Comments Submitted By:

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For Internal Revenue Service Request for Comments on Credits for Clean Hydrogen and Clean Fuel Production (Notice 2022-58)

Dear Secretary Yellen,

Thank you for accepting public comments on this important matter. The Clean Energy Buyers Institute (CEBI) would like to offer market insights on the Internal Revenue Service's (IRS) Request for Comments on Credits for Clean Hydrogen and Clean Fuel Production (Notice 2022-58) to support the Administration's efforts to scale and deploy clean hydrogen.

The Clean Energy Buyers Institute (CEBI) is a 501(3)(c) non-profit organization focused on solving the toughest market and policy barriers to achieving a customer-driven, carbon-free energy system for all. CEBI works in collaboration with customers, solution providers, policymakers, leading philanthropies, and energy market stakeholders to develop insights and solutions that solve these barriers. CEBI, together with the Clean Energy Buyers Association (CEBA), a 501(c)(6) business association with over 330 energy customer and solution provider member companies representing more than $7 trillion in revenues and 16 million employees, form the Clean Energy Buyers Alliance (Alliance). The Alliance's aspiration is to achieve a 90% carbon-free U.S. electricity system by 2030 and cultivate a global community of customers driving clean energy to deliver clean energy access for all.

CEBI offers the IRS the following recommendations in response to question 1(e) to inform this guidance based on our unique expertise and leadership in solving barriers to unlock markets for energy customers, catalyze customer communities for carbon-free electricity deployment, and decarbonize the grid for all:

1(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?
Clean hydrogen must only be eligible for the 45V credit if the lifecycle emissions of its energy inputs can be verified to fall within the 4.0 kgCO2e/kgH2 standard as specified by the Clean Hydrogen Production Standard (CHPS). Hydrogen producers eligible for the clean hydrogen tax credit should be required to obtain and deliver energy attribute certificates (EACs) for each megawatt-hour (MWh) of carbon-free energy (CFE) they procure to be applied to electrolysis. These EACs verify clean hydrogen producer's procurement of CFE and substantiates the clean energy credentials of hydrogen claims. These electricity-based EACs can feed into the needed new clean hydrogen EACs, where each of these clean hydrogen certificates represents 1 kg of hydrogen powered by verified CFE. Clean hydrogen EACs, mirroring the success of EACs in activating customer markets and hastening investments in grid decarbonization, will enable customers to authenticate the low-or zero-emission credentials of their clean hydrogen procurement. The CertifHy scheme in Europe may, for

example, offer a useful example to consider following and modifying to suit the needs of the U.S. market.

Meeting the carbon intensity (CI) limit for clean hydrogen from electrolysis under the CHPS requires electricity to have a CI of 37kgCO2/MWhe (or 74 KgCO2/MWhe for 4kgCO2/kgH2), which is lower than the grid average emissions in all U.S. regions. The use of "market-based" instruments like EACs are essential to enable hydrogen producers to procure CFE for their electrolysis needs and qualify for the CHPS. Without enabling the use of EACs, the grid average emissions factor implies that there are currently no electrolyzers in the U.S. that could qualify for the tax credit. Modeling conducted through Princeton University's ZERO Lab also concluded that hydrogen produced via grid-connected electrolysis may result in significant excess emissions if there are no requirements for hourly time matching and regional location matching, indicating the need to make hourly timestamped EACs (known as granular certificates, or GCs) available. Additionally, clean hydrogen production costs with hourly matching are less than $1/kg and can be zeroed out in cases where firm CFE resources exist.[1]

The use of a robust attributional, "market-based" method is imperative to comply with the emissions verification required under the CHPS definition of "clean hydrogen" and cultivate markets that promote clean hydrogen expansion with carbon accounting integrity and grid decarbonization impact. The application of EACs for clean hydrogen are a prerequisite to verifying the CFE credentials of clean hydrogen production and activating a voluntary, self-sustaining market for clean hydrogen customers. The opportunity to purchase clean hydrogen EACs will enable customers to transact clean hydrogen—increasing revenues for clean hydrogen production that helps attract further investment and drive cost reductions.

1(e)(i) How might clean hydrogen production facilities verify the production of qualified clean hydrogen using other specific energy sources?
As illustrated above, EACs are an essential market instrument that represents the underlying purchase of verified CFE and associated carbon-free attributes. By enabling a voluntary market for clean hydrogen akin to the voluntary market for CFE, energy customers can procure and verify procurement of clean hydrogen. Voluntary markets for clean hydrogen—underpinned by EACs—would generate additional revenue and secure customer demand, unlocking greater investments and better investment terms for new clean hydrogen production facilities. This is how clean hydrogen producers can verify the CFE credentials of electrolysis and resulting produced clean hydrogen for CHPS qualification.

1(e)(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?
To enable and incentivize the clean hydrogen producers to optimize the impact of their CFE procurement and the associated CFE credentials for their respective clean hydrogen product, U.S. EAC registries must capture new attributes—namely, an hourly (or sub-hourly) timestamp and grid carbon intensity metrics to ensure that clean hydrogen is verifiably clean-powered at the most granular level possible and catalyzes demand for CFE. As per Princeton's research, this will also help avoid the unintended potential impact of new electrolyzers increasing local grid emissions. The addition of these attributes to EACs should follow emerging industry standards, namely the Energy Tag Granular Certificate Scheme

[1] Ricks, Wilson, Xu, Qingyu, & Jenkins, Jesse D. (2022). Enabling grid-based hydrogen production with low embodied emissions in the United States. Zenodo. https://doi.org/10.5281/zenodo.7183516

Standard. By enabling and encouraging clean hydrogen producers to power their electrolysis to optimize the decarbonization impact of their CFE procurement, clean hydrogen producers will send more powerful, targeted market signals that better align the expansion of clean hydrogen production with systemic grid decarbonization.

To facilitate the availability of hourly timestamped and carbon stamped EACs and resulting next generation CFE procurement products, the Department of Treasury and Department of Energy should compel local registries to add hourly timestamps, tags for all CFE resources, tags for CFE storage events, and average grid carbon intensity information to EACs. The resulting next generation CFE procurement solutions that use these enriched EACs will enable clean hydrogen producers to send the most powerful market signals possible for systemic grid decarbonization.

CEBI welcomes feedback on our comments. CEBI can also serve as a partner to provide further insights on energy customers' perspectives and address any current gaps in research and educational resources to reflect the unique role of customers and voluntary markets in maximizing the efficacy and impact of the CHPS and broader U.S. decarbonization strategy.

We look forward to continuing to inform and support the Administration's wider efforts to accelerate the clean energy transition.

Sincerely,

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