

February 23, 2023

The Honorable Lily L. Batchelder  
Assistant Secretary for Tax Policy  
Department of the Treasury

Mr. Seth Hanlon  
Deputy Assistant Secretary for Tax and Climate Policy  
Department of the Treasury

Mr. William M. Paul  
Principal Deputy Chief Counsel and Deputy Chief Counsel (Technical)  
Internal Revenue Service

Mr. John Podesta  
Senior Advisor to the President for Clean Energy Innovation and Implementation  
White House

Mr. Ali Zaidi  
Assistant to the President and National Climate Advisor  
White House

The Honorable Jennifer Granholm  
Secretary  
U.S. Department of Energy

**Re: Implementation of the IRA 45V clean hydrogen tax credits as it relates to guidelines for emissions accounting of grid-connected electrolyzers**

Dear Assistant Secretary Batchelder, Mr. Hanlon, Mr. Paul, Mr. Podesta, Mr. Zaidi, and Secretary Granholm:

We write to urge Treasury, the Department of Energy (DOE), and the White House to adopt thoughtful and climate-aligned implementation of the 45V clean hydrogen production tax credit (PTC). Our coalition is composed of organizations, companies, and institutions spanning sectors, business models, and interests united by a common concern for the climate and agreement on principles to underpin qualification for the 45V clean hydrogen PTC.

***Weak guidelines for grid-connected systems risk driving up emissions, in direct conflict with the IRA's requirements***

We applaud the 45V tax credit for its potential to support the transition to a clean economy. However, we are concerned that Treasury may adopt insufficiently rigorous guidance concerning the credit's implementation—especially as it relates to grid-connected electrolyzers. Using fossil-generated electricity or siphoning off renewables subsequently back-filled by fossil power to operate electrolyzers—which would occur under loose guidance—generates **at least twice** the carbon emissions that status-quo gas-derived hydrogen emits. Weak guidance could therefore force Treasury to spend **more than \$100 billion dollars in subsidies** for hydrogen projects that result in *increased net emissions*, in direct conflict with statutory requirements and tarnishing the reputation of the nascent “clean” hydrogen industry.

***Additionality, deliverability, and hourly matching are necessary to guard against negative consequences***

To prevent those negative outcomes in contradiction to the IRA's requirements, we support Treasury's implementation of a strong emissions accounting system for grid-connected electrolysis that espouses three pillars: **additionality, deliverability, and hourly matching**. A robust body of research consistently identifies **all three principles** as necessary

to guard against substantial emissions increases and drive the deployment of truly low or zero emitting hydrogen projects.<sup>1,2</sup> In fact, the recent EU rules European Union’s proposed rules in its Hydrogen Delegated Act firmly upheld all three pillars as necessary to demonstrate that hydrogen is “renewable” and has zero-carbon emissions.

*Treasury has broad regulatory authority to implement the three-pillar system, and the system is administrable*

The IRA requires Treasury to only provide subsidies to projects that reduce “effective GHG emissions,” meaning that for electrolysis projects, system-wide grid emissions must be accounted for, and guidance for 45V implementation must be designed to reduce overall emissions. **The three-pillar system is necessary to ensure this outcome.** Furthermore, Treasury has statutory authority to implement the three-pillar system. **The statute provides broad regulatory authority for Treasury to “issue regulations or other guidance to carry out the purposes of this section.”**<sup>3</sup>

**A lifecycle analysis must embed all three pillars in order to meet the purposes of this provision.** Furthermore, and to the extent that it is needed, Treasury has specific authority to adopt a “successor model” to the GREET model which can and should include these pillars.<sup>4</sup> Importantly, **each of the three pillars is administrable:** signatory companies are either already implementing them or confident that they can successfully do so, and the necessary tools and market structures for compliance with the pillars are widely available. We continue to explore how to leverage existing information already collected by taxpayers and/or reported to federal regulators to adopt and operationalize these three pillars, and we look forward to working with the White House, Treasury and DOE on this topic.

*Hydrogen projects that satisfy the three pillars can be extremely competitive from the outset*

Renewable energy and hydrogen developers—including a subset of companies who have signed onto this letter—are **already developing profitable projects** that satisfy additionality, deliverability, and hourly matching. This provides robust evidence that the system is technically and economically feasible. Developers can successfully manage operations by contracting for diverse clean resources, storing hydrogen, and ramping the electrolyzer load to match clean power availability; in fact, electrolyzer technologies are already capable of efficiently ramping to match variable generation profiles with major ancillary benefits for grid reliability. Further, ongoing financial modeling is robustly concluding that projects that satisfy the three pillars can be extremely competitive from the outset; **claims that the three pillars would result in an industry that is “dead on arrival” are therefore demonstrably false.** We look forward to further engagement on this topic.

*Hourly matching can be widespread in time for large-scale hydrogen development*

The tools necessary to accomplish hourly matching **are proven, available, and already support existing renewable energy credit (REC) markets.** M-RETS—a non-profit and the largest North American credit tracking system—**has over 100 million hourly RECs in its system and is already ready to provide hourly certificates nationwide, including all markets and U.S. regions.** EnergyTag—a global entity building a market for hourly clean energy certificates—supports **over a dozen hourly matching projects worldwide.** Both are signatories to this letter. Furthermore, third-party grid data providers such as Electricity Maps and software providers such as FlexiDAO – both signatories to this letter -- already provide both the necessary data and a framework for robust hourly tracking to customers and can do so for hydrogen today.

Otherwise, any regional or national registry who would like to can implement hourly matching tools at scale in less than 12 to 18 months, compared to the no less than 24 months scaling timelines for large-scale electrolyzer deployment. In

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<sup>1</sup> Ricks, Wilson, Xu, Qingyu, & Jenkins, Jesse D. (2023). Minimizing emissions from grid-based hydrogen production in the United States. Environmental Research Letters. <https://iopscience.iop.org/article/10.1088/1748-9326/acacb5/meta>

<sup>2</sup> Zeyen, Elisabeth, Riepin, Iegor, & Brown, Tom. (2022). Hourly versus annually matched renewable supply for electrolytic hydrogen (0.1). Zenodo. <https://doi.org/10.5281/zenodo.7457441>

<sup>3</sup> See 26 U.S.C. § 45V (f)

<sup>4</sup> *Id.* Sec 45V(c)(1)(B)

fact, PJM will now provide hourly, time-stamped certificates-- an offering which scaled in a short period of time.<sup>5</sup> PJM developed those tools largely in response to growing demand from large customers, demonstrating that **hourly matching is moving forward independently of the hydrogen market** such that Treasury guidelines that require less granularity would be contrary to market direction and introduce additional risk to developers. As we note above, M-RETS is already ready to offer hourly matching nationwide **as well as offer regional registries technical assistance and the use of its platform as Western Electricity Coordinating Committee states did when their tracking system WREGIS adopted the M-RETS platform.**<sup>6</sup>

Furthermore, increased global demand and policy signals continue to drive the scaling of hourly matching infrastructure.<sup>7</sup> For example, the U.K. hydrogen standard requires hourly matching, Germany's recently launched tender for green ammonia imports starting in 2024 requires hourly matching and more importantly, the European Union's approved rules in its Hydrogen Delegated Act require all hydrogen projects to prove hourly matching in 2030 onwards, including for hydrogen imports, as the way to prove that the electricity feeding electrolyzers is fully renewable and therefore zero carbon. All these developments should drive a significant acceleration in the roll-out of hourly energy tracking infrastructure in Europe and globally, and the US should not fall behind to guarantee a coherent approach in the clean hydrogen global trade.<sup>8</sup>

Hourly matching is **firmly not** a complex endeavor that would prevent industry scale and is well understood by customers. For example, companies such as Google and Microsoft already employ the range of those tools and execute contracts based on hourly matching in several U.S. states, and the U.S. government recently signed an MOU with Entergy Arkansas to supply federal agencies with carbon free energy, including 50% on an hourly basis.<sup>9,10,11</sup>

We are therefore confident that hourly matching options will be widely available in time for large-scale hydrogen development.

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<sup>5</sup> PJM, PJM EIS To Produce Energy Certificates Hourly, February 13, 2023, [https://www.utilitydive.com/news/pjm-to-offer-time-matched-renewable-energy-certificates-as-demand-for-247/643135/?utm\\_source=Sailthru&utm\\_medium=email&utm\\_campaign=Issue:%202023-02-21%20Utility%20Dive%20Newsletter%20%5Bissue:48206%5D&utm\\_term=Utility%20Dive](https://www.utilitydive.com/news/pjm-to-offer-time-matched-renewable-energy-certificates-as-demand-for-247/643135/?utm_source=Sailthru&utm_medium=email&utm_campaign=Issue:%202023-02-21%20Utility%20Dive%20Newsletter%20%5Bissue:48206%5D&utm_term=Utility%20Dive)

<sup>6</sup> M-RETS, WECC Signs Multi-Year Agreement with M-RETS for Software Services, <https://www.mrets.org/wecc-signs-multi-year-agreement-with-m-rets-for-software-services/>

<sup>7</sup> Running list of policies, proposals and regulations requiring hourly (or sub-hourly) matching:

<https://docs.google.com/spreadsheets/d/1nRSKH0Tl61SjSs15hYcGtCzQ79kyXLLrwCNiybFc1Po/edit?usp=sharing>

<sup>8</sup> Baker McKenzie, International: H2Global enables imports of sustainable hydrogen products into Germany and incentivizes investment in green hydrogen outside of the European Union, <https://insightplus.bakermckenzie.com/bm/projects/international-h2global-enables-imports-of-sustainable-hydrogen-products-into-germany-and-incentivizes-investment-in-green-hydrogen-outside-of-the-european-union/>; [European Commission sets out rules for renewable hydrogen](#)

<sup>9</sup> Google Cloud Blog, Timely Progress Towards Around-the-Clock Carbon-free Energy, March 15, 2022:

<https://cloud.google.com/blog/topics/sustainability/t-eacs-help-drive-around-the-clock-carbon-free-energy>

<sup>10</sup> PR Newswire, AES Announces First-of-Its-Kind Agreement to Supply 24/7 Carbon-free Energy for Google Data Centers in Virginia, May 04, 2021. <https://www.prnewswire.com/news-releases/aes-announces-first-of-its-kind-agreement-to-supply-247-carbon-free-energy-for-google-data-centers-in-virginia-301282750.html>

2. "Microsoft and AES Partner to Bring Around-the-Clock Renewable Energy to Data Centers," November 2, 2021.

<https://www.prnewswire.com/news-releases/microsoft-and-aes-partner-to-bring-around-the-clock-renewable-energy-to-data-centers-301414877.html>

3. Silicon Valley Clean Energy, Silicon Valley Clean Energy and Google Announce Comprehensive 24/7 Carbon-free Energy Agreement, June 15, 2022. <https://svcleanenergy.org/news/silicon-valley-clean-energy-and-google-announce-comprehensive-24-7-carbon-free-energy-agreement/>

4. Canary Media, 24/7 Carbon-free Energy is About to Become a Reality in California, January 18, 2023.

<https://www.canarymedia.com/articles/clean-energy/24-7-carbon-free-energy-is-about-to-become-a-reality-in-california>

<sup>11</sup> Entergy News Room, Entergy Arkansas, U.S. government sign first MOU to work toward 24/7 carbon-free electricity, November 15, 2022. <https://www.entergynewsroom.com/news/entergy-arkansas-u-s-government-sign-first-mou-work-toward-24-7-carbon-pollution-free-electric/>

*The 45V credits will have far-reaching consequences beyond the hydrogen industry; thoughtful implementation is imperative*

The magnitude of the 45V credit will have ripple effects well beyond the hydrogen economy. While secondary to satisfying the IRA's legal emissions requirements, implementation guidance will impact grid congestion; electricity prices; water supplies; long-term hydrogen, renewable energy, and storage infrastructure; electrolyzer technology development; and energy resource siting.

*Treasury should work with DOE and the White House to implement a strong system embedding the three pillars*

We urge Treasury to work closely with DOE and the White House to design rigorous guidelines for grid-connected electrolyzers that embed additionality, deliverability, and hourly matching. The breadth of this letter's signatories should demonstrate significant confidence in **this system's technical and economic feasibility, administrability, and necessity to comply with the IRA's emission requirements and safeguard the climate integrity of the 45V tax credits.**

We have the solutions to get this right. The signatories stand ready to work with Treasury, DOE, and the White House to design a strong and legally durable system. Please do not hesitate to reach out to us should you have questions about the items we have put forward.

Sincerely,

Clean Air Task Force

EDP Renewables

Electric Hydrogen

Electricity Maps

Energy Innovation

EnergyTag

Environmental Defense Fund

Evergreen Action

FlexiDAO

Galvanize Climate Solutions

Intersect Power

M-RETS

Natural Resources Defense Council

Nordex USA, Inc

Rondo

Singularity Energy

Synergetic LLC

Union of Concerned Scientists