H Quest Vanguard, Inc
750 William Pitt Way
Pittsburgh, PA 15238

Douglas W. O'Donnell
Deputy Commissioner for Services and Enforcement
Internal Revenue Service
P.O. Box 7604, Ben Franklin Station
Washington, DC
20044

DATE
February 26, 2024

SUBJECT
Comment Submission on the Notice of Proposed Rulemaking on the Credit for Production of Clean Hydrogen (Section 45V)

REFERENCE
IRS REG-117631-23

RE: Comment Submission on the Notice of Proposed Rulemaking on the Credit for Production of Clean Hydrogen (Section 45V)

Dear Mr. O'Donnell,

H Quest Vanguard, Inc. ("H Quest" or the "Company") appreciates the opportunity to comment on the proposed guidance regarding the establishment of a tax credit for clean hydrogen production, Section 45V. Specifically, H Quest is writing to provide comments on the process to calculate the life cycle carbon dioxide emissions (CO_2e) for methane pyrolysis and on the allocation of CO_2-e when hydrogen is co-generated along with valorized co-products.

For background, H Quest is a technology start-up company developing an energy-efficient and cost-effective natural gas microwave plasma pyrolysis (MPP) process targeting distributed production of methane-derived hydrogen with a highly tunable co-product slate. MPP belongs to the family of methane pyrolysis processes: hydrogen production pathway predicated on heating methane (natural gas) to crack it into hydrogen and solid carbons. Methane pyrolysis does not output CO_2, unlike steam-methane reforming (SMR) and auto-thermal reforming (ATR) processes, and has a much (theoretically 7x) lower energy requirement than water electrolysis per kg of hydrogen produced.

H Quest's MPP process benefits from the very fast heating and reaction rates at low (just above ambient) pressures, which enable its compact, lightweight, low-cost equipment to be fabricated from ordinary materials: aluminum and steel. The full-scale system placed in a 40' ISO cargo container would process about 200 MCF of natural gas to deliver a tonne of hydrogen per day. These compact systems can be mass-manufactured and delivered to customer facilities for drop-in installation that could take less than a day.

The distributed point-of-use deployment will eliminate the need for costly and dangerous transportation of hydrogen to the end-user. Sales of the carbon co-product will generate sufficient revenue to make H Quest's hydrogen the lowest-cost clean fuel solution available. In many cases H Quest's hydrogen could be priced competitively with natural gas itself, directly

supporting decarbonization of some 200,000 small- and medium-scale US manufacturers that rely on the abundant natural gas as the primary energy source.

H Quest has dedicated a decade of research and development to refining its carbon co-products. With support from the Department of Energy and in collaboration with the Penn State University, West Virginia University, Research Triangle Institute, University of North Dakota and PNNL, H Quest demonstrated co-production of hydrogen with sustainable carbon black, ethylene, graphene, synthetic graphite, carbon nanotubes, and other materials and commodities, conventional production of which is very energy- and carbon-intensive. Its first commercial co-product, carbon black, has been screened, evaluated, and verified by both its R&D partners, and the commercial carbon black manufacturers, including Birla Carbon, Asbury Carbons, and others.

In summary, H Quest's MPP process enables a two-sided decarbonization. Firstly, it provides natural gas utilities as well as small- and medium-scale manufacturers with a non-disruptive decarbonization solution. Secondly, assuming average lifecycle footprint of conventional carbon black to be between 2 and 4 kgCO2-e per kg, every kilogram of H Quest's hydrogen would eliminate emissions of 6-10 kgCO2-e by displacing 3 kilograms of this CO2-intensive carbon material.

As a company that was founded with the explicit goal of establishing new, sustainable uses for the abundant natural gas, H Quest is vested in establishing hydrogen as a clean fuel source, as well as in a flourishing renewable natural gas market. As an emerging technology provider, H Quest has a critical need for clearly defined and consistent rules and guidelines, which are consistently deployed across the field of hydrogen production options.

Our comments below are rooted in the need for a fair and consistent approach to evaluating the environmental impacts, benefits, and credits associated with the production of hydrogen and its direct and indirect decarbonization effects.

Presently, the Provisional Emissions Rate (PER) guiding the lifecycle determination for the Section 45V is based on the 45VH2-GREET model, which currently excludes the life cycle analysis of hydrogen production pathways based on methane pyrolysis. We respectfully request that the Treasury prioritize the updates of the 45VH2-GREET model to include methane pyrolysis pathways.

Further, we respectfully request the Treasury to incorporate into its PER calculation for methane pyrolysis processes the following: (a) allocation of the CO2e footprint between the hydrogen as well as the valorized carbon co-products, and (b) consideration for the negative footprint of the renewable natural gas (RNG) feedstocks. These changes would adequately reflect the decarbonization benefits of displacing the energy- and carbon-intensive production of carbon commodities, reward and promote utilization of the economically stranded RNG resources, and maintain consistency with other GREET models.

Finally, the 45VH2-GREET model does not presently recognize regional differences in the footprint of natural gas nor does it allow using the cited footprints of the Certified Natural Gas.

Including Certified Natural Gas option in the 45VH2-GREET model would provide the economic incentives to lower CO2 emissions along the entire supply chain of natural gas, starting at the wellhead, and reward the responsible industry players who are working to reduce upstream greenhouse gas emissions and bear the costs of providing the Certified Natural Gas.

We are also pleased to include our comments on several specific guidance topics below:

§IA1 *Qualified clean hydrogen facility must begin construction before January 29, **2023**. [Cited twice in paragraph.]*

There are several instances of statements reading "Qualified clean hydrogen facility must commence construction before January 29, **2023**." This date as stated would exclude all new construction. Should the date be corrected to January 29, **2033**?

§IA2a *Lifecycle Greenhouse Gas Emissions is adjusted if the produced hydrogen contains any impurities. The GREET model adds CO2e to the equation of there are any impurities in the hydrogen.*

This stipulation is valid and constructive when green hydrogen is delivered as a transportation fuel for fuel cells or a chemical feedstock to help decarbonize fuel refining and synthesis, fertilizer manufacturing, and other chemical production. High purity is a requirement for chemical feedstocks, and purification processes are very energy-intensive and therefore potentially highly CO2-emissive. Therefore it is reasonable to adjust the GGE of hydrogen sources to account for subsequent purification requirements.

However, this stipulation disincentivizes production of low-cost hydrogen that's best suited for use as a conventional fuel. Therefore, it becomes counterproductive in situations when the produced hydrogen is intended to be used as a clean fuel in blends with natural gas.

Hydrogen blending applications are recognized as the fastest and most effective path to decarbonization of highly-emitting hard-to-decarbonize sectors including residential, commercial, and industrial heating; their success is critical for achievement of the government, societal, and corporate net zero goals. However, for this solution to be viable, hydrogen blends must be competitively priced with current energy sources, including natural gas.

Rewarding production of high-purity hydrogen or penalizing production of lower purity hydrogen only serves to increase costs and worsen the resource and energy consumption profile of the hydrogen industry.

In particular, hydrogen blends by definition are not pure, and therefore don't require high purity hydrogen. There is no benefit to purifying this stream before it would be mixed back with the natural gas again. Since high purity hydrogen is best utilized for demanding chemical applications; its use in low-value combustion should be disincentivized.

On the other hand, methane pyrolysis processes typically achieve the optimal energy use when the feedstock conversion rates are less than 100% -- hence their output is naturally contaminated with the unconverted methane impurity. Purification of the hydrogen output stream prior to its blending back with the natural gas is not just useless -- it's extremely wasteful and counterproductive to the goals of decarbonization, promoting sustainability and energy efficiency, and achieving net zero.

H Quest believes impurities should be penalized only when these impurities are generated by the production process itself. On the other hand, the impurities inherent to the gas stream that effectively pass through in the natural gas conversion process should not be penalized and should be excluded from the CO2e calculations.

For example, if a methane pyrolysis process yields hydrogen in the form of a 85%H_2 / 15% natural gas mixture to displace 100% natural gas use in, say, a turbine, the taxpayer would not receive the full value of the 85%H_2; they would need to subtract the carbon intensity of the 15% natural gas even though the counterfactual is 100% natural gas.

In this situation a taxpayer could purify the outlet gas to 100%H_2 and recycle the remaining natural gas back into the process; however, this purification process is energy intensive and is wasted entirely. The net amount of hydrogen production is fixed based on the size of the methane pyrolysis unit and it does not benefit in any way from receiving recycled gas vs. inlet gas. The net amount of hydrogen produced is the same with a 85%H_2 mixture or 100%H_2 output. In the latter case, it is actually produced with a higher energy intensity and would likely only be done to increase the amount of available tax credits. We strongly urge the Treasury to measure the benefits of the hydrogen infusion into natural gas without penalizing those benefits by subtracting out the lost benefits.

In the event 45V rules overly incentivize purified hydrogen, then additional energy and capex will be expended to purify the hydrogen in an uneconomical process, only to result in the purified hydrogen being blended back into natural gas anyway. Ironically, the purification process would diminish the output of hydrogen and cause less decarbonization.

H Quest does have customers that require purified hydrogen, but are paying a premium price for that purified hydrogen that justifies the additional energy and capex to purify the hydrogen.

§IA3b *No 45V tax credit if the facility includes a carbon capture credit under 45Q.*

H Quest believes that carbon capture systems are not the most efficient technology to minimize the CO2e during the production of hydrogen. There should be a CO2e penalty for the additional energy required to operate a carbon capture system, including the full lifecycle of the "capturing" process. This penalty should exist even if the energy is clean, as the opportunity cost of using that electricity for carbon capture prevents the use of that

clean energy elsewhere, and therefore is detrimental to the goals of decarbonization, promoting sustainability and energy efficiency, and achieving net zero.

§IIA *Facility defined as a single production line that is used to produce qualified clean hydrogen. A facility excludes the equipment to transport hydrogen and the equipment to power the hydrogen production process.*

Clarification Question: Does hydrogen production equipment that is installed on the property of an industrial plant or a gas utility qualify as a 45V "Facility"? H Quest intends to deploy its point-of-use hydrogen production units as close as possible to the point of consumption of its hydrogen to minimize costs and risks associated with transportation of hydrogen.

§III *The taxpayer that owns the qualified clean hydrogen production facility does not need to be a producer under Section 263A.*

Clarification Question: Is the following the definition that is referenced in III above:

> *"***Produced by the taxpayer***"* means a process conducted by the taxpayer that substantially transforms constituent elements, materials, or subcomponents into a complete and distinct eligible component that is functionally different from that which would result from mere assembly or superficial modification of the elements, materials or subcomponents. This does not include partial transformation that does not result in a substantial transformation, mere assembly of two or more constituent elements, materials, or subcomponents, or superficial modification of the final eligible component.

§VA *GREET permits users to input the quantity of the valorized co-products and allocates the CO2e emission to those co-products.*

H Quest strongly supports allocation CO2e to the valorized carbon co-products. The allocation of the emissions between the valorized carbon (beneficial use) and hydrogen can be based on the proportion of weight of each co-product. Therefore, the CO2e allocated to the valorized carbon equals the fraction of (a) total kgs of carbon produced divided by (b) total kgs of Carbon + Hydrogen. This fraction is then multiplied by (c) the total CO2e attributed to the natural gas and electricity consumed during the production of hydrogen.

As a working example, let's assume a pyrolysis process has the full lifecycle footprint of 4 kgs of CO2 per kg of hydrogen produced. However, the process also co-produces 3 kgs of a carbon commodity along with each kg of hydrogen. Therefore, the carbon commodity would be allocated 75% of the CO2e (3/(3+1)) and hydrogen would be allocated 25% of the CO2e (1/(3+1)). In this example, hydrogen would have a CO2e of 1.00 per kg of hydrogen.

In H Quest's process, the carbon co-products are critical to its ability to be the lowest cost hydrogen supplier and to support decarbonization of industrial heat. The revenue

generated from the sale of the carbon co-products allow H Quest to offer the lowest-cost hydrogen across the board. The low cost (on par with natural gas) of hydrogen is critical to the natural gas power generators and LDC gas utilities; it allows them to decarbonize without incurring prohibitive increases to their operating and capital expenditures.

Having 45VH2-GREET incorporate the benefits of the valorized co-products will both reflect the full decarbonization effects of methane pyrolysis pathways to hydrogen production and ensure a more rapid adoption of hydrogen displacing natural gas than without the CO2e allocation.

§VB1 *Currently GREET excludes methane plasma pyrolysis, resulting in a Provisional Emissions Rate (PER)*

Clarification Question: According to the Treasury guidance, the PER process is evaluated by the Department of Energy in accordance with the same framework as the 45VH2-GREET model. Once a CO2e has been established by the Department of Energy, that figure is reviewed by Treasury before being confirmed. Where can more information be found regarding the process to request a DoE Emissions Value for the PER process?

§VC1a *Requested comment on whether clean upgrades should be considered as the "incremental" energy.*

Power generating companies ("Power Generators") are not going to produce surplus electricity without any increases in current and/or forecasted demand. Since Power Generators may not publicly disclose their demand calculations that led to incremental power generation, H Quest believes that clean energy upgrades should count as the energy sourced by 45V participants. However, in the event the Power Generators charge a premium price for the clean energy compared to its fossil fuel energy, 45V must pay that premium rate to use the clean energy in its CO2e calculations. Otherwise, the 45V participants must use the CO2e rate from the pre-upgrade power for its 45VH2-GREET calculations.

§VC1ai *Requested comment on avoided retirement due to clean hydrogen demand*

As the Treasury guidelines state, there are many factors threatening the existence of clean energy sources, particularly wind turbines. There are also pressures on new solar projects due to the higher financing costs. These projects could benefit from the increased demand for clean energy and the willingness for participants to pay a premium for their energy. Consequently, there should certainly be acknowledgement and credit for the avoided retirements caused by incremental demand from 45V participants.

§VC1aiii *Wind curtailment and other events that curtail clean electricity production. Should the IRS include a 5% curtailment allowance.*

H Quest fully supports avoiding curtailment of clean electricity production and is in favor of a 5% curtailment allowance. In fact, a 10% curtailment allowance may be more appropriate given the realities faced by many of the clean electricity producers.

§VIC *Tolling Arrangement whereby a party provides the raw materials and in return owns the hydrogen produced from those raw materials. There is an exclusion that the hydrogen cannot be used for electricity to power the production of hydrogen, even indirectly.*

H Quest proposes that any adjustment to the hydrogen tax credit should be based on the ratio of hydrogen sourced from the 45V participant versus the hydrogen and gas sourced from non 45V participants. For example, if 2% of the fuel powering a hybrid hydrogen-methane turbine is hydrogen sourced from 45V participants, then 2% of hydrogen produced by 45V participants should be excluded from the 45V tax credit.

H Quest also want an exemption to this exclusion if the application of the hydrogen production is to address flaring and/or venting at well heads. In many instances, the power sourced at these locations will be from gas or diesel generators, so using the hydrogen prevents further emissions into the atmosphere.

§VIIB *Retrofit of an existing Facility*

45V should exclude any maintenance, repairs, or upgrades to the original system in the calculation of the market value of the used property. Such expenses would in effect be investments to prolong the working life of the systems and should not incur a penalty if the 45V participants later on seek to replace or overhaul the existing system. H Quest proposes those upgrades should be excluded from the market value of the used property and instead added to the investment basis of the new property.

We have included below our responses to many of the specific RNG related questions posed in the guidance.

(1) *What data sources and peer reviewed studies provide information on RNG production systems (including biogas production and reforming systems), markets, monitoring, reporting, and verification processes, and GHG emissions associated with these production systems and markets?*

H Quest recommends the following resources which provide information on RNG production, emissions and markets:

RNG markets monitoring reporting and verification

i. CA LCFS -Low Carbon Fuel Standard | California Air Resources Board
ii. EPA RFS - Overview for Renewable Fuel Standard | US EPA
iii. Voluntary – Green-e® Renewable Fuels | Green-e
    1. Documents | Green-e
    2. M-RETS | M-RETS Renewable Thermal Tracking (mrets.org)

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

Any indirect emissions generated during the combustion or conversion of RNG to hydrogen should be included in the lifecycle emission analysis in the 45VH2-GREET model. For example, there are some hydrogen production technologies that require combustion of natural gas and hydrogen to pyrolyze methane. The combustion requires oxygen and results in CO2 emissions. Even if these CO2 emissions are caused by the combustion of RNG or biogas still causes CO2 to be emitted and needs to be accounted for.

(3) *How broadly available and reliable are existing electronic tracking systems for RNG certificates in book and claim systems? What developments may be required, if any, before such systems are appropriate for use with RNG certificates used to claim the section 45V credit?*

H Quest supports Treasury's inclination to allow for a book-and-claim system to track the environmental attributes associated with RNG and fugitive methane. We recommend that the Treasury incorporates rules governing the use of electronic book-and-claim tracking systems into the final regulatory guidance. M-RETS is currently tracking RTCs for RNG markets in Oregon and California, and announced its first green hydrogen RTC through a Minnesota program.

H Quest does not endorse M-RETS as the only tracking platform that can or should be used to track RNG environmental attributes and support a book-and-claim system. Rather, we share this information as evidence that electronic tracking systems do indeed exist and are both broadly available and reliable, which should give Treasury more confidence in the integrity and readiness of the RNG market.

(4) *How should RNG or fugitive methane resulting from the first productive use of methane be defined, documented, and verified? What industry best practices or alternative methods would enable such verification to be reflected in an RNG or methane certificate or other documentation? What additional information should be included in RNG certificates to help certify compliance?*

H Quest recognizes Treasury's intent to encourage new and additional RNG supplies into the market. New hydrogen and RNG projects may take years to construct, and experience both expected and unexpected delays. Aligning an RNG project to come into service at the same time as a new clean hydrogen project, will be challenging at best, and at worse risk delaying emissions reductions that could have otherwise been taking place from an RNG project placed in service.

Moreover, RNG to hydrogen production pathways should encourage new RNG project development to meet the growing demand from a new market. Concerns over shifting

RNG supply from an existing market to a new hydrogen market are unjustified, given that the vast majority of RNG consumed today is a result of regulatory policies in other economic sectors. Any shift in supply contracts from an existing market to a new clean hydrogen developer will have to be backfilled by more RNG – not fossil natural gas – to comply with regulations.

Finally, should Treasury still seek to ensure that new or recent RNG supplies are used for hydrogen production, then we believe a look-back period is an appropriate measure to employ. The American Biogas Council has proposed a 36-month lookback period, and H Quest would support this approach. We believe that allowing hydrogen producers to secure RNG that came online within the prior 36 months is a more workable strategy, that would align with the proposed look-back period for electricity projects, and would be more easily documented and verified for reporting purposes.

(5) *What are the emissions associated with different methods of transporting RNG or fugitive methane to hydrogen producers (for example, vehicular transport, pipeline)?*

The vast majority of RNG is transported via the interstate natural gas pipeline system, and the GREET 2023 model captures transportation emission for all RNG feedstock supplies in both the CNG and LNG pathways. Fugitive methane emissions from pipeline leakage are also captured and are equivalent to natural gas. H Quest strongly supports the inclusion of the full suite of RNG feedstocks into the 45VH2-GREET model, and recommends that transportation related emissions be consistent with GREET 2023.

(6) *How can the section 45V regulations reflect and mitigate indirect emissions effects from the diversion of biogas or RNG or fugitive methane from potential future productive uses? What other new uses of biogas or RNG or fugitive methane could be affected in the future if more gas from new capture and productive use of methane from these sources is used in the hydrogen production process?*

Section 45V is intended to spur development of the clean hydrogen sector and drive down the cost of producing clean hydrogen. Section 45V is intended to be technology neutral and furthermore, contribute to economy wide emission reductions. H Quest discourages Treasury from trying to predict theoretical future use cases for RNG, and create policy to try and protect hypothetical future markets.

Rather, H Quest encourages Treasury to recognize the current state of RNG market supply and demand, and design 45V guidance based upon the best available science of lifecycle emissions analytical frameworks. To that end, 45VH2-GREET should be updated to incorporate all RNG feedstocks and pathways to hydrogen production, creating consistency in the treatment of RNG lifecycle carbon intensities across GREET platforms and within the markets that rely on these frameworks. Treasury should also recognize that RNG demand is primarily being driven by regulatory markets where it is used as a compliance mechanism. So any diversion of RNG to hydrogen markets would be backfilled by more RNG, helping build a more robust market and further incentivizing the capture of fugitive methane emissions.

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

H Quest is not aware of any instances in which a market for RNG has driven the production of additional waste. Furthermore, the use of a lifecycle emissions analytical framework, such as GREET, is designed to capture the direct and indirect emissions associated with the production of unique RNG feedstocks and production pathways. We encourage continuous updates to the GREET models to ensure alignment with best available science. That way, if a counterfactual scenario should emerge through technological or regulatory advancements, updates to the carbon intensity of RNG should be reflected in the GREET model.

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

H Quest disagrees that existing RNG markets and potential future markets will drive the additional production of waste. EPA stated that the existence of the RFS and LCFS markets for RNG does *not* drive the proliferation of concentrated animal feeding operations and therefore more waste. Rather, these markets create incentive to invest in the capture of existing fugitive methane emissions that would otherwise be cost prohibitive.

H Quest wants Treasury to incentivize new and additional RNG production to support a hydrogen market. Therefore, we would welcome the opportunity to discuss the creation of an appropriate look-back period for eligible RNG production.

(9) *Are geographic or temporal deliverability requirements needed to reflect and reduce the risk of indirect emissions effects from biogas and RNG or fugitive methane use in the hydrogen production process? If so, what should these requirements be and are electronic tracking systems able to capture these details?*

The use of an electronic tracking system such as M-RETS to enable a book-and-claim system for tracking RNG alleviates the need to establish geographic requirements. A book-and-claim system enables RNG producers to inject molecules into the common carrier pipelines for use anywhere along that interconnected system, whether it is in a nearby county or across the country. By using meter data and a renewable thermal tracking system, participants can be confident that equal volumes of RNG were injected into the pipeline network as what was consumed, giving all parties confidence in the purchase and claims associated with RNG credits.

If the Treasury wishes to further align RNG injections with consumption claims, an annual or monthly basis would be reasonable, and already exists in other markets. This data could be made available through meter data and tracking systems.

(10) *How should variation in methane leakage across the existing natural gas pipeline system be taken into account in estimating the emissions from the transportation of RNG or fugitive methane or establishing rules for RNG or fugitive methane use? How should methane leakage rates be estimated based on factors such as the location where RNG or fugitive methane is injected and withdrawn, the distance between the locations where RNG or fugitive methane is injected and withdrawn, season of year, age of pipelines, or other factors? Are data or analysis available to support this?*

Methane leakage and emissions are highly variable between fields, producers, and midstream providers. They are highly variable on regional basis as well. This variability should be taken into account in the GREET model. At the very least, emissions cited for certified natural gas must be utilized in the GREET model.

The GREET model includes assumptions for methane leakage in the existing natural gas pipeline system. Methane leakage rates should be estimated using at least a regionally-measured fugitive emissions factor based upon mile of pipe. Treasury should employ this same method in its 45V final guidance, to ensure consistency in assumptions of emissions across gas pipeline transportation and distribution systems.

(11) *What counterfactual assumptions and data should be used to assess the lifecycle GHG emissions of hydrogen production pathways that rely on RNG? Is venting an appropriate counterfactual assumption for some pathways? If not, what other factors should be considered?*

A general venting assumption is unfairly penalizing those oil and gas producers who have made voluntary investments into elimination of venting at their sites. As stated elsewhere, at the very least, emissions cited for certified natural gas must be utilized in the GREET model.

(12) *What criteria should be used in assessing biogas and RNG-based PERs? What practices should be put in place to reduce the risk of unintended consequences (for example, gaming)? Should conservative default parameters and counterfactuals be used unless proven otherwise by a third party?*

While gaming could be problematic, the Treasury has included many safeguards against gaming in its guidelines. However, the carbon credit space has been tarnished by widely spread allegations of fraud and abuse (e.g. https://www.nature.com/articles/477517a, https://www.theguardian.com/environment/2023/jan/18/revealed-forest-carbon-offsets-biggest-provider-worthless-verra-aoe). H Quest recommends strict oversight and checking the full CO2e lifecycle estimates specifically in cases when CO2 emissions are inherent to the process and carbon capture is utilized to achieve the 45V emission tiers (blue hydrogen from SMR and ATR processes).

H Quest appreciates the opportunity to share our feedback based on experience with operating methane plasma pyrolysis technology, producing valorize carbon co-products, and decarbonization solutions. We believe that participating in the 45V program will be important to drive the new Hydrogen Economy with our low-cost and safe delivery of hydrogen to end users. H Quest looks forward to working with Treasury and the DOE to make it happen as efficiently and quickly as possible.

Thank you for the opportunity to share this feedback.

Respectfully,

Steve Hubbard, CFO
H Quest Vanguard