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Internal Revenue Service
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Room 5203
P.O. Box 7604, Ben Franklin Station
Washington, D.C. 20044

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Re: Request for Comments on Notice 2022-58.

To whom it may concern:

Monolith Materials appreciates the opportunity to submit comments regarding the Inflation Reduction Act ("IRA") pursuant to I.R.S. Notice 2022-58. Monolith is a U.S. private company founded in 2012 and is a leading clean hydrogen and materials producer based in Nebraska. Through its proprietary technology, Monolith has pioneered the process of methane pyrolysis, which uses electricity to convert natural gas or renewable biogas 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. In addition, the methane pyrolysis process produces waste heat that Monolith captures as steam and plans to put to productive uses.

Monolith's carbon-dioxide-free process reduces greenhouse gas (GHG) emissions by 96% as compared to traditional ways of making hydrogen (e.g., steam methane reforming, "SMR") and carbon black. Furthermore, when Monolith utilizes renewable biogas from landfill gas or other sources, the process has a negative carbon intensity, drawing down emissions that would have otherwise gone into the atmosphere.

Since founding, Monolith has developed and successfully operated a clean hydrogen demonstration plant in Redwood City, California and a commercial scale facility in Hallam, Nebraska ("Olive Creek 1"). Monolith is actively developing phase two of its commercial facility, which it expects to be online in 2026 ("Olive Creek 2"). Once complete, Olive Creek 2 will be one of the largest clean hydrogen facilities in the world. Monolith also has five near-term projects of similar size in its pipeline, and up to 40 additional projects under consideration. Importantly, the company provides lasting, high quality, high wage clean manufacturing jobs wherever its projects are located.

Monolith's experience and expertise make it uniquely positioned to discuss and provide insight with respect to Section 45V,[1] as added by the IRA (the "Hydrogen Credit"). We urge the Department of the Treasury ("Treasury") and Internal Revenue Service ("IRS") to issue implementing 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 as well as in the supporting infrastructure necessary to mature the broader

[1] Except as otherwise indicated, all "Section" and "Treasury Regulation Section" references contained herein refer to, respectively, sections of the Internal Revenue Code of 1986, as amended (the "**Code**") and the Treasury Regulations promulgated thereunder.

clean hydrogen market. For example, the U.S. currently lacks the pipeline infrastructure to efficiently transport hydrogen from production to key markets where it is consumed—indeed, according to the Department of Energy, the U.S. has an extensive network of approximately three million miles of natural gas pipelines. However, there are just 1,600 miles of dedicated hydrogen pipeline. Clear and thoughtful guidance will grow hydrogen production and catalyze parallel investment in crucial clean hydrogen infrastructure that is necessary for this market to reach its potential.

Response to Notice 2022-58 Comment Request

Notice 2022-58, Section 3.01 requests comments on the Hydrogen Credit. We respectfully request clarifying guidance generally and, specifically, on the items listed below.

There are two reoccurring themes in our recommendations: the need for certainty and the need for flexibility. Certainty is necessary for efficient and reliable financing and will encourage the rapid growth and maturation of domestic clean hydrogen production, and the associated environmental, economic, and employment benefits of such growth and maturation. Flexibility—like in the use of site-specific information and indirect book accounting factors in the lifecycle analysis ("LCA")—encourages taxpayers to exceed national and local averages and adapt to geographic and temporal variations in the carbon intensity of electricity and feedstock. Flexibility also prevents Treasury and the IRS from "picking winners" amongst taxpayers. Our key recommendations, as discussed in more detail below, are as follows:

- **The provisional emissions rate determination should be available at, and preferably before, the final investment decision ("FID").** Certainty is critical for securing funding for clean hydrogen production facilities. Providing for the provisional emission rate determination process as soon as a reasonably well-supported provisional emission rate determination can be made (i.e., at or around FID) is crucial to the financing and development of clean hydrogen facilities—without it many facilities will be unfinanceable, and uncertainty will cause delays in building plants. The alternative—postponing the provisional emission rate determination until after FID—will hamper clean hydrogen development as investors may avoid moving forward with their plans in the face of uncertainty on emissions assessments. Furthermore, taxpayers should be permitted to rely on a provisional emission rate (with requisite changes) for similar facilities. Monolith is particularly interested in this issue given that we have a number of near-term projects under development—as early as next year.

- **LCA for a facility should lock-in for the life of the facility, absent factual changes.** A project LCA based on the GREET model, and the inputs and assumptions therein (as may be adjusted for project specific inputs as described below), should be determined at a point in time that allows for flexibility and efficient financing (e.g., on or around FID) and should be effective for the life of the project (absent actual factual changes).

- **Taxpayers producing multiple products including hydrogen should be permitted to utilize any reasonable allocation method for the purposes of determining the lifecycle greenhouse gas emissions of hydrogen and co-products** (e.g., mass-based / offset / economic allocation) absent compelling facts that such a method is patently unreasonable or would be abusive. Hydrogen and co-product production are diverse and novel pathways will likely be developed. Requiring a certain allocation method will only hinder the development of novel production and valorization pathways. For example, energy allocation may be appropriate in

some cases, but if hydrogen is sold for use as a chemical feedstock and not as an energy resource, another allocation method would likely be more appropriate.

- **Taxpayers should be permitted to use site-specific information in their lifecycle analysis ("LCA").** The greatest accuracy—and incentive for companies to exceed national and locational averages—comes from allowing companies to use project-specific emission calculations, as opposed to averages and estimates, in the LCA.

- **Taxpayers should be able to use indirect book accounting factors for electricity and feedstock in the LCA.** Consistent with Section 45V's legislative history, taxpayers need to be able to use a wide variety of market-based mechanisms to access clean power and natural gas (both fossil and renewable). This includes, but is not limited to, book and claim methods for electricity and natural gas, renewable energy certificates (or renewable energy credits, collectively "RECs"), virtual power purchase agreements ("VPPAs"), environmental attribute certificates, and other synthetic contractual/market-based arrangements in the LCA and in determining GHG emissions (such arrangements referred to herein as "market-based mechanisms").

- **Taxpayers should be able to rely on the validation of a facility's LCA by an independent registered engineer with relevant expertise.** Projects should be permitted to rely on an independent registered engineer to validate the Project's LCA. This would be consistent with requirements found in respect of Section 45Q (namely Treasury Regulation 1.45Q-2, which requires an attestation from an independent registered engineer with relevant experience).

- **The well-to-gate scope should be narrowly, and explicitly, defined in final regulations and interim guidance.** Since the goal of the clean hydrogen production and investment tax credit is to reduce emissions compared to the traditional way of manufacturing hydrogen—and the statutory language calls for the "lifecycle greenhouse gas emissions" to be determined only through the point of production—the well-to-gate determination should be narrow, starting with the procurement of raw materials only and ending when hydrogen is produced at a clean hydrogen production facility.

1. ***Clean Hydrogen. Section 45V provides a definition of the term "qualified clean hydrogen." What, if any, guidance is needed to clarify the definition of qualified clean hydrogen?***

    a. ***Section 45V defines "lifecycle greenhouse gas emissions" to "only include emissions through the point of production (well-to-gate)." Which specific steps and emissions should be included within the well-to-gate system boundary for clean hydrogen production from various resources?***

Monolith believes that the lifecycle boundary of the new hydrogen credit is appropriately limited to "well-to-gate," *i.e.*, to include upstream emissions associated with hydrogen production through the point of hydrogen production, and any guidance should apply the plain language of this scope to any definitions or descriptions of lifecycle greenhouse gas emissions ("LGGE").

Footnote 3 of Notice 2022-58 provides a more detailed description of the boundary included in the well-to-gate scope.[2] Monolith agrees with the descriptions of such boundary and requests that guidance include a similar description.

Regardless of what specific steps and emissions Treasury and the IRS ultimately include in the well-to-gate scope, final regulations and any interim guidance should state clearly and explicitly the steps and emissions that will be included in the well-to-gate scope.

With respect to scope 3 emissions in particular, the goal of the hydrogen credit is to reduce emissions compared to the traditional way of manufacturing hydrogen and, therefore, the scope 3 definition should be narrowly defined, only cover well-to-gate, and be limited to procurement of raw materials only. Furthermore, Treasury and the IRS should clarify that site-, grid-, project- and feedstock-specific information on emissions and specific steps can be used in the LGGE determination. Monolith's experience is that the greatest accuracy—and incentive for companies to exceed national and locational averages—comes from allowing companies to use project-specific emission calculations as opposed to averages and estimates.

While there is no doubt that the Greenhouse gases, Regulated Emissions, and Energy use in Transportation model (commonly referred to as the "GREET" model) is a critical tool for calculating carbon intensity, estimates can at times vary. For example, Monolith intends to use Renewable Natural Gas ("RNG") in its process, and many types of RNG have an associated negative carbon intensity in the range of -100 to -250 kg of CO2/MMBtu (e.g., RNG from animal manure). Another example is that the average leakage rates calculated in upstream emissions can vary by a factor of ten in the GREET model depending on the origin of the natural gas. Historically, the GREET model has used average leakage rates from the entire country. These averages can result in a wide variety of outcomes that may not be in line with the actual inputs or results of a given project. As such, GREET permits users to override the default assumptions with project-specific leakage rates to generate more accurate results. Treasury and the IRS should permit taxpayers to follow standard GREET procedures and allow taxpayers to use the most accurate LGGE results available.

Similarly, as part of Monolith's commitment to environmental transformation, the company plans to partner with Responsibly Sourced Gas ("RSG") providers (i.e., certified low-leak natural gas) for the supply of certified low-leak natural gas, which will be transported through the national natural gas pipeline networks. Taxpayers should be permitted the necessary flexibility to represent RSG, and other feedstocks with reduced carbon intensities, in the GREET model and in the LGGE determination. In contrast, if emissions are calculated on a U.S. average, there would be no benefit from the reduced emissions that come from RSG or incentive for companies to partner with environmentally responsible feedstock providers, which would undermine the congressional purpose of the new credit.

With the above in mind, Monolith suggests that any guidance/regulations should permit taxpayers to use reasonable, supported project-specific inputs and not limit the model to published provisional emissions rates or default GREET values. Taxpayers should be incentivized to exceed averages and receive the benefit of project-specific attributes. Project-specific emission rates incentivize companies to optimize design choices, employ state-of-the-art technologies, and form innovative partnerships to reduce emission rates below the national average, all of which support the policy objective of lowering emissions rates.

[2] "The well-to-gate system boundary for hydrogen production includes emissions associated with feedstock growth, gathering, and/or extraction; feedstock delivery to a hydrogen production facility; conversion of feedstock to hydrogen at a production facility; generation of electricity consumed by a hydrogen production facility (including feedstock extraction for electricity generation, feedstock delivery, and the electricity generation process itself); and sequestration of carbon dioxide generated by a hydrogen production facility." Notice 2022-58, footnote 3.

b. (i) How should lifecycle greenhouse gas emissions be allocated to co-products from the clean hydrogen production process? For example, a clean hydrogen producer may valorize steam, electricity, elemental carbon, or oxygen produced alongside clean hydrogen. (ii) How should emissions be allocated to the co-products (for example, system expansion, energy-based approach, mass-based approach)? (iii) What considerations support the recommended approaches to these issues?

Monolith is particularly interested in guidance pertaining to the allocation of emissions between hydrogen, co-products, and other minerals, products, and materials produced in the hydrogen-production process (such as elemental carbon).[3] Monolith believes that a taxpayer should be able to use an allocation method that reasonably reflects its hydrogen-production pathway and its co-products.

Monolith (and other methane pyrolysis companies) can produce both hydrogen and solid carbon with virtually no emissions. Methane pyrolysis, therefore, can reduce the emissions that would otherwise be produced through two separate facilities—a carbon black plant and a SMR hydrogen plant—in one process that results in two clean co-products. GREET and the International Organization for Standardization ("ISO") provide a variety of options for allocating emissions in the case of a multiproduct plant, such as Monolith's projects. Monolith encourages Treasury and the IRS to permit companies that produce co-products, or other minerals, products, and materials in the hydrogen-production process to utilize the allocation method that reasonably represents the emissions reduction on a single-product basis. With the exception of narrow guardrails to prevent abuse, limitations on a taxpayer's ability to select an appropriate methodology would stifle the taxpayer's ability to utilize novel, clean technologies and undermine the policy objective of encouraging clean hydrogen production and decarbonization.

Importantly, Section 45V is technology neutral and designed to accommodate novel hydrogen production pathways. Empowering taxpayers to select the appropriate allocation method ensures that Treasury and the IRS will not favor one production pathway over another or stifle the development of novel hydrogen production pathways or co-product valorization pathways. A restrictive approach—such as selecting a required allocation method or specifying specific allocation methods for each hydrogen production pathway—would favor some hydrogen production methods over others and would create uncertainty for novel hydrogen production pathways, thereby hindering their development and running contrary to the technology-neutral design of the hydrogen credit.

The appropriate allocation method will vary depending on the hydrogen production pathway and co-products. For example, using a mass-based allocation method to allocate emissions to valorized steam would unreasonably distort and shrink the LGGE of hydrogen, while using an energy-based allocation method for an inert co-product would unreasonably distort and inflate the LGGE of hydrogen. Treasury and the IRS should require that the chosen allocation method reasonably reflects the hydrogen production pathways to ensure that taxpayers will not use allocation methods in an abusive or unreasonable manner.

Monolith also respectfully requests that guidance clearly and explicitly state that co-products are subject to the same well-to-gate scope as hydrogen. Using a uniform scope will encourage administrative efficiency and is consistent with the plain language of the statute. In addition, a uniform scope makes different hydrogen production processes comparable and ensures that the advantages or disadvantages of multiproduct production processes are accurately reflected under the LGGE determination.

[3] Monolith respectfully requests that, consistent with the description in Notice 2022-58, any hydrogen credit guidance specify that steam, electricity, elemental carbon, or oxygen produced alongside clean hydrogen are appropriately treated as co-products for which allocation of LGGE is appropriate.

For example, as noted above, Monolith and other methane pyrolysis companies produce hydrogen and carbon black, a form of elemental carbon, using methane and electricity. Carbon black is an essential component in everyday products, including plastics and batteries for electric vehicles, and an indispensable input for tire manufacturing. Consistent with the plain language of the statute, where emissions are calculated up to the point of production, the appropriate scope for this process should not include the end use of the carbon black. Any other formulation would lead to significant uncertainty and disadvantage production processes that result in a co-product, even where such co-product has an important commercial utility and is produced in a dramatically cleaner way than traditionally produced.

e. How should qualified clean hydrogen production processes be required to verify the delivery of energy inputs that would be required to meet the estimated lifecycle greenhouse gas emissions rate as determined using the GREET model or other tools if used to supplement GREET?

i. How might clean hydrogen production facilities verify the production of qualified clean hydrogen using other specific energy sources?

Taxpayers should be permitted to rely on an independent registered engineer to validate a project LCA based on the GREET model (including the reasonableness and accuracy of inputs therein). This would be consistent with requirements found in respect of Section 45Q (namely Treasury Regulation 1.45Q-2, which requires an attestation from an independent registered engineer with relevant experience).

In addition, a project LCA based on the GREET model, and the inputs and assumptions therein (as may be adjusted for project specific inputs as described below) and verified by a third party should be determined at a point in time that allows for flexibility and efficient financing (e.g., on or around the final investment decision ("FID")). Moreover, once determined, the project LCA should be effective for the life of the project (absent actual factual changes). This will help meet the policy objective of rapidly maturing a clean hydrogen economy, driving greater private investment in this sector, and achieving environmental and economic goals.

A locked-in LCA is critically important for taxpayer certainty. If a facility's LCA, and, therefore, the applicable percentage under Section 45V, is constantly subject to change based on a periodic revision to the GREET model by National Labs or if a facility's LGGE cannot be determined or relied upon until after its completion, taxpayers will face substantial uncertainty and difficulty in securing construction capital for the facility in the first place.

Taxpayers must be able to reasonably rely on their verified LCA as well as the then-currently available information and guidance when a project is in development. Without such certainty, especially in the context of a 10-year hydrogen tax credit, companies would be unable to secure and maintain financing and operations if changes to the LCA or related guidance were constantly a risk.

The need for certainty is not to say that a material change in fact assumed in an LCA (e.g., if a facility begins valorizing a new co-product) should not be taken into account in determining the LGGE of a facility for the year in which the change occurs, with the amount of qualified clean hydrogen produced adjusted accordingly. In such case, it would be reasonable for guidance to require taxpayers to perform a new LCA in the event of any such material changes in fact.

ii. What granularity of time matching (that is, annual, hourly, or other) of energy inputs used in the qualified clean hydrogen production process should be required?

As noted above, annual time matching is appropriate for the qualified clean hydrogen production process because it aligns taxpayer incentives with the goal of annual determination of the hydrogen credit, and it leverages existing standard contracting arrangement systems. As further noted, inputs may vary on a periodic or seasonal basis; provided that such variation is taken into account on an annual basis, the overall result of the LCA should accurately reflect the amount of "qualified clean hydrogen" without imposing the aforementioned administrative burdens.

Furthermore, an annual time matching requirement would also recognize that taxpayers may enter into commercially available contractual relationships with energy providers, feedstock suppliers, and providers of indirect book-accounting factors. Standard contractual arrangements of this type and with these entities often do not contain the necessary detail for time matching beyond an annual basis.[4] The Environmental Protection Agency addresses the challenge of granular matching on their webpage where they specifically state that "most environmental attribute tracking systems in the U.S. do not currently issue energy attribute certificates or RECs with the requisite hourly information to match electricity consumption on a 24/7 basis."[5] As such, imposing a more granular approach would negatively impact certain taxpayers and facilities based on the commercial arrangements that are available in their market.

2. ***Alignment with the Clean Hydrogen Production Standard. On September 22, 2022, the Department of Energy (DOE) released draft guidance for a Clean Hydrogen Production Standard (CHPS) developed to meet the requirements of § 40315 of the Infrastructure Investment and Jobs Act (IIJA), Public Law 117-58, 135 Stat. 429 (November 15, 2021). The CHPS draft guidance establishes a target lifecycle greenhouse gas emissions rate for clean hydrogen of no greater than 4.0 kilograms CO2-e per kilogram of hydrogen, which is the same lifecycle greenhouse gas emissions limit required by the § 45V credit. For purposes of the § 45V credit, what should be the definition or specific boundaries of the well-to-gate analysis?***

Monolith believes the definition and specific boundaries of the well-to-gate analysis under Section 45V should align with the definition and specific boundaries of the well-to-gate analysis under the Clean Hydrogen Production Standard such that taxpayers should have the same LCA and LGGE under both Section 45V and under the Clean Hydrogen Production Standard.

This will reduce uncertainty for taxpayers and will allow Treasury and the IRS to apply a more unified federal standard and benefit from the DOE's subject matter expertise. However, we encourage Treasury and the IRS to state clearly and explicitly in regulations or other guidance the definition and any specific boundaries for the well-to-gate analysis under Section 45V.

3. ***Provisional Emissions Rate. For hydrogen production processes for which a lifecycle greenhouse gas emissions rate has not been determined for purposes of § 45V, a taxpayer may file a petition with the Secretary for determination of the lifecycle greenhouse gas emissions rate of the hydrogen the taxpayer produces.***

    a. ***At what stage in the production process should a taxpayer be able to file such a petition for a provisional emissions rate?***

[4] We understand that some of these contractual relationships, like those with regulated utilities and certain renewable energy credits, are governed by state law and, therefore, may not be modifiable by the parties to the contract without state legislative or regulatory action.

[5] EPA, "24/7 Hourly Matching of Electricity." March 15, 2022. Available at: https://www.epa.gov/green-power-markets/247-hourly-matching-electricity.

The hydrogen credit will play a vital role in financing the development of novel hydrogen production pathways and new hydrogen production facilities. A clear understanding of the application and ultimate monetization of the hydrogen credit will be integral in underwriting the construction of new hydrogen production facilities in private markets. Early understanding of the likelihood of a production facility to benefit from the hydrogen credit and the associated economic impact will significantly de-risk construction financing and broader project viability.

Therefore, taxpayers should be able to file a petition for a provisional emission rate as early as possible (ideally before, at or around FID) and, in any event, a provisional emissions rate petition should not require the mechanical completion or actual construction of a commercial facility.[6]

Like all taxpayers that will claim hydrogen credits (or any other tax credit), taxpayers that submit a petition for a provisional emissions rate will remain subject to review and audit of any relevant tax return to ensure compliance with the new credit.

b. What criteria should be considered by the Secretary in making a determination regarding the provisional emissions rate?

Treasury and IRS standards should mirror the standards used by Argonne National Labs and other governmental entities. It would be reasonable to require a taxpayer's petition for a provisional emission rate to contain (i) a proposed provisional emission rate, (ii) a modified version of the most recently published GREET model containing a characterization of the production pathway, and (iii) an attestation from an independent registered engineer.

4. Recordkeeping and Reporting.

f. Should indirect book accounting factors that reduce a taxpayer's effective greenhouse gas emissions (also known as a book and claim system), including, but not limited to, renewable energy credits, power purchase agreements, renewable thermal credits, or biogas credits be considered when calculating the § 45V credit?

Consistent with the Section 45V legislative history (namely the Wyden/Carper colloquy reported in Congressional Record vol. 168, No 133),[7] Monolith respectfully recommends that taxpayers be permitted to utilize indirect book-accounting factors or market-based mechanisms, including, but not limited to RECs, virtual power purchase agreements (VPPAs), environmental attribute certificates, and other synthetic

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[6] By analogy, GREET2022 includes a pathway for a hydrogen production pathway—Nuclear PEM—without operating real-world facilities. *See* https://www.energy.gov/ne/articles/4-nuclear-power-plants-gearing-clean-hydrogen-production

[7] Mr. Carper: Section 13204 of title I of the Inflation Reduction Act of 2022 provides a production and investment tax credit for the production of clean hydrogen. In Section 13204, the term "lifecycle greenhouse gas emissions" for a qualified hydrogen facility is determined by the aggregate quantity of greenhouse gas emissions through the point of production, as determined under the most recent Greenhouse gases, Regulated Emissions, and Energy use in Technologies—GREET—model. It is also my understanding of the intent of section 13204, is that in determining "lifecycle greenhouse gas emissions" for this section, the Secretary shall recognize and incorporate indirect book accounting factors, also known as a book and claim system, that reduce effective greenhouse gas emissions, which includes, but is not limited to, renewable energy credits, renewable thermal credits, renewable identification numbers, or biogas credits. Is that the chairman's understanding as well?

Mr. Wyden: Yes

Congress.gov. "H.R. 5376 – 117th Congress (2021-2022): Inflation Reduction Act of 2022" August 6, 2022.

contractual/market-based arrangements in the LCA. Monolith suggests the same logic be applied to the carbon-intensity of feedstock used in the hydrogen-production process, so that indirect book-accounting factors for low-carbon feedstock could also be considered in calculating LGGE.

Indirect book accounting factors and market-based mechanism will be necessary for a mature hydrogen economy until the electricity grid decarbonizes. Hydrogen is a peculiarly difficult molecule to transport: it causes conventional pipes to become brittle and even crack, specialized pipelines are expensive, and transporting hydrogen over long distances requires substantial investment in compressors and other ancillary technologies. This difficulty is borne out by the limited quantity of hydrogen pipelines in the United States. There are approximately 1,600 miles of dedicated hydrogen pipeline, dwarfed by the approximately three million miles of natural gas pipelines.[8] While research may eventually yield an effective solution to hydrogen transportation, today, the best approach is to minimize transportation altogether and build hydrogen production facilities near ultimate hydrogen applications. While clean hydrogen producers consider many factors when making siting decisions, proximity to demand for hydrogen or to the limited quantity of hydrogen pipelines in the United States is often an overwhelming consideration. There is little room in siting decisions to consider the carbon intensity of the local electricity grid or natural gas supply. Market-based mechanisms and indirect book accounting factors enable hydrogen producers to support low carbon intensity electricity and natural gas producers while making the most efficient siting decisions.

Section 45V is intended to encourage the production of clean hydrogen. Until the electricity grid more fully decarbonizes—a matter that is out of the control of most hydrogen producers—indirect book-accounting factors will be necessary for the production of clean hydrogen. For example, electrolysis and methane pyrolysis—the hydrogen production pathways with the lowest potential LGGE—use substantial quantities of electricity and operate best if run continuously. Reliable power is therefore necessary for these processes. Similarly, the best suited locations for a hydrogen-production facility may not align with the best suited location for a renewable facility, or it simply may not be feasible to locate a hydrogen-production facility in an area that is able to source renewable energy directly. Indirect book accounting allows taxpayers to use synthetic arrangements to "acquire" renewable electricity for all hours of the day and year in the most efficient manner possible. Indirect book-accounting factors maximize clean hydrogen production by enabling the hydrogen-production pathways with the lowest potential LGGE to operate at full capacity. Such mechanisms serve the overall purpose of Section 45V and the IRA by encouraging renewable energy sourcing to increase generation of clean hydrogen while also encouraging the development of renewable energy sources in locations and jurisdictions where such renewable facilities are practically and economically best suited.

While Section 45V will encourage the decarbonization of the grid, both directly and indirectly, implementing regulations and other guidance should not create requirements for indirect book-accounting factors that would require substantial changes to state and local energy markets or established practices in the natural gas industry. Prohibiting the use of indirect book-accounting factors or placing novel, untested requirements—like hourly matching—on indirect book-accounting factors will interfere with state and regional regulatory structures and electricity grid operation. For example, RECs are creatures of state law, developed to enable utilities to comply with state-based renewable portfolio standards. If the implementing rules require that RECs meet novel requirements to be considered under Section 45V, utilities, REC generators, and customers may face contradictory pressures from hydrogen producers, states, and regional regulators. Such interference with state and regional electricity market operations could have vast economic and political significance that would be in conflict with the overall congressional mandate found in the IRA

[8] DOE, "HyBlend: Opportunities for Hydrogen Blending in Natural Gas Pipelines" https://www.energy.gov/eere/fuelcells/hyblend-opportunities-hydrogen-blending-natural-gas-pipelines

to rapidly mature a clean hydrogen economy across the United States, and bring clean technology and jobs to disadvantaged communities, including energy communities.

We believe Section 45V regulations and guidance should permit taxpayers to take into consideration the indirect book-accounting factors created, tracked, and used by states, regional regulators, and reputable private entities. We believe the hydrogen credit should be designed to encourage clean hydrogen production today, and on today's grid. Taxpayers should not need to wait for other tax credits or other state and federal policies to decarbonize the grid fully before they are able to claim credits under Section 45V. Accordingly, taxpayers need to be able to take into account these various market-based mechanisms in their LCA.

Thus, taxpayers should be entitled to purchase renewable energy or low-carbon feedstocks and assume that they are using the same in their production process, regardless of whether the actual low-carbon electrons or feedstock molecules are physically used by the purchasing taxpayer. As noted above, this is an important concept for many reasons: (i) most hydrogen-production processes require a constant source of power that cannot always be provided from intermittent sources, (ii) some state's regulatory regimes will not allow the purchasing taxpayer to directly connect carbon-free power sources to their facilities, and (iii) optimal location of a project may lead to longer distances from sources of RNG, RSG, and other clean-energy resources, and physically transporting the molecules may not be viable. Allowing indirect book-accounting factors and "book and claim" methods in the Section 45V implementing rules and guidance is a sound solution.

a. If indirect book accounting factors that reduce a taxpayer's effective greenhouse gas emissions, such as zero-emission credits or power purchase agreements for clean energy, are considered in calculating the § 45V credit, what considerations (such as time, location, and vintage) should be included in determining the greenhouse gas emissions rate of these book accounting factors?

Treasury and the IRS should implement Section 45V regulations that are consistent with the IRA's broader policy goals of lowering emissions and incentivizing clean-energy production. However, Section 45V regulations should not undermine the plain goal of Section 45V: encouraging clean hydrogen production. In the current U.S. electricity market and natural gas market (fossil and renewable), any significant clean hydrogen production will require access to some market-based mechanisms. Treasury and the IRS should issue hydrogen credit regulations that are practical and that reflect the reality of U.S. electricity and natural gas markets. For example, RECs and similar market-based mechanisms are the default instrument used by electricity service providers ("ESPs") to comply with the Renewable Portfolio Standards and Clean Energy Standards of twenty states.

We do not believe it would be appropriate for Treasury and the IRS to implement a unified, federal system of market-based mechanisms without a clear mandate from Congress. Therefore, Treasury and the IRS should issue standards or guidelines that build on existing market-based mechanisms. Treasury and the IRS should not create standards or guidelines that would prevent taxpayers from using existing, reputable market-based mechanism. Vintage, time-matching, location, and other requirements or considerations for market-based mechanisms under Section 45V should be consistent with existing market-based solutions. For example, the WREGIS REC registry has a vintage requirement, but not an hourly matching requirement. A taxpayer that purchases RECs and retires them on the WREGIS should not be required by Treasury or the IRS to comply with an hourly matching requirement that is not contemplated by the WREGIS REC system.

Similarly, the use of market-based mechanisms should be considered on an annual basis (*i.e.*, there should be no shorter time of use limitations), and such arrangements should not be geographically restricted (i.e., it should not matter whether the feedstock producer/generator and purchaser are part of the same

transmission system). This latter point is crucial given that not all load-serving entities will pursue adoption of renewables into their generation portfolio equally. We believe that utilities will be more willing to participate in the energy transition if they can monetize the environmental attributes of their existing fleet of carbon-free generation resources to support clean hydrogen producing taxpayers. Moreover, mandating taxpayers only recognize carbon intensity from new resources ("Additionality") will increase system costs and limit involvement from utilities that may have previously invested in emission reduction objectives. Without these functionalities, the hydrogen credit may have limited utility and may not meet its stated goals and policy objectives.

Lastly, when using a reasonably available indirect book accounting factors or market-based mechanisms to reduce a project's LGGE, taxpayers should be permitted to assume the availability of those indirect book accounting factors and market-based mechanisms for the life of the project. Thus, if taxpayers are able to establish a reasonable, economic plan for procuring RECs, virtual PPAs, environmental attributes, and other contractual arrangements, it should not be necessary that the taxpayer must fully contract for such resources for the life of the project. Accordingly, guidance should clarify that taxpayers have the flexibility to contract for these attributes as needed, with emphasis on traceability of the attribute to the energy consumed on a per annum basis.

We appreciate the opportunity to offer our comments in response to Notice 2022-58. If you have questions, please do not hesitate to contact Monolith.

Sincerely,

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