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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: Section 45V Credit for Production of Clean Hydrogen; Section 48(a)(15) Election to Treat Clean Hydrogen Production Facilities as Energy Property, Notice of Proposed Rulemaking and Notice of Public Hearing.

Dear Mr. O'Donnell:

After Monolith completes the expansion (called Olive Creek 2) of its first commercial scale hydrogen and carbon black production facility (called Olive Creek 1) the company is estimated to displace approximately 778,000 metric tons of CO2e emissions annually, from hydrogen and carbon black production.[1] Monolith has multiple projects of similar size in the pipeline and plans to expand hydrogen production facilities throughout the United States.

Monolith is a U.S. private company founded in 2012, proudly based in Nebraska, and is a leading clean hydrogen and materials producer. Through its proprietary technology, Monolith has pioneered the process of methane pyrolysis, which uses electricity to convert methane into hydrogen and a solid carbon, called carbon black. Carbon black is an indispensable input for manufacturing tires and an essential component in everyday products, including plastics and batteries. When compared to conventional process of creating hydrogen and carbon black, Monolith's process prevents 14.4 metric tons ("MT") of CO2e equivalents going into the atmosphere for every 1 MT of hydrogen and every 3.6 MT of carbon black produced.

[1] *Environmental Assessment – Monolith Olive Creek Expansion Facility*, Department of Energy Loan Program Office – Title XVII Program (December 2021) *available at* https://www.energy.gov/sites/default/files/2022-04/fonsi-and-ea-2180-monolith-olive-creek-expansion-facility-2021-12.pdf.

At Monolith's Nebraska facilities, including OC1+2, Monolith will use its clean hydrogen to produce ammonia to create a low-emission fertilizer. This valuable, low-emission product will be sold to producers in the surrounding Corn Belt, providing a domestic supply of this essential input for feeding and fueling the world. Monolith has begun supplying several major global tire manufacturers with low- and zero-emission carbon black, which will provide meaningful support to those manufacturers in meeting their own net zero pledges. Goodyear has used Monolith produced carbon black in their ultra-high performance, all-season ElectricDrive GT tire – a major milestone for Monolith.

Monolith appreciates the opportunity to submit comments on the Proposed Regulations, published December 26, 2023.[2] Monolith's experience and expertise make it uniquely positioned to discuss and provide insight with respect to Section 45V (the "Hydrogen Credit") of the Internal Revenue Code of 1986, as amended (the "Code"), which was added by the Inflation Reduction Act (IRA).[3] We urge the Department of the Treasury ("Treasury"), Internal Revenue Service ("IRS"), and Department of Energy ("DOE") to issue final guidance as soon as possible to help ensure that the new hydrogen credit reaches its maximum potential. Such clarity will drive investment in clean hydrogen production and in the supporting infrastructure necessary to mature the broader clean hydrogen market.

Monolith Key Priority Areas

1. System expansion should be default for 45VH2-GREET, the emissions evaluation process and the Provisional Emission Rate ("PER") application because it is the best method to ensure well-to-gate carbon intensity accuracy.
2. The three pillars' requirements for clean electricity can be improved to maximize hydrogen liftoff and emission reductions.
    a. Hourly-time matching should not begin until 2030 to give energy attribute certificate ("EAC") registries and accounting systems time to mature and to align section 45V regulations with analogous requirements adopted by the European Union ("EU").
    b. Taxpayers should be able to use interregional EACs if they can demonstrate that the underlying electricity could have been delivered to the hydrogen producer.
    c. Treasury should clarify the uncertainty surrounding how qualified EACs can reconcile with annual life cycle analyses ("LCAs"). One approach is to allow taxpayers to aggregate qualified EACs annually without the need for an hourly LCA, simplifying compliance while still promoting clean hydrogen production and environmental sustainability.

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[2] 88 Fed. Reg. 89,220 (Dec. 26, 2023).

[3] An Act commonly referred to as the Inflation Reduction Act of 2022, P.L. 117-169, 136 Stat. 1818 (Aug. 16, 2022).

    d. The incrementality pillar should (a) be based on the placed in-service date of zero greenhouse-gas-emitting and minimal emitting sources not their commercial operation date, and (b) provide a reasonable and administrable path for nuclear and hydroelectric resources to satisfy the avoided retirement path.
3. Taxpayers should be permitted to "lock-in" the most recently released 45VH2-GREET model or successor model (including related background data and assumptions) that applies to a clean hydrogen production facility when such facility reaches final investment decision ("FID"), and the project commences construction.
4. The Emissions Evaluation and PER application process should have a reasonable timeline, a mechanism for appeal, and should align with the 45VH2-GREET model default emission evaluation method of system expansion.
5. Taxpayers should be entitled to use the Emission Value/PER process for feedstocks that are described in the "background" data but that have verifiably different characteristics.
6. Taxpayers should be incentivized to use the most emission reducing feedstocks possible – including responsibly sourced natural gas ("RSG") and renewable natural gas ("RNG") – leveraging market-based systems that already exist.
    a. Site-specific carbon intensity scores for RNG, not first productive use requirements, are the best path to quickly reduce system wide emissions of methane.
    b. Temporal matching requirements do little to improve the accuracy of carbon intensity scores, and if matching is required, it should be calculated monthly.
    c. Hydrogen production facilities should be encouraged to purchase RNG from nearby producers and from producers that use pipelines or other transportation methods that exceed the 45VH2-GREET default assumptions.
    d. Monolith fully endorses the use of a book-and-claim approach for RNG and is confident that qualifying EAC registries and accounting systems will quickly develop the capability to support RNG EACs.

7. An existing facility retrofitted to capture hydrogen that would have been flared or released should be treated as placed in service for Section 45V purposes when the retrofit equipment is placed in service.

1. <u>System expansion should be default for 45VH2-GREET, the Emissions Evaluation process, and the Provisional Emission Rate application because it is the best method to ensure well-to-gate carbon intensity accuracy.</u>

Monolith strongly endorses the use of system expansion adopted in the Proposed Regulations, both narrowly as it relates to co-product displacement credits, and broadly as it relates to displaced and induced emissions outside the gate of hydrogen production facilities,[4]

[4] For example, Monolith supports the use of displaced emissions in the calculation of the carbon intensity of RNG.

because system expansion is the best method to ensure the well-to-gate carbon intensity of hydrogen production is accurately represented.

If a technology process produces multiple valorized products, an LCA of such process must attribute a portion of aggregate greenhouse gas emissions (*i.e.,* greenhouse gas emissions from the production process as a whole) to the different products. There are several recognized methods to attribute emissions between co-products including system expansion, mass allocation, economic allocation, and energy allocation.

The system expansion method is applied to a primary product (in this case, hydrogen) and any secondary products.[5] First, all emissions from the production of the primary and secondary product are attributed to the primary product, and then reduced by the emissions from the business-as-usual ("BAU") production of the secondary product. System expansion assumes that, when a new process generates a secondary product, it displaces the BAU production process for that secondary product.[6] So, the higher the carbon intensity of the BAU secondary product, the lower the carbon intensity of the primary product following system expansion emission allocation.

This is the real strength of the system expansion method: it encourages innovation and investment in new technologies that will displace the most carbon intensive sectors and activities. Furthermore, it ensures investments are not misdirected towards processes that do little to reduce, or even increase, overall emissions. By using system expansion today and in future versions of 45VH2-GREET, Treasury, the IRS, and the DOE will have immunized the Section 45V credit against maladaptive production processes that would increase overall emissions.

Because of its accuracy, system expansion is already the method most widely used in policy-level decisions. System expansion is the preferred method in International Organization for Standardization ("ISO") Standards, the new 45VH2-GREET model,[7] section 45Q,[8] and system expansion is the only approach that considers certain significant indirect emissions as required by subparagraph (H) of section 211(o)(1) of the Clean Air Act and (e), which is the basis for the lifecycle greenhouse gas emissions determination under Section 45V. The International Standards Organization ("ISO") has published two sets of standards that describe

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[5] *E.g.*, for methane pyrolysis, carbon black and steam; for electrolysis, oxygen; for steam methane reforming, steam; for autothermal reactors, nitrogen.

[6] As noted above, Monolith's carbon black customers are purchasing our low-emission carbon black as part of conscious decarbonization efforts.

[7] Prop. Reg. Preamble (". . . 45VH2–GREET utilizes the "system expansion" approach for all co-products if possible. . . ").

[8] Where an LCA is necessary to determine the quantity of carbon oxides that are utilized by a process for purposes of the credit provided under 45Q(f)(5). National Energy Technology Laboratory's ("NETL") 45Q guidance borrows from ISO standards, including standards regarding allocation. Jamieson et al. (2022). *See also*, Prop. Reg. Preamble. Requesting comments as to whether a different allocation methodology "would better ensure well-to-gate carbon intensity of hydrogen production is accurately represented," implying that system expansion is the current default method.

the principles and framework for LCAs and requirements and guidelines for LCAs—ISO 14040:2006 and 14044:2006, respectively ("ISO Standards"). Notably, the DOE cites to and borrows from these ISO standards in its guidelines for LCAs under certain section 45Q provisions.[9] The ISO Standards also provide a procedure to determine whether and how emissions should be attributed to different co-products. In practice, this procedure recommends system expansion, and mass allocation as a less favored alternative.

Because system expansion is the best method to represent accurately the well-to-gate carbon intensity of hydrogen with co-products, it is crucial that taxpayers be allowed to submit back-up information to describe the BAU carbon intensity of their co-products, and whether or not guardrails, like the limit on steam valorization for steam methane reforming and autothermal reforming, are appropriate for a particular hydrogen production pathway.

System expansion, by its nature, requires a BAU carbon-intensity score. Whether a taxpayer pursues an Emission Value and PER from the DOE and Treasury, respectively, or the DOE includes a new technology pathway in a future release of 45VH2-GREET, the DOE will need to evaluate the BAU carbon intensity of a co-product or choose to use an allocation method that will less accurately describe the well-to-gate emissions of the hydrogen produced than system expansion. It is, therefore, imperative that co-products, such as carbon black, are automatically included in the list of co-products in 45VH2-GREET when a corresponding technology pathway is included.

New technology pathways should be included in the 45VH2-GREET model when DOE has received sufficient reliable and verifiable data describing such technology pathway and relevant co-product BAU production pathways and should not wait to add technology pathways to the 45VH2-GREET until relevant hydrogen production facilities are placed in service.

2. <u>Three pillars' requirements can be improved to maximize hydrogen liftoff and emission reductions.</u>

Monolith firmly believes that the lifecycle greenhouse gas emission rate of hydrogen should accurately reflect indirect, and induced, emissions caused by hydrogen production. However, we believe that the three pillars as outlined in the Proposed Regulations are overly burdensome and, by depressing hydrogen development, will ultimately result in reduced environmental benefit. In short, the three pillars are: (1) regionality – where an EAC can only be used by a hydrogen producer if the generator of such EAC is in the same "region" as the relevant hydrogen production facility, (2) incrementality – where (a) an EAC can only be used by a hydrogen producer if the generator of such EAC began "commercial operations" less than 36-

[9] Skone et al. "Carbon Dioxide Utilization Life Cycle Analysis Guidance for the U.S. DOE Office of Fossil Energy and Carbon Management Version 2.0" National Energy Technology Laboratory (January 2022); Jamieson et al. *NETL 45Q Addendum to the CO2U LCA Guidance Toolkit* (DOE/NETL-2021/2852). National Energy Technology Laboratory, U.S. Department of Energy (2022).

months prior to the placed in service date of the relevant facility or (b) where an EAC can be used if the generator of such EAC satisfies an alternative path like the proposed avoided retirement approach, and (3) temporal matching – where an EAC can only be used by a hydrogen producer if the EAC was generated during same the hour, starting in 2028, as the relevant unit of hydrogen.

Monolith offers the following recommendations to address some of the challenges anticipated with the three pillars while maintaining the integrity of the underlying system expansion approach of reducing direct, indirect, and induced emissions associated with hydrogen production.

(a) Hourly-time matching should not begin until 2030 to give EAC registries and accounting systems time to mature and to align Section 45V regulations with analogous European Union requirements.

Monolith endorses the perspectives and recommendations presented in the "H2 Annual Matching Coalition 45V Comments," advocating for a thoughtful adjustment to the temporal matching requirements stipulated by Section 45V. We underscore the coalition's concerns regarding the practicality and feasibility of immediate implementation of these regulations. Furthermore, we propose an extension for the initiation of temporal matching requirements to 2030, emphasizing the necessity for a phased approach. This timeframe would better accommodate the development of the requisite technological and operational frameworks, ensuring the clean hydrogen industry can adapt without compromising growth or innovation. This stance not only aligns with the coalition's call for more manageable compliance pathways but also highlights our commitment to a sustainable and pragmatic transition to stricter regulatory mandates. It will also align U.S. requirements with requirements adopted by the European Union for certain clean fuels[10] and enhances the exportability of domestically produced hydrogen and hydrogen-based fuels and products.

In addition, to ensure hydrogen liftoff and the success of the hourly-matching program, Monolith suggests the following:

- Incentivization of EAC tracking systems tied to deadlines that require demonstrated technical readiness.
- Longer adaptation period for hydrogen producers, possibly until 2030 or later.
- Access to low-cost or government-backed securities in clean energy procurement to reduce the issues for emerging hydrogen companies to securitize their electricity source.

[10] Commission Delegated Regulation (EU) 2023/1184 of 10 February 2023 supplementing Directive (EU) 2018/2001 of the European Parliament and of the Council by establishing a Union methodology setting out detailed rules for the production of renewable liquid and gaseous transport fuels of non-biological origin.

These recommendations acknowledge the intermittent nature of predominant renewable sources, like solar and wind, necessitating over-procurement for consistent energy matching. Given the unpredictability in hourly energy production, a more gradual approach aligns better with industry capabilities, market realities and environmental goals. For example, despite proactive efforts to over procure EACs, there is a substantial risk that the EACs available for any given hour will fall short of expectations. This raises a critical question for our industry: **How should we manage instances where only a portion of the EAC load requirement for a particular hour can be met?**

(b) Taxpayers should be able to use interregional EACs if they can demonstrate that the underlying electricity could have been delivered to the hydrogen producer.

Monolith recommends that taxpayers should be able to use interregional EACs if they can demonstrate that the underlying electricity generation resources from different regions tie into the hydrogen producer's regional grid. This can be accomplished through contracting with generation sources that are transmitting electricity through long-distance high-voltage direct-current transmission lines or contractual structures (*i.e.,* wheeling services agreements) that secure transmission rights from generation point to point of consumption.

(c) Clarification on EAC Aggregation and LCA Reporting Requirements under Section 45V.

In alignment with the Treasury's proposed guidance under Section 45V, it is understood that the framework supports the annual aggregation of qualified EACs over hourly LCA for determining the lifecycle greenhouse gas ("GHG") emissions rate of hydrogen production. This approach is practical, acknowledging the intermittent nature of renewable energy sources and the operational realities of hydrogen production facilities. Moreover, conducting an hourly LCA is impractical not only for taxpayers but also for the GREET model, which currently does not support structures for calculating the grid mix on an hourly basis. GREET's methodology, which reflects an annual mix calculation, aligns with the proposed method of summing EACs annually, providing a comprehensive overview of a facility's GHG emissions footprint efficiently.

Given the importance of clear, actionable guidance for compliance and the advancement of environmental benefits under Section 45V, explicit clarification from the Treasury on these requirements is crucial. Clarifying that taxpayers should aggregate qualified EACs annually without the need for hourly LCAs will facilitate compliance and support the objectives of promoting environmental sustainability and clean hydrogen production. Ensuring stakeholders understand these requirements is essential for the success of Section 45V.

(d) The incrementality pillar should (a) be based on the placed in-service date of GHG-emitting and minimal emitting sources, not their commercial operation date, and (b) provide a reasonable and administrable path for nuclear and hydroelectric resources to satisfy the avoided retirement path.

Under the Proposed Regulations, the incrementality pillar is satisfied if an EAC is generated by a generator that began commercial operations less than 36-months prior to the placed in-service date of the relevant clean hydrogen production facility. By basing incrementality on the commercial operations date ("COD") of low-emitting sources, rather than the placed in-service date of such sources, the Proposed Regulations will likely exclude low-emitting sources that have been repowered in compliance with the "80/20 Rule" and received new placed in-service dates but not new CODs. This rule would drastically reduce the number of low-emitting sources that can produce and sell qualifying EACs. Regions with long interconnection queues and regions with large existing renewable generation fleets will be hit the hardest by the incrementality pillar and may not have sufficient incrementality-compliant low-emitting sources to serve new clean hydrogen production facilities. Instead, Treasury, DOE, and the IRS should use the placed in-service date of low-emitting sources for the incrementality pillar.

The Proposed Regulations outline several alternative paths to satisfy incrementality, including the "avoided retirements approach." Under the avoided retirements approach, a generator would be deemed to satisfy the incrementality pillar regardless of its COD if the generator "is likely to avoid retirement because of its relationship with a hydrogen production facility." This "avoided retirements approach" particularly affects nuclear and hydroelectric power.

Nuclear energy and hydroelectric generators are minimal or zero-greenhouse gas emitting sources that provide critical clean base load power for many regions, states, and utilities, especially as more intermittent power sources like wind and solar enter the system. Most nuclear and hydroelectric facilities began commercial operations decades ago and will be systematically excluded from participation in the new hydrogen industry without a path to satisfy incrementality.

As many nuclear facilities are nearing the end of their initial licensing periods, the process of relicensing becomes critical. The associated costs for relicensing nuclear plants are substantial, often ranging from hundreds of millions to billions of dollars. This process also requires years of planning. Monolith believes that supporting a nuclear and hydroelectric facility's relicensing application — by entering long-term offtake arrangements for power or EACs — should be sufficient to satisfy the incrementality requirement.

Moreover, it is important to ensure that hydrogen producers, who are key commercial partners in this phase, have a streamlined process. Nuclear and hydroelectric producers should demonstrate their financial contribution towards the relicensing costs through established contractual relationships. This approach will enable them to produce EACs generated from these facilities, including during the period leading up to relicensing. Simplifying this procedure will support the continued operation of clean energy generators, ensuring they contribute effectively to a low-emission grid.

3. **Taxpayers should be permitted to "lock-in" the most recently released 45VH2-GREET model or successor model that applies to a clean hydrogen production facility when such facility reaches final investment decision, and the project commences construction.**

While Monolith believes it is important that the DOE keeps the 45VH2-GREET model up to date with the best available science and new technology pathways, unpredictable changes to the 45VH2-GREET model, and therefore, unpredictable changes to taxpayers' eligibility for the Section 45V credit, create a substantial barrier to the financing and completion of hydrogen production facilities. To balance Treasury's and the DOE's interest in an up-to-date 45VH2-GREET model and Congress' interest in supporting the growth of domestic hydrogen production, taxpayers should be permitted to "lock-in" the most recently released 45VH2-GREET model or successor model that applies to the taxable year in which a clean hydrogen production facility begins construction, including the background data and assumptions applicable to the model for such year.

Under the Proposed Regulations, taxpayers are required to use the most recently released 45VH2-GREET model at the start of a taxable year or the most recently released 45VH2-GREET model at the end of the year. At most, taxpayers are entitled to a single year of a stable 45VH2-GREET model. Notably, the Proposed Regulations do not contain any guardrails on how much different versions of 45VH2-GREET can change nor does it create an opportunity for taxpayers to review and comment on proposed releases of 45VH2-GREET. This creates substantial, unresolvable uncertainty for hydrogen producers, lenders, and investors.

The most administrable approach to reduce this uncertainty is to allow hydrogen producers to lock-in their 45VH2-GREET model when they begin construction. This will provide lenders and investors with the necessary certainty that the Section 45V credit will not be pulled out from under a project by the release of a new 45VH2-GREET model during the credit period. Even with a locked-in model, taxpayers will still have to apply the locked-in model to the taxpayer's feedstocks and electricity to determine the annual amount of the production tax credit. Thus, if the inputs change, the locked-in model will produce a corresponding adapted credit level that appropriately accounts for the carbon emissions associated with the hydrogen production of that year.

The beginning of construction is the appropriate milestone for taxpayers to be able to lock in the year's 45VH2-GREET because hydrogen production facilities take several years to complete construction. While a placed-in-service milestone would mitigate the risk caused by 45VH2-GREET releases during the credit period, it would leave hydrogen producers, lenders and investors exposed to the risk of a new 45VH2-GREET release during construction—already the riskiest stage for most projects. Furthermore, taxpayers should be entitled to "un-lock" the applicable 45VH2-GREET model and follow future releases of 45VH2-GREET for the remainder of the credit period.

4. **The Emissions Valuation and PER processes should have a reasonable timeline, appeals mechanism, and should align with the 45VH2-GREET model default emission evaluation method of system expansion.**

As a hydrogen producer whose technology is not currently included in 45VH2-GREET, we are optimistic that forthcoming guidance from the DOE will give the taxpayers the flexibility necessary to submit a request for an Emissions Valuation that accurately represents hydrogen produced from its technology. However, for the Emission Valuation and PER process to support these hydrogen production technologies, there must be (a) a reasonable timeline for responses to requests for emission values and (b) an appeals process and/or ability to supplement requests for emission values.

Monolith strongly supports the use of FEED studies in requests for Emissions Valuations, because FEED studies are a reliable indicator of project maturity but can be completed prior to construction, and financing, of a clean hydrogen production facility.

We do not expect that hydrogen production facilities that have submitted a request for an Emissions Valuation will be able to fully secure financing until they receive an emission value from the DOE. In our discussions with lenders and potential investors, we have already seen significant focus on the Emissions Valuation application process. It is critical that Emissions Valuation requests are answered within 90 days of submission so that novel hydrogen production technologies do not get "stuck in limbo" and lose lender, investor and off-taker interest and confidence.

To aid in the efficient disposition of requests for Emissions Valuations, taxpayers should be given the opportunity to appeal Emissions Valuation determinations and/or supplement their requests. This ensures that taxpayers and the DOE will not need to start the Emissions Valuation request process anew for relatively small problems or defects in a request.

Furthermore, many emerging hydrogen production technologies, like solid oxide electrolysis cells and Monolith's methane pyrolysis reactors, are modular and hydrogen production facility sites may have dozens of hydrogen production "facilities" under the Proposed Regulations. The Emissions Valuation request process should allow taxpayers to apply and rely on an Emissions Valuation for a substantially similar hydrogen production facility, so that taxpayers do not need to submit—and the DOE does not need to review—duplicate requests for Emissions Valuations.

For accuracy and consistency, the Emission Valuation and PER processes should utilize the system expansion methodology for co-product allocation and feedstock emissions determination.

5. **Taxpayers should be permitted to use the Emissions Valuation/PER process for feedstocks, such as methane, that are described in the "background" data but that have verifiably different characteristics.**

Treasury requested comments "on the readiness of verification mechanisms that could be utilized for certain background data in 45VH2–GREET if it were reverted to foreground data in future releases."[11] Monolith agrees that electronic tracking systems should be required for the integrity of this credit, and we are confident that adequate verification systems exist today for RSG and RNG (*e.g.*, California's Low Carbon Fuel Standard ("LCFS") pathway application and verification systems.) The Final Regulations should leverage those existing systems to meet the needs of the Section 45V credit and support the further development of those systems moving forward. However, this request assumes that data must first become foreground data in a future 45VH2-GREET release before taxpayers can attempt to modify data with sufficient, verifiable information.

Alternatively, or additionally, taxpayers should be permitted to use the Emissions Valuation/PER process to adjust "background" data to reflect site-specific data. This would incentivize hydrogen producers to procure electricity, fuel, and feedstocks from sources that exceed the 45VH2-GREET average. For example, when making procurement decisions for RNG and RSG, Monolith is primarily concerned with the carbon intensity of such RNG and intends to pay a premium for RNG and RSG that has extremely low-carbon-intensity scores. However, Monolith will not realize the benefit of ultra-low-carbon-intensity RNG and RSG, if 45VH2-GREET does not allow site-specific data, and correspondingly, the incentive for hydrogen producers to use such ultra-low carbon-intensity RNG and RSG will be diminished along with the associated emissions reductions.

At the same time, expanding the Emissions Valuation/PER application process to include site-specific data will facilitate the development of future 45VH2-GREET models as taxpayers aggregate, collect and share data, research and experience with Treasury, the IRS, and the DOE through the Emissions Valuation/PER Process. Sharing project specific data with Federal agencies will allow for Treasury and the IRS to accurately determine the effectiveness of the Section 45V hydrogen PTC. Currently, the Proposed Regulations prohibit the use of the Emissions Valuation/PER application process when taxpayers "disagree" with the background data. While reasonable limits on the Emissions Valuation/PER application are appropriate, taxpayer innovation should drive the development of future 45VH2-GREET releases, not be stymied by the pace of 45VH2-GREET releases.

6. Taxpayers should be incentivized to use the most emission reducing feedstocks possible – including responsibly sourced natural gas and renewable natural gas – leveraging market-based systems that already exist today.

Anaerobic digesters are a critical tool to capture methane emissions associated with the treatment and storage of livestock manure and landfill gas. Anaerobic digesters allow for the use of thermal oxidizers, flares and other emissions control technologies that mitigate the greenhouse

[11] 88 Fed. Reg. at 89225.

gas warming potential of emissions from these operations. The methane captured by anaerobic digesters, generally referred to as "biogas," or RNG, can also be put to productive use and displace conventional, fossil natural gas. When RNG is used as a feedstock for methane pyrolysis, biogenic carbon is trapped in the carbon black co-product and functions as a form of sequestration. RNG, therefore, reduces the carbon intensity of methane-derived hydrogen, reduces the carbon intensity of U.S. livestock production and landfill emissions, and provides farmers and communities with additional revenue streams.

The IRA clearly indicated that Congress intended to encourage the development of new RNG production by providing an investment tax credit for biogas production property in section 48 and by incentivizing RNG production with the clean fuels production tax credit in section 45Z. Final Section 45V regulations that dampen RNG production would be clearly inconsistent with congressional intent.

Monolith firmly believes that Treasury and the DOE should take overall emission impacts into consideration and believes that system expansion is the best method available to do so. While RNG production may not always have formal co-products, it displaces emissions from BAU manure management practices and fertilizer usage, as currently represented in the 45VH2-GREET model's use of a "displacement credit" when calculating the carbon intensity of landfill gas. Because displacement and system expansion rely on the same accounting mechanisms and similar underlying assumptions, we appreciate Treasury's and the DOE's recognition and consistent application of this concept for co-product allocation and displacement for RNG.

(a) Site-specific carbon intensity scores for RNG, not first productive use requirements, are the best path to quickly reduce system wide emissions of methane.

The best path to ensure system-wide emissions reductions is through site-specific carbon intensity scores for RNG, not first productive use or similar requirements. The 45VH2-GREET model uses over a dozen factors to determine the carbon intensity of RNG—the most impactful of which is the BAU manure management technique.[12] After applying the displacement credit, many methods have a negative carbon intensity score, and some do not. Acceptance of site-specific carbon intensity scores incentivizes the best technology to be applied to methane reduction activities.

Site-specific carbon intensity scores for RNG are better suited to address the overall emission impact of the diversion of RNG to hydrogen production than any analogous "three pillars." The first productive use and same year requirements appear to be an analogue to the incrementality requirement for clean electricity[13] Treasury and the DOE may be concerned that

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[12] Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2022. Pg. 461 https://www.epa.gov/system/files/documents/2024-02/us-ghg-inventory-2024-main-text.pdf.

[13] "The implication of this proposal is that biogas from any source that had been productively used in a taxable year prior to taxable year in which the relevant hydrogen production facility was placed in service would not receive an emission value

hydrogen production will divert RNG from fuel standard compliance programs, like LCFS and the renewable fuels standard ("RFS"). However, these compliance programs are market-based. If RNG is diverted from the transportation sector, the price of LCFS credits and Renewable Identification Numbers ("RINs") should increase, encouraging further renewable fuel production, which further reduces methane emissions that would otherwise be uneconomical to capture.

The same-year requirement would create a substantial burden for hydrogen and RNG producers and would delay the mitigation of unabated methane emissions from livestock production. Large-scale hydrogen production facilities are complex and often first-of-a-kind, with long construction times. They are very likely to face uncontrollable delays in equipment and supply deliveries, and weather events. RNG facilities are comparatively simple with relatively short construction timelines. If a hydrogen producer intends to secure a qualifying RNG supply, it will need to delay the construction of an RNG production facility until it nears the placed-in-service date of the relevant hydrogen production facility. This will cause methane emissions to continue unabated and increase costs – and risk – for the hydrogen facility or RNG producers. Monolith is particularly concerned that construction delays for a hydrogen facility could create substantial risk towards the end of each taxable year, where a relatively short delay in construction may move the placed-in-service date of the hydrogen production facility to a period after the completion of an RNG facility rendering contracted RNG supplies useless for purposes of the Section 45V credit.

Treasury should treat RNG and electricity consistently and use a three-year look-back period from the placed-in-service date of a hydrogen production facility to the placed-in-service date of the RNG production facility.

(b) Temporal matching requirements do little to improve the accuracy of carbon intensity scores, and if matching is required, it should be monthly.

The temporal-matching requirement is a relevant pillar for electricity because electricity must be produced and consumed almost simultaneously. This is not the case for U.S. natural gas and RNG. First, the United States has substantial natural gas storage capabilities in dedicated storage facilities and in pipelines themselves. Second, natural gas and RNG production does not instantaneously rise and fall with natural gas and RNG demand. Therefore, increased demand for RNG does not yield a simultaneous increase in natural gas production and related indirect emissions. Thus, temporally matching RNG production and RNG use does little to improve the accuracy of carbon intensity scores. Time matching with a period shorter than monthly would create an arbitrary burden with little benefit. The natural gas and RNG market frequently use a

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consistent with biogas-based RNG but would instead receive a value consistent with natural gas in the determination of the emissions value for that specific hydrogen production pathway." 88 Fed. Reg at 89239.

monthly settlement period. Treasury should require monthly-matching, beginning when hourly-matching is required for electricity EACs.

(c) Hydrogen production facilities should be encouraged to purchase RNG from nearby producers and from producers that use pipelines or other transportation methods that exceed the 45VH2-GREET default assumptions.

The regionality requirement for electricity is intended to ensure that EACs represent electricity that could actually be used by the relevant hydrogen production facility. Monolith is not aware of analogous transmission constraints in the natural gas and RNG sector that would justify the same map-based regionality requirement.

Nonetheless, Monolith firmly believes that hydrogen production facilities should be encouraged to purchase RNG from near-by producers and from producers that use pipelines or other transportation methods that exceed the 45VH2-GREET default assumptions because transportation related emissions can be far greater for natural gas and RNG than transmission and distribution losses are for electricity. The best way to encourage hydrogen producers to exceed 45VH2-GREET averages is to place the relevant factors in the "foreground" of the 45VH2-GREET model and require eligible EACs to include those relevant factors. For example, an eligible RNG EAC should list the location of the RNG production facility so that taxpayers can reasonably calculate the transportation distance between the RNG production facility and hydrogen production facility when determining the carbon intensity of their hydrogen.

(d) Monolith fully endorses the use of a book-and-claim approach for RNG and is confident that qualifying EAC registries and accounting systems will quickly develop the capability to support RNG EACs.

Monolith fully endorses the use of a book-and-claim approach for RNG and is confident that qualifying EAC registries and accounting systems will quickly develop the capability to support RNG EACs. Third-party verifiers trained in the LCFS and RFS space should be leveraged to ensure that all RNG EACs accurately reflect the emission rate of the underlying RNG. In addition to the location of the RNG production facility, eligible RNG EACs should include the information necessary to accurately assess the carbon intensity of RNG, prioritizing the factors that can yield positive carbon intensity score for RNG and factors that allow hydrogen producers to make targeted procurement decisions. For example, manure moisture content and BAU manure management technique can both yield a positive carbon intensity score for RNG under 45VH2-GREET, so eligible RNG EACs should include information on these factors to ensure that their RNG does not increase overall emissions. Furthermore, livestock type, anaerobic digester type, and location should also be included, so that hydrogen producers can make targeted procurement decisions that optimize cost and carbon intensity reductions.

7. **An existing facility retrofitted to capture hydrogen that would have been flared or released should be treated as placed in service for Section 45V purposes when the retrofit equipment is placed in service.**

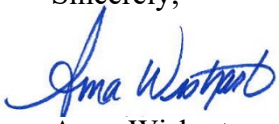
Under Section 45V(d)(4), any facility that was placed in service prior to January 1, 2023, that is modified to produce qualified clean hydrogen is deemed to have a placed-in-service date as of the date of such modification. Monolith fully endorses the incentive this provision provides to convert conventional, high-carbon-intensity hydrogen production facilities into clean hydrogen production facilities. However, there are often mismatches in the development time of hydrogen production facilities and off-taking facilities, pipelines, and storage infrastructure. Therefore, hydrogen producers may be unable to put hydrogen to productive use for reasons outside of their control. These hydrogen producers will not be able to claim the Section 45V credit, but the 10-year credit period for their facility will begin to toll.

Monolith recommends that "any modification" made for the purpose of enabling the facility to produce qualified clean hydrogen should qualify as a facility modification. When an existing facility is modified such that it captures hydrogen and puts it to productive use, the facility should be deemed to have a placed-in-service date as of the date the modifications were placed in service for purposes of the Section 45V credit. This would align with the approach taken in Section 45Q for retrofit facilities. Facilities that are retrofit with carbon-capture equipment that captures carbon oxides that would have otherwise been released into the atmosphere are treated as being placed in service for purposes of Section 45Q when the carbon-capture equipment is placed in service.

Conclusion

Monolith appreciates the opportunity to provide the above comments to Treasury, the IRS, and the DOE. As a leader in clean hydrogen and advanced manufacturing, Monolith is confident that the additional certainty and functionality provided in the recommendations above will help ensure the clean hydrogen production tax credit can fulfill its intended purpose – to make the United States the world leader in clean energy. We applaud your commitment to soliciting industry and community input so we can continue to create a cleaner planet together.

Sincerely,



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