Submitted at Regulations.gov
February 26, 2024

Constellation Energy Corporation's Comments on
Treasury's Proposed Rule: *Section 45V Credit for Production of Clean Hydrogen*
(IRS REG–117631–23)

Docket ID No. IRS-2023-0066

Constellation Energy Corporation (Constellation) respectfully submits these comments on the Treasury Department's notice of proposed rulemaking regarding *Section 45V Credit for Production of Clean Hydrogen*.[1] Constellation previously submitted comments on Treasury's Notice.[2] Constellation is a member of the Nuclear Energy Institute (NEI) and joins NEI's comments on this rulemaking in full. We submit this comment letter to provide Treasury with additional information based on Constellation's experience with clean hydrogen.

Introduction

The production tax credit for clean hydrogen under Section 45V of the Inflation Reduction Act (IRA) has the potential to stimulate the creation of a new clean hydrogen economy that will be critical in meeting the country's clean energy goals. It is imperative that Treasury and the IRS implement Section 45V in a manner that is consistent with the statutory text and accomplishes Congress's underlying policy goals. Inclusion of an "incrementality" requirement is completely inconsistent with Congress's intent to leverage America's carbon-free nuclear fleet to jumpstart the hydrogen economy and enable the United States to decarbonize by mid-century.

Under Treasury's proposal, nuclear power plants – which currently produce half the carbon-free electricity in the United States[3] – would have no ability to participate in the 45V program and contribute to deploying clean hydrogen at scale. This would make the United States the only nation in the world to intentionally sideline its commercial nuclear power plants in the fight against climate change, allowing China and Europe to overtake us in clean hydrogen just like they have done with solar, wind, batteries, and other clean energy technologies.

---

1 *See* Dep't of Treasury, Notice of Proposed Rulemaking and Notice of Public Hearing, Section 45V Credit for Production of Clean Hydrogen; Section 48(a)(15) Election to Treat Clean Hydrogen Production Facilities as Energy Property," 88 Fed. Reg. 89,220 (Dec. 26, 2023).

2 Constellation Comment on IRS Notice 2022-58, "Request for Comments on Credits for Clean Hydrogen and Clean Fuel Production," (Dec. 12, 2022), https://www.regulations.gov/comment/IRS-2022-0029-0192; NEI Comment on IRS Notice 2022-58 (May 24, 2023), https://www.regulations.gov/comment/IRS-2022-0029-0215 (co-signed by Constellation). Constellation also developed a white paper, "Ensuring Equal Access to Clean Hydrogen" (Dec. 2022), *available at* https://www.constellationenergy.com/our-work/what-we-do/generation/ensuring-equal-access-to-clean-hydrogen.html.

3 *See* EIA Annual Energy Outlook 2023 (Mar. 16, 2023), https://www.eia.gov/outlooks/aeo/.

Constellation has worked tirelessly over the past 18 months to design what would be the world's largest nuclear-powered clean hydrogen production facility. Our project is the lynchpin of the Midwest Alliance for Clean Hydrogen ("MachH2"), one of the seven hydrogen hubs selected by the Department of Energy ("DOE") for funding under the Infrastructure Investment and Jobs Act (IIJA). The MachH2 hub application was explicit that imposition of an additionality requirement on eligibility for the hydrogen production tax credit – referred to as "incrementality" in Treasury's proposed rule – will preclude nuclear from making hydrogen, the most cost effective and expeditious form of clean hydrogen.[4] Given the uncertainty around Section 45V, we have suspended development work on our hub project and will be forced to cancel that project if Treasury's proposed regulations are finalized without revision.

Constellation therefore supports the comments submitted by the Nuclear Energy Institute. As those comments make clear, the incrementality requirement has no basis in the IRA. It is indisputable that Congress intended for electricity generated by existing nuclear plants to produce hydrogen, as the IRA explicitly links eligibility for the Section 45V tax credit with the Section 45U tax credit that is available only to existing nuclear plants. While Congress included vintage limitations in Section 45V for in-service and construction dates for hydrogen production facilities, it did not carve out generation facilities constructed prior to its passage. Furthermore, numerous terms in Section 45V clearly limit Treasury's discretion in considering factors that are not contemplated by the statutory text: lifecycle analysis is limited to the "process" of hydrogen production and does not go beyond the "point of production," and the credit is broadly available to "any" qualified clean hydrogen. In light of Treasury's lack of expertise in GHG emissions analysis and power system modeling, 45V specifically incorporates the GREET model, under which well-to-gate GHG emissions from nuclear-based hydrogen production are minimal.[5] Treasury's expansive interpretation of narrow statutory text is squarely foreclosed by the major questions doctrine, which the Supreme Court has repeatedly applied to precisely this context where the agency is not expert in the area it is seeking to regulate.[6]

In addition, Treasury provides no support for its inaccurate assumption that hydrogen production using new clean generation will not produce any induced emissions, while hydrogen production using existing clean generation necessarily will. In much of the country, there is already more demand for clean generation than can be supplied, and the § 45V credit does not bring about any incremental clean generation—it simply results in new clean generation that would otherwise be serving the grid being used for hydrogen production instead.

---

4 The MachH2 hub application stated that, if an additionality requirement is imposed, "nuclear hydrogen production across the country and specifically in the Midwest will not be developed."

5 Amgad Elgowainy, Argonne Nat'l Lab'y, Presentation at H2IQ webinar: *GREET Model for Hydrogen Life Cycle Emissions*, at Slide 8 (June 15, 2022), https://www.energy.gov/sites/default/files/2022-06/hfto-june-h2iqhour-2022-argonne.pdf; Argonne Nat'l Lab'y, *Hydrogen Life-Cycle Analysis in Support of Clean Hydrogen Production* at 20, Figure 2 (Oct. 2022), https://greet.es.anl.gov/files/hydrogenreport2022 (affirming that the GREET model's inputs include the emissions only of the direct source of electricity for production).

6 *See, e.g.*, *King v. Burwell*, 576 U.S. 473, 494 (2015) (concluding that it was "especially unlikely that Congress would have delegated this decision to the IRS, which has no expertise in crafting health insurance policy of this sort").

Treasury's shortsighted proposal would cause two of the Administration's signature achievements – the IRA and the IIJA – to fail to meet their emission reduction goals. There is no credible path to achieving the Administration's clean energy goals if misguided and unlawful rulemaking sidelines our nation's nuclear fleet and results in a path dependent entirely on energy that varies with the weather. Treasury should finalize a rule that will allow clean hydrogen production to expand on a timeline that meets the Administration's expectations, including DOE's Hydrogen Shot[7] and the U.S. National Hydrogen Strategy,[8] and the urgent need for climate solutions. Smart regulation can spur hydrogen's potential to decarbonize sectors of the economy where urgent progress is needed.

Our Company: Constellation's Contribution to Decarbonization

Constellation is the nation's largest producer of carbon-free energy and a leading supplier of competitive energy supply, including a variety of sustainable energy solutions, to millions of residential, public-sector and business customers, including three-fourths of Fortune 100 companies. Our fleet of nuclear, hydro, wind, natural gas, and solar facilities has the generating capacity to power the equivalent of approximately 15 million homes, producing 10 percent of the nation's emission-free energy. Constellation is helping to accelerate the nation's transition to a carbon-free future with an annual output that is nearly 90 percent emission-free.

Our world-class nuclear plants can support decarbonization of other sectors through the production of clean hydrogen needed to transition industry, agriculture and heavy-duty transportation away from fossil fuels. Thanks to advances in technology, carbon-free hydrogen can be produced from clean electricity through electrolysis. Unlike fossil fuel processes, electrolysis powered by nuclear energy is pollution-free.[9] Our fleet is particularly well positioned to advance clean hydrogen because nuclear plants generate carbon-free electricity 24/7 (efficiently utilizing electrolysis infrastructure to reduce costs), are located near water (needed for electrolysis), produce waste heat (which can increase the efficiency of hydrogen production), and are located near advantageous locations for many hydrogen end-users (minimizing the cost and logistical challenges of transporting hydrogen).[10]

---

7 U.S. Dep't of Energy, *Secretary Granholm Launches Hydrogen Energy Earthshot to Accelerate Breakthroughs Toward a Net-Zero Economy* (June 7, 2021), https://www.energy.gov/eere/fuelcells/articles/hydrogen-shot-introduction ("an all-hands-on-deck call" to "reduce the cost of clean hydrogen by 80% to $1 per kilogram in one decade").

8 U.S. Dep't of Energy, *U.S. National Clean Hydrogen Strategy and Roadmap* (June 2023) at 3, https://www.hydrogen.energy.gov/library/roadmaps-vision/clean-hydrogen-strategy-roadmap ("Pathways for clean hydrogen to decarbonize applications are informed by demand scenarios for 2030, 2040, and 2050 with strategic opportunities for 10 million metric tonnes (MMT) of clean hydrogen annually by 2030, 20 MMT annually by 2040, and 50 MMT annually by 2050.").

9 For more information on Constellation's work to advance clean hydrogen as a climate solution, please see our website: Constellation Energy Corp., *Hydrogen: The New Frontier in Energy*, https://www.constellationenergy.com/our-work/what-we-do/generation/clean-hydrogen.html

10 *Id.*

The unmatched reliability of nuclear power is what many customers including hydrogen producers need to increase efficiencies and drive down costs. We therefore have invested in developing hydrogen production facilities at our nuclear power plants to enable the scaling of carbon-free hydrogen to meet expected growth in demand across multiple sectors of the economy. In early 2023, Constellation began producing clean hydrogen as part of a demonstration-scale pilot project at the Nine Mile Point Nuclear Plant, the nation's first nuclear-powered clean hydrogen production facility.[11] This project was funded in part by a $5.8 million award from the Department of Energy. The 1.25 MW Proton Exchange Membrane ("PEM") electrolyzer and hydrogen handling system is co-located with the nuclear plant, powered exclusively by nuclear with no connection to the power grid.[12] The clean hydrogen made from this electrolyzer currently supplies Nine Mile Point's daily operational hydrogen use, thus eliminating reliance on vendor purchases. With support from NYSERDA, Nine Mile Point will also help demonstrate hydrogen fuel cell technology to provide long-duration energy storage for the electric grid.[13] Nuclear plants are particularly well suited to produce clean fuels to use as storage that injects energy onto the grid when weather-dependent resources are not available.

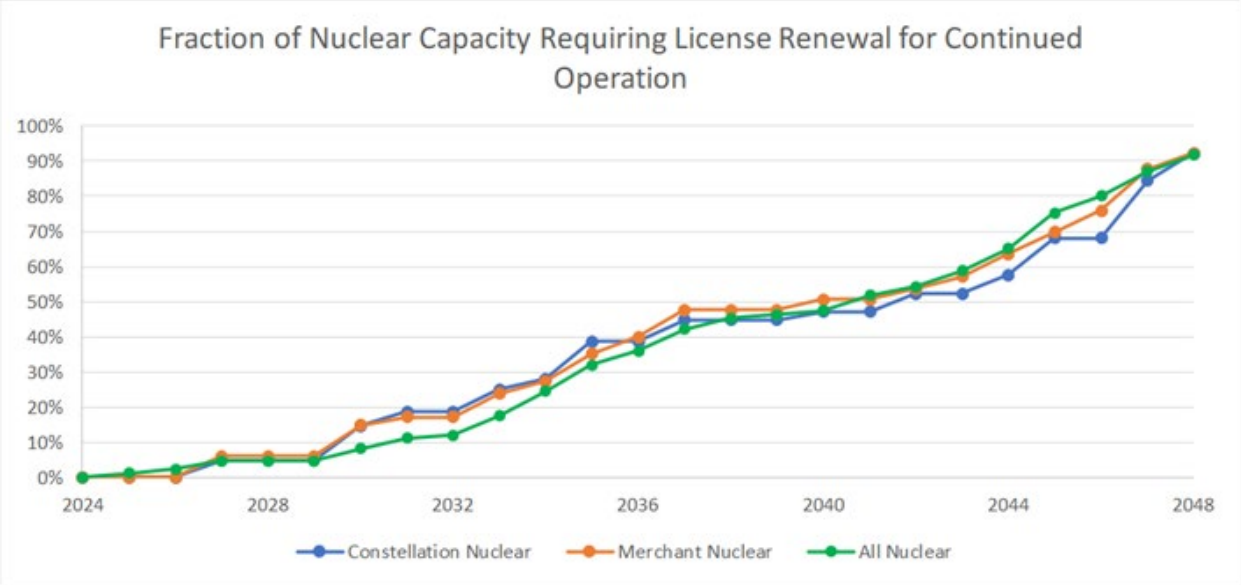
The impact of nuclear-based hydrogen production extends far beyond this small pilot project. Utilizing a portion of the country's nuclear fleet to make clean hydrogen will provide a pathway to relicensing and operating a large number of nuclear units that are near the end of their 20-year operating licenses. Thirty-nine percent of Constellation's nuclear capacity, which operates in competitive markets without access to traditional forms of utility cost recovery, will require license renewal by 2035, increasing to 47% by 2040 and 68% by 2045. The broader nuclear industry faces this same reality, both merchant units in competitive markets like Constellation and regulated units in traditionally-regulated states.

---

[11] Constellation Energy Corp., *Constellation Starts Production at Nation's First One Megawatt Demonstration Scale Nuclear-Powered Clean Hydrogen Facility* (Mar. 7, 2023), www.constellationenergy.com/newsroom/2023/Constellation-Starts-Production-at-Nations-First-One-Megawatt-Demonstration-Scale-Nuclear-Powered-Clean-Hydrogen-Facility.html.

[12] As discussed in the NEI comments, the GREET model has a pre-programmed lifecycle greenhouse gas emissions rate for hydrogen produced by electrolyzers co-located with and directly powered by a nuclear plant that are below the threshold for the full 45V tax credit. NEI's Comments on Proposed Section 45V Clean Hydrogen Regulations (REG-117631-23) (Feb. 26, 2024) at 13.

[13] *See supra* note 10.



Restricting the Section 45V credit to newly-built power would send a clear message that the Administration does not value these nuclear plants and that they should be retired instead of relicensed. According to researchers at the Pacific Northwest National Laboratory, Argonne National Laboratory, and Idaho National Laboratory, this would increase power sector emissions by ~0.4 GtCO2 per year and increase the cost of meeting mid-century carbon goals by $300 to $500 billion.[14] For Constellation's fleet alone, extending operating licenses will create over 900 million person-hours of work – 450,000 person-years of high-paying, family-supporting jobs. The Administration is putting these environmental and job benefits at risk by creating anti-nuclear barriers that violate the express statutory language of the IRA.

The DOE Hub Program and Other Private Sector Investments Are Jeopardized by Treasury's Proposed Incrementality Requirement

To leverage hydrogen as a decarbonizing force over the long term, it is essential to start scaling production and encouraging investment now.[15] Indeed, that is the shared goal of the seven hydrogen hubs including MachH2, a multistate alliance of public and private entities joining together to grow the hydrogen value chain in the Midwest. The MachH2 projects are estimated to reduce carbon emissions by approximately 3.9 million metric tons per year – equivalent to removing emissions from more than 867,000 gasoline powered cars annually – improving air

[14] Son H. Kim et al., *The Carbon Value of Nuclear Power Plant Lifetime Extensions in the United States*, 208 Nuclear Tech. 775, at 785, 791 (2022), https://www.tandfonline.com/doi/epdf/10.1080/00295450.2021.1951554?needAccess=true.

[15] U.S. Dep't of Energy, *Pathways to Commercial Liftoff: Clean Hydrogen*, at 1 (Mar. 2023), https://liftoff.energy.gov/wp-content/uploads/2023/03/20230320-Liftoff-Clean-H2-vPUB.pdf.

quality through avoided criteria pollutant emissions.[16] MachH2 also anticipates creating 13,600 direct jobs – 12,100 in construction jobs and 1,500 permanent jobs.

Constellation's portion of the MachH2 hub funding will go towards building the world's largest nuclear-powered clean hydrogen production facility at the LaSalle Clean Energy Center in Illinois. Like our Nine Mile Point electrolyzer, the LaSalle project would be directly connected to and powered exclusively by the nuclear plant, with no connection to or deliveries from the power grid.[17] The project would produce an estimated 33,450 tons of clean hydrogen each year and create over 1,400 good-paying jobs while spurring hundreds of additional jobs with potential off-takers.

Constellation and the MachH2 hub are committed to ensuring that all of the MachH2 projects are developed with equity and community benefit at the forefront. MachH2 is creating specific targets to ensure diverse hiring and contracting, including 40 percent of total subcontracted dollars going to Minority/Disadvantaged Business Enterprises (M/DBEs), roughly $30 million for new startups through an inclusive entrepreneurship program (focusing on M/DBEs), and a target of 45 percent diverse hiring.[18] As the largest source of hydrogen in the hub, Constellation's LaSalle project would drive a significant portion of these benefits and economic opportunities for underrepresented communities in Illinois.

The IIJA clearly envisioned this kind of role for existing nuclear plants in the clean hydrogen economy, with specific direction that to the maximum extent practicable at least one hydrogen hub demonstrate the production of clean hydrogen from nuclear energy. The selection of the MachH2 hub, with nuclear hydrogen production as a centerpiece, complied with that directive. The incrementality requirement proposed by Treasury for 45V eligibility would undo DOE's hub award by preventing nuclear from participating in this or any other hub. If hydrogen produced using existing behind-the-meter nuclear generation does not qualify for the full 45V credit, neither Constellation nor any other nuclear operator will be able to economically develop a commercially-scaled hydrogen production facility at a nuclear generating station. As a result, it will become impossible for the DOE to meet the statutory mandate in the IIJA.

Some academics and advocacy groups have claimed that producing clean hydrogen at scale is possible even with 45V rules that exclude the use of existing carbon-free resources like nuclear. These claims are misleading because they are based on studies that significantly underestimate the cost of new hydrogen production at commercial scale and assume a learning curve on those facility construction costs that cannot be achieved based on the proposed 45V eligibility. The studies referenced by these advocates base their costs largely on the purchase of the electrolyzer itself, but our real-world experience is demonstrating that over 50 percent of construction activity for a

---

[16] Midwest Alliance for Clean Hydrogen (MachH2) Selected as Regional Clean Hydrogen Hub by U.S. Department of Energy's Office of Clean Energy Demonstrations (OCED), Oct. 13, 2023, https://machh2.com/oced/.

[17] As with our Nine Mile electrolyzer, the pre-programmed lifecycle greenhouse gas emissions rate for electrolyzers with this configuration is below the threshold for the full 45V tax credit.

[18] U.S. Dep't of Energy Office of Clean Energy Demonstration, *Regional Clean Hydrogen Hubs Selections for Award Negotiations*, https://www.energy.gov/oced/regional-clean-hydrogen-hubs-selections-award-negotiations

hydrogen production facility is associated with balance of plant investments not captured in the analysis. These balance of plant activities include the Engineering, Procurement and Construction (EPC) costs for items such as: water intake, treatment, purification and discharge systems; air cooling equipment; buildings and control room; hydrogen pressurization; fire detection and protection systems; metering systems; and, electrical distribution systems. Another 10 percent of the project costs are associated with connecting the hydrogen production facility and hydrogen off-taker to the source of electricity (e.g., nuclear power plant) by installing electrical infrastructure including switchyard equipment and substations. The learning curve – and cost savings – referenced in those studies will not occur without the ability to have multiple commercial scale hydrogen facilities connected to highly-reliable sources of carbon-free electricity – like nuclear plants – that qualify for the full 45V credit. Projected cost savings require more than just improvements in the electrolyzer technologies. They also require the ability to utilize experience on the facility design, construction, and behind-the-meter electrical installations to lower overall hydrogen production costs.

Our view of project economics is informed by the substantial work that we have completed to move the planned LaSalle hydrogen production facility beyond initial due diligence phases. Constellation already has started construction on the behind-the-meter power facilities that will deliver clean energy to the hydrogen production facility. We also have completed a Front-End Engineering Design (FEED) study for the hydrogen production facility. This process involved over a hundred engineers completing technical evaluations, cost estimates, construction schedules, environmental reviews, risk assessments, and initial engagement of local community leaders. Constellation's project is ready to progress to the EPC phase but has been stalled due to uncertainty over the 45V regulations. While this development work was ongoing, Constellation engaged a number of potential off-takers interested in procuring clean hydrogen from the LaSalle facility or other future development sites, but those discussions are similarly stalled pending further clarity on 45V eligibility. Nevertheless, the progress we have made in developing the planned LaSalle facility and engaging off-takers gives Constellation a real-world view of the cost to develop large scale clean hydrogen production and the price tolerance of a variety of potential off-takers. None of this commercial reality is reflected in the studies relied upon by academics and advocacy groups claiming that hydrogen production is economic under an incrementality requirement.

Beyond the specific projects included in MachH2 and other hubs, the incrementality requirement will impair the nation's collective ability to build a robust hydrogen economy in the U.S. The development of hydrogen production facilities as part of a hub, including at the LaSalle nuclear generating station as part of MachH2, is only the beginning of further work needed to enable a broader hydrogen business. This involves incurring a range of startup costs related to capital allocation, staffing, training, marketing, operations, and maintenance. Constellation has taken several of these steps by hiring full-time employees to build projects, manage compliance, establish operations, and negotiate agreements with off-takers. However, a broader scope of hydrogen production, beyond the initial LaSalle project, is needed to support the range of investments needed to enable a hydrogen business and make clean hydrogen affordable for end-users. Constellation can only incur those startup costs and develop this new business if we have a

viable pathway to making it sustainable – one that does not exist in Treasury's proposal. The same is true for any other potential hydrogen producer.

How Treasury defines eligibility for the 45V credit will largely determine the trajectory of this emerging industry. Even if some companies are able to continue with their hub projects under the restrictive rules proposed by Treasury, they will proceed at a higher cost with lower volumes of hydrogen production, resulting in billions of federal dollars spent on a handful of bespoke projects that are inadequate to catalyze hydrogen deployment. This would be a tragic, and entirely avoidable, legacy for the Biden Administration.

Treasury's Proposal Discriminates Against Nuclear in Favor of Other Sources of Electricity

The proposed regulations would immediately impose an incrementality requirement while deferring compliance with a temporal matching requirement until 2028. Even assuming Treasury has the legal basis to adopt an incrementality requirement (which it does not[19]), there is no rational basis for providing no compliance flexibility for incrementality while waiving away other temporal matching requirements that Treasury concludes are equally necessary to prevent hydrogen production from resulting in significant induced emissions. Indeed, the most logical way to read the statute is that both temporal matching and deliverability are immediately necessary for any hydrogen production to qualify for the full 45V tax credit.

Eligibility for the 45V tax credit is based on lifecycle GHG emissions of hydrogen production, which includes the emissions profile of the electricity used to power the electrolyzer producing the hydrogen. To give effect to the statute's express focus on the "process" through which the "hydrogen … is produced," the consumption of zero-carbon electricity must line up with its production temporally and geographically. Where hydrogen producers receive electricity directly from a particular generator through co-location, as with our projects, the emissions profile of that electricity is clear. If using grid-delivered electricity with clean energy attributes temporally and geographically matched to consumption, the hydrogen producer can demonstrate functional equivalence to a directly-connected electrolyzer, with the same indisputable connection to the emissions profile of the source generator.

In contrast, annual certificates are not matched to the time when the electrolyzer is actually operating and therefore are insufficient to demonstrate that the producer is using a process powered by clean generation at any particular point in time. For example, if an electrolyzer running only during the day is purchasing a clean energy attribute created in the middle of the night, that attribute would be completely disconnected from the "process" by which the "hydrogen … is produced." As borne out by research and experience, temporal mismatch undermines the accuracy of emissions estimates.[20] Claims that zero-emission electricity is used to produce hydrogen must be

[19] As noted above, Constellation supports the comments submitted by the Nuclear Energy Institute in this proceeding and incorporates herein all aspects of those comments, including evidence demonstrating the irrationality of Treasury's proposed incrementality requirement.

[20] As demonstrated in a 2021 study by Columbia University, customers matching wind and solar purchases to electricity consumption on an annual basis end up using grid power for 26-50% of their demand in New England,

supported by attribute certificates generated during the same hour in which the hydrogen producer is operating.

In the proposed rule, Treasury recognizes the need for temporal matching in order to have accurate emissions rates but expresses concern that hourly tracking is not yet commercially and technically feasible.[21] We have explained in prior comments why these concerns are overstated.[22] Treasury does not need to wait until 2028 to implement hourly matching and certainly should not extend the timeframe further. But even if these technical concerns are valid, they do not authorize Treasury to violate the statute. As DOE's memo to Treasury points out, where "the generation can occur at a different location and/or at a different time than the buyer's load, there is risk that the buyer's load would induce significant GHG emissions from other sources of generation."[23] Treasury's interpretation of the statute to require consideration of induced grid emissions means that no hydrogen producer should qualify for the full 45V tax credit until it is able to demonstrate compliance with the statutory standard. By proposing annual matching until 2028, Treasury is allowing renewable-powered hydrogen production to qualify for the tax credits even when accurate calculation of its lifecycle GHG emissions (in light of backfill from the grid when renewables are not generating) would exceed the numeric thresholds specified in the statute. Either the statute requires consideration of induced grid emissions or it does not. Treasury cannot have it both ways.

20-46% in Texas, and 20-40% in California, with associated carbon emissions ranging from 500 tons to 2,000 tons per year depending on the region. *See* Melissa Lott & Bruce Phillips, Columbia University Center on Global Energy Policy, *Advancing Corporate Procurement of Zero Carbon Electricity in the United States: Moving from RE100 to ZC100* (Dec. 2011), at 21-22, https://www.energypolicy.columbia.edu/publications/advancing-corporate-procurement-zero-carbon-electricity-united-states-moving-re100-zc100/. On a broader scale, California has been able to achieve nearly 100% clean-power use during certain lower-demand daylight hours, but must rely on high levels of polluting generation to keep the system stable during evening hours when solar starts to fall offline. *See, e.g.*, Order Instituting Rulemaking to Establish Policies, Processes, and Rules to Ensure Reliable Electric Service in California in the Event of an Extreme Weather Event in 2021, Rulemaking No. 20-11- 003, Legal and Policy Brief of the California Independent System Operator Corporation at 5-8 (Cal. Pub. Utils. Comm'n Feb. 21, 2021), http://www.caiso.com/Documents/Feb5-2021-Legal-and-Policy-BriefReliableElectricService-ExtremeWeatherEvent-R20-11-003.pdf

[21] Notice of Proposed Rulemaking, 88 Fed. Reg. 89,220, 89,233 ("The DOE has advised that hourly matching is necessary to properly address significant indirect emissions from electricity use and that the tracking systems and related contractual structures for hourly matching will take some time to develop to an appropriate level of maturity.")

[22] Power grid operators across the country already track the real time production of all grid-connected electric generators to ensure reliable operation. Using this information, clean energy attribute certificates are created and tracked in registries that generally overlap with the regional power grid footprints. Two of the largest registries – the M-RETS and GATS systems – have hourly functionality in place. These registries can be used by any generator, regardless of its location, to document the production of electricity by simply registering with the system and activating the necessary data exchange. Hourly functionality is currently available to large portions of the country today and could be made quickly available to the rest of the country in response to either regulatory requirements or expanded customer requests. *See* Constellation Comment on IRS Notice 2022-58 (Dec. 2022), *supra* note 2, at 10.

[23] U.S. Dep't of Energy, *Assessing Lifecycle Greenhouse Gas Emissions Associated with Electricity Use for the Section 45V Clean Hydrogen Tax Credit* (Dec. 2023), at 9.

In contrast, the proposed regulations provide no flexibility for the use of existing sources of carbon-free electricity like nuclear units. This is a glaringly disparate treatment of nuclear power, particularly since the IRA explicitly directs Treasury to make nuclear output eligible to power 45V-qualifying hydrogen production and Treasury even acknowledges that there are a range of circumstances in which using existing nuclear units for hydrogen production does not result in induced grid emissions. To be fair, Treasury does seek comment on how to reflect those circumstances in its final regulations and Constellation supports the recommendations provided by the Nuclear Energy Institute. Constellation also understands that Treasury is balancing many competing considerations in crafting these regulations. The most reasonable interpretation of the IRA and most effective approach to 45V eligibility are the same: allow existing sources of highly-reliable carbon-free electricity like nuclear power to pair with new sources of variable carbon-free electricity like wind and solar in order to make a portfolio of resources available to power the hydrogen production needed to decarbonize our economy.

Hydrogen producers will find it difficult to develop projects that are economic if they can only produce hydrogen during the times when wind and solar generation are available. Hydrogen production is a capital-intensive process, requiring high utilization of equipment in order to keep the cost of delivered hydrogen affordable enough for end-users to switch from fossil-based alternatives. It is true that some start-up companies are claiming that future electrolyzer technologies will be more flexible and able to operate at lower utilization without impairing economics. But that is not the current commercial reality. Currently-available electrolyzer technologies require higher utilization that, in turn, requires a consistent supply of carbon-free electricity to make clean hydrogen a realistic option to fossil-based fuels. It also is true that hydrogen producers can address wind and solar variability by installing batteries to keep power flowing into electrolyzers or by installing hydrogen storage facilities to keep the hydrogen flowing when electrolyzers ramp down. But again, these solutions only drive up capital costs, making the resulting hydrogen too expensive to be of interest to customers.

Our work over the last year developing the LaSalle hub project has confirmed that using nuclear plants to power electrolyzers is the least-cost option to achieving time- and locally-matched hydrogen production. The incrementality requirement proposed by Treasury takes this option off the table. If Treasury instead allows hydrogen producers to access hourly matched, deliverable zero carbon generation from existing nuclear, they can use a blend of resources to enhance the viability and affordability of all hydrogen projects and scale up production to support multi-sector decarbonization – exactly what Congress intended in both the IIJA and IRA.

Conclusion

Treasury should not intentionally sideline its commercial nuclear power fleet in the fight against climate change. For Section 45V to have its intended effect, Treasury must provide a clear and economically viable pathway for hydrogen produced using existing generation and credible emerging clean hydrogen pathways to qualify for the tax credit. This is an opportunity for the United States to be a leader in a new industry, but only under a regulatory approach that enables the participation of all available clean energy assets.

W. Mason Emnett
Senior Vice President, Public Policy
Constellation Energy Corporation
250 Massachusetts Avenue NW, Suite 760
Washington, DC 20001
mason.emnett@constellation.com

Aditi Prabhu
Assistant General Counsel, Environmental Policy
aditi.prabhu@constellation.com