Treasury Department Seeking Comments

Request for Comments on Credits for Clean Hydrogen and Clean Fuel Production

Notice 2022-58

Date: December 3, 2022

To Whom it May Concern:

The Green Hydrogen Coalition[1] (GHC) appreciates the opportunity to submit comments on Notice 2022-58 on Credits for Clean Hydrogen and Clean Fuel Production.

The GHC is a California educational 501(c)(3) non-profit organization. GHC was formed in 2019 to recognize the game-changing potential of "green hydrogen" to accelerate multi-sector decarbonization and combat climate change. GHC's mission is to facilitate policies and practices that advance green hydrogen production and use in all sectors of the economy to accelerate a carbon-free energy future and a just energy transition. Our sponsors include renewable energy users and developers, utilities, and other supporters of a reliable, affordable green hydrogen fuel economy for all.

The GHC commends the Department of the Treasury (Treasury Department) and the Internal Revenue Service (IRS) for their work on the hydrogen production tax credit.

INTRODUCTION & SUMMARY.

Recent global crises have underscored the importance of establishing a clean and reliable grid in the United States. First and foremost, global emissions reduction deadlines are fast approaching; in eight short years, the globe must reduce emissions by 45% to keep on track with the Paris Agreement.[2] Secondly, the Russia-Ukraine war – and the subsequent energy crisis - has highlighted the importance of energy security. These issues, and many others, highlight the

[1] https://www.ghcoalition.org/

[2] See https://www.un.org/en/climatechange/net-zero-coalition#:~:text=Currently%2C%20the%20Earth%20is%20already,reach%20net%20zero%20by%202050.

severity of the climate crisis and reinforce the importance of making inroads on clean energy, including hydrogen.

Clean hydrogen has the potential to decarbonize hard-to-abate sectors across the entire U.S. economy, decrease our reliance on fossil fuels, and increase the resiliency of the Nation's grid. For hydrogen's potential to materialize, it must become cost-competitive with other resources. Historically, this has been difficult since hydrogen production, such as electrolytic hydrogen, is estimated to be more than three times the price of natural gas.[3] With the passage of the Inflation Reduction Act of 2022[4] (IRA) – specifically through the production tax credit (PTC) – overcoming this barrier becomes possible since clean hydrogen can now be on equal footing with other cheaper, more carbon-intense resources.

In the following sections, we detail our responses to several key questions outlined in Notice 2022-58.

I. CREDITS FOR CLEAN HYDROGEN.

1) Clean Hydrogen.

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

The GHC advocates for the use of a well-to-gate life cycle assessment (well-to-gate LCA) on the basis that it will better support sustainable reductions in greenhouse gas (GHG) emissions as compared to a "point of production" methodology. We believe a well-to-gate LCA approach is crucial since it accounts for the climate impacts associated with all aspects of hydrogen use, including production. This helps reduce possible market misrepresentations by accurately

[3] See https://www.utilitydive.com/news/green-hydrogen-prices-global-report/627776/
[4] See https://www.congress.gov/bill/117th-congress/house-bill/5376/text

capturing the true GHG emissions of fuels, thereby facilitating the development of a credible clean hydrogen market.

Furthermore, the GHC believes this approach ingrains a more sustainable view of hydrogen into the market and reduces ambiguity in several ways. First, the well-to-gate LCA perspective – which adopts a carbon intensity (CI) specific approach instead of one focused on 'colors' – will reduce the subjectivity inherent in the conversation about what constitutes "green hydrogen." Additionally, this approach is inclusive of all production types – so long as they have a low CI – and thereby is inherently technology-agnostic. The GHC supports taking this perspective since it opens other pathways for competition on the basis that hydrogen, regardless of how it is produced, can flourish if it meets the desired life cycle emissions threshold.

Recommendation: Adopt the International Partnership for Hydrogen in the Economy well-to-gate system boundary for clean hydrogen production from various resources

Regarding the question posed by the Treasury and IRS about the specific steps that should be taken, the GHC believes the well-to-gate system boundary methodology employed by the International Partnership for Hydrogen in the Economy (IPHE) should be implemented for five main reasons. First, IPHE includes the collaboration of 21 countries and is aligned with international best practices,[5] which makes the GHC confident that the boundary condition methodology put forth will be a helpful guide for the United States. This methodology, created by IPHE's Hydrogen Production Analysis Task Force (H2PA TF), is intended to account for the emissions from each unit of hydrogen across the supply chain.

Second, and related to the point above, the GHC appreciates that the methodology is intended to be used across all hydrogen production pathways and is aligned with internationally agreed-upon approaches for evaluating the emissions of fuel production.[6] The GHC believes this would be beneficial since local and state governments could replicate these well-established and carefully

[5] See https://www.iphe.net/iphe-working-paper-methodology-doc-oct-2021

[6] The proposed emissions accounting methodology aims at being applied to all hydrogen production pathways utilizing the different standards ISO 14067, ISO 14040, and ISO 14044.

considered conditions. To this end, the U.S. market – even at a micro level – would have the advantage of being in sync with the global market from its inception. This may lead to more straightforward international trade as well as shared best practices for the production of hydrogen, all of which would benefit our hydrogen economy.

Third, the GHC particularly supports the IPHE methodology because of the principles that underpin it: (1) inclusiveness, (2) flexibility, (3) transparency, (4) comparability, and (5) practicality.[7] From GHC's perspective, these criteria will be essential for transforming the nascent hydrogen market into a robust one. Inclusiveness is necessary because, by not prohibiting certain primary energy sources from being candidates for hydrogen production,[8] we can prevent hamstringing the market. Flexibility is also a crucial element since the hydrogen market will likely be dynamic as it emerges, which implies that methodology should be ready to adapt as new barriers and opportunities materialize. Transparency regarding the assumptions within the IPHE methodology will also be necessary for not only building confidence in this approach but also having the potential to spur innovation and engagement amongst all stakeholders. Compatibility is critical for the hydrogen market since it will allow for the comparison of emissions from hydrogen to emissions from other sources, which may highlight where hydrogen is excelling relative to other fuel sources and where it can grow further. Lastly, ensuring that this methodology is practical will allow it to be adapted widely and can be reasonably incorporated.

Fourth, the GHC believes a strength of the IPHE methodological approach is that it will mature as the hydrogen market grows, both internationally and domestically. As stated by the IPHE, this approach will be "built upon over time, potentially covering additional production pathways and other parts of the value chain such as different hydrogen physical states and energy carriers, and emissions due to the transportation to the usage gate."[9] The ability of this methodology to develop

[7] See IPHE Hydrogen Product ion Analysis Task Force working paper *Methodology for Determining the Greenhouse Gas Emissions Associated with the Production of Hydrogen*.
[8] Ibid.
[9] Ibid.

in tandem with the market will establish best practices that are inclusive of as many stakeholders and hydrogen production pathways as possible.

Fifth, employing this methodology would allow the Treasury and IRS to become aligned with the Department of Energy's Clean Hydrogen Production Standard (CHPS). The CHPS, a federal standard that will be explained in the coming section, is implementing the IPHE to guide its emissions analysis. The Treasury and IRS can create continuity, reduce ambiguity, and lower obstacles to participation by aligning with the Department of Energy on this front.

Ultimately, these five criteria, when taken together, lead the GHC to believe this methodology will help usher in a sustainable, clean, and just energy transition that is inclusive of hydrogen. For this reason, we encourage the Treasury and IRS to adopt the IPHE methodology as part of the well-to-gate system boundary for clean hydrogen production.

2) Alignment With the Clean Hydrogen Production Standard.

The GHC would like to express its support for the CHPS. We have identified three key ways in which the CHPS aligns with GHC's values: (1) it adopts a well-to-gate life cycle assessment approach for evaluating hydrogen production, which in turn promotes technology neutrality and feedstock diversity, (2) the methodology that underpins the CHPS will allow the nascent hydrogen economy to develop using international best practices, and (3) the lifecycle threshold aligns with the hydrogen production tax credit in the Inflation Reduction Act (IRA).[10] For further detail, please see the GHC's comments submitted to the Department of Energy on November 14, 2022.[11]

<u>For purposes of the § 45V credit, what should be the definition or specific boundaries of the well-to-gate analysis?</u>

[10] See https://www.congress.gov/bill/117th-congress/house-bill/5376/text
[11] See https://static1.squarespace.com/static/5e8961cdcbb9c05d73b3f9c4/t/636e8ada74bfee38e83092df/1668188890529/2022-11-14+GHC+Response+to+DOE+CHPS+Draft+Guidance_FINAL.pdf.

The GHC believes the system boundary conditions employed by IPHE will be important for developing the hydrogen economy (*see section 1.A. comments for further detail*).

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

The GHC believes that the inclusion of renewable energy credits (RECs) in § 45V would help grid-connected hydrogen production applications. Today's existing infrastructure and market mechanisms are not sufficiently mature to track and account for the physical delivery of renewable electricity to grid-connected green hydrogen production. A primary goal of the GHC, therefore, is to support the development of such infrastructure and mechanisms in a sustainable way, rather than hinder green hydrogen market development. To this end, the GHC supports leveraging existing infrastructure and systems in the short term that have worked for decades under the REC scheme to accelerate green hydrogen market development.

Specifically, in the short term,[12] the GHC supports a "book-&-claim" approach in which RECs can be used to satisfy the "renewable" component of grid-connected hydrogen production. By uncoupling the renewable electricity from the production of hydrogen, the GHC believes this allows for more flexibility for producers and end-users since RECs can be traded in such a way that emissions decrease on a net basis. We believe this flexibility is especially evident in the ramp-up phase of the hydrogen market while policies are being developed. This principle builds on existing principles that allowed REC markets to flourish by providing more flexibility for producers and end-users, increasing competition, and helping overcome near-term barriers to large-scale infrastructure development.

It is important to note that the GHC has not yet formulated a position on the level of temporal correlation (*e.g., annual, monthly, weekly, or hourly*) or deliverability requirements (*e.g., geographic boundary*) for this book-&-claim approach; however, we encourage further discussion

[12] GHC defines "short-term" as today through 2030, or as soon as infrastructure and mechanisms are in place.

on this topic with experts (e.g., M-RETS, EnergyTag, etc.), who specialize in the use of contractual instruments for verifying clean hydrogen produced from grid-based electricity, before this mechanism is implemented.

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

While the GHC supports RECs in the short term, we believe mass-balancing – which comes with a unique set of factors worthy of consideration – will be critical to success in the medium- to long term.[13] Mass-balancing links renewable electricity with the respective physical delivery, which primarily traces a renewable energy carrier from its use to its production. While we believe mass balancing is ideal in the medium- to long-term, we note that this will require research and development – and therefore time – before it can be implemented. Nevertheless, as infrastructure is developed, a physical link (*e.g., physical connectivity and deliverability between the source of the renewable feedstock and the location of the hydrogen production*) would be established throughout the value chain. This physical link can be made through the electricity grid. A physical link between renewable generation and grid-connected hydrogen production will be important because it will be an easy way to verify the cleanliness of the hydrogen produced. To successfully implement mass balancing, the following three factors will need to be considered:

- **Additionality:** How should hydrogen production facilities contribute to the build-out or financing of new renewable electricity capacity to avoid its development leading to increased shares of fossil-generated electricity elsewhere in the electricity system and promote decarbonization?
- **Temporal correlation:** Should there be contemporaneous matching requirements between renewable electricity and hydrogen production (e.g., annual, monthly, weekly, hourly)?

[13] GHC defines "medium- to long-term" as starting in 2030 and beyond, or beginning earlier if the necessary mechanisms are developed.

- **Geographical connection:** Should there be a geographic boundary between the feedstock and production facility (e.g., western/eastern/ERCOT interconnect, ISO/RTO, or balancing authority)?

    - Other considerations: What requirements should be set in place for physical connectivity and deliverability between the source of the renewable feedstock and the location of the hydrogen production?

Addressing these considerations to support market development has no clear-cut answers and will take time. However, the GHC advocates for the book-and-claim approach to only last a prescribed period – no later than 2030. However, to transition from book-&-claim to mass balancing, work needs to be started today to begin developing a vision and strategy to address these complex questions. The GHC proposes that the Treasury and IRS work with the U.S. Department of Energy develop a task force to create this plan with policymakers, industry, and interested stakeholders. In the meantime, the Treasury and IRS should set policies in place that encourage market development and ratchet up policies (*such as those outlined above*) after interested stakeholders have had the opportunity to dive deep into the issues.

II. CONCLUSION

The GHC appreciates the opportunity to submit comments and looks forward to future collaboration.

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