



February 26, 2024

Via Electronic Mail

Internal Revenue Service
CC:PA:LPD:PR (REG-117631-23)
Room 5203
P.O. Box 7604
Ben Franklin Station
Washington, D.C. 20044

**RE: Section 45V Credit for Production of Clean Hydrogen; Section 48(a)(15)
Election To Treat Clean Hydrogen Production Facilities as Energy Property**

To Whom it May Concern:

NATSO, Representing America’s Travel Centers and Truckstops, and SIGMA: America’s Leading Fuel Marketers (together, the “Associations”)¹ respectfully submit these comments in response to the proposed regulations (“Proposed Rule” or the “Proposal”) relating to the credit for production of clean hydrogen (“clean hydrogen production credit” or the “45V” credit), as enacted under the Inflation Reduction Act of 2022 (“IRA”).² We would welcome the opportunity to meet with the Treasury Department (“Treasury”), the Internal Revenue Service (the “IRS”), and the Environmental Protection Agency (“EPA,” collectively the “Agencies”) to discuss these comments in greater detail, or to answer any questions that you may have.

When Congress enacted the 45V credit, it was intended to catalyze robust investment in clean hydrogen production and associated supply chains. A “three pillar” scheme that seeks to minimize avoidable ancillary emissions increases resulting from 45V’s implementation is not inherently unsound. Many specific elements of Treasury’s proposal, however, would effectively neuter the 45V credit and surrender the decarbonization potential of a burgeoning hydrogen industry. The Proposal unnecessarily tethers the pace of hydrogen’s development to the pace of electric utilities’ market innovation. This sacrifices one of hydrogen’s core advantages over electricity. Private enterprise will not invest in hydrogen production if the return on that investment is contingent upon unattainable timelines.

The comments that follow are intended to enable the 45V credit to function as a catalyst to decarbonize heavy-duty trucking as quickly as possible.

¹ NATSO currently represents approximately 5,000 travel plazas and truckstops nationwide, comprising both national chains and small, independent locations. SIGMA represents a diverse membership of approximately 260 independent chain retailers and marketers of motor fuel.

² See Public Law 117-169, title I, § 13204(a)(1)–(3), 136 Stat. 1936, 1938, 1939 (Aug. 16, 2022).

The Associations represent more than 80 percent of retail sales of motor fuel in the United States, and well above 90 percent of retail sales of diesel. Our membership serves as the home away from home for America’s truck drivers; they coordinate closely with trucking fleets to ensure their operations are responsive to the trucking industry’s needs. This includes calibration of fuel offerings and site locations, thereby ensuring that travel centers are located at convenient places for truck drivers to find the types of fuel that their vehicles demand. The site location assessment has evolved with the supply chain over time, always tethered to ports and other freight terminals, and, in recent years, increasingly tied to the location of Amazon warehouses. We expect it will continue to evolve as new fuels such as hydrogen enter the market.

Many of the Associations’ members – particularly those with highway locations that service heavy-duty commercial trucks – are actively expanding their hydrogen capabilities in response to market- and federal policy signals. They have developed new commercial relationships with companies in the hydrogen value chain, actively participate in multiple “hydrogen hub” projects,³ and are actively exploring hydrogen grant and loan guarantee opportunities.⁴

Unlike light-duty electric vehicle purchases, which can be motivated by non-financial concerns, commercial decisions to invest in heavy-duty vehicles will be grounded in economics. Commercial businesses will not buy heavy-duty electric or hydrogen vehicles at scale unless the total cost of operation of doing so is less than the cost of diesel-powered trucks. Minimizing fuel costs should therefore be an essential element of any policy intended to decarbonize heavy-duty trucking, including the 45V credit.

The Associations’ members have ample experience responding to carbon intensity accounting price signals and leveraging government incentives – including tax incentives – to lower the price commercial fleets pay for fuel, while simultaneously displacing petroleum-based fuels with more environmentally attractive alternatives. They are eager to apply the lessons they have learned through that experience to hydrogen-powered trucks.

In the heavy-duty space, the commercial and emission-reduction opportunities in hydrogen are more crystallized and compelling than is the case with electricity. Transitioning to battery electric trucks requires expensive grid upgrades. With uncertain time horizons, it would also adversely impact commercial trucking operations by extending refueling times and injecting a patchwork of electricity tariffs and regulations into what today is an efficient private commercial trucking market.

Hydrogen used in over-the-road trucking, on the other hand, would leverage existing refueling infrastructure and a supply chain familiar to the industry – centralized production, transportation to market and retail fuel sales through a nationwide network of well-functioning and

³ See generally U.S. Department of Energy, “Regional Clean Hydrogen Hubs Selections for Award Negotiations,” Energy.gov, October 13, 2023, <https://www.energy.gov/oced/regional-clean-hydrogen-hubs-selections-award-negotiations>.

⁴ See generally U.S. Department of Energy, “Program Guidance for Title 17 Clean Energy Financing Program Original Program Guidance for Title 17 Clean Energy Financing Program Original,” May 19, 2023, <https://www.energy.gov/lpo/articles/program-guidance-title-17-clean-energy-program#page=1>.

convenient refueling locations. In addition, the time it takes to refuel a hydrogen truck is similar to the time it takes to refuel a diesel truck, causing minimal operational disruptions compared with battery electric trucks that take longer to refuel. Heavy-duty trucking business models and economics are plainly more conducive to hydrogen as a refueling technology than battery electric technology. As transportation energy retailers and distributors, our membership will rely upon hydrogen producers to provide an economical supply of clean hydrogen in the years ahead. Section 45V should be implemented in a manner that maximizes the market's ability to realize this objective.

I. The Section 45V Hydrogen Production Tax Credit

The IRA provided for, in relevant part, a ten-year production tax credit for qualifying clean hydrogen production facilities. Qualifying clean hydrogen must be produced through a process that results in a well-to-gate lifecycle greenhouse gas (“GHG”) emission rate less than 4 kilograms (“kg”) of carbon dioxide equivalent (“CO₂e”) per kg of hydrogen.⁵ The lifecycle emission GHG rate is determined under the Argonne Greenhouse gases, Regulated Emissions, and Energy use in Technologies (Argonne “GREET”) model, and is utilized to calculate the value of the 45V credit.⁶

The value of the credit varies from \$0.12 per kg (for hydrogen with a lifecycle GHG emissions rate between 2.5 and 4 kg of CO₂e per kg of hydrogen) up to \$0.60 per kg (for hydrogen with a rate of less than 0.45 kg of CO₂e per kg of hydrogen). If an eligible production facility meets prevailing wage and apprenticeship requirements, this means the maximum credit value is \$3.00 per kg of hydrogen.⁷

The Proposal provides guidance regarding the calculation of the lifecycle GHG emission reduction percentage under Section 45V. That guidance is the subject of this letter.

II. Fuel Distributors and Retailers Support Incentives for Hydrogen Infrastructure.

The Associations' members comprise the country's downstream fuel distribution system. They should be viewed as surrogates for the consumer in that they identify the most reliable, lowest-cost transportation energy available, and deliver that energy to every community in the country. The Associations' members are agnostic to the type of transportation energy that their customers purchase from them and are prepared to invest in any transportation energy technology that their customers desire, including hydrogen.

Existing retail fuel locations are optimal candidates for the buildout of hydrogen refueling stations. Clean, hydrogen-powered vehicles represent an essential component of the heavy-duty decarbonization portfolio. Importantly, incorporating hydrogen into the nation's suite of clean energy solutions would leverage *existing* energy infrastructure to decarbonize heavy-duty transportation.

⁵ *Supra* n. 2.

⁶ *Id.*

⁷ *Id.*

Many of the Associations’ members – particularly those with on-highway locations that service heavy-duty commercial trucks – are actively evaluating expanding their hydrogen capabilities.⁸

III. The “Three Pillars” Construct

The Proposal includes three complex “pillar” requirements governing energy attribute certificates (“EACs”) that hydrogen producers who use electricity to produce hydrogen must meet. These requirements have no basis in statute; they appear not to have been formally developed as policy concepts until after the IRA was enacted.⁹ The Proposal nevertheless layers these requirements on top of the low-emission requirements that are expressly included in the IRA that tie the value of the 45V credit to the producer’s GHG emissions as measured under the GREET model.

Since the enactment of the IRA, the Members of Congress who authored Section 45V have repeatedly clarified their intent was to allow varied, existing sources of clean electricity generation to qualify for the credit.¹⁰ They did not intend to permit the Argonne GREET model to be reconfigured to inject new restrictions into the law.¹¹

⁸ One company has signed a Memorandum of Understanding with a major hydrogen producer to pursue the deployment of an extensive hydrogen retail network, starting with the initial deployment of hydrogen stations along a strategic trucking route. The initial aim is to support the development of 150 tons per day of hydrogen production and the refueling infrastructure capable of supplying more than 2,000 heavy-duty vehicles. A different member-company is currently constructing two heavy-duty hydrogen refueling stations in California and maintains a specialized fleet dedicated to hauling and delivering hydrogen fuel by truck. Yet another member –located on I-80 in the Midwest – is a leading participant of the Mid-Continent Hydrogen Hub’s efforts to service class 8 hydrogen trucks in Nebraska, Iowa, and Kansas. A fourth member-company is similarly focused on opportunities to grow its hydrogen portfolio and has been actively involved in the Midwest Alliance for Clean Hydrogen.

⁹ See Colton Poore, “Princeton Engineering - without Guidance, Inflation Reduction Act Tax Credit May Do More Harm than Good,” Princeton Engineering, December 20, 2022, <https://engineering.princeton.edu/news/2022/12/20/without-guidance-inflation-reduction-act-tax-credit-may-do-more-harm-good>.

¹⁰ See Nov. 9, 2023 Letter from Senator Tom Carper to Treasury on the 45V Credit *available at* https://www.epw.senate.gov/public/_cache/files/e/4/e4183b35-14e4-47ca-b125-a60f69a35cb0/FDBCE69166D6C705D0B40634487EC73A.2023.11.09-45v-hydrogen-letter-final.pdf (“I am concerned that the Department of Treasury might decide to require hydrogen producers to utilize only newly developed clean energy resources, which was not the intent behind the underlying legislation [emphasis added]. During floor consideration of the IRA, I engaged in a colloquy with Senate Finance Committee Chairman Wyden regarding the intent for 45V. This colloquy addressed the significance of ensuring that the tax credits are technology-neutral and allow for a wide range of hydrogen production methods to qualify.”); *see also* Comments to E&E News from Senator Joe Manchin on the Proposal, underscoring lawmakers’ concerns that the overly stringent proposed requirements would effectively neuter the credit entirely: “[the Proposal] has killed the whole thing that could be a tremendous transition. We’ve put four or five hydrogen hubs in limbo,” (Jan. 12, 2024) *available at* <https://www.eenews.net/articles/manchin-carper-predict-biden-will-ease-hydrogen-rules/>

¹¹ See Nov. 6, 2023, Letter on Implementation of the Section 45V Clean Hydrogen Production Tax Credit signed by eleven U.S. Senators, *available at* <https://subscriber.politicopro.com/f/?id=0000018b-ab2e-d7df-abbf-ef6fb5ca0000> (“While 45V allows for ‘a successor model (as determined by the Secretary),’ this additional flexibility was included as a safeguard in the unlikely event the GREET model was no longer available at some future date and should not be interpreted as a license to create a new LCA model or additional regulatory prescriptions [emphasis added]... We hope

As a policy matter (*i.e.*, putting aside the question of Treasury’s legal authority to proceed down this path), a version of the “three pillars” concept can be a part of 45V’s implementation without disrupting Congress’ objective of jumpstarting a domestic clean hydrogen industry. That is only true, however, if the extra-statutory requirements that Treasury develops do not effectively preclude that industry from developing.

The Associations have serious concerns that Treasury’s proposal would do just that.

To ascertain the GHG emissions associated with the electricity used for the hydrogen production process, the Proposal requires hydrogen producers to purchase and retire qualifying EACs for each unit of electricity that the taxpayer claims from the source. The “three pillars” refer to the requirements hydrogen producers must meet to obtain EACs and claim the credit.

EACs should enable hydrogen producers to compete over clean electricity to power their production processes. Carbon intensity accounting as an enabler for market signals is a critical missing component of the hydrogen value chain today. EACs under 45V should not only incentivize hydrogen production and lower-cost clean hydrogen being available at retail, but should also incentivize upstream investments in clean electricity generation to power the hydrogen production process (just as Renewable Identification Numbers (“RINs”) under EPA’s Renewable Fuel Standard (“RFS”) program subsidize the production *and* distribution and retailing of renewable fuels).

At the same time, if EACs are exceedingly expensive or impossible to obtain, they will fail to serve this purpose and undermine the entire 45V tax credit.

a. Proposed Incrementality (or “Additionality”) Requirements

The Proposed Rule generally requires that EACs represent incremental additional sources of electricity from clean power generation that began commercial operations no more than 36 months prior to the date the hydrogen facility was placed in service. This requirement is designed to minimize ancillary, non-renewable electricity generation as a result of the 45V credit.

The proposed 36-month window is too short and will unnecessarily curtail the ability of many power plants, especially nuclear facilities, to serve as sources of power for clean hydrogen production.

Congress, when drafting Section 45V and the IRA more broadly, developed a variety of incentives for new clean electricity generation. Among other federal incentives, the IRA expanded and extended a tax credit for production of electricity from renewable sources; modified and extended a tax credit for investment in renewable energy projects; created a new investment tax credit for small-scale solar and wind facilities on Indian land and in low-income communities;

the final guidance will avoid evolving and complex eligibility criteria—such as overly stringent additionality, deliverability, and time matching requirements—that could raise costs, suppress hydrogen production, feedstock and production pathway innovation, and private-sector investment, while discriminating against some regions based on their existing clean energy mixes.”)

created a new tax credit for production of clean electricity; created a new tax credit for investment in facilities that generate clean electricity; and created a new production tax credit for domestic manufacturing of components for solar and wind energy, inverters, battery components, and critical minerals.¹² This is in addition to the clean fuel production credits in Section 45Z and 45V that are designed to further incentivize fuel producers to pay a premium for cleaner electricity.

In addition, several states have enacted, or are in the process of considering, various forms of clean electricity standards that either incentivize or require the electrical grid to transition to renewable forms of electricity in the coming decades. These incentives and mandates for clean power generation will ameliorate at least some of the risk of new, fossil- fuel-based electricity generation as a result of the 45V credit, while enabling that credit to serve as a catalyst for a domestic clean hydrogen industry.

As noted above, there are absolutely no additionality requirements in the 45V statutory language. Congress allowed clean hydrogen production facilities to claim the 45V tax credit even if the facility uses electricity produced from an existing nuclear plant that claims the 45U tax credit. This clearly demonstrates that strict incrementality requirements are misaligned with Congressional intent. To mitigate the extent to which incrementality requirements undermine Congressional intent to encourage hydrogen production, the Associations support a percentage-based incrementality waiver that IRS suggests in the Proposal, but urge IRS to increase the waiver value from 5 to 10 percent.¹³ IRS correctly notes that the waiver would capture existing electricity generation that would otherwise be discontinued but for new clean hydrogen production.

At a higher level, however, we encourage the Agencies to be mindful of the various clean electricity generation incentives being developed, and the length of time it will take for those incentives to yield fruit. Regulated utilities need commission approval to make sizeable investments, and also need commission approval to adjust those investments as events or circumstances necessitate. Obtaining commission approvals takes time and can slow the pace of investment which will translate into delayed renewable power production facilities and subsequently delayed clean hydrogen production projects.

Private sector buildout of hydrogen production facilities and the broader hydrogen supply chain has the potential to be much faster to market than the utilities' buildout of cleaner electricity capacity. Unless hydrogen investments are made on a parallel track in the years leading up to the buildout of cleaner electricity capacity – rather than waiting until after that capacity exists – it will take far longer than necessary for hydrogen to displace diesel in heavy-duty trucking

¹² See generally The White House. “Inflation Reduction Act Guidebook.” The White House, August 16, 2022. <https://www.whitehouse.gov/cleanenergy/inflation-reduction-act-guidebook/>.

¹³ See *Supra* n. 2 at 89232 (“The Treasury Department and the IRS seek comments on this five percent allowance approach, including the merits of this approach compared to the targeted pathways described, particularly with respect to balancing administrative feasibility and burden with accuracy of identifying circumstances with a low risk of induced grid emissions. The Treasury Department and the IRS also seek comments on whether 5 percent is the appropriate magnitude for an allowance.”)

applications.¹⁴ As renewable generation comes online and transmission capacity increases, reasonable *temporal-matching* and *regionality* requirements should sufficiently mitigate avoidable ancillary emission increases. As proposed, incrementality is an unnecessary, counterproductive element of this equation. Treasury should consider abandoning the requirement entirely in the context of 45V guidance.

b. *Proposed Deliverability (or “Regionality”) Requirements*

The Proposal generally requires that any EAC used to claim the 45V credit must represent electricity that is generated within the same transmission region or territory as the production facility.

The Associations’ views on this subject are mixed. On the one hand, the Proposal appropriately recognizes that production facilities may not always be located adjacent to renewable sources of energy. It enables hydrogen producers to circumvent that reality by granting them access to any clean electricity that is produced throughout a much broader geographic territory than its immediate vicinity. The Associations support this flexibility.

The Associations simultaneously question the wisdom of having a deliverability requirement at all if the goal is to maximize emission reductions as quickly as possible. For instance, IRS should want to encourage a prospective wind project in New England to come to fruition on account of a hydrogen producer in Texas purchasing the New England facility’s EACs at a premium. This is particularly true if the only way diesel trucks in Texas transition to hydrogen is if hydrogen producers in that state can access EACs from far-away sources of clean energy. The energy transition should motivate the federal government to harness the country’s geographic footprint and associated comparative advantages in different regions, rather than create disparate geographic winners and losers.

For these reasons, we encourage the Agencies to consider other ways of satisfying the deliverability requirement, including instances where EACs can be delivered from a clean electricity generating facility in one region to a hydrogen production facility in a different region. The Associations would be eager to work with the Agencies in that endeavor.

c. *Proposed Temporal-Matching Requirements*

The Proposal is exceedingly strict on the temporal-matching requirement. Specifically, it requires that beginning in 2028, the electricity represented in the EAC be generated in the same hour that the hydrogen production facility *uses* the electricity to produce hydrogen. EACs are not currently generated with such detail and are unlikely to be before 2028.¹⁵ Whether they are or not

¹⁴ There is a reason that Olympic relay runners start running before their teammate hands them the baton; if they waited until they had the baton in hand to start running, they would lose too much time transitioning from one runner to another and the team would lose the race.

¹⁵ See *Supra* n. 2 at 89233 (“Hourly tracking systems for EACs are not yet broadly available across the country and will take some time to develop. The Treasury Department and the IRS acknowledge uncertainty in the timing of implementing an hourly matching requirement, however, and request comments on the appropriate duration of this

will depend upon the speed with which the broader electricity sector innovates in the coming years to accommodate those types of capabilities.

Limiting an EAC's time-of-use to the hour of its generation will significantly increase the cost of clean hydrogen and stunt the development of a clean hydrogen market. It will also deter investment and result in fewer production facilities and thus fewer places where hydrogen can displace diesel fuel in heavy-duty trucks. For example, clean hydrogen production facilities utilizing electrolyzers require a high utilization rate to reduce the cost per unit cost (cost per kilogram) of clean hydrogen. Requiring clean hydrogen production facilities to use an undeveloped, and untested hourly matching system will limit production hours, *i.e.*, utilization, and drive up the cost of clean hydrogen. Requiring hourly matching before it's a commonly available and adequately tested grid accounting mechanism increases the cost of clean hydrogen (hindering adoption) and imperils the development of clean hydrogen production facilities.

Although the Proposal's "transition rule" would appear to permit facilities to take advantage of a more lenient "annual" time-matching requirement for the next several years, the Associations are concerned that, until hourly time-matching EAC capabilities materialize, banks may be reluctant to finance hydrogen production projects that, starting in 2028, will necessarily rely upon hourly time matching to be competitive.

It is inconsistent with Congressional intent to so strictly tether 45V's efficacy to the electricity sector's rapid progress in accommodating hourly temporal matching. Placing disproportionate burdens on clean hydrogen at this nascent stage of the industry's development is anathema to 45V's policy objectives. Companies are currently capable of calculating the carbon intensity of electricity being sent to the facility. Embedding temporal flexibility within 45V will enable hydrogen production facilities to operate on low-carbon energy throughout the day – even when the wind is not blowing and the sun is not shining. Facilities should be permitted to invest in and utilize (well-established) market structures to source carbon-free power, both to enable the facilities to be competitive, and to further augment the business case for upstream low-carbon electricity and hydrogen production investments.

The Associations recommend that Treasury's temporal-matching of energy inputs be matched on an annual basis through 2032. Without substantial change to this aspect of the Proposal, IRS threatens to neuter 45V before it even gets off the ground. This not only undermines Congressional intent with respect to hydrogen tax incentives, but it *also* undermines various other incentive programs being administered by other agencies¹⁶ that rely upon a coherent 45V scheme.

i. Request for Clarity Regarding Carbon Intensity Averaging

The Proposal is unclear as to whether a facility's carbon intensity is calculated on an annual average or hourly basis. The distinction is extraordinarily consequential. If carbon intensity ("CI")

transition rule to hourly matching, including specific data regarding current industry practices, the predicted timelines for development of hourly tracking mechanisms, and the predicted timeline for market development for hourly EACs.")

¹⁶ See *Supra* n. 3-4.

is calculated on an annual average, running a production facility with grid backup without environmental attribute certificates (“EACs”) for those megawatt hours would result in average CI being less than \$3/kg for all hydrogen the facility produces in a given year. On the other hand, averaging power inputs would enable facilities to bifurcate CI for hydrogen produced with EACs and hydrogen produced with backup grid electricity, such that the latter will not disrupt the former’s ability to access the full value of the available credit for EAC production. The Associations strongly support hourly averaging, which is more standard in low carbon analysis and would result in an appropriately more robust 45V credit value.

IV. CONCLUSION

It is essential that the implementation of the 45V credit aligns with Congressional intent and catalyzes robust investment in clean hydrogen production. An aggressive, but measured, approach to implementing Section 45V will result in game-changing reductions in emissions and criteria pollutants from hydrogen being used in hard-to-abate sectors such as heavy-duty trucking. It would allow a domestic green hydrogen industry to develop *alongside* a cleaner electricity industry, enabling hydrogen supply chains to grow and be competitive well beyond Section 45V’s expiration. Any near-term, ancillary, electricity-related emissions increases would be more than offset by the emission reduction opportunities associated with maintaining hydrogen as a viable means to decarbonize transportation.

Thank you for your consideration of these comments.

Sincerely,



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