The National Hydropower Association, Inc.
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December 8, 2022

Ms. Holly Porter
Associate Chief Counsel (Passthroughs and Special Industries)
U.S. Internal Revenue Service
CC:PA:LPD:PR (Notice 2022-58)
Room 5203, P.O. Box 7604, Ben Franklin Station
Washington, DC 20044

Re: Comments of the National Hydropower Association on the Credits for Clean Hydrogen and Clean Fuel Production Notice (Notice 2022-58)

Dear Ms. Porter:

The National Hydropower Association ("NHA") is a non-profit national association dedicated to securing hydropower as a clean, carbon-free, renewable, and reliable energy source that provides power to an estimated 30 million Americans. Its membership consists of more than 300 organizations, including public and investor-owned utilities, independent power producers, equipment manufacturers, and professional organizations that provide legal, environmental, and engineering services to the hydropower industry.

NHA promotes innovation and investment in all waterpower technologies, including conventional hydropower, marine and hydrokinetic power systems, and pumped storage hydropower to integrate other clean power sources, such as wind, solar, and clean hydrogen. NHA appreciates the opportunity to submit the following comments in response to this Notice.[1]

Background on Hydropower

NHA's members own roughly 85% of the U.S. hydropower generating capacity, which includes over 100 Gigawatts ("GW") of hydropower and pumped storage capacity.

Hydropower is a clean, flexible, and reliable energy source that supports an estimated 72,000 well-paying jobs in the United States.[2] The sector also generates more than 6 percent of the country's utility-scale electricity and nearly one third of all utility-scale renewable power. In addition, pumped storage, which is a long-duration energy storage asset, provides over 90 percent of energy storage on the grid.

[1] U.S. Internal Revenue Service, Request for Comments on Credits for Clean Hydrogen and Clean Fuel Production ("Notice") Notice 2022-58 (November 3, 2022). https://www.irs.gov/pub/irs-drop/n-22-58.pdf.
[2] U.S. Department of Energy, *U.S. Hydropower Workforce: Challenges and Opportunities* (October 2022). https://www.energy.gov/eere/water/articles/new-report-highlights-hydropower-industrys-demand-new-diverse-talent.

Approximately one-third (281) of U.S. Federal Energy Regulatory Commission ("FERC") hydropower operating licenses are scheduled to expire by 2030 and almost half by 2035 (459).[3] These 459 licenses include over 9,000 megawatts of hydropower capacity, which translates into 22 million metric tons of carbon dioxide emissions avoided per year, electricity for 4.8 million homes and avoiding the emissions from nearly 5 million cars annually.[4] The licenses also include nearly 8,400 megawatts of pumped storage capacity, which accounts for 38 percent of the nation's total energy storage capacity, which is 400 percent more energy storage capacity than that of all battery installations constructed from 2010 to 2020.[5]

NHA also wants to emphasize that there is significant growth opportunity that remains in the hydropower industry. It is a myth that hydropower is an industry that is "tapped out." For example, for pumped storage alone, there are approximately 45,000 issued preliminary permits and approximately 25,000 preliminary permits pending at the FERC.[6] Three projects have received their license to build new facilities. Other development opportunities include capacity additions and efficiency improvements at existing facilities, adding generation to non-powered dams, new greenfield small hydropower projects, as well as marine energy projects.

1. Clean hydrogen can be produced by existing and new generation

Both the Inflation Reduction Act ("IRA") and the Infrastructure Investment and Jobs Act ("IIJA") provide significant funds and incentives for the domestic development of clean hydrogen. Under the IRA's §45V clean hydrogen production tax credit, qualified clean hydrogen is defined as "…hydrogen which is produced through a process that results in a lifecycle greenhouse gas emissions rate of not greater than 4 kilograms of CO2e per kilogram of hydrogen."[7]

Numerous existing technologies, including hydropower, have a life cycle emissions rate less than that required under §45V. Hydropower, as one of the non-emitting sources of energy, can be a practical and powerful source of clean hydrogen as defined under §45V. When implementing the IRA, as well as the IIJA, the Internal Revenue Service ("IRS") and Department of Treasury ("Treasury"), along with the Department of Energy ("DOE"), should not discriminate between new and existing resources. As stated above, the value proposition of clean hydrogen can support the continued operation of those existing facilities. Developers could also pair electrolyzers with repurposed non-powered dams, expansions of existing conventional hydropower and pumped storage generation, or marine energy projects to produce clean hydrogen. The federal government should not preclude these avenues for clean hydrogen development when Congress explicitly granted them.

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[3] National Hydropower Association, *17 GWs of Hydropower at Risk* Fact Sheet at https://www.hydro.org/wp-content/uploads/2022/11/Hydropower-At-Risk-2035.pdf.
[4] *Id.*
[5] *Id.*
[6] Federal Energy Regulatory Commission, *Active Preliminary Permits* and *Pending Preliminary Permits*, at https://www.ferc.gov/licensing. Last updated October 25, 2022.
[7] 26 USC § 45V(c)(2)

1.1 Waterpower has the lowest lifecycle emissions of any renewable and storage technology

Argonne National Laboratory ("Argonne") analyzed lifecycle emissions using their Greenhouse gases, Regulated Emissions, and Energy use in Technologies ("GREET") model.[8] DOE is utilizing this model in their Clean Hydrogen Production Standard Draft Guidance ("CHPS Draft Guidance"). Though Argonne's analysis determined solar and wind have the lowest well-to-gate ("WTG") emissions amongst hydrogen production pathways, Argonne did not model hydropower, which unfortunately did not present a complete picture of the opportunities to produce hydrogen from the full suite of renewable resources.[9] For example, analysis by the National Renewable Energy Laboratory ("NREL") demonstrated that both hydropower and pumped storage have lower lifecycle emissions than wind, solar, and other storage technologies.[10] Treasury and the IRS should ensure and make clear that companies producing hydrogen powered by waterpower technologies are eligible for the clean hydrogen tax credits, and should be permitted to calculate the associated lifecycle emission rate at the time the hydrogen production facilities go into service. That lifecycle emission rate would then be used until such time there is a material change in the production facility's operation or power supply that results in a change in emission rate.

1.2 Related comments from the CHPS Draft Guidance

IRS asks specific questions regarding potential alignment with the CHPS Draft Guidance. Accounting for the MWs used to produce clean hydrogen is an important implementation item with respect to the clean hydrogen credits for which DOE asked several questions in the Draft Guidance:[11]

> Should renewable energy credits, power purchase agreements, or other market structures be allowable in characterizing the intensity of electricity emissions for hydrogen production? Should any requirements be placed on these instruments if they are allowed to be accounted for as a source of clean electricity (e.g. restrictions on time of generation, time of use, or regional considerations)? What are the pros and cons of allowing different schemes? How should these instruments be structured (e.g. time of generation, time of use, or regional considerations) if they are allowed for use?

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[8] Argonne National Laboratory, *GREET Model for Hydrogen Life Cycle GHG Emissions* (June 15, 2022). https://www.energy.gov/sites/default/files/2022-06/hfto-june-h2iqhour-2022-argonne.pdf.
[9] Id at 8.
[10] National Renewal Energy Laboratory, *Life Cycle Greenhouse Gas Emissions from Electricity Generation: Update* (September 2021) at Table 1. https://www.nrel.gov/docs/fy21osti/80580.pdf
[11] CHPS Draft Guidance at 8.

NHA recommended to DOE, and recommends to the IRS, that utilizing existing renewable energy generation structures wherever possible is wise.[12] Developers and offtakers have different business models depending on the value proposition of their projects and their business strategies. Some entities utilize Power Purchase Agreements for the volume required to serve the load while also locking in price. The evidence required is simply the contract itself. Renewable Energy Credits are tracked, and those tracking mechanisms can be employed.[13] Other entities may decide to build the hydrogen production infrastructure behind the meter or at the point of interconnection of the generator. The federal government should support as broad of a net as possible as the country seeks to develop clean hydrogen, including support for both existing and new renewable energy projects to power clean hydrogen production

Thank you very much for considering these comments. NHA would welcome the opportunity to discuss these issues further with IRS.

Sincerely,

/s/ Michael Purdie

Michael Purdie
Director of Regulatory Affairs and Markets

[12] National Hydropower Association, "Comments of the National Hydropower Association on the Clean Hydrogen Production Standard Draft Guidance" (November 14, 2022).
[13] U.S. Environmental Protection Agency, *Renewable Energy Tracking Systems* (last updated February 25, 2022). https://www.epa.gov/green-power-markets/renewable-energy-tracking-systems#contract