardless of whether that RNG is directed to hydrogen, transportation or another market. RNG both prevents methane emissions upstream and displaces higher emissions activities downstream. Changing the downstream end use for RNG does not diminish the emissions that RNG prevents upstream. However, excluding RNG projects from markets will increase methane emissions, and changing the end use is likely to reduce systemwide emissions.

To mitigate concerns around indirect emissions, the Treasury Department should recognize the industry standard practice of book and claim accounting which serves to directly link a volume of fuel produced to a single end use and prevent double counting of emissions reductions.

Question 7: ***How can the potential for the generation of additional emissions from the production of additional waste, waste diversion from lower-emitting disposal methods, and changes in waste management practices be limited through emissions accounting or rules for biogas and RNG use established for purposes of the section 45V credit?***

In our experience, there is no evidence that people will create additional waste to generate more RNG that could benefit from market-based incentives. There have also not been any documented cases of biogas or RNG production driving the production of additional waste or the fraudulent claiming of non-waste commodities as waste streams under either the RFS or state LCFS programs. The safeguards against perverse incentives in biogas and RNG production are hard-wired into life-cycle analysis models: if a waste stream would be disposed of through lower-emitting means in the counterfactual scenario, these indirect emissions would be applied to the carbon intensity of the RNG, making it unviable for the creation of qualified clean hydrogen under the Section 45V program.

Question 8: ***To limit the additional production of waste, should the final regulations limit eligibility to methane sources that existed as of a certain date or waste or waste streams that were produced before a certain date, such as the date that the IRA was enacted? If so, how can that be documented or verified? How should any changes in volumes of waste and waste capacity at existing methane sources be documented and treated for purposes of the section 45V credit? How should additional capture of existing waste or waste streams be documented and treated?***

Gevo works closely with dairy farmers and can attest to their commitment to sustainability and improvement of waste management practices. Our experience finds that decisions around development and operations in the dairy sector are driven by strategic intent to maximize current and future value in milk markets while maintaining strong environmental stewardship, not by incurring additional waste production. This question and the proceeding one are analogous to recent stakeholder discussions around California's LCFS; the LCFS has demonstrated how the recognition of avoided emissions can catalyze large-scale methane abatement at farms.

The U.S. Environmental Protection Agency (EPA) also recently evaluated similar issues in conjunction with the RFS, concluding the following:

"The RFS may, along with the CARB LCFS and other programs, incentivize the use of digesters at concentrated animal feeding operations (CAFOs) for the utilization of renewable biofuels, ***however, it does not drive the proliferation of CAFOs.*** *The use of manure management systems such as digesters can be a useful tool in nutrient management, if utilized properly. Water quality*

issues on animal farms often stem from runoff that is high in phosphorus and nitrogen due to manure. Digesters allow for the collection of manure and concentration of this nutrient-rich runoff into a single effluent stream, making it easily treatable."[1]

"Commenters provided little substantive evidence to support their belief that the RFS program is driving consolidation or expansion of large animal feeding operations, or that the proposed volumes were likely to do so. While it is clear that larger facilities are of the size and scale required to economically support processing biogas into RNG and establishing a pipeline interconnect, this does not mean that the RFS program is a driver of the expansion of large scale animal agriculture that has taken place in the U.S. There are a host of other factors much more likely to dictate facility sizing."[2]

CONCLUSION

The IRA Section 45V provisions seek to promote domestic clean hydrogen production based on a technology neutral carbon intensity metric with the goal to lower GHG emissions. However, the proposed regulations would put expansion of clean hydrogen production at risk due to unduly restrictive requirements on clean electricity producers, especially for projects in an advanced stage of development. Furthermore, the proposed rules related to use of RNG as a feedstock would also impede deployment of RNG to support clean hydrogen production.

We appreciate the opportunity to provide input to the Treasury Department and IRS on the significant issues for renewable energy producers such as Gevo as you develop final regulations. Thank you for considering our comments.

Respectfully,

Kathy Bergren
Director of Federal Government Relations
Gevo, Inc.

[1] EPA, *Renewable Fuel Standard (RFS) Program: Standards for 2023-2025 and Other Changes: Response to Comments*, at 206 (2023), *available at* https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P1017OKN.pdf.
[2] *Id.* at 386.