Context Labs

February 26, 2024

Submitted via: www.regulations.gov
Docket IRS REG-117631-23

Commissioner Daniel Werfel
Department of Treasury
Internal Revenue Service
1111 Constitution Ave NW
Washington, DC 20224

Re: Section 45V Credit for Production of Clean Hydrogen

Dear Commissioner Werfel,

Context Labs is pleased to submit these comments in response to the Internal Revenue Service's (IRS's) proposed rule relating to the 45V tax credit for the production of clean hydrogen, as established by the Inflation Reduction Act of 2022. According to the Department of Energy (DOE), hydrogen can play a role in decarbonizing up to 25% of global energy-related carbon emissions and could transform key sectors of the US economy. President Biden has made climate change one of his administration's top priorities, with hydrogen as one part of the long-term solution to the crisis.

However, the IRS proposal relies on outdated models in its assumptions about carbon intensity of natural gas used as a feedstock in hydrogen production. This unnecessarily throttles the hydrogen production pathway most readily available in the US and places Treasury at odds with other elements of the administration's agenda. Technology exists today to fully quantify the emissions of natural gas in a way that allows for its use as a hydrogen feedstock, ensures that carbon emissions reductions are real, aligns with Congress's intent in the statute, and protects the US taxpayer.

Background

Context Labs is an enterprise technology company dedicated to sourcing, organizing, and contextualizing the world's climate information. The company enables data to become trusted, shared, and utilized to inform markets. We take disparate, disconnected data from any source — including satellites, drones, ground sensors, and other operational assets — to uncover the ground truth of an activity's actual carbon intensity. The data is then ingested, deconstructed, and contextualized using artificial intelligence, machine learning and blockchain technologies to make it fully auditable and impossible to manipulate. This trusted emissions data supports the production of carbon credits with provenance direct to the source of the mitigation activity. Our near-real time emissions quantification is being used by leaders in the natural gas industry like EQT and Williams Companies to support their decarbonization efforts.

Technology Exists to Fully Quantify and Independently Verify Emissions of Hydrogen Feedstocks

In the proposed rule, Treasury states that "bespoke inputs from hydrogen producers are unlikely to be independently verifiable with high fidelity, given the current status of verification mechanisms." In fact, new technology does allow for independently verifiable data on the carbon intensity of a feedstock. Treasury's assumption reflects the limitations of emissions-based factors that underpin most GHG reporting programs, and the inertia of some in the industry that oppose robust quantification of their full emissions profile. Technology exists today that can replace factor-based estimates with rigorous quantification derived from multi-scale measurement, even in industries such as oil and gas.

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Federal regulators have always relied on emissions factor models and estimates to report greenhouse gas emissions. When these regulatory schemes were established, there was simply no other way to approximate GHGs across an industry. Oil and gas facilities, for example, can generate huge amounts of emissions-relevant data. A single methane sensor may generate millions of data records per month. A typical facility will have multiple emissions sources that generate vast amounts of emissions-relevant operational and contextual data at similar rates. At the enterprise scale, operators may produce hundreds of millions of emissions-relevant data points in a given month.

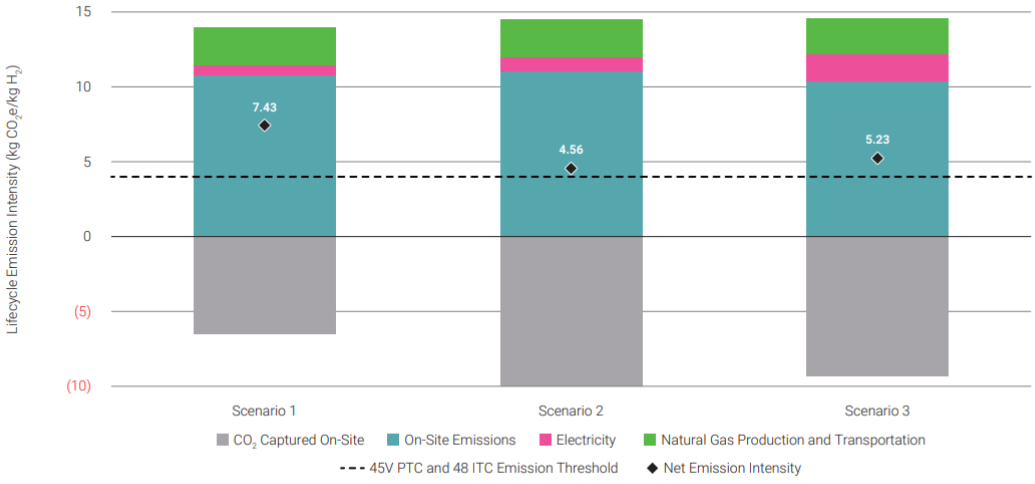
It's no wonder, then, that regulators rely on modeling. However, while any model will be imperfect, modern quantification technology shows that for some assets in the oil and gas industry GHG emissions estimates based on factors can be significantly inaccurate and disconnected from conditions in the field. Even well-regarded models such as GREET will suffer from limitations inherent in emissions factoring.

Context Labs' technology can ingest all of an enterprise's emissions data from all sources to create a "digital twin" of a physical asset that accounts for various monitors and perspectives. Our platform is designed to incorporate sensors positioned across different atmospheric levels seamlessly. Leveraging these sensors, we employ a reconciliation process that operates both from the top down and the bottom up. To create precision in our classifications, we gather data as proximate to the source as feasible, establishing a direct link to the measurement, thereby relying on empirical evidence.

Congress Intended the 45V Tax Credit to be Technology Neutral

In establishing the Provisional Emissions Rate (PER) process (described in more detail below), Treasury acknowledges that fuels or processes not anticipated by pathways in the GREET model should be eligible for the credit. This is in keeping with Congress's intent in the Inflation Reduction Act that the credit be flexible and technology-neutral. However, the proposed rule requires that methane loss rate be included in un-editable background data that applies to the entire natural gas industry. This unfairly burdens natural gas-derived hydrogen with carbon intensity scores that will often be artificially high. As the graph below indicates, if natural gas projects are required to use the emissions estimates in the GREET model, it will be nearly impossible for them to claim even the lowest tier of the credit.

FIGURE 5 | Blue Hydrogen Carbon Intensities by Scenario



Note | Natural gas and electricity consumption are reflective of a plant running carbon capture at a 90% capture rate on the syngas and flue streams as applicable.
Electricity and natural gas emission intensity are calculated using U.S. average emission intensities per the GREET model.
Source | Enverus Intelligence® Research, Argonne National Laboratory, IEA, IEAGHG, NETL, U of A, NTNU

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Fully Verified Empirical Data Should Serve as Foreground Data in 45VH2-GREET

In support of Treasury's rulemaking, DOE released a new version of the GREET model tailored to the administration of the 45V credit. Treasury seeks comment on conditions under which "the 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." Foreground data is that which is input by the user, such as feedstock type, the amount of type of energy used in production, details about carbon capture and storage at the facility, etc. Background data are fixed assumptions that may not be changed by the user. In 45VH2-GREET examples of background data include the carbon intensity of the electricity supply to the hydrogen production facility and upstream methane leakage rates.

As noted above, new technology allows for end-to-end quantification of an enterprise's emissions, including methane loss rates. Users should be allowed to enter this fully verified data as foreground data in the model. Relying on background data in the model may result in inappropriately high carbon intensity calculations. Not only would eligible projects be unfairly boxed out of receiving the tax credit, investment in technology that accurately represents emissions would be disincentivized.

Projects Should Be Able to Use the Provisional Emission Rate Process Even If Its Feedstock and Pathway is Represented in 45VH2-GREET

Treasury's proposal establishes a PER process by which a project that does not have a lifecycle GHG emissions determined in 45VH2-GREET can file a petition with the Department to establish its own lifecycle rate. The proposal suggests that this alternative process is meant for biomass fuels or other feedstocks not anticipated by the latest update of the model. By establishing this allowance, Treasury grants itself flexibility to make new and unforeseen technologies eligible for the tax credit. But it fails to recognize that assumptions in the model may be so distorted that currently recognized feedstocks may be better represented by a similar direct petition.

If users cannot submit their own data on electricity supply or methane leakage as foreground data, the PER process should be made available for projects that disagree with assumptions in the background data or in the calculation approach of 45VH2-GREET. This would allow projects with fully verified lifecycle emissions data, more accurate than the results provided by the model, to apply for eligibility. Failure to allow this flexibility will unnecessarily exclude qualified projects from the credit and further disincentive investment in improved quantification technologies.

Treasury Should Consider Criteria for Verification of Project-Specific Data

In making this allowance for the PER process, Treasury can ensure that project-specific data is not simply producer self-reported, but fully verified against strict criteria. At a minimum, emissions data must be independently collected using objective quantification methods. Because no single sensor can be the sole source of truth, multiple sources should support lifecycle claims. Most importantly, the data trail should be immutable, auditable, transparent, and accessible by third parties. Technologies exist that help producers meet all of the above criteria and easily demonstrate it directly to stakeholders, so Treasury need not establish a list of approved certifiers for the PER process.

Treasury Should Support DOE's Efforts to Establish a Hydrogen Economy

The Department of Energy has significant interest in development of a US hydrogen industry. In its Clean Hydrogen Commercial Liftoff report published last year, DOE describes a runway to deployable hydrogen energy with specific near- and medium-term targets. It categorizes opportunities as pilot-stage,

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demonstration-stage, and deployable, with barriers to commercial adoption and potential solutions identified.

The report identifies steam methane reforming with carbon capture and storage as a readily available hydrogen production pathway with much lower carbon intensity than electrolysis using grid electricity. The report also acknowledges that "anticipated regulations and advances in methane monitoring are expected to reduce these emissions and provide greater measurement certainty." Here, DOE is recognizing the work their colleagues at EPA had underway on regulating methane emissions from the gas industry. Treasury should similarly acknowledge how efforts by other federal agencies will inform its administration of the 45V credit.

Last October DOE also identified seven regional Hydrogen Hub (H2) projects that will receive $7 billion in funding from the 2021 Bipartisan Infrastructure Law. The H2 program is savvily designed to match supply with demand and create local connective infrastructure that will accelerate production and storage of tremendous amounts of hydrogen energy. Several of these projects intend to use natural gas as a feedstock, and one used Context Labs technology to demonstrate that low-emission natural gas can be fully verified to support clean hydrogen production. Early indications are that Treasury's 45V proposal have already had a cooling effect on H2 project investments. If one or more of these projects fail, the US hydrogen market may collapse before it can get started.

Conclusion

The Inflation Reduction Act introduced historic investments aimed at decarbonizing the US economy and accelerating the energy transition. In the two years since the legislation passed the Biden administration has taken meaningful steps towards establishing a role for hydrogen energy in these long-term plans, and markets have responded to these signals. Unfortunately, Treasury's proposal for the 45V tax credit gets key details wrong in a way that disincentivizes natural gas as a feedstock for hydrogen production. If the 45V rules are finalized as is, the hydrogen production pathway most readily available in the US will dissolve, with repercussions for our economy, energy security, and the climate.

Context Labs appreciates the opportunity to comment on this important issue. Our staff would be glad to demonstrate our technology and elaborate on how it can support an informed review of this proposal before it is finalized.

Sincerely,

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