**February 26, 2024**

VIA ELECTRONIC FILING (www.regulations.gov) (REG-117631-23)

The Honorable Janet Yellen
Secretary
United States Treasury
1500 Pennsylvania Avenue, N.W.
Washington, D.C. 20220

**Re: Section 45V Credit for Production of Clean Hydrogen, Notice of Proposed Rulemaking, 88 Fed. Reg. 89,220 (Dec. 26, 2023)**

Newtrient is submitting the following comments and recommendations related to the proposed regulations implementing section 45V of the IRS Code, and related information requests, entitled "Section 45V Credit for Production of Clean Hydrogen; Section 48(a)(15) Election to Treat Clean Hydrogen Production Facilities as Energy Property," published at 88 Fed. Reg. 89,220 (referred to as "45V Proposed Rule).

Newtrient was founded by 12 leading milk cooperatives representing nearly 20,000 dairy farmers producing approximately half of the nation's milk supply. Newtrient brings together farmers, industry associations, researchers, investors, technology leaders and product developers to make informed decisions about manure management opportunities. Newtrient's work includes advancing manure-based management and product technologies and bringing public and private sector partners together to advance environmental asset trading opportunities. Newtrient understands dairies, markets, practices and technologies, and brings the right entities together for success. Newtrient members include investors, owners, and operators of anaerobic digester systems on dairies across the country. The biogas systems our members build, own, and operate provide waste management solutions for organic material such as manure, biosolids, industrial food waste, green waste, food waste, and purpose-grown crops. Biogas systems recycle nutrients, create soil products, and produce energy (biogas) that can be converted to renewable electricity as well as Renewable Natural Gas (RNG). RNG is biogas that has been further cleaned and conditioned to meet quality specifications for natural gas pipelines, and because of this, dairy RNG has several end uses, e.g., fuel in CNG vehicles, biointermediate for the production of other fuels and also as feedstock for hydrogen production, which is the primary focus of these comments.

U.S. dairy farmers are environmental stewards who tend with great care to their land and water to improve the resources on their farms and ensure future generations can carry on our important work of feeding the nation and

the world. Dairy farmers value a proactive approach to sustainability and have adapted as agricultural practices and technologies have evolved and improved over time. As a testament to dairy's endeavors, in 2007, producing a gallon of milk used 90 percent less land and 65 percent less water, with a 63 percent smaller carbon footprint than in 1944. As further demonstration of this continuous improvement, research shows that producing a gallon of milk in 2017 required 30% less water, 21% less land, had a 19% smaller carbon footprint, and produced 20% less manure than it did in 2007.

Anaerobic digesters are one of several key technologies that dairy farmers can use as they pursue sustainable manure management and look to generate energy, recycle bedding, provide fertilizer and compost while reducing GHG emissions. Today there are 700,000 cows contributing to digesters across the U.S. that are removing GHG from the environment and eliminating the need for millions of gallons of fossil fuel annually. These impressive numbers continue to increase because digesters have a strong track record of curbing environmental impacts while providing a regional energy source. A well-designed biogas system can capture more than 80 percent of the methane resulting from a waste stream and in turn be used for the production and use of biogas to generate electricity and heat or for upgrading biogas to biomethane or RNG.

As recognized by other federal agencies, RNG use as a feedstock to clean hydrogen production provides another avenue to produce zero-carbon and carbon-negative energy carrier in support of the transportation and industrial sectors.[1] Specifically, Steam methane reforming (SMR) and Autothermal reforming (ATR) account for the majority of hydrogen production processes globally. Both processes, with and without Carbon Capture and Sequestration (CCS) are included in the ANL 45VH2-GREET model. [2] Because RNG meets natural gas pipeline specifications, it can leverage existing natural gas pipeline infrastructure and be use as a drop-in feedstock at SMR and ATR hydrogen production facilities, allowing the production of low carbon, carbon neutral, or even carbon negative hydrogen today, while other early-stage zero carbon hydrogen technologies are set to be commercialized over the next 5 years.

For these reasons, Newtrient members have a material interest in this rulemaking, and we appreciate the opportunity to submit the following comments on the 45V Proposed Rule.

***"First Productive Use" Restrictions***

In the 45V Proposed Rule, Treasury did not include any proposed regulations addressing RNG. Instead, Treasury indicated that "[t]he Treasury Department and the IRS intend [in the future] to provide rules addressing hydrogen production pathways that use renewable natural gas (RNG) or other fugitive sources of methane … for purposes of the section 45V credit. Besides imposing restrictions borrowed from renewable power (see next section), Treasury

[1] 87 Fed. Reg. 80,582, 80,687 (Dec. 30, 2022) (U.S. Environmental Protection Agency); U.S. Department of Energy (DOE), *U.S. Department of Energy Clean Hydrogen Production Standard (CHPS) Guidance*, at 3 (2023), *available at* https://www.hydrogen.energy.gov/docs/hydrogenprogramlibraries/pdfs/clean-hydrogen-production-standard-guidance.pdf.

[2] US Department of Energy Guidelines to Determine Well-to-Gate Greenhouse Gas (GHG) Emissions of Hydrogen Production Pathways using 45VH2-GREET 2023 (energy.gov)

indicates that it "anticipates" to create this unique constraint for the RNG to Hydrogen pathway: "For biogas or biogas-based RNG to receive an emissions value consistent with … [RNG] and not standard natural gas, the RNG used during the hydrogen production process must originate from the first productive use of the relevant methane." 88 F.R. 89238 (emphasis added). "First productive use" of the relevant methane is proposed to mean "the time when a producer of that gas first begins using or selling it for productive use in the same taxable year as (or after) the relevant hydrogen production facility was placed in service."[3]

While Treasury provides almost no explanation of the purpose of this burdensome restriction solely imposed on the biogas to hydrogen pathway, Newtrient presumes that the threatened constraint seeks to address potential indirect greenhouse gas emissions triggered when an existing RNG supply is shifted to hydrogen production. However, Treasury has provided no evidence to support their implied assumption that renewable feedstocks would be replaced by fossil fuels.

To the contrary, industry data from the American Biogas Council suggests that domestic production of biogas and RNG can support both new hydrogen production *and* current end uses like compressed natural gas (CNG) transportation vehicles. There were 2,415 operational biogas systems in the United States in 2023, with the potential to develop 15,000 additional systems, an over six-fold growth in biogas and RNG potential. Newtrient anticipates that within the timeframe of applicability for Section 45v, there are more than enough opportunities to serve demand in many sectors, without the assumed issue of induced emissions.

In addition, the "first productive use" requirement is not authorized by statute, overly restricts otherwise eligible biogas and RNG feedstocks that could support clean hydrogen production and ignores the fact that there are numerous reasons an existing biogas facility may switch "productive uses" including, but not limited to, the expiration of existing contracts, like power purchase agreements. These facilities require clear market signals to direct facilities to continue utilizing biogas to produce RNG, hydrogen, or other fuels. Absent clear market signals and incentives facilities may leave biogas underutilized and may return to flaring. Currently much of the RNG in the U.S. is used in the transportation sector for compliance with the Renewable Fuel Standard and/or state clean fuel programs like the California Low Carbon Fuel Standard. If an existing RNG supplier leaves this program to send its RNG to new hydrogen production, these program requirements will ensure that the lost RNG is backfilled with other compliant fuels.

Lastly, negative net indirect emissions from diverting RNG from combustion end uses to hydrogen are a distinctly different outcome than the positive indirect emissions that occur in electrolytic hydrogen This is because hydrogen can, and is intended to, replace its natural gas feedstock in legacy natural gas end use applications. This is not true for electrolytic hydrogen. Electrolytic hydrogen is not intended to replace grid electricity as an energy source.

For these reasons, we ask Treasury to remove the "first productive use" requirement applied to RNG as feedstock to hydrogen. By doing so, Treasury allows the market to provide cost effective feedstocks to meet the needs of the emerging hydrogen production sector, regardless of its prior use.

[3] 88 Fed. Reg. at 89,239.

While we believe the 45V Proposed Rule provides no scientific basis for induced emissions, the statute, at most, allows consideration of "induced emissions" as part of the GREET model analysis. Assuming that induced emissions are appropriately considered under Section 45V and, since default natural gas and RNG pipeline delivery systems already modeled in 45V-H2 GREET, it should be feasible to perform a robust assessment of the induced emissions of redirecting RNG from its prior use to hydrogen production. We believe such consideration would not result in an increase in the emissions rate and, therefore, it need not be included due to the speculative nature of the initial premise. Alternatively, if such "induced" emissions must be shown and until they can be quantified in 45V-H2 GREET, a potential alternative to excluding these facilities is to add an indirect emission charge equal to the emissions associated with the extraction, processing, and delivery of fossil natural gas to backfill the prior demand for such gas.

***Applying Renewable Electricity Restrictions to RNG Additionality, Temporality, and Regionality***

In the 45V Proposed Rule, Treasury did not include any proposed regulations addressing RNG. Instead, Treasury indicated that "[t]he Treasury Department and the IRS intend [in the future] to provide rules addressing hydrogen production pathways that use renewable natural gas (RNG) or other fugitive sources of methane … for purposes of the section 45V credit…. Such rules would apply to all RNG used for the purposes of the section 45V credit and would provide conditions that must be met before certificates for RNG … (representations of the environmental attributes of the methane) and the GHG emissions benefits they are meant to represent may be taken into account in determining lifecycle GHG emissions rates for purposes of the section 45V credit. 88 F.R. at 89238.

Treasury stated that it intends to impose conditions on the use of RNG certificates "logically consistent with but not identical to the incrementality, temporal matching, and deliverability requirements for electricity derived" renewable electricity certificates." Ibid. In explaining how RNG restrictions would vary, Treasury stated that the rules "would be designed to reflect the ways in which additional RNG … can impact lifecycle GHG emissions and also to address the differences between electricity and methane, including but not limited to the different sources of emissions, markets, available tracking and verification methods, and potential for perverse incentives." 88 F.R. at 89239.

Newtrient is a member of the American Biogas Council and through this organization is involved in with many stakeholders in the RNG market who have deep expertise in RNG production and transportation. Newtrient would like to support the Treasury and ensure that it has accurate and full information regarding the considerations listed. In this effort Newtrient fully supports the American Biogas Council responses to the questions posed by Treasury at the end of their comments and recommends that they be carefully reviewed and adopted.

Initially, Newtrient is very skeptical that any of these criteria proposed for renewable energy power transactions are applicable to RNG. Of concern, there is no scientific, policy, or legal basis to impose the three restrictions proposed for renewable electricity, (additionality/incrementality, temporality, or regionality), which are intended to account for "induced" grid emissions. These concepts simply do not recognize the very different infrastructure

systems at play when gaseous feedstocks, especially those transported in common carrier pipelines (i.e. the natural gas grid) are used.

Additionality and Incrementality requires the RNG project, and the hydrogen production facility begin commercial operation in the same year, a requirement that is simply unworkable, even for single projects. For some, larger hydrogen production projects, the volume of RNG needed would require multiple RNG projects, further emphasizing the complexity and unlikelihood that all projects are completed at the exact same time. The construction timeline for an RNG facility is 18-36 months, while hydrogen facilities could take 36-48 months. A likely scenario of a severe weather event which could delay the hydrogen production facility's online date. Implementing this "taxation year" restriction could prevent an otherwise qualified hydrogen production facility from qualifying for the Section 45V hydrogen tax credit is nonsensical, and unnecessarily increases the financing risk of the hydrogen and RNG projects.

A more practical set of circumstances would be to build the RNG facility once the definitive RNG off-take agreement is signed, and begin capturing methane emissions as soon as possible, receiving the benefits from existing methane emission reduction programs for a period of approximately 2-3 years until the hydrogen facility comes online. Rather than requiring the two facilities to come online in the same (or later) taxation year, the Section 45V final rule should allow for a look-back period that is appropriate for the projects to secure adequate financing.

One option would be to allow a hydrogen producer to utilize the RNG from an RNG project that came online in the prior 36-months to entering the off-take agreement with the hydrogen production facility. This approach is more aligned with the 45V Proposed Rule's 36-month look back for electricity and will 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 it will allow additional methane emissions to be captured soonest, having the greatest cumulative impact towards reducing the effects of climate change from otherwise wasted methane.

The rationales for temporal and regional matching of renewable assets with hydrogen producers turns on the unique nature of electricity and the existing power grid. Electricity must be instantaneously consumed meaning that power from intermittent renewable sources (like wind or solar) are not actually matching power consumption by a 24/7 facility. Storage can and will create more capacity to firm up renewable power but the U.S has only modest electricity storage assets. Beyond that regional transmission bottlenecks limit the practical movement of power in and out of regions in the county, as noted in the DOE study cited by Treasury as the basis for its proposed regional restrictions.

RNG delivery does not raise the same concerns. The natural gas grid in the US is not segregated by regions, as is the case with the electric grid. There is no analogy to a Regional Transmission operator (RTO) for gas infrastructure, and no unique emission profile associated with specific regions on the gas grid. Therefore, there is no need to impose regional geographic restrictions for RNG. In addition, the natural gas system in North America has the added advantage of underground, and in some gases above ground storage to help manage supply and

demand. This system capability is unique to the natural gas pipeline system, and feedstocks leveraging that system to supply hydrogen production. Natural gas storage capacity in the US is around 5 trillion cubic feet (Tcf), and it is capable of delivery up to 118 billion cubic feet per day, a rate that exceeds the highest historical average documented on the system[4]. Feedstocks, like RNG, could be produced in the summer, for example, stored for several months, then transported via a nationwide system to a hydrogen production site. This and other fundamental differences between the gas and electric grids demonstrate that temporal and regional restrictions are neither appropriate nor necessary.

Many improvements to data and tracking systems need to occur before the arguably mature electricity market can move forward with time matching renewable energy supply to demand and ultimately end use by the consumer. Broadly, applying this concept to an emerging, nascent industry unnecessarily restricts what energy supplies can be leveraged for hydrogen production, causing cost of production to increase to meet the requirements, further limiting production and the ability of federal funding to be efficiently deployed.

Natural gas markets are different from electricity markets by nature of the national common carrier pipeline value chain. The national pipeline system enables injected physical quantities to be accounted for and tied to equivalent quantities that can be dispensed elsewhere in the network carrying associated environmental attributes with assurance.

Under the RFS program, monthly reconciliations take place today and enable substantiation of actual end-use of the RNG and its environmental attributes. Under the California Low Carbon Fuel Standard, reconciliation occurs quarterly. The natural gas pipeline system is resilient to temporal changes due to a number of industry safeguards and real-time monitoring of gas supply, which is heavily scrutinized by the EPA and CARB today.

The natural gas pipeline system operates on a displacement basis, where all injections are balanced with consumption and storage. Physical volumes do not necessarily move – they balance. The temporal or geographic restrictions are not experienced in the commerce of natural gas.

Another fundamental difference compared to electricity is methane's unlimited storability, which is solved for in today's gas grid through dedicated storage caverns, line packing and other means. While there is no physical basis or justification for limiting temporal deliverability, we recognize that reasonable boundaries are warranted for program implementation. Any MMBtu that is pipeline injected in calendar year "A" should be freely book-and-claim deliverable in calendar years "A" and "A+1."

We agree that a book-and-claim system based on physical connectivity (e.g., natural gas pipeline) is the right answer to support an efficient use of existing infrastructure, while also encouraging further investments.

[4] United States Department of Energy, US Natural Ga Storage Capacity and Utilization Outlook (2016), available at https://www.energy.gov/sites/prod/files/2017/01/f34/U.S.%20Natural%20Gas%20Storage%20Capacity%20and%20Utilization%20Outlook_0.pdf

***Greenhouse Gas (GHG) emission accounting and the 45V-H2 GREET Model***

We appreciate the work that Argonne National Laboratories has done to provide a GREET model that directly supports the 45V tax credit and have long supported use of GREET as a transparent and well-respected lifecycle emission model that relies on the science of greenhouse gas (GHG) emissions, including the recognition of unique global warming impacts of specific GHG emissions.

The 45VH2-GREET model should include additional pathways for RNG to hydrogen beyond landfill gas, which uses flaring as counterfactual in the lifecycle assessments. Lifecycle GHG analysis of other RNG types (e.g., derived from anaerobic digestion of animal waste) often deploys the counterfactual of avoided methane emissions (CARB GREET 2024), which is also scientifically defensible, and critical to recognizing the unique global warming impacts associated with different greenhouse gas emissions, like methane.

***Facility Modifications***

Section 45V(d)(4) provides that for purposes of section 45V(a)(1), in the case of any facility that (A) was originally placed in service before January 1, 2023, and, prior to the modification described in section 45V(d)(4)(B), did not produce qualified clean hydrogen, and (B) after the date such facility was originally placed in service (i) is modified to produce qualified clean hydrogen, and (ii) amounts paid or incurred with respect to such modification are properly chargeable to the capital account of the taxpayer, such facility is deemed to have been originally placed in service as of the date the property required to complete the modification described in section 45V(d)(4)(B) is placed in service. Section 45V(d)(4) is effective for modifications made after December 31, 2022.

Proposed § 1.45V–6(a)(2) would provide that an existing facility will not be deemed to have been originally placed in service as of the date the property required to complete the modification is placed in service unless the modification is made for the purpose of enabling the facility to produce qualified clean hydrogen and the taxpayer pays or incurs an amount with respect to such modification that is properly chargeable to the taxpayer's capital account for the facility. Proposed § 1.45V–6(a)(2) would also provide that a modification is made for the purpose of enabling the facility to produce qualified clean hydrogen if the facility could not produce hydrogen with a lifecycle GHG emissions rate that is less than or equal to 4 kilograms of CO2e per kilogram hydrogen but for the modification. Proposed § 1.45V–6(a)(2) further states that changing fuel inputs to the hydrogen production process, such as switching from conventional natural gas to renewable natural gas, would not qualify as a facility modification for purposes of section 45V(d)(4)(B). Newtrient requests that Treasury remove this limitation proposed in § 1.45V–6(a)(2).

As mentioned above, Newtrient applauds the Treasury's recognition of renewable natural gas (RNG) as a tool to decarbonize hydrogen production, and emphasizes that RNG will be an indispensable, "drop-in" solution to the nation's large-scale production of low-carbon hydrogen. The restriction related to changing fuel inputs would stifle an important pathway for decarbonizing the most common form of domestic hydrogen production and would

reduce critically needed investment in RNG. Also, there are existing hydrogen facilities where carbon capture investments are not economically feasible. RNG investments assist in the ability for these and other hydrogen production facilities to produce low carbon hydrogen.

Dairy RNG can be deployed today to jumpstart clean hydrogen production, and we request that the Treasury Department reconsider its threatened requirements, not only those that impact RNG as a feedstock, but also those that impose overly strict requirements, counter to the goals of the IRA. The IRA 45V provisions seek to promote domestic clean hydrogen production based on a technology neutral, carbon intensity metric with the goal to lower GHG emissions in the United States.

Sincerely,

Mark Stoermann

Chief Operating Officer

Newtrient LLC