Aindriu Colgan
Director, Corporate Policy
Tax and Trade Policy
API
202-682-8044
colgana@api.org

February 26, 2024

CC:PA:LPD:PR (REG–117631–23)
Room 5203
Internal Revenue Service
P.O. Box 7604
Ben Franklin Station
Washington, DC 20044

Via Federal eRulemaking Portal at: www.regulations.gov (IRS REG–117631–23)

Re: API Comments on Credits for Section 45V Credit for Production of Clean Hydrogen; Section 48(a)(15) Election To Treat Clean Hydrogen Production Facilities as Energy Property

Dear Sir/Madam:

The American Petroleum Institute ("API") is the national trade association representing America's oil and natural gas industry. Our industry supports more than 11 million U.S. jobs and accounts for approximately 8 percent of U.S. GDP. API's nearly 600 members, from fully integrated oil and natural gas companies to independent companies, comprise all segments of the industry. API's members are producers, refiners, suppliers, retailers, pipeline operators, and marine transporters as well as service and supply companies providing much of our nation's energy. API was formed in 1919 as a standards setting organization and is the global leader convening subject matter experts from across the industry to establish, maintain, and distribute consensus standards for the oil and natural gas industry. API has developed more than 800 standards to enhance operational safety, environmental protection, and sustainability in the industry.

On behalf of our member companies, API writes in response to the proposed regulations on Credits for Production of Clean Hydrogen and Clean Fuel Production concerning the clean hydrogen production credit under section 45V of the Internal Revenue Code ("45V credit") and the election to treat clean hydrogen production facilities as energy property under section 48(a)(15) ("48 credit"). As such, our members wish to ensure that the final rules and relevant guidance accomplish the legislative intent of the statute and provide efficient ways to ensure its goals are achieved. We submit these comments to the Department of the Treasury and Internal Revenue Service ("Treasury and IRS") in an effort to assist in developing those goals.

As an established supplier of natural gas feedstock for hydrogen production, consumer of hydrogen in refining operations, leader in CO_2 management, and expected producer, transporter, and consumer of low-carbon hydrogen, the oil and natural gas industry has a significant role to play and interest in

implementation of the 45V credit created to support the growth of a hydrogen economy. Today, the oil and gas industry is both the primary producer and consumer of hydrogen in the U.S.[1]

The comments in this letter focus on the following areas, which are critical for the Section 45V implementation process to be inclusive of all technologies and pathways that can meet the tax credit's statutory 4 kg CO2e/kg H2 threshold:

- Our role in clean ("low-carbon") hydrogen and importance of 45V implementation – API notes that a separate NPRM is needed to provide proposed operative rules relating to low-carbon hydrogen production using renewable natural gas ("RNG").

- The 45VH2-GREET model – API recommends that Treasury, in collaboration with DOE, permit taxpayers to input EPA-verified greenhouse gas ("GHG") emissions data for the natural gas supply chain in order to more accurately reflect the carbon intensity of CCS-enabled hydrogen. This would move the most accurate taxpayer-specific data, such as methane emissions from production and pipelines for natural gas used to produce hydrogen, into GREET foreground data rather than locking taxpayers into inaccurate default background data values. API also recommends that taxpayers have the ability to use the version of the GREET model that is available during project development for the duration of the section 45V credit period.

- Indirect book accounting/book-and-claim – API recommends longer transition rules for the application of the "three pillars" to book-and-claim for electrolytic hydrogen. API also provides an overview and specific recommendations as it relates to natural gas and the use of book-and-claim in determining emissions for low-carbon hydrogen production. Specifically, API recommends allowing the use of book-and-claim for purposes of calculating emissions of natural gas feedstocks and describes how it is unjustified and impractical to impose three-pillar-type restrictions on book-and-claim for those feedstocks due to the fundamental differences between natural gas and electricity.

- Provisional emissions rate ("PER") – API recommends that taxpayers receiving a PER have the ability to use the PER for the duration of the credit period. API also recommends wider availability of the PER process.

- Third party verification – API raises issues with the timing and process requirements in proposed section 1.45V-5(a) relating to third-party verification and makes recommendations for how the process could be streamlined.

- The 80/20 rule – API raises questions with the application of the proposed 80/20 rule and provides recommendations for clarifications, including refining what is included in the definition of "any existing facility."

[1] https://www.iea.org/reports/global-hydrogen-review-2022/executive-summary

The industry role in low-carbon hydrogen and the importance of 45V implementation

Industry's role in low-carbon hydrogen

API and our member companies strongly believe in the potential for low-carbon hydrogen or reducing carbon emissions while creating much needed American jobs. The oil and natural gas industry is already a major hydrogen producer and is well positioned to play a significant role in the expansion of a low-carbon hydrogen economy. Hydrogen produced from natural gas with carbon capture and sequestration ("CCS"), sometimes known as blue hydrogen, can reduce emissions in hard-to-electrify sectors, be produced in large quantities at all times of the day, with high efficiency, and at low cost. But most importantly, it can be produced with very low GHG emissions. As the oil and natural gas industry continues to commercialize technologies to reduce GHG emissions, hydrogen derived from natural gas with carbon capture and storage (CCS) is proving to be among the most promising. Accordingly, the oil and gas industry welcomes tax credit guidance that enables producers to demonstrate more accuracy in GHG emissions accounting, not less.

The Biden Administration has proposed jumpstarting and scaling a clean hydrogen economy with two policies: the Regional Clean Hydrogen Hubs Program and the Hydrogen Production Tax Credit (section 45V). The Department of Energy ("DOE") and the Biden Administration have estimated that the seven Hydrogen Hubs winners alone will collectively provide 334,280 direct jobs and 111,000 permanent jobs.

Additionally, the success of DOE's Regional Clean Hydrogen Hubs will depend on workable, flexible section 45V guidance to drive down the cost of producing hydrogen. Limiting access to the section 45V credit will make the Regional Clean Hydrogen Hubs uneconomical, especially for the four out of the seven selected hydrogen hubs that intend to use natural gas with CCS. American communities are counting on these sizeable investments for local development and to help lead the clean energy economy of tomorrow.

Section 45V implementation and the need for future rulemaking for Renewable Natural Gas

For section 45V to be an impactful tool in placing the U.S. at the forefront of low-carbon hydrogen production and use, it must be implemented effectively and accurately. The potential future hydrogen economy will be driven by investment and investment needs clear, stable, and workable rules. We understand the underlying complexity of this rulemaking and appreciate effort that has been invested in the rulemaking to date. Going forward, we encourage continued effort and stakeholder engagement during the ongoing implementation of section 45V, including, as a recommended next step, a supplemental NRPM.

It is noted that the proposed regulation does not include any rules in the regulatory text addressing low-carbon hydrogen production pathways using renewable natural gas ("RNG"), which is biogas that comes from a variety of sources including landfills, livestock farms, and waste treatment plants. This is in contrast to the regulatory text relating to the production of low-carbon hydrogen using electricity, which contains detailed rules and procedures specifying, among other things, how and when electricity attribute certificates ("EACs") may be used. While the preamble includes language indicating an intent to issue rules for RNG that are "logically similar" to those applicable to electricity, no actual rules are articulated. We also note that the proposed regulations make no mention of an intent to issue a separate NPRM applicable to RNG.

It is strongly recommended that Treasury and IRS do not consider finalizing rules related to RNG without first proposing sufficiently developed and detailed regulatory text. To do so otherwise is inconsistent with the general principles of the Administrative Procedures Act ("APA") requiring that the public have the opportunity to comment on regulations published in proposed form before they are finalized. It is acknowledged that the APA generally exempts interpretive rules (as opposed to legislative) from the notice and comment requirements and tax rules have historically been viewed as interpretive. That said, more recent judicial challenges have questioned the appropriateness of an interpretive characterization. Furthermore, irrespective of whether a tax rule is legislative or interpretive, the Treasury "Policy Statement on the Tax Regulatory Process" dated March 15, 2019, states the following: "The APA generally requires notice and comment for legislative rules. The APA exempts interpretive rules from notice-and-comment requirements. Nonetheless, as a matter of sound regulatory policy, the Treasury Department and the IRS will continue to adhere to their longstanding practice of using the notice-and-comment process for interpretive tax rules published in the Code of Federal Regulations." Specifically, stakeholders cannot engage in a meaningful comment process in the absence of clearly articulated rules, and final rules cannot represent a logical outgrowth from proposed rules, when operative rules are not actually proposed.

Finalizing rules on RNG hydrogen production pathways without first proposing regulatory text places the segment of low-carbon hydrogen producers using those pathways at a distinct disadvantage compared to hydrogen produced with electricity ("electrolytic hydrogen") during this notice and comment period. While electrolytic hydrogen producers have specific rules to consider and respond to during this comment period, CCS-enabled low-carbon hydrogen producers are only able to comment on a nebulous set of assumptions, suggestions and questions presented in the preamble.

The 45VH2-GREET Model

Need for additional foreground data for accurate carbon intensity of CCS-enabled hydrogen

The preamble to the proposed regulations explains that the parameters in the 45VH2-GREET model are fixed assumptions ("background data") and that users may not change background data, which is a diversion from previous versions of GREET. The preamble further asserts that parameters included in background data are those for which inputs from hydrogen producers are unlikely to be independently verifiable given currently available verification mechanisms. The preamble specifically seeks comment on "the readiness of verification mechanisms that could be utilized for certain background data in the 45VH2–GREET model if it were reverted to foreground data in future releases. For example, "[…] the conditions, if any, under which the [upstream] methane loss rate may in future releases become foreground data (such as certificates that verifiably demonstrate different methane loss rates for natural gas feedstocks, sometimes described as responsibly sourced natural gas)."

While we appreciate default values being available in the 45VH2-GREET model, we recommend that background data in the 45VH2-GREET model relating to the life-cycle emissions of CCS-enabled hydrogen, such as methane emissions from natura gas production and pipelines and the underlying factors that determine these, be made available as foreground data for user specified input. Doing so would incentivize producers of low-carbon hydrogen to source low-methane intensity natural gas or use advanced methane detection and mitigation technologies for a taxpayer's gas that could result in a lower carbon intensity

value. Locking those parameters as background data, which the 45VH2-GREET model does, disincentives and prevents the production of CCS-enabled hydrogen using technologies or feedstocks that are significantly less carbon intensive than the relevant background data in the 45VH2-GREET model. Locking these key variables in the 45VH2-GREET model as background data will inaccurately reflect carbon emission intensity, stifle the development of low-carbon hydrogen production facilities, and be detrimental to the goal of reducing overall emissions.

Moreover, restricting parameters to specified averages or other values would significantly limit opportunities to optimize supply chain and facility designs and would delay and limit the growth of the low-carbon hydrogen economy. It will also incentivize the use of less efficient technologies resulting in higher GHG emissions, which is counterproductive to the legislative intent of section 45V.

Therefore, we recommend allowing all background data in the 45VH2-GREET model relating to the life-cycle emissions of CCS-enabled hydrogen to be treated as optional foreground data, so producers can have the opportunity to demonstrate their use of low-carbon-Intensity hydrogen production technologies, power sources, and feedstocks.

There are readily available verification mechanisms for both quantifying and verifying the GHG emissions associated with the natural gas supply chain, with EPA's own required GHG reporting at its core. In general, the available verification mechanisms include an assessment framework which defines the scope and boundary for what is being assessed along with the underlying data needed to perform the assessment. For hydrogen produced from natural gas, also referred to as CCS-enabled hydrogen production, the natural gas supply chain scope is most often defined on a well-to-gate basis, which is consistent with the approach outlined in the 45VH2-GREET model. This scope can include production, gathering and boosting, processing, storage, and/or pipeline and compression, and transmission to the hydrogen plant, which is considered the gate for the natural gas value chain. In order to accurately reflect natural gas supply chain emissions and ensure consistency in reported lifecycle emissions, producers should be required to:

1. Use GHG emissions data reported to and verified by the EPA associated with each segment of the supply chain, from the well to the hydrogen production facility.
2. Allocate GHG emissions across all energy products (crude oil, natural gas liquids and natural gas). EPA GHG emissions data contains aggregate values representing the GHG emissions of all energy products and does not allocate emissions to co-products, so it is important that reported data undergo a process by which emissions are allocated along the natural gas value chain.
3. Apply a consistent, consensus-based approach to calculating methane emissions intensity within each segment of the natural gas supply chain. Allocated emissions information must be converted to a compatible metric for use in the 45VH2-GREET model, such as methane intensity, based on ISO-compliant lifecycle methodologies.

Relevant mechanisms for these three steps include:

- Emissions Data: Data reported under EPA's Greenhouse Gas Reporting Program ("GHGRP") Subpart W
    - The IRA statutorily expanded the mandate for Subpart W, requiring revisions to the program so that reported data could be used for purposes of assessing excess methane emissions under the Methane Emissions Reduction Program. These revisions, which are

ongoing, are statutorily required to enhance granularity of the data and will complement the use of the data for purposes of section 45V.

- Emissions Allocation and Conversion for GREET:
    - Established LCA standards exist and are widely used today for system and products units, such as ISO 14064-3:2019 and ISO 14067:2018.

For clarity, voluntary methane emissions measurement frameworks (e.g., OGMP2.0 and GTI Veritas) and commercial natural gas certification programs (e.g., Equitable Origin, MiQ, Project Canary) are designed to incorporate empirical data into methane emissions inventories and gather additional primary data from ongoing operations, respectively. These voluntary measurement-informed frameworks and commercial natural gas certification programs are in no way meant to replace, undermine, or cast doubt upon the data reported by operators to the EPA under the GHGRP. The data that taxpayers would input into the 45VH2-GREET model as foreground data for calculating the credit value would reflect the data reported to and verified by the EPA for GHGRP, Subpart W. That GHG emissions data would then simply need to be appropriately allocated and converted as described to provide a robust supplier-specific life-cycle assessment for improved emissions accounting.

Overview of EPA GHGRP Emissions Data and its Suitability for Use as Foreground Data in the 45VH2-GREET Model

Under the Clean Air Act, the EPA established the GHGRP in 2009,[2] requiring reporting for a broad inventory of facilities that produce 25,000 or more metric tons Carbon Dioxide Equivalent (CO_2 and other greenhouse gases).[3] Since its inception, the GHGRP has been the primary mechanism for reporting facility-specific GHG emissions in the U.S., and most of the reported GHG emissions information and calculation details are publicly released by EPA. The EPA's GHGRP data is an important source that is used to develop the national GHG Inventory of emissions that is reported to the United Nations Framework Convention on Climate Change.

EPA updates their emission factors and reporting requirements periodically, as new information becomes available (see EPA Emission Factor Hub to view how the factors have changed over time to reflect the current state of science). EPA is currently finalizing the next iteration of the reporting program that will include updated emission factors based on empirical data, updated calculation and measurements methodologies, and revised global warming potentials, particularly for methane emissions.

Reporting requirements for respective industries in the GHGRP are divided into 41 Subparts, however, the petroleum and natural gas industry reporting requirements are covered under Subpart W, which includes emission sources in 10 industry segments,[4] and Subpart C for combustion sources. Subpart C and Subpart W reporters calculate their GHG emissions using specific methodologies required by EPA.[5] Reporters must

[2] 74 Fed. Reg. 56260 https://www.federalregister.gov/documents/2009/10/30/E9-23315/mandatory-reporting-of-greenhouse-gases

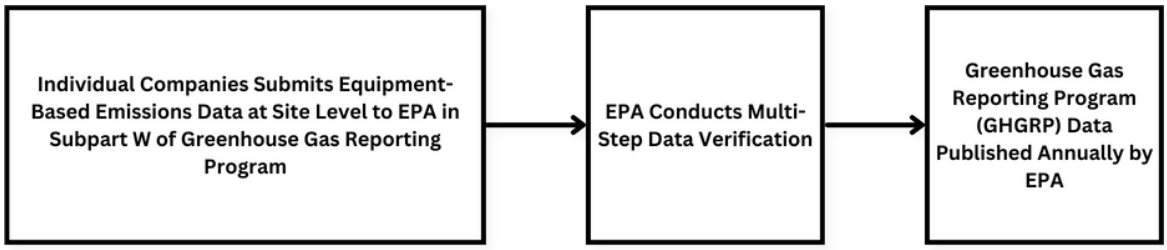
[3] US EPA, Learn about the GHGRP, Reporting https://www.epa.gov/ghgreporting/learn-about-greenhouse-gas-reporting-program-ghgrp

[4] Industry Segments: Onshore Petroleum and Natural Gas Production, Offshore Petroleum and Natural Gas Production, Onshore Petroleum and Natural Gas Gathering and Boosting, Onshore Natural Gas Processing, Onshore Natural Gas Transmission Compression, Onshore Natural Gas Transmission Pipelines, Underground Natural Gas Storage, Liquefied Natural Gas (LNG) Storage, LNG Import and Export Terminals, Natural Gas Distribution. https://www.epa.gov/system/files/documents/2023-10/subpart_w_2022_sector_profile.pdf

[5] US EPA, GHGRP Methodology https://www.epa.gov/sites/default/files/2017-12/documents/ghgrp_methodology_factsheet.pdf

submit their emissions data to EPA's Electronic Greenhouse Gas Reporting Tool (E-GGRT) reporting system annually by March 31, and reported data from the previous reporting year is publicly released around October and can be accessed via EPA's Data Summary portal.

The below flowchart depicts the data submission, verification, and publication process:



EPA protocols in a multi-step process within the E-GGRT reporting system ensure that the data submitted to the GHGRP is accurate, complete, and consistent. EPA describes the pre-submittal process as similar to how, "tax reporting software flags potential issues before the data are [sic] submitted to the government to reduce the chances of an audit, these checks help reduce the chance that there will be errors in the submitted data that would require EPA to follow up with the facility."[6] During this pre-submittal phase, automated checks provide reporters with real-time feedback on potential errors that must be resolved and certified before submission.

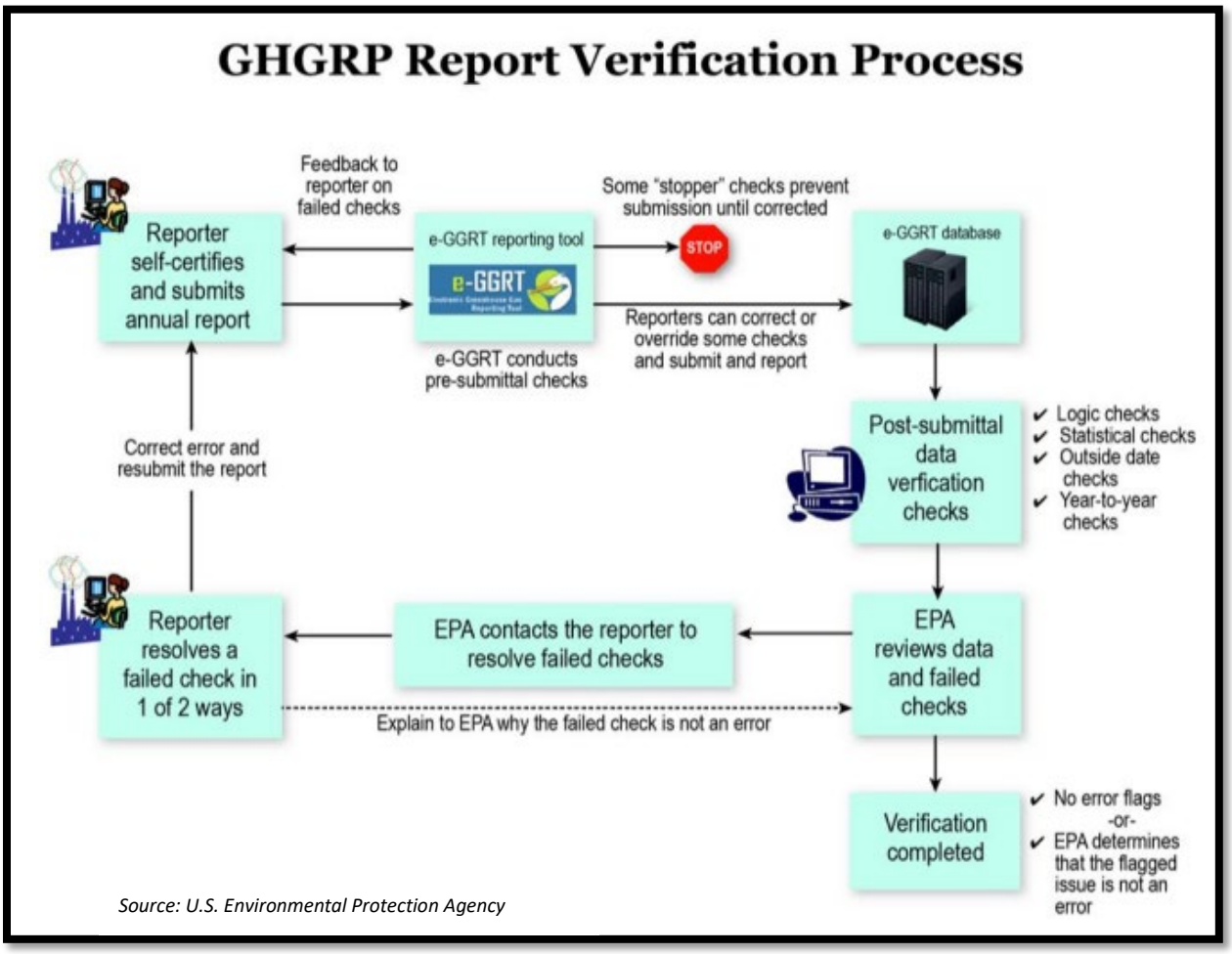
After a report is submitted, it is evaluated through several additional electronic checks that provide alerts for potential errors. EPA manually reviews potential errors and follows up with reporters by requesting corrections and setting re-submission requirements. Examples of data checks that EPA conducts to verify post-submission reports include:

- Range checks to determine if a respondent's data are within the expected range. For example, the number of annual operating hours would be expected to fall between 0 and 8,784. Values outside of that range would be flagged.
- Statistical checks to evaluate the data from all similar facilities and identify data that might be outliers.
- Algorithm checks to evaluate the relationships between different pieces of entered information and compare them to an expected value. For example, does quarterly data add up to the annual total?
- Outside data checks to compare facility level details to other datasets not in the GHGRP. For example, data that facilities reported to the Department of Energy. Year-to-year checks are used to determine if variations occur in the same reported data element between reporting years.

EPA requires GHGRP reporters to maintain records documenting how the data provided in their annual reports was developed. These records include a monitoring plan describing where and when samples were collected, methods used to analyze samples, and the procedures used for quality assurance and quality control. These records must be kept for at least three years following the respective reporting

[6] US EPA, GHGRP Verification https://www.epa.gov/sites/default/files/2017-12/documents/ghgrp_verification_factsheet.pdf

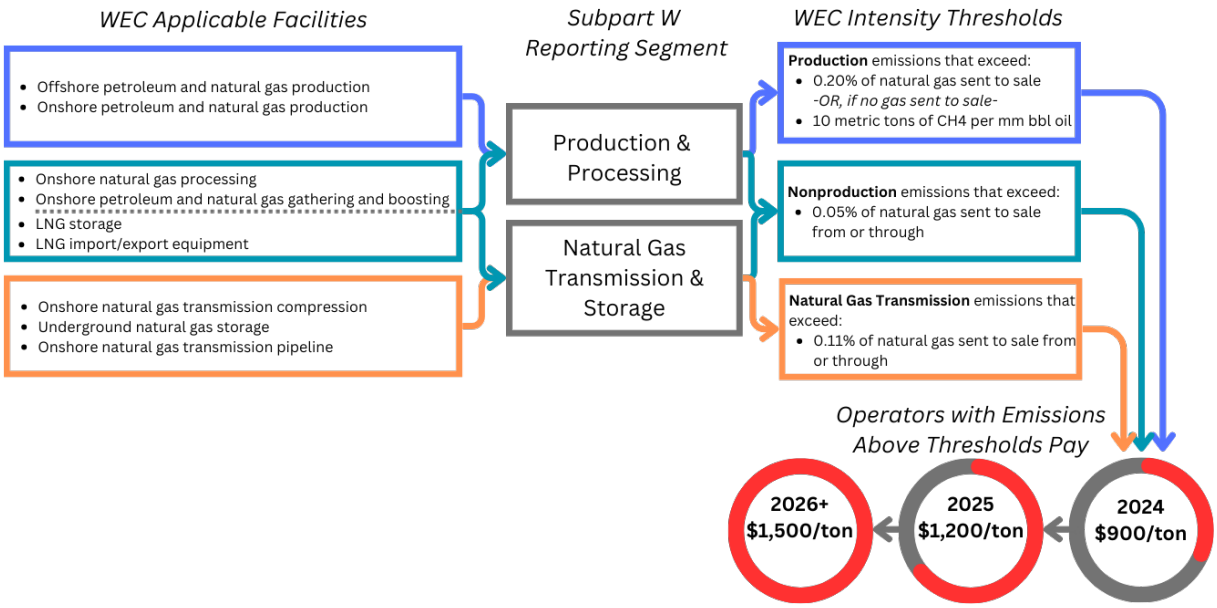
period in a format that is readily available for inspection and review.[7] The following figure provides a visual of EPA's GHGRP verification process:



Beyond changes in upcoming data reporting, there are regulatory actions actively underway, particularly by EPA, that are expected to reduce methane emissions significantly from the natural gas value chain in the U.S. Such reductions may lead to value chain specific performance that is better than the 45V GREET default assumptions. These changes, including the "Methane Emissions and Waste Reduction Incentive Program for Petroleum and Natural Gas Systems" and changes to New Source Performance Standards ("NSPS") are summarized in the next few paragraphs.

On methane loss reductions in particular, section 60113 of the IRA created the "Methane Emissions and Waste Reduction Incentive Program for Petroleum and Natural Gas Systems" by adding Section 136 to the Clean Air Act ("CAA"). CAA Section 136(c) directs the EPA to impose and collect a Waste Emissions Charge ("WEC").[8] Beginning in 2025 the WEC will apply to methane emissions from applicable facilities reported to Subpart W in 2024 over statutory intensity thresholds per CAA 136(f) as depicted below:

[7] 79 Fed. Reg. 63750 https://www.federalregister.gov/documents/2014/10/24/2014-23780/revisions-to-reporting-and-recordkeeping-requirements-and-confidentiality-determinations-under-the
[8] https://www.epa.gov/inflation-reduction-act/waste-emissions-charge



EPA projects the WEC will result in emissions reductions of 960 thousand metric tons of methane from 2024 to 2035.[9]

Separately but concurrently, EPA is finalizing a rule[10] for new and existing sources of methane in the upstream and midstream segments (onshore petroleum and natural gas production, natural gas processing, gathering, and boosting, and transmission and storage) that will drive further significant reductions in methane emissions from the oil and natural gas industry. EPA projects this rule will, "avoid an estimated 58 million tons of methane emissions from 2024 to 2038."[11]

Both EPA rulemakings include compliance mechanisms. For the WEC, annual emissions would continue to be verified by EPA, through the aforementioned GHGRP. Once finalized, the rules will be the most stringent methane emissions reporting requirements anywhere in the world. The reported data will serve as the basis for the WEC. It should be noted that the WEC was introduced in the IRA as part of the legislation's sweeping climate related provisions alongside the clean energy tax credits, including section 45V. It would therefore be logically and statutorily consistent for this same data to be used as the basis for compliance with the WEC as well as for the section 45V tax credit.

Allocation and conversion of GHG emissions data

As mentioned previously, in order to input data into the 45VH2-GREET model, the GHG emissions data reported under EPA's GHGRP must be allocated across co-products and converted to a GHG emissions intensity. The allocation of emissions data and the conversion to emissions intensity should be accomplished using consensus-based standards. For product lifecycle carbon intensity, established ISO Standards (e.g. ISO14067) are widely used today. In addition, industry-specific standards and guidance, Including the API Guidance Document for GHG Reporting, the Natural Gas Sustainability Initiative ("NGSI") methane intensity protocol, or the Our Nation's Energy ("ONE") Future methane intensity protocol all

[9] https://www.epa.gov/system/files/documents/2024-01/wec_ria.pdf
[10] https://www.epa.gov/controlling-air-pollution-oil-and-natural-gas-operations/epas-final-rule-oil-and-natural-gas
[11] https://www.epa.gov/system/files/documents/2023-12/key-things-to-know-about-epas-final-rule-for-oil-and-natural-gas-operations.fact-sheet.pdf

drive consistency of approaches across producers for the producer's individual GHG intensity of feedstock supply. Notably, these API, NGSI, and ONE Future guidance and protocols employ the EPA's GHGRP data in service of calculating natural gas methane intensity. For energy products associated with the production of oil and gas, it is most appropriate to use the energy allocation methodology for the specific natural gas supply chains (production, gathering, boosting, processing, transmission and storage) for input into the 45VH2-GREET model.

The 45VH2-GREET model can then calculate a facility- and/or producer-specific CO2e value using EPA-verified GHGRP emissions data for the section 45V tax credit qualification. This value will be accurate, could potentially award a higher credit value for producers that invest in technologies or feedstocks that are less carbon intense, and incentivize continual reductions in carbon intensity across the low-carbon hydrogen value chain, all while using data from an EPA-verified program, which the President of the Environmental Defense Fund referred to as the most protective in the world.[12]

Therefore, it is recommended that parameters for natural gas feedstocks be unlocked, and taxpayers are permitted to enter verifiable inputs as foreground data using the approach outlined above. Under this recommendation, if information is reported to the EPA for purposes of the GHGRP and Subpart W, such information should be acceptable as verifiable for purposes of the 45VH2-GREET model. Additional third-party verification should not be mandated for regulatory reporting.

Other supplemental emissions verification options

Additional frameworks for the verification of GHG emissions associated with natural gas have been developed by various entities. These could also serve as voluntary supplemental emissions verification options for taxpayers for 45V. These Include voluntary commercial natural gas certification programs (e.g., Equitable Origin, MiQ, Project Canary). As stated previously, however, these voluntary measurement-informed frameworks and commercial natural gas certification programs are in no way meant to replace, undermine, or cast doubt upon the data reported by operators to the EPA under the GHGRP.

Certified or responsibly sourced natural gas, also known as "certified natural gas", is also used to describe natural gas production that has undergone third-party certification of its performance against certain environmental, social, and governance metrics, with a heavy emphasis on having lower methane emissions. The U.S. government has not coalesced around a single verification standard for certified or responsibly sourced natural gas and the DOE decided in 2023 not to pursue development of a national standard at this time. If this were ever to change, provisions included in a supplemental rulemaking to address issues specific to the use of RNG should provide producers the option to input GHG emission data verified by accepted third-party verifiers using a standard or set of standards approved by U.S. government.

Steam co-products

As described in the 45VH2-GREET user manual, the model sets the steam co-products value to zero if the CO_2 produced from the reformer is captured and sequestered. The user manual explains that previous modeling indicates that in these cases the excess steam is used to power the carbon capture process

[12] https://www.epa.gov/newsreleases/biden-harris-administration-finalizes-standards-slash-methane-pollution-combat-climate

rather than being valorized. The user manual goes on to note that while pathways that incorporate both carbon capture and steam valorization cannot currently be evaluated using the 45VH2-GREET model, this assumption may be re-evaluated in future versions of the model.

There are, however, existing hydrogen production pathways using carbon capture where there is excess steam. Specifically, cryogenic CO_2 capture processes have higher overall efficiency and negligible steam requirements when compared to amine-based processes. Because the cryogenic system is powered via low carbon intensity electricity, it does not require the large amount of steam that an amine-based system requires. Amine absorption has been the primary method of separating CO_2 from gas mixtures for more than 40 years, but technology development with cryogenic processes have resulted in more efficient and effective CO_2 capture. Thus, an updated 45VH2-GREET model should allow a hydrogen producer with a more efficient carbon capture technology to take credit for excess steam created during the production process because its carbon capture technology is more efficient. This excess steam can be used to replace higher CI energy sources in other parts of an energy complex (non-hydrogen operation). Hydrogen producers should be able to enter non-zero values for valorized steam co-product when more efficient CCS pathways are employed.

Successor Models

Taxpayers that produce hydrogen from a qualified facility are generally entitled to claim tax credits under section 45V for a 10-year period that begins on the date that the facility is placed in service. The proposed regulations require taxpayers (including taxpayers that have already placed in service a qualifying hydrogen facility) to calculate the amount of section 45V tax credits generated in a given tax year by using the "most recent GREET model" to determine the lifecycle GHG emissions rate.

We note that the development of a hydrogen facility is a multi-year process and requires significant capital. Taxpayers may not invest in the development of hydrogen facilities unless they are confident that future versions of the GREET model will not limit or prevent a hydrogen facility from qualifying for tax credits under section 45V. If the rule in the proposed regulations requiring taxpayers to use the "most recent GREET model" is finalized in its current form, there will be risk that a production facility that qualifies to generate tax credits in the year it is placed in service will fail to qualify, or qualify for a lower credit, in a future year solely as a result of an updated GREET model. We note that as proposed, this language is punitive and will likely prevent taxpayers from having the certainty needed when evaluating whether to invest in the construction of clean hydrogen facilities.

Therefore, API recommends that taxpayers are provided the option to use the GREET model in place at the time the investment decision is made or, at the latest, at the time that the facility is placed in service and use that version of the model for the duration of the credit period. Specifically, it is recommended that final guidance allow taxpayers to make a one-time irrevocable election to lock in a version of the 45VH2-GREET model that is available as early as after completion of a front-end engineering and design ("FEED") study or similar indication of project maturity, such as project specification and cost estimation sufficient to inform a final investment decision has been completed for the hydrogen production facility, or as late as the placed in service date of the facility. If the "lock-in" election is made, the taxpayer may use that version of the 45VH2-GREET model for the entire 10-year credit period. API recommends that a "lock-in" election can be made no later than the year the facility is placed in service. The taxpayer may elect out of the "lock-in" election and use the most recent GREET model at any time during the 10-year

credit period. We note that once the taxpayer has elected out of the "lock in" there should be no ability to "lock-in" into a successor model or toggle back to the previously locked in model.

Indirect Book Accounting/Book and Claim

The three pillars – electricity

API opposes restrictions on the use of electricity attribute certificates ("EAC") by electrolytic hydrogen producers to meet section 45V carbon intensity thresholds. We acknowledge the risk identified by the DOE[13] that additional load associated with new electrolytic hydrogen production will lead to induced GHG emissions unless EACs used by producers have attributes that meet the incremental generation, geographic matching, and temporal matching restrictions. However, the scope and scale of potential induced emissions remains unproven while the potential impact of the restrictions is a very real and immediate threat to electrolytic hydrogen production, especially as the nascent clean hydrogen economy in the U.S. begins to scale. However, should Treasury seek to restrict the use of EACs in the final rule, API offers the following recommendations.

The proposed regulations provide that in order for an EAC to be qualified for use in determining GHG emissions for purposes of sections, such EACs must adhere to the so-called "three pillars," (i) incrementality; (ii) temporal matching, and (iii) deliverability.

Additionality/incrementality

The proposed regulations provide that an EAC meets the incrementality requirement if the electricity generating facility that produced the unit of electricity to which the EAC relates has a commercial operation date ("COD") that is no more than 36 months before the hydrogen production facility for which the EAC is used was placed in service.

It is recommended that final regulations provide a transition rule under which this requirement will start to apply to hydrogen facilities placed in service after 2031. API acknowledges that, currently, there is insufficient pipeline of renewable energy facilities to meet this requirement. In addition, facility interconnection can take up to five years, which will create a timing and planning mismatch.

It is also recommended that there is an ability for an existing fossil fuel electricity-generating facility that installs CCS to meet the incremental generation criteria if COD is within the 36 months of clean hydrogen production facility start-up. Consistent with the December 2023 DOE White Paper,[14] the intent of incremental power generation is to provide new low-emissions power, which is enabled through such CCS retrofits that prevent induced grid emissions. CCS retrofits clearly maintain dispatchable generation on the grid by extending the life of existing thermal generators (and creating new low-emissions dispatchable generation). This low-emissions retrofit should be recognized for a period consistent with the section 45V production credit.

[13] See DOE publication "Assessing Lifecycle Greenhouse Gas Emissions Associated with Electricity Use for the Section 45V Clean Hydrogen Production Tax Credit"

[14] Assessing Lifecycle Greenhouse Gas Emissions Associated with Electricity Use for the Section 45V Clean Hydrogen Production Tax Credit 508_EDITED (energy.gov)

Lastly, we support the concept of five-to-ten percent for installed renewables capacity to be treated as incremental to account for curtailments of existing renewables. The agencies acknowledge that periods of curtailment or zero/negative pricing present scenarios where there would be limited to no induced grid emissions. As a result, it is appropriate to account for this in any final rule.

Temporal matching

Under temporal matching the proposed regulations would provide a general rule that an EAC satisfies the temporal matching requirement if the electricity represented by the EAC is generated in the same hour that the taxpayer's hydrogen production facility uses electricity to produce hydrogen. The proposed regulations further provide that annual matching is allowed through 2027, and the hourly matching requirement will start in 2028.

It is recommended that annual matching is permitted until 2032, at which time monthly matching will be required. It is further recommended that projects that "begin construction" (under generally applicable tax credit begin construction rules) prior to 2032 are permitted to use annual matching for hydrogen production for the entire 10-year credit period. API notes that there will not be hourly matching capabilities by 2028, either in terms of tracking or battery capacity.

Regionality/deliverability

The proposed regulations would provide that an EAC meets the deliverability requirements if the electricity represented by the EAC is generated by a source that is in the same region as the relevant hydrogen production facility. The proposed regulations would define region according to a 2023 DOE Needs Study. API recommends that hydrogen projects that demonstrate physical connectivity should meet the deliverability requirement. Additionally, API recommends that regions be defined based on ISO regions. The deliverability rule should follow existing regional tracking systems to the extent possible (e.g., WECC/WREGIS). For example, WREGIS is set up with regional transfer/trading of renewable energy certificates ("RECs") in mind (Wyoming wind can qualify for CA RPS requirements). If the tracking systems will not be used, then we recommend a transition rule until 2032 to enable projects that have commercial agreements in place to utilize electricity outside of the proposed regions.

Book-and-claim should apply to all natural gas, not just RNG

Background – RNG

RNG is the term used for upgraded biogas used as a replacement for fossil natural gas, which comes from a variety of sources including landfills, livestock farms, and waste treatment plants. As RNG provides a very low carbon intensity feedstock for clean hydrogen production, all feedstock types should be permitted for section 45V consistent with the original intent of the legislative text.

Hydrogen producers using RNG as feedstock would use the common carrier pipeline network for supply as RNG plants are not co-located with hydrogen production. The "book-and-claim" system is the industry standard for indirect accounting process in place to bridge the environmental attributes related to the RNG to the hydrogen being produced, enabling the economic development of emissions abatement in the agriculture sector that is often far from demand centers and has few alternatives to decarbonize.

It is important to note that book-and-claim should be allowed for *all* natural gas, including RNG. By allowing the use of EACs, Treasury and IRS have clearly and correctly determined that indirect book accounting for environmental attributes of production inputs is consistent with legislative intent, current GHG emissions calculation methodologies, and the practical considerations with producing clean hydrogen. Moreover, as explained in more detail below, book-and-claim is widely used and accepted (including by Federal government agencies).

EPA's Renewable Fuel Standard ("RFS") and California's Low Carbon Fuel Standard ("LCFS")

The preamble to the proposed regulations notes that future rules will require that for purposes of the section 45V credit hydrogen producers use RNG or fugitive methane to acquire and retire corresponding attribute certificates through a book-and-claim system that can be verified in an electronic tracking system. Hydrogen producers would also be required to have a pipeline interconnection and measurement using a revenue grade meter. The preamble goes on to describe that in all cases, attribute certificates would need to document the RNG or fugitive methane procurement. Finally, the preamble requests comments on, among other related matters, how broadly available and reliable are existing electronic tracking systems for RNG certificates in book-and-claim systems and what developments may be required, if any, before such systems are appropriate for use with RNG certificates used to claim the section 45V credit.

It is various API members' experience that RNG attributes tracked through book-and-claim accounting can be readily verified based on contracts, user attestations, and data. Furthermore, book-and-claim accounting is currently used to support clean fuel production by, for instance, the EPA to verify compliance with the RFS and the California Air Resource Board ("CARB") in connection with the LCFS.

Taxpayers should be allowed to use existing policies that are heavily audited and scrutinized through regulatory agencies (such as EPA and CARB) to substantiate the carbon intensity of the RNG used for hydrogen production. Treasury should not seek to develop a separate administratively burdensome process/requirement that would be inconsistent with the regulations and policies currently in place under the EPA and CARB or other state regulatory agencies. The hydrogen regulations should allow book-and-claim accounting for RNG without additional restrictions for the following reasons:

- The "book-and-claim" system in both the RFS and LCFS programs has robust substantiation through commercial agreements, attestations, and routine reconciliations, which are audited on an annual basis. These programs require approved third-party verifiers to confirm the validity of the attestations.
- Renewable Identification Numbers ("RINs") are closely tracked in the EPA Moderated Transaction System ("EMTS") and LCFS credits in the LCFS Reporting Tool and Credit Bank & Transfer System ("LRT-CBTS").
- The Q-RIN Quality Assurance Plans ("QAP") under the RFS Program is a voluntary program where third-parties audit and verify that RINs have been properly generated and are valid for compliance purposes. The RFS QAP is an established industry standard for RNG that uses the chain of custody to substantiate RNG production and distribution. Protocols to implement third-party QAP programs are approved by EPA staff and must meet program criteria to be allowed.

Tracking systems

There are various national tracking systems (e.g., M-RETS), but these registries are all private and limited. Registries require significant resources and extended deployment time, which would limit or unduly delay the hydrogen industry. Regulators and industry participants have not prioritized the build out of a registry because existing systems are working effectively to date. In lieu of a national registry, the existing policies and procedures under EPA and CARB will provide adequate support for the use of RNG for hydrogen production.

The three pillars and RNG

The preamble to the proposed regulations indicates that future rules relating to the use of certificates for RNG and fugitive methane, would be logically consistent with but not identical to the incrementality, temporal matching, and deliverability requirements for electricity derived EACs.

Natural gas markets are different from electricity markets by nature of the national, interstate common carrier pipeline value chain. The interstate pipeline system enables injected amounts of natural gas and the attributes thereof to be accounted for and tied to equivalent amounts that can be dispensed elsewhere in the network carrying associated environmental attributes with assurance. Therefore, the restrictions under the three pillars for electricity are not relevant for RNG and should not be applied for the following reasons:

- Additionality/incrementality (first productive use): The preamble to the proposed regulations state that the IRS anticipates requiring that biogas or biogas-based RNG receive an emissions value consistent with that gas (and not standard natural gas), and that the RNG used during the hydrogen production process must originate from the first productive use. This requirement would cause a significant value discrepancy for new projects creating a market distortion, greater risk of stranded gas for existing projects, added complexity, and higher prices for end-consumers.

- Temporal matching: Time-matching does not apply to the book-and-claim delivery of natural gas or RNG, given that gases do not have to be used at the same time as they are produced. Natural gas and RNG can be stored along with the environmental attributes, over long periods of time.

- Regionality/deliverability: Diverse sources of RNG are unevenly distributed around the U.S. and may not be located near prospective hydrogen projects. Fortunately, RNG can easily be blended into the existing natural gas pipeline network which is a highly integrated network that moves natural gas throughout the continental U.S. The act of injecting RNG into a pipeline system demonstrates deliverability, as established under EPA's RFS and California's LCFS. Additionally, API recommends no requirements be made for direct-use, or direct-connection of RNG, so long as the RNG is injected into the gas pipeline system. A direct-use requirement would needlessly require significantly more pipelines rather than using the existing pipeline network available.

Provisional Emissions Rates

The proposed regulations describe the process for obtaining a PER. The PER process is not available unless a lifecycle GHG emissions rate has not been determined under the most recent GREET model. The proposed regulations further provide a taxpayer may not use the PER process if its feedstock and hydrogen production technology are represented in the 45VH2–GREET model, even if the taxpayer disagrees with the underlying assumptions (background data) or calculation approach used by the most recent 45VH2–GREET model. In addition, the proposed regulations state that a taxpayer is allowed to use a PER it has obtained until such time as a successor GREET model can be used to determine lifecycle GHG emissions.

The first step in the proposed PER process is making a request to the DOE for an emissions value of the taxpayer's production process. Taxpayers may begin making these requests to DOE on April 1, 2024, and that guidance and procedures for applicants to request and obtain an emissions value from the DOE will be published by the DOE. The proposed regulations also note that background data parameters in the 45VH2–GREET model will be treated as background data (with fixed values that an applicant cannot change) in the emissions value request process.

Similar to the recommendations relating to successor GREET models, it is recommended that final regulations allow taxpayers to make a "lock-in" election for a PER it has obtained, so that taxpayers may use a PER for the duration of the 10-year credit period. This should be permitted even in the case a successor GREET model does include feedstocks or production technologies omitted in previous models. Similar to the recommended "lock-in" election for GREET models, a taxpayer should be allowed to elect out of its "lock-in." We note that a taxpayer should not have the ability to "lock-in" the previous PER.

In addition, it is recommended that data that is treated as background data for purposes of the 45VH2-GREET model is not in all cases treated as background data in the evaluation of an emissions value request. For that data to be fixed in all cases would seem to run counter to the intended flexibility afforded by the availability of a PER in the first place.

It is also recommended that the PER process is available more broadly and not limited only to taxpayers with feedstocks or technologies not included in the most recent GREET model. Specifically, if a taxpayer has independently calculated lifecycle GHG emissions, for instance by using GHGRP emissions data, and the emissions value determined from such calculation differs from what is produced by the most recent GREET model by a significant amount, in such case the taxpayer should be permitted to pursue a PER. In these cases, taxpayers would have to present its calculation to DOE as part of its emissions value request. However, as previously noted, if certain background data is moved to the foreground in successor GREET models, the demand for PERs for scenarios like this would significantly decrease.

Generally, it is requested that stakeholders have the opportunity to comment and provide input when guidance is issued by the DOE relating to the procedures for making requests.

Third Party Verification

Administrative burden

The proposed regulations described various rules and procedures related to the third-party verification requirement in section 45V(c)(2)(B)(ii). In general, these proposed rules include requirements that amounts produced and used or sold are verified each year and that the credit cannot be claimed prior to the completion of such verification.

It is requested that final rules incorporate some modifications aimed at streamlining the third-party verification process. Streamlined processes are encouraged here because the verification rules as proposed appear to require procedures that may be cumbersome and, in many cases, duplicative and may require taxpayers to file amended returns to claim the section 45V credit for the entire 10-year credit period. For instance, it is requested that in situations where the clean hydrogen production process is unchanged from a year in which a third-party verification of the process was previously completed, that an additional verification of the identical process is unnecessary. In these cases, the taxpayer can provide an attestation or other form of assurance certifying that there has been no change to the production process.

Similarly, it is recommended that if clean hydrogen is sold pursuant to contractual offtake arrangements that have been previously verified, then additional subsequent review of such sales is unnecessary.

Interaction with monetization

As previously noted, the proposed regulations would require the third-party verification to be completed prior to when a taxpayer claims a section 45V credit on a tax return and in many cases that verification may not occur until after the extended return filing deadline for the taxable year in which the hydrogen was produced, requiring the credit to be claimed on an amended return. However, if the verification process may require many taxpayers to claim the credit on amended returns or Administrative Adjustment Requests ("AARs"), that potentially conflicts with the timing rules for making an election under section 6417 for direct pay or section 6418 for transferability. Specifically, sections 6417(d)(4)(B) and 6418(3) require the elections to be made on originally filed returns. Furthermore, the pre-registration process for both section 6417 and 6418 require taxpayers to be able to register the credit for which elections under either section 6417 or 6418 will be made in advance of making the election and in order to pre-register the taxpayer must be able to provide the amount of credit for which an election is being made. In the pre-registration User Guide provided Publication 5884, it is recommended that taxpayers complete their pre-registration at least 120 days prior to when the taxpayer plans to file its tax return.

If the third-party verification rules are finalized as proposed, it may preclude taxpayers from making an election under section 6417 or section 6418, which would clearly frustrate the intent of making those elections available to section 45V in the first place. Therefore, API recommends that the process be streamlined as described above or in any other practicable ways so that in no event will a taxpayer be in a position where the credit has to be claimed on an amended return or AAR and foreclosed from making a section 6417 or section 6418 election solely because of the mechanics of the third-party verification requirement.

Anti-abuse rule

The proposed rules provide an anti-abuse rule in section 1.45V–2(b)(1) under which the section 45V credit is not allowed when, based on a consideration of all the relevant facts and circumstances, the primary purpose of the production and sale or use of qualified clean hydrogen is to obtain the benefit of the section 45V credit in a manner that is wasteful, such as the production of qualified clean hydrogen that the taxpayer knows or has reason to know will be vented, flared, or used to produce hydrogen.

It is recommended that final rules clarify the application of this rule to certain fact patterns and how the third-party verifications of production and sale or use interacts with the facts and circumstances determination applicable to the anti-abuse rule.

Suggested clarifications include lists of specific factors to use to identify abuse and/or de minimis rules for certain situations. For instance, there are clean hydrogen production processes that feed some of the hydrogen that is produced back into the system, with those amounts being small in comparison to overall production. These situations should not run afoul on the anti-abuse rule as long as the hydrogen fed back into the system is equal to or less than a certain percentage of the amount produced; API proposes seven percent. From a policy and practical perspective, it is not abusive to allow the of use some hydrogen to produce more clean hydrogen, rather than rely on additional fossil-based power or other GHG emitting inputs and processes.

Finally, clarity is sought on whether third party-verifiers are empowered to make facts and circumstances determinations relating to the anti-abuse rule.

The 80/20 Rule

Section 45V(d)(4) provides that in the case of any facility which was originally placed in service before January 1, 2023, and did not produce qualified clean hydrogen, but is later modified to produce qualified clean hydrogen, then such facility will be treated as originally placed in service as of the date the modification is complete, as long as the modification costs are capitalizable. The proposed regulations impose the application of the "80/20" rule to the modification described in section 45V(d)(4) and state that the 80/20 rule applies to "any existing facility, regardless of whether the facility previously produced qualified clean hydrogen."

Examples provided in the proposed regulations further describe fact patterns where the facility that is modified included carbon capture equipment for which a section 45Q credit was claimed. The examples generally provide that satisfying the 80/20 rule with respect to the modified facility does not, however, cleanse the facility of its previous section 45Q credit claim, and therefore a section 45V credit is not available.

It is recommended that final regulations provide some clarifications to the application of the 80/20 rule. First, it is unclear what is included in the definition of "any existing facility" and whether the 80/20 rules apply only to existing hydrogen producing facilities. It is suggested that existing facilities to which the 80/20 rule applies are only those for which the primary purpose is the production of hydrogen. It is further suggested that final rules provide that for purposes of the 80/20 rule, the unit of property to which it applies, and therefore the unit for which any used property's value would need to be determined, is a

single production line as defined in section 1.45V-1(a)(7)(i). This is consistent with the application of the 80/20 rule in other contexts, e.g. its application to the wind facility (the turbine, tower, pad) for section 45 under Rev. Rul. 91-34 and its application to a single process train for purposes of section 45Q.

Second, it is recommended that the interaction between the 80/20 rule and section 45Q is more clearly explained. The examples suggest that a modification will not cleanse a previously claimed section 45Q credit. However, clarification is sought on whether that is still the case if the unit of carbon capture equipment is modified such that it satisfies the 80/20 rule provided in section 1.45Q-2(g)(5)?

Conclusion

API strongly believes in the broad decarbonization potential for low-carbon hydrogen and stresses the importance of the section 45V credit to meeting this potential. To that end, it is critical that the section 45V implementation process is inclusive of all pathways and technologies that can meet the tax credit's 4 kg CO2e/kg H2 threshold. The process must also recognize the oil and gas industry's vast and continual investments in reducing emissions across the value chain. The oil and gas industry is already a major hydrogen producer and could be a critical in jumpstarting the low-carbon hydrogen economy by supplying the country with energy that can be produced in large quantities at all times of the day, with high efficiency, at low cost, and with very low emissions.

We appreciate the opportunity to comment and look forward to continued interaction as this process moves forward. To the extent you have any questions, please do not hesitate to contact me at colgana@api.org or 202-682-8044.

Sincerely,

Aindriu Colgan
Director, Tax and Trade Policy

Appendix A

Although there is not currently a sufficient electronic tracking system in place today for RNG certificates, there is a "book-and-claim" system under the RFS and LCFS programs that should be followed. In the "book-and-claim" system, the environmental attributes are carried forward through the end use and substantiated through various commercial agreements, attestations, and routine reconciliations.

In the preamble of the proposed 45V regulations, Treasury states that "existing tracking and verification systems have limited capabilities for tracking and verifying RNG pathways, especially in the part of the production process before the methane has been reformed to RNG." Table 1 details the RFS and LCFS program requirements, along with the industry standards for substantiation and third-party verification, that would substantiate the production process before the methane has been reformed to RNG. Note that the EPA has RNG to hydrogen pathways under consideration. These existing processes should be leveraged for the use of RNG for hydrogen production.

Table 1: Clarification on Existing Tracking and Verification Processes for Renewable Natural Gas (RNG)

List of Issues Listed by Treasury in the Preamble of the Proposed Regulations	EPA RFS Quality Assurance Plan (QAP) Requirements	CARB LCFS Requirements	Industry Substantiation & 3rd Party Verification Examples	Sources
Clearly distinguish between inputs	The EPA must approve Quality Assurance Plans (QAPs) must verify the feedstocks used to generate the fuel in the EPA Moderated Transaction System (EMTS) quarterly. The QAP verifies that the feedstock used to produce renewable fuel is not a renewable fuel from which RINs were already generated. The EPA also reviews and approves all auditor protocols. The detailed list of requirements is per 40 CFR 80.1469(a)(1): "Feedstock-related components. (i) Components requiring ongoing monitoring:	LCFS Pathway holders must provide chain of custody evidence and feedstock transfer documents in accordance with Section 95488.8 "g.1.A-C." Transactions are verified via quarterly reporting and annual verification audits of all inputs using the LRT-CBTS according to section 95491 "Fuel Transactions and Compliance Reporting."	• Mandatory 3rd Party Engineering Reviews renewed on a 3-year cycle • EPA Completed Pathway Assessments • LCFS Certified CI Pathways • Related 3rd party audits and annual attestation • Market convention mandates Q-RIN qualification for commercial contracts for the buying of RNG environmental attributes	EPA 40 CFR Part 80 RFS Renewable Identification Number (RIN) Quality Assurance Program (QAP) Final Rule: 2014-16487.pdf (govinfo.gov) https://www.ecfr.gov/current/title-40/part-80/section-80.1469#p-80.1469(a)(1) Section 95488.8 "Fuel Pathway Application Requirements Applying to All Classifications" View Document - California Code of

Appendix A

List of Issues Listed by Treasury in the Preamble of the Proposed Regulations	EPA RFS Quality Assurance Plan (QAP) Requirements	CARB LCFS Requirements	Industry Substantiation & 3rd Party Verification Examples	Sources
	(A) Feedstocks are renewable biomass. (B) Feedstocks are being separated according to a separation plan, if applicable under § 80.1426(f)(5)(ii). (C) Crop and crop residue feedstocks meet land use restrictions, or alternatively the aggregate compliance provisions of § 80.1454(g). (D) If applicable, verify that feedstocks with additional recordkeeping requirements meet requirements of § 80.1454(d). (E) Feedstocks are valid for the D code being used, and are consistent with information recorded in EMTS. (F) Feedstock is consistent with production process and D code being used from the approved pathway. (G) Feedstock is not renewable fuel for which RINs were previously generated. (ii) Components requiring quarterly monitoring: (A) Separated food waste or separated yard waste plan is			Regulations (westlaw.com) Section 95491 "Fuel Transactions and Compliance Reporting"

Appendix A

List of Issues Listed by Treasury in the Preamble of the Proposed Regulations	EPA RFS Quality Assurance Plan (QAP) Requirements	CARB LCFS Requirements	Industry Substantiation & 3rd Party Verification Examples	Sources
	accepted and up to date, if applicable under § 80.1426(f)(5)(ii). (B) Separated municipal solid waste plan is approved and up to date, if applicable under § 80.1426(f)(5)(ii). (C) Contracts or agreements for feedstock acquisition are sufficient for facility production. (D) Feedstock processing and storage equipment are sufficient and are consistent with the most recent engineering review under § 80.1450(b)(2). (E) If applicable, accuracy of feedstock energy FE calculation factors related to feedstocks, including average moisture content m and feedstock energy content E."			
Verify/require verification of underlying practices claimed by RNG production sources	The EPA's QAPs require monitoring of production process related components in EMTS per 40 CFR 80.1469(a)(2): "(2) Production process-related components (i) Components requiring ongoing monitoring:	LCFS pathway application process requires demonstrating the underlying practices to CARB staff and a verification body prior to certification. LCFS pathway holders must complete an annual Fuel Pathway Report which is verified by a 3rd party annual	• 3rd Party Audit / Verification • Utility Bills tracking energy consumption • Metering of process inputs • LCFS and RFS Pathway application processes	EPA 40 CFR Part 80 RFS Renewable Identification Number (RIN) Quality Assurance Program (QAP) Final Rule: 2014-16487.pdf (govinfo.gov)

Appendix A

List of Issues Listed by Treasury in the Preamble of the Proposed Regulations	EPA RFS Quality Assurance Plan (QAP) Requirements	CARB LCFS Requirements	Industry Substantiation & 3rd Party Verification Examples	Sources
	(A) Production process is consistent with that reported in EMTS. (B) Production process is consistent with D code being used from the approved pathway. (C) Certificates of analysis verifying fuel type and quality, as applicable. (ii) Components requiring quarterly monitoring: (A) Mass and energy balances are appropriate for type and size of facility. (B) Workforce size is appropriate for type and size of facility, and sufficient workers are on site for facility operations. (C) If applicable, process-related factors used in feedstock energy FE calculation are accurate, in particular the converted fraction CF. (D) Verify existence of quality process controls designed to ensure that fuel continues to meet applicable property and quality specifications.	verification body in accordance with Section 95500 "Holders of certified fuel pathways who supplied site-specific CI data for pathway certification and are required to update site-specific CI data on an annual basis, as specified in this subarticle, are responsible for annual verification of their Fuel Pathway Report." (95500(b)) "Verification Requirement and Deadline. Each fuel pathway holder, who is not exempt from obtaining verification in section 95500, must ensure that a positive or qualified positive verification statement covering the annual Fuel Pathway Report is received by the Executive Officer from the verification body pursuant to the schedule in 95500 in order to maintain a valid fuel pathway code for use in reporting fuel transactions. An adverse fuel pathway verification statement would result in investigation by the Executive Officer. It is the responsibility of the fuel pathway holder to ensure this deadline is met" (954880.1 (c))		https://www.ecfr.gov/current/title-40/part-80/section-80.1469#p-80.1469(a)(2) Section 95500 View Document - California Code of Regulations (westlaw.com)

Appendix A

List of Issues Listed by Treasury in the Preamble of the Proposed Regulations	EPA RFS Quality Assurance Plan (QAP) Requirements	CARB LCFS Requirements	Industry Substantiation & 3rd Party Verification Examples	Sources
	(E) Volume production is consistent with that reported to the EPA and EIA, as well as other federal or state reporting. (F) Volume production is consistent with storage and distribution capacity. (G) Volume production capacity is consistent with RFS registration.			
Require proof of generator interconnection or revenue-quality metering	According to 40 CFR 80.1426(f)(11)(ii), "RINs for renewable CNG/LNG produced from RNG that is introduced into a commercial distribution system may only be generated if all the following requirements are met: (A) The renewable CNG/LNG was produced from renewable biomass and qualifies for a D code in an approved pathway. (B) The RIN generator has entered into a written contract for the sale or use of a specific quantity of RNG, taken from a commercial distribution system (e.g., physically connected pipeline, barge, truck, rail), for use as transportation fuel, or has obtained affidavits from all	"To substantiate RNG quantities injected into the pipeline for dispensing as bio-CNG, bio-LNG, or bio-L-CNG or as an input to hydrogen production, the pathway application and subsequent Annual Fuel Pathway Reports must include the following documents linking the environmental attributes of RNG (in MMBtu or Therms) with corresponding quantities of natural gas withdrawn: unredacted monthly invoices showing the quantities of RNG (in MMBtu) sourced and the contracted price per unit; and the unredacted contract by which the fuel pathway holder obtained the environmental attributes." (94588.8 (i)(2)(B))	• CA LCFS Monitoring plans required. • Written contractual agreements: (1) biogas producer and local utility for biomethane injected into pipeline (2) Interstate pipeline utility and local utility (3) biogas producer and offtaker for environmental attributes • Unredacted monthly invoices needed for CARB.	eCFR :: 40 CFR 80.1426 -- How are RINs generated and assigned to batches of renewable fuel? 40 CFR 80.1426(f)(11)(ii) https://www.ecfr.gov/current/title-40/part-80/subpart-M#p-80.1426(f)(8) Section 95488.8 "Fuel Pathway Application Requirements Applying to All Classifications" View Document - California Code of Regulations (westlaw.com)

Appendix A

List of Issues Listed by Treasury in the Preamble of the Proposed Regulations	EPA RFS Quality Assurance Plan (QAP) Requirements	CARB LCFS Requirements	Industry Substantiation & 3rd Party Verification Examples	Sources
	parties selling or using the RNG taken from a commercial distribution system as transportation fuel. (C) The renewable CNG/LNG produced from the RNG was sold for use as transportation fuel and for no other purpose. (D) The RNG was injected into and withdrawn from the same commercial distribution system. (E) The RNG was withdrawn from the commercial distribution system in a manner and at a time consistent with the transport of the RNG between the injection and withdrawal points. (F) The volume of RNG injected into the commercial distribution system and the volume of RNG withdrawn are measured by continuous metering. (G) The volume of renewable CNG/LNG sold for use as transportation fuel corresponds to the volume of RNG that was injected into and withdrawn from the commercial distribution system. (H) No other party relied upon the volume of biogas, RNG, or	"All measurement devices that log or record data for use in fuel pathway applications must comply with the manufacturer-recommended calibration frequency and precision requirements. If manufacturer-recommendations are not provided, the measurement devices must be calibrated every six years" (95488.8 (j)(2)) Every pathway owner has to have a monitoring plan to document the devices and related protocols.	• Upstream attestation to CARB needed	

Appendix A

List of Issues Listed by Treasury in the Preamble of the Proposed Regulations	EPA RFS Quality Assurance Plan (QAP) Requirements	CARB LCFS Requirements	Industry Substantiation & 3rd Party Verification Examples	Sources
	renewable CNG/LNG for the generation of RINs. (I) The RNG was introduced into the commercial distribution system no later than December 31, 2024, and the renewable CNG/LNG was used as transportation fuel no later than December 31, 2024. (J) RINs may only be generated on biomethane content of the biogas, treated biogas, RNG, or renewable CNG/LNG. (K) (1) On or after January 1, 2025, RINs may only be generated for RNG injected into a natural gas commercial pipeline system for use as transportation fuel as specified in subpart E of this part. (2) RINs may be generated for RNG as specified in subpart E of this part prior to January 1, 2025, if all applicable requirements under this part are met."			

Appendix A

List of Issues Listed by Treasury in the Preamble of the Proposed Regulations	EPA RFS Quality Assurance Plan (QAP) Requirements	CARB LCFS Requirements	Industry Substantiation & 3rd Party Verification Examples	Sources
	According to 40 CFR 80.1426(f)(8), "*Standardization of volumes.* In determining the standardized volume of a batch of renewable fuel for purposes of generating RINs under this paragraph (f), the batch volumes shall be adjusted to a standard temperature of 60 °F."			
Provide validation of generation methodology	The EPA's QAPs require the following RIN Generation components according to 40CFR 80.1469(a)(3) "(i) Components requiring ongoing monitoring: (A) Standardization of volumes pursuant to § 80.1426(f)(8) are accurate. (B) Renewable fuel type matches the D code being used. (C) RIN generation is consistent with wet gallons produced or imported. (D) Fuel shipments are consistent with production volumes. (E) If applicable, renewable content R is accurate pursuant to § 80.1426(f)(9).	LCFS pathway holders must complete an annual Fuel Pathway Report which is a 3rd party annual verification in accordance with Section 95500 LCFS credit generation transactions are governed by Section 95487	• RIN and LCFS generation protocols • Monitoring Plan that details the operational calculations that go into LCFS credit generation • Annual fuel attest engagement required for EPA	EPA 40 CFR Part 80 RFS Renewable Identification Number (RIN) Quality Assurance Program (QAP) Final Rule: 2014-16487.pdf (govinfo.gov) https://www.ecfr.gov/current/title-40/part-80/section-80.1469#p-80.1469(a)(3) **Section 95500** **"**Requirements for Validation of Fuel Pathway Applications; and Verification of Annual Fuel Pathway Reports, Quarterly Fuel Transactions Reports, Crude Oil Quarterly and

Appendix A

List of Issues Listed by Treasury in the Preamble of the Proposed Regulations	EPA RFS Quality Assurance Plan (QAP) Requirements	CARB LCFS Requirements	Industry Substantiation & 3rd Party Verification Examples	Sources
	(F) Equivalence value EqV is accurate and appropriate. (G) Renewable fuel was intended and sold for qualifying uses as transportation fuel, heating oil, or jet fuel. (H) Verify that appropriate RIN generation calculations are being followed under § 80.1426(f)(3), (f)(4), or (f)(5), as applicable. (ii) Components requiring quarterly monitoring: (A) Registration, reporting and recordkeeping components. (B) [Reserved]"			Annual Volumes Reports, Project Reports, and Low-Complexity/Low-Energy-Use Refinery Reports" View Document - California Code of Regulations (westlaw.com)
Include exclusively US based-generation	RFS requires fuel use in the domestic United States. RINs associated with fuels exiting the United States must be retired. "For each batch of renewable fuel, the QAP must verify that volumes of renewable fuel for which RINs are being generated are designated for use as transportation fuel, heating oil, or jet fuel in the 48 contiguous states and Hawaii. This verification should also take into account the additional Product Transfer Document (PTD)	LCFS pathway applications include the point of origin of the production according to Section 95488.8 "Fuel Pathway Application Requirements Applying to All Classifications"	RFS and LCFS Pathway holders must disclose where production is located.	EPA 40 CFR Part 80 RFS Renewable Identification Number (RIN) Quality Assurance Program (QAP) Final Rule: 2014-16487.pdf (govinfo.gov) Section 95488.8 "Fuel Pathway Application Requirements Applying to All Classifications" View Document - California Code of

Appendix A

List of Issues Listed by Treasury in the Preamble of the Proposed Regulations	EPA RFS Quality Assurance Plan (QAP) Requirements	CARB LCFS Requirements	Industry Substantiation & 3rd Party Verification Examples	Sources
	designation requirements for all renewable fuels, and registration, reporting and recordkeeping requirements for fuels not typically used as transportation fuel, heating oil, or jet fuel." As part of complying with "Table II.E.1.B-1 QAP Monitoring Frequency – Production Process-Related," and "Table II.E.1.C-1 QAP Monitoring Frequency – RIN Generation-Related," it is required to note the location of the production facility.			Regulations (westlaw.com)
Track the vintage of generator interconnection	Monthly balancing period is required. The vintage is included within the RINs generated. "QAP plans are pathway-specific, and auditors may verify RINs for any facility that uses a pathway for which they have been approved."	CA LCFS allows for up to 2 calendar quarters to report from the quarter of end-use. CA LCFS utilizes a monthly time balancing period to retire RECs related to low-CI energy production. LCFS pathway holders must complete an annual Fuel Pathway Report which is verified by a 3rd party annual verification body in accordance with Section 95500.	• Monthly and quarterly invoices • Counter-party reconciliation is required.	EPA 40 CFR Part 80 RFS Renewable Identification Number (RIN) Quality Assurance Program (QAP) Final Rule: 2014-16487.pdf (govinfo.gov) **Section 95500** "Requirements for Validation of Fuel Pathway Applications; and Verification of Annual Fuel Pathway Reports, Quarterly Fuel Transactions Reports,

Appendix A

List of Issues Listed by Treasury in the Preamble of the Proposed Regulations	EPA RFS Quality Assurance Plan (QAP) Requirements	CARB LCFS Requirements	Industry Substantiation & 3rd Party Verification Examples	Sources
				Crude Oil Quarterly and Annual Volumes Reports, Project Reports, and Low-Complexity/Low-Energy-Use Refinery Reports" View Document - California Code of Regulations (westlaw.com)