SUBMITTED ELECTRONICALLY

December 3, 2022

Internal Revenue Service
CC:PA:LPD:PR (Notice 2022-58)
Room 5203
P.O. Box 5203, Ben Franklin Station
Washington, D.C. 20044

The Honorable Lily L. Batchelder
Assistant Secretary for Tax Policy
Department of the Treasury
1500 Pennsylvania Ave., NW
Washington, D.C. 20220

Mr. William M. Paul
Acting Chief Counsel
Internal Revenue Service
1111 Constitution Ave., NW
Washington, D.C. 20224

Re: Request for Meeting and Comments on Implementing the Inflation Reduction in Response to Notice 2022-58 and the Credit for Production of Clean Hydrogen

Dear Ms. Batchelder and Mr. Paul:

HIF Global respectfully submits the following comments in response to the questions asked in Notice 2022-58.

Company Overview

HIF Global is developing facilities to produce qualified clean hydrogen by electrolysis utilizing renewable electricity. External to the hydrogen production facility, HIF Global will obtain captured carbon dioxide and use a process of synthesis to attach the carbon dioxide molecules to the hydrogen molecules to produce a synthetic hydro-carbon, a fuel that begins with renewable electricity, (an "eFuel"), which is a gasoline substitute that can be dropped-in to existing engines and infrastructure to support carbon reduction goals by continuously reusing and recycling carbon dioxide and displacing fossil fuels.

Without tax credits such as the Section 45V credit for the production of clean hydrogen, HIF Global's project initially would be uneconomic and could not be constructed. Without the value from the Section 45V tax credit, HIF Global would allocate its resources to green hydrogen projects outside the United States. The Section 45V tax credit has incentivized HIF Global to reallocate resources and prioritize U.S. green hydrogen projects. Given the importance of the tax credits to the economics of the project, HIF Global seeks clear guidance related to section 45V and investment tax credit (ITC)/production tax credit (PTC) eligibility.

As more fully explained below, we respectfully recommend that any guidance or proposed regulations address the following items:

SECTION 3. REQUEST FOR COMMENTS

.01 Credit for Production of Clean Hydrogen.

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

HIF agrees with industry groups such as the American Clean Power Association (ACP) and the Fuel Cell and Hydrogen Energy Association (FCHEA) that the IRS should clarify that it will use the Greenhouse Gases, Regulated Emissions, and Energy Use in Technologies (GREET) model to qualify projects. In addition, the IRS should clarify that producers of electrolytic hydrogen that use primarily on-site zero-carbon electricity and that are grid connected qualify for Section 45V credits. As the legislative history clearly indicates, grid-connected electrolyzers that use grid power and procure renewable energy to offset their greenhouse gas emissions re meant to be eligible for the Section 45V credit at the highest tiers:

> Mr. CARPER: It is … my understanding of the intent of section 13204, is that in determining ''lifecycle greenhouse gas emissions'' for this section, the Secretary shall recognize and incorporate indirect book accounting factors, also known as a book and claim system, that reduce effective greenhouse gas emissions, which includes, but is not limited to, renewable energy credits, renewable thermal credits, renewable identification numbers, or biogas credits. Is that the chairman's understanding as well?
>
> Mr. WYDEN. Yes.

Consistent with that clear Congressional intent, the IRS should clarify that power purchase agreements, virtual power purchase agreements, synthetic power purchase agreements, and other market instruments, including Renewable Energy Credits, should be taken into account in the determination of the emissions rate and applied towards qualification for clean hydrogen.

This is critical to HIF Global's business because the type of equipment that exists today for electrolyzers cannot be run intermittently, and wind and solar power provide only intermittent supply. If the project had to connect directly to the renewable power source, it would not be able to operate economically. This is not just an issue for HIF Global, but is an issue for anyone operating an electrolyzer. Current electrolyzer technology degrades more quickly when it is shut down and ramped back up due to intermittent power supply. The membranes of the electrolyzer will need replacement far more often than if baseload power can be supplied, thus making the project uneconomic to operate, which will prevent it from being built. The intent of the IRA is to foster and assist the development of new climate friendly technology and fuels.

(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?

HIF Global expresses support for the comments of Carbon Direct, an expert in the field.

(b) (i) How should lifecycle greenhouse gas emissions be allocated to co-products from the clean hydrogen production process? For example, a clean hydrogen producer may valorize steam, electricity, elemental carbon, or oxygen produced alongside clean hydrogen.

The IRS should issue guidance clarifying that emissions should be allocated to co-products. Emissions allocated to co-products should not be double counted. For example, if oxygen is produced alongside clean hydrogen, emissions should be allocated between the clean hydrogen and the oxygen. This is consistent with the GREET model, which already accounts for co-products such as steam and oxygen.

(ii) How should emissions be allocated to the co-products (for example, system expansion, energy-based approach, mass-based approach)?

Co-products should be allocated using any reasonable method, including, as indicated above, consistently with the GREET model. The GREET model's system expansion approach is consistent with Congressional intent in enacting the IRA because the GREET model reflects the environmental impact of hydrogen production better than a mass-based approach.

(d) If a facility is producing qualified clean hydrogen during part of the taxable year, and also produces hydrogen that is not qualified clean hydrogen during other parts of the taxable year (for example, due to an emissions rate of greater than 4 kilograms of CO2-e per kilogram of hydrogen), should the facility be eligible to claim the § 45V credit only for the qualified clean hydrogen it produces, or should it be restricted from claiming the § 45V credit entirely for that taxable year?

A facility that meets the 45V carbon intensity thresholds using the GREET model on an annual-average approach for estimating emissions should be permitted to claim the Section 45V credit in a taxable year. In other words, a facility should only be prohibited from claiming the credit if its emissions rate is greater than 4 kilograms of CO2-e per kilogram for that year. This should be looked at annually and failure to comply in one year should not impact qualification in any other year.

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

HIF Global respectfully requests as much flexibility as possible in developing industry standards, but until industry standards develop, a lifecycle analysis should be sufficient verification.

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

In order to maintain an economic threshold sufficient to attract financing for construction and operate at a positive cash flow, electrolyzers must operate at a near 100% capacity factor, requiring 24-hour reliable electricity supply. At this time, it is not possible or cost effective to sustain renewable power generation or REC purchasing with 24-hour continuous reliability in most regions of the country. Therefore, HIF Global requests IRS to adopt a time matching

standard based on annual time of use (i.e., the emissions-free power or RECs are produced or purchased within the same year that the hydrogen is produced).

Hourly matching over hourly time-of-day or hour-to-hour matching (for example, hydrogen produced from 10 am to 11 am would need to be matched to renewable electricity produced between 10 am and 11 am in order to meet the definition of "qualified clean hydrogen") would be catastrophic to HIF Global and would render projects uneconomic and unfinanceable because any hour that the renewable power is not in operation would mean the hydrogen would not qualify as clean hydrogen, which has the potential to reduce the clean hydrogen produced by 60% or greater. There are days when renewable power generation is zero. An hourly matching system simply does not exist at this time and will not be established any time in the near future. HIF Global requests that matching be permitted over an annual period to provide the most flexibility and thereby most certainty that green hydrogen projects will move forward.

(2) Alignment with the Clean Hydrogen Production Standard. On September 22, 2022, the Department of Energy (DOE) released draft guidance for a Clean Hydrogen Production Standard (CHPS) developed to meet the requirements of § 40315 of the Infrastructure Investment and Jobs Act (IIJA), Public Law 117-58, 135 Stat. 429 (November 15, 2021).4 The CHPS draft guidance establishes a target lifecycle greenhouse gas emissions rate for clean hydrogen of no greater than 4.0 kilograms CO2-e per kilogram of hydrogen, which is the same lifecycle greenhouse gas emissions limit required by the § 45V credit. For purposes of the § 45V credit, what should be the definition or specific boundaries of the well-to-gate analysis?

HIF Global expresses support for the comments of Carbon Direct, an expert in the field.

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

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

A taxpayer should be able to file for a provisional rate at the engineering stage (i.e., prior to financing and construction). After a review process by the IRS, in consultation with DOE, the provisional emission rate should be confirmed so the project can proceed in development. Permitting taxpayers to file for early provisional rate petitions will inform engineering and ensure projects are constructed as efficiently and as cleanly as possible. Without an early verification process, it will be difficult to secure financing for projects, which will hamper development.

We believe the Section 45Q guidance is informative. While Section 45Q does not require a provisional LCA in the same way that Section 45V does, the guidance sets a precedent for the IRS/Treasury and DOE to approve a LCA prior to construction, as long as it is validated by a third party. We recommend that the IRS issue similar guidance in respect of Section 45V.

(4) Recordkeeping and Reporting.

(a) What documentation or substantiation do taxpayers maintain or could they create to demonstrate the lifecycle greenhouse gas emissions rate resulting from a clean hydrogen production process?

HIF Global requests flexibility from the IRS in defining the documentation and substantiation necessary, but as a baseline the LCA should be sufficient for both documentation and substantiation. The IRS should also allow applicants to substitute data for factors like the carbon intensity of regional grids, where available. Grid carbon intensity can vary significantly within regions utilized in the GREET model.

(b) What technologies or methodologies should be required for monitoring the lifecycle greenhouse gas emissions rate resulting from the clean hydrogen production process?

The IRS should provide as much flexibility as possible in designating technologies and/or accounting systems, especially until industry practices are established.

(c) What technologies or accounting systems should be required for taxpayers to demonstrate sources of electricity supply?

The IRS should provide as much flexibility as possible until industry standards are developed. HIF Global agrees with industry groups that data or tools can be developed to assign unique attributes to renewable power consumed virtually so that projects are able to verify the emission reductions associated with green hydrogen. The IRS should permit the industry to develop additional infrastructure and mechanisms to help verify the use of market instruments in green hydrogen in a way that supports the overall development of the industry and allows such instruments to be accounted for as a source of clean electricity. A "book-&-claim" approach would allow regionally supplied renewable energy or RECs to be quantified to satisfy the "renewable" component of grid-connected hydrogen production.

(d) What procedures or standards should be required to verify the production (including lifecycle greenhouse gas emissions), sale and/or use of clean hydrogen for the § 45V credit, § 45 credit, and § 48 credit?

With respect to green hydrogen, the IRS should allow taxpayers to submit a lifecycle analysis report that demonstrates compliance with the definition of the qualified facility and the GHG emission rate for such facility determined under the GREET model.

(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?

HIF Global believes that any regionality concept should define region broadly. For example, rather than limiting regional boundaries to a single region in ERCOT, all of ERCOT and its surrounding areas, including other parts of the State of Texas, should be included in the region. Regionality does not make sense outside of ERCOT. Defining regions as broadly as possible ensures balanced building of renewable energy facilities and associated infrastructure across all regions, which ultimately contributes to stabilization of the grid, reduces volatility, and increases access to renewable power, consistent with the goals of the IRA.

As noted above, it is of the utmost importance that the IRS not adopt a time-of-use standard based on hour-to-hour time matching. Accounting should be done on a quarterly or annual

basis consistent with how business is conducted. Any stricter matching standard would impair the ability of green hydrogen projects to be financed and constructed.

HIF Global intends to meet any additionality requirements, meaning it intends to contract for new build renewable power capacity equal to or greater than its annual requirements. However, HIF Global believes an additionality standard within 45V is not required because increasing demand for RECs will increase the price of RECs, thereby incentivizing new renewable power construction with or without long term power purchase agreements. HIF Global believes that including an additionality standard would reduce flexibility and impair some green hydrogen projects from moving forward, particularly smaller projects and facilities testing new technologies, and therefore recommends the IRS not impose additionality requirements.

(6) <u>Coordinating Rules</u>.

(c) Coordination with § 45Q. Are there any circumstances in which a single facility with multiple unrelated process trains could qualify for both the § 45V credit and the § 45Q credit notwithstanding the prohibition in § 45V(d)(2) preventing any § 45V credit with respect to any qualified clean hydrogen produced at a facility that includes carbon capture equipment for which a § 45Q credit has been allowed to any taxpayer?

Section 45V(d)(2) provides that "no credit shall be allowed under this section with respect to any qualified clean hydrogen produced at a facility which includes carbon capture equipment for which a credit is allowed to any taxpayer under section 45Q for the taxable year or any prior taxable year."

There is a circumstance where carbon capture equipment for which a credit is allowed to a taxpayer under section 45Q may have common ownership with, and be located near, a hydrogen production facility and be capturing carbon oxides that are unrelated to the production of the qualified clean hydrogen, thereby potentially qualifying the taxpayer for both the 45Q credit and the 45V credit. The following conditions would be required for this circumstance to be true: (1) the hydrogen production facility would not have any carbon oxides in the production process of the hydrogen and CO2 would not be a bi-product of the hydrogen production process – meaning the hydrogen would be produced by electrolysis from renewable electricity or indirect book accounting factors including RECs, with hourly matching over an annual period, and (2) the carbon capture equipment would be capturing carbon oxides that are unrelated to the qualified clean hydrogen production process. In this circumstance the carbon capture equipment, although physically proximate to the qualified clean hydrogen production, would be external to the qualified clean hydrogen production facility.

However, given that common ownership and physical proximity could render the definition of clean hydrogen production facility ambiguous, HIF respectfully requests the IRS to clarify that carbon capture equipment that captures carbon oxides that are unrelated to the production of the qualified clean hydrogen are not part of the qualified clean hydrogen production facility.