

Comments Submitted By:

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For U.S. Department of Energy Clean Hydrogen Production Standard (CHPS) Draft Guidance

Dear Secretary Granholm,

Thank you for accepting public comments on this important matter. The Clean Energy Buyers Institute (CEBI) would like to offer market insights on the U.S. Department of Energy (DOE) Clean Hydrogen Production Standard (CHPS) Draft Guidance (Guidance) to support the Administration's efforts to scale and deploy clean hydrogen.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 DOE three overall recommendations for the 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. **DOE should require clean hydrogen producers' use of existing market-based instruments—namely, energy attribute certificates (EACs) like renewable energy certificates (RECs)** that include fact-based, ex-post information—in the CHPS so that producers can procure carbon-free electricity (CFE) to power their clean hydrogen production and substantiate claims about their CFE procurement to qualify for and promote the integrity of the CHPS;
2. **DOE should encourage clean hydrogen producers to procure CFE to match demand on an hourly basis and/or procure CFE in the times and places that are most carbon intensive** to help create demand for more granular, data-rich EACs (such as Granular Certificates, or GCs) and expedite U.S. REC registries' adoption and integration of GCs to enable clean hydrogen producers' production to procure and deploy CFE resources in the times and places that optimize their decarbonization impact.
3. **DOE should promote and accelerate the introduction of a new market-based instrument for clean hydrogen and activate voluntary clean hydrogen markets** so that energy customers can procure clean hydrogen, substantiate their clean hydrogen procurement-related claims, and enable clean hydrogen producers to leverage customers' procurement to attract more financing and secure better financing terms—reducing the unit costs of clean hydrogen and advancing clean hydrogen commercialization.

CEBI expects that, by integrating these three recommendations into the Guidance, DOE can strengthen the CHPS as a mechanism for cultivating the development of robust clean hydrogen markets where customers can engage and compliment wider efforts by the Biden Administration to decarbonize the grid for all. CEBI requests that DOE considers these recommendations along with our more detailed comments below responding to Questions 3a and 3c.

3a. Emissions verifications

It is critical that the CHPS enables maximum traceability of the greenhouse gas emissions associated with each kilogram of hydrogen production and enables hydrogen producers to leverage CFE procurement to qualify for the CHPS. To this end, the Guidance should include and prioritize the use of enhanced market-based instruments to promote the highest integrity and decarbonization impact of CHPS criteria. More specifically, the Guidance should promote the following:

- A straightforward, transparent verification process, such as the process developed by CertifHy in Europe, about the CFE procured to electrolyze each kg of hydrogen to substantiate the low- or zero-emission credentials of each kg;
- A methodology that specifies a new standardized EAC for clean hydrogen, where each of these clean hydrogen certificates represents 1 kg of hydrogen powered by CFE; and
- The adoption of GCs by U.S. REC registries (in line with the [EnergyTag Granular Certificate Scheme Standard](#)) so that clean hydrogen producers can procure CFE that contains more granular, data-rich attributes—namely, sub-hourly (or hourly) timestamps and grid carbon intensity metrics—and the collection of needed underlying data for these new attributes in order to differentiate clean hydrogen options based on grid decarbonization impact, particularly at the local level.

It is critical that the CHPS encourages robust traceability of hydrogen production to the CFE procured for electrolysis and verification of the resulting clean electricity credentials and associated lifecycle emissions of a given kg of hydrogen that seeks to meet the CHPS 4.0 kgCO₂e/kgH₂ standard. The CHPS should follow existing industry standards and best practices by requiring that clean hydrogen producers obtain EACs like RECs for each megawatt-hour (MWh) of CFE they procure and want to apply to each MWh of electricity consumption from electrolysis. The CHPS should extend existing EACs and facilitate the introduction of a new standardized EAC for clean hydrogen that makes use of EACs like RECs and enables customers to verify the low- or zero-emission credentials of their hydrogen procurement. The [CertifHy](#) scheme in Europe may offer a useful example to consider following and modifying to suit the needs of the U.S. market.

Furthermore, the CHPS should encourage clean hydrogen producers to procure local CFE at the same times of day as their consumption and/or procure local CFE at the most carbon-intensive times of day so that their CFE procurement sends time-sensitive market signals and advances the development of more CFE generation at these same times of day in the places where they are consuming electricity from the grid. The CHPS should also consider encouraging clean hydrogen producers to procure CFE at the times of day and/or locations where the carbon intensity of the local grid is highest. It is critical that clean hydrogen producers procure CFE in the most targeted way possible in order to help ensure that the new electricity demand from electrolyzers does not have the unintended, yet currently likely, impact of powering on carbon-polluting resources on the local grid and undermining the clean credentials of clean hydrogen.

As CEBI details in our [Next Generation CFE Procurement Activation Guide](#), updates to U.S. REC registries are required to increase the availability of consistent and comparable CFE procurement options that help clean energy customers, like clean hydrogen producers, procure CFE at specific times of day and/or in the times and places that are most carbon intensive. DOE should request that U.S. REC registries introduce GCs to enable customers to procure CFE matching their hourly demand and/or in the times and places that are most carbon intensive. By adopting GCs, which are needed to activate these next generation procurement options, U.S. REC registries will introduce new market system infrastructure that empowers clean hydrogen producers to help drive systemic grid decarbonization.

Meeting the 2 kgCO₂/kgH₂ CI limit for clean hydrogen from electrolysis under the CHPS requires electricity to have a CI of 37kgCO₂/MWh (or 74 KgCO₂/MWh for 4kgCO₂/kgH₂), which is lower than the grid average emissions in all U.S. regions. If the CHPS excludes the use of market-based instruments, then the resulting use of grid average emissions factors and/or location-based accounting frameworks implies that there are currently no electrolyzers in the U.S. that could qualify under the CHPS. The use of a robust attributional or “market-based” method will therefore be imperative to

comply with the emissions verification required for CHPS and cultivate markets that promote clean hydrogen expansion with carbon accounting integrity and grid decarbonization impact.

3c. Enabling a Voluntary Market

It is critical that the CHPS cultivates robust voluntary markets for clean hydrogen that enable energy customers to procure clean hydrogen, substantiate their procurement-related claims, and accelerate the commercialization of clean hydrogen and systemic grid decarbonization. To this end, the Guidance can support an acceleration in the deployment and commercialization of clean hydrogen by promoting the formation of a voluntary market that incentivizes hydrogen that achieves the 4.0 kgCO₂e/kgH₂ CHPS lifecycle emissions criteria through market-based instruments. More specifically, the Guidance should promote the following synergistic developments:

- Facilitate the standardization of the transaction structures for clean hydrogen contracts to allow an array of customers to discover, compare, procure, and verify clean hydrogen procurement in a consistent way;
- Advance the definition and deployment of EACs for clean hydrogen that integrate with existing and next generation EAC frameworks in order to cultivate a voluntary clean hydrogen market where customers can transact clean hydrogen and substantiate related claims; and
- Encourage and/or facilitate the development of a clean hydrogen customer leadership program that defines goal setting, verification, and reporting criteria for customers to demonstrate leadership in clean hydrogen procurement.

Voluntary CFE procurement markets currently facilitate the annual sale of over 1 billion EACs globally to energy customers. Commercial and industrial energy customers in the U.S. are responsible for over 37% of new wind, solar, and storage capacity additions to the grid since 2014. There is a tremendous opportunity to apply customer demand and the forces of voluntary markets to clean hydrogen to catalyze demand for more CFE deployment on the grid. Customers can drive commercialization of clean hydrogen if verified, standardized products become available that help customers procure clean hydrogen and achieve their clean energy procurement targets.

Creating a voluntary market for clean hydrogen is imperative for customers to achieve their clean energy procurement goals and send demand signals that will accelerate and scale the deployment of these resources to decarbonize the grid. The DOE should facilitate the development of straightforward and accessible transaction structures to enable clean hydrogen producers to sell their products to energy customers in a voluntary market. This voluntary market should lead to customer offerings for contracted procurement options where the physical delivery of clean hydrogen can either be bundled or unbundled from clean hydrogen EACs. The availability of bundled and unbundled green hydrogen contractual frameworks will allow diverse customers to procure clean hydrogen and obtain the low- or zero-carbon credentials associated with the clean hydrogen. These transactions will empower customers to more swiftly send demand signals for clean hydrogen, provide needed new revenue to clean hydrogen producers, bring costs down, scale hydrogen production and relevant technologies at an accelerated rate, and promote CFE deployment in the times and places that optimize grid decarbonization impact.

To form a voluntary U.S. clean hydrogen market, DOE should encourage U.S. REC registries to capture new attributes—namely, a sub-hourly (or hourly) timestamp and grid carbon intensity metrics—to ensure that clean hydrogen is verifiably clean-powered, catalyzes new and local demand for CFE, and does not have the unintended impact of increasing local grid emissions. The addition of these attributes should follow emerging industry standards, namely the EnergyTag Granular Certificate Scheme Standard, to enable GCs and motivate customers to procure clean hydrogen in ways that jointly promote the PTC emissions threshold and accelerate systemic grid decarbonization.

There is also an opportunity for DOE to encourage the development of a new customer leadership program that creates new incentives and standardized goal setting and reporting criteria for customers to receive recognition for clean hydrogen procurement leadership. This new program would help form a new community of customers that pursue achieving clean hydrogen together, resulting in the development of best practices as well as greater motivation for companies to follow through on their

commitments and for more companies to join. This program should also consider integrating with or modeling itself after existing successful renewable energy procurement leadership programs, such as RE100 and the U.S. Environmental Protection Agency's Green Power Partnership. As DOE investigates the goal-setting criteria, DOE should conduct additional research to determine if this leadership program should incentivize customers to procure clean hydrogen produced from time-matched CFE locally and/or from the most carbon-intensive times of day and locations to inform which clean hydrogen-related EAC attributes lead to the maximum grid decarbonization impact.

CEBI welcomes the DOE's 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 efforts to accelerate the clean energy transition.

Sincerely,

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