

Congress of the United States

Washington, DC 20515

September 11, 2024

The Honorable Janet Yellen
Secretary
U.S. Department of the Treasury
1500 Pennsylvania Avenue NW
Washington, D.C. 20220

The Honorable Michael Regan
Administrator
Environmental Protection Agency
1200 Pennsylvania Avenue NW Washington,
D.C. 20460

The Honorable Jennifer Granholm
Secretary
U.S. Department of Energy
1000 Independence Ave SW
Washington, D.C. 20585

John Podesta
Senior Advisor to the President for Clean
Energy Innovation and Implementation
The White House
1600 Pennsylvania Ave NW
Washington, D.C. 20500

The Honorable Shalanda Young
Director
Office of Management and Budget
725 Seventeenth Street NW
Washington, D.C. 20503

Ali Zaidi
National Climate Advisor
The White House
1600 Pennsylvania Ave NW
Washington, D.C. 20500

Dear Secretaries Yellen and Granholm, Administrator Regan, Director Young, Mr. Podesta, and Mr. Zaidi,

When Congress drafted the climate provisions of the Inflation Reduction Act (IRA), including the Section 45V Tax Credit for Production of Clean Hydrogen (45V), our primary intent was to develop a suite of incentives that would result in substantial emissions reductions. The 45V tax credit is a key part of the IRA, which will help decarbonize hard-to-abate industrial sectors. Treasury's proposed rules for 45V remain critical to ensuring that 45V does not increase net carbon pollution, and we urge Treasury to finalize rules consistent with its proposal.

As members deeply involved in the crafting and passage of the IRA, our goal was always to enact a package of incentives that would put the United States on track to meet its Nationally Determined Contribution (NDC)¹ of 50 to 52 percent emissions reductions by 2030 compared to a 2005 baseline, a target scientists state is necessary to avoid exceeding 1.5 degrees Celsius of warming. To ensure the IRA lived up to this goal, hundreds of hours of work went into the emissions analysis of various competing policies.

¹ United States Department of State, "The United States' Nationally Determined Contribution: Reducing Greenhouse Gases in the United States: A 2030 Emissions Target," 2021, <https://unfccc.int/sites/default/files/NDC/2022-06/United%20States%20NDC%20April%2021%202021%20Final.pdf>.

New analysis from Energy Innovation shows that if proper guardrails are not in place, 45V could actually increase emissions by 2 to 3 percentage points.² This is significant: since 2005, U.S. emissions have only declined by 18 percent.³ In other words, getting the 45V rule wrong could erase one sixth of our progress to date.

We agree on the need for a robust, clean hydrogen industry. The environmental impact and energy efficiency of hydrogen depends on how it is produced. Currently, most hydrogen is produced by natural gas reforming or gasification, and marginally by electrolysis and other methods. Electrolytic hydrogen has the potential to cut emissions in the hardest-to-abate sectors, particularly where direct electrification is unfeasible. However, because of the energy intensity of the electrolysis process, when powered by gas or coal, electrolyzers produce hydrogen with 1.5-5 times the emissions of conventional hydrogen made through steam methane reforming (SMR).⁴ As a result, estimates indicate that, without safeguards, 45V would actually *increase* the emissions intensity of U.S. hydrogen production.⁵ Taxpayer dollars must not blindly support all kinds of electrolytic hydrogen or we risk eroding climate progress and further subsidizing the fossil fuel industry at the expense of environmental justice and American consumers.⁶

45V should also not blindly support the production of hydrogen from fossil fuels. In addition to being major sources of greenhouse gas emissions, SMR hydrogen production poses severe pollution risks to frontline communities.⁷ Accounting loopholes that allow conventional fossil hydrogen to qualify for 45V must be prohibited; it is unconscionable to let federal funds prop up a greenwashed industry that pollutes historically marginalized communities.

Reserving the tax credit for truly clean hydrogen that reduces emissions is directly in line with the statutory text of the IRA, which plainly states congressional intent. 45V's subsidy is reserved for qualified clean hydrogen "produced through a process that results in a lifecycle greenhouse gas emissions rate of not greater than 4 kilograms of CO₂e per kilogram of

² Dan Esposito, "Evidence Shows Three Pillars Remain Crucial for 45V Hydrogen Tax Credit to Protect Climate, Consumers, Industry," Energy Innovation, July 26, 2024.

<https://energyinnovation.org/wp-content/uploads/2024/07/Evidence-shows-three-pillars-remain-crucial-for-45V-hydrogen-tax-credit.pdf>.

³ Ben King *et al.*, "Taking Stock 2024: US Energy and Emissions Outlook," Rhodium Group, July 23, 2024,

<https://rhg.com/research/taking-stock-2024/>.

⁴ Dan Esposito, Eric Gimon, and Mike O'Boyle, "Smart Design of 45V Hydrogen Production Tax Credit Will Reduce Emissions and Grow the Industry," Energy Innovation, April 11, 2023,

<https://energyinnovation.org/publication/smart-design-of-45v-hydrogen-production-tax-credit-will-reduce-emissions-and-grow-the-industry/>.

⁵ Evolved Energy Research, *op. cit.*

⁶ Eric Gimon, "Consumer Cost Impacts of 45V Rules," Energy Innovation, November 6, 2023,

<https://energyinnovation.org/wp-content/uploads/2023/11/Consumer-Cost-Impacts-of-45V-Rules-1.pdf>.

⁷ Environmental Defense Fund, "Petition for Rulemaking to List and Establish National Emission Standards for Hydrogen Production Facilities under Clean Air Act Sections 111 and 112," September 15, 2023,

<https://www.edf.org/sites/default/files/2023-09/Petition%20for%20Rulemaking%20-%20Hydrogen%20Production%20Facilities%20-%20CAA%20111%20and%20112%20-%20EDF%20et%20al.pdf>.

hydrogen.”⁸ This reflects Congress’s recognition that taxpayer dollars must be carefully directed towards hydrogen production that moves us closer to, not further from, our decarbonization targets.

The statute adopts a definition for “lifecycle greenhouse gas emissions” from section 211(o)(1) (H) of the Clean Air Act, which makes clear that this greenhouse gas emissions rate must account for “significant indirect emissions such as significant emissions from land use changes”.⁹ By acknowledging that electrolytic hydrogen production which drives significant increases in grid emissions fails to meet the statute’s threshold lifecycle greenhouse gas emissions rate, Treasury’s proposed rules give effect to the IRA’s text and purpose of reducing emissions. Consideration of lifecycle greenhouse gas emissions under section 211(o), the Renewable Fuel Standard (RFS), requires a broad consideration of indirect emissions, beyond the scope of just a single farm or facility. The Environmental Protection Agency (EPA) characterizes this as a need to consider “market interactions induced by expanded biofuel production and use.”¹⁰ Since the emissions profile of electrolytic hydrogen depends wholly on the resources powering it, accounting for indirect emissions under 45V requires similar scrutiny of grid market dynamics. EPA confirms that this is consistent with their interpretation and application of section 211(o)(1) (H).¹¹ Just as it is insufficient to look only at a single plot of land under the RFS, an accounting of only facility-level emissions or a simple tallying of renewable energy certificates (RECs) is inadequate for 45V.

A robust body of modeling and analysis supports this conclusion. In addition to the new analysis from Energy Innovation, Evolved Energy Research (EER) estimates that if 45V were implemented without rules accounting for indirect emissions, annual greenhouse gas emissions could increase by nearly 200 million metric tons (MMT) of CO₂e per year by 2032, even after accounting for the displacement of conventional hydrogen and fossil fuels in vehicles and the power sector.¹² Cumulatively, this could lead to a net 1,233-MMT CO₂e increase in U.S. emissions by 2032, when compared to a scenario without the 45V tax credit.¹³ By comparison, roughly 10 MMT of hydrogen is produced annually in the U.S. from fossil fuels, emitting approximately 100 MMT CO₂e of greenhouse gases.¹⁴ Without reasonable safeguards in place, 45V actually *increases* the emissions intensity of U.S. hydrogen production. Displacing conventional hydrogen with a lower-carbon alternative is a worthwhile endeavor, but subsidizing

⁸ 26 U.S.C. § 45V(c)(2)(A)

⁹ 26 U.S.C. § 45V(c)(1)(A); 42 U.S.C. § 7575(o)(1)

¹⁰ Letter from EPA Deputy Secretary Janet McCabe to Treasury Assistant Secretary Lily Batchelder, December 20, 2023, <https://home.treasury.gov/system/files/136/45V-NPRM-EPA-letter.pdf>.

¹¹ *Ibid.*

¹² Ben Haley and Jeremy Hargreaves, “45V Hydrogen Production Tax Credits: Three-Pillars Accounting Impact Analysis,” Evolved Energy Research, June 23, 2023, <https://www.evolved.energy/post/45v-three-pillars-impact-analysis>.

¹³ *Ibid.*

¹⁴ United States Department of Energy, “U.S. National Clean Hydrogen Strategy and Roadmap,” June 2023, <https://www.hydrogen.energy.gov/docs/hydrogenprogramlibraries/pdfs/us-national-clean-hydrogen-strategy-roadmap.pdf>.

the production of hydrogen that is more carbon-intensive than the legacy industry would be a glaring policy failure.

Several other independent analyses agree on the importance of guardrails—specifically the guardrails proposed by Treasury. These include modeling from the Electric Power Research Institute (EPRI),¹⁵ analysis from Rhodium,¹⁶ prior analysis from Energy Innovation,¹⁷ and modeling from Princeton ZERO Lab.¹⁸ The models that differ, such as the one conducted by Energy & Environmental Economics (E3) and funded by the American Council on Renewable Energy (ACORE),¹⁹ fail to account for power sector load growth dynamics and produce flawed conclusions as a result.²⁰

Data centers, investments in manufacturing, and broader electrification of the economy are driving load growth in the U.S. for the first time in two decades, causing many utilities to turn to increasing fossil generation.^{21,22} 45V adds electrolyzers to this equation, which require tremendous amounts of power and represent a sizeable new demand, capable of drawing power at all hours of the day. To meet the Department of Energy’s (DOE) goal of 10 MMT of annual clean hydrogen production by 2030, electrolyzers consuming several dozen gigawatts of electricity will need to come online.²³ Without strong standards, new sources of clean electricity will not necessarily be deployed to meet this demand, especially not at all hours of the day. As such, the 45V tax credit risks creating a shell game, where existing clean generation gets nominally claimed by hydrogen electrolyzers, but the resulting gap in grid capacity is backfilled by fossil fuel generation.²⁴

¹⁵ Electric Power Research Institute, “Impacts of IRA’s 45V Clean Hydrogen Production Tax Credit,” November 3, 2023, <https://www.epri.com/research/products/000000003002028407>.

¹⁶ Ben King, Galen Bower, Marie Tamba, Whitney Jones, and John Larsen, “Scaling Green Hydrogen in a post-IRA World,” Rhodium Group, March 16, 2023, <https://rhg.com/research/scaling-clean-hydrogen-ira/>.

¹⁷ Energy Innovation, “Smart Design Of 45V,” *op. cit.*

¹⁸ Wilson Ricks, Qingyu Xu, and Jesse D. Jenkins, “Minimizing emissions from grid-based hydrogen production in the United States,” *IOPscience*, January 6, 2023, <https://iopscience.iop.org/article/10.1088/1748-9326/acacb5>.

¹⁹ Arne Olson, Gregory Gangelhoff, Anthony Fratto, Hadiza Felicien, and Karl Walter, “Analysis of Hourly & Annual GHG Emissions: Accounting for Hydrogen Production,” Energy & Environmental Economics, April 2023, <https://acore.org/wp-content/uploads/2023/04/ACORE-and-E3-Analysis-of-Hourly-and-Annual-GHG-Emissions-Accounting-for-Hydrogen-Production.pdf>.

²⁰ Anna Cybulsky, Michael Giovanniello, Tim Schittekatte, and Dharik S. Mallapragada, “Producing hydrogen from electricity: How modeling additionality drives the emissions impact of time-matching requirements,” MIT Energy Initiative, April 2023, <https://energy.mit.edu/wp-content/uploads/2023/04/MITEI-WP-2023-02.pdf>.

²¹ T. Bruce Tsuchida *et al.*, “Electricity Demand Growth and Forecasting in a Time of Change,” Brattle Group, May 2024, <https://www.brattle.com/wp-content/uploads/2024/05/Electricity-Demand-Growth-and-Forecasting-in-a-Time-of-Change-1.pdf>.

²² Rhodium, “Taking Stock 2024,” *op. cit.*

²³ Department of Energy, *op. cit.*

²⁴ Gernot Wagner and Danny Cullenward, “Get tax right or clean hydrogen will be bigger boondoggle than biofuels,” *Washington Post*, April 27, 2023, <https://www.washingtonpost.com/opinions/2023/04/27/clean-hydrogen-tax-credit-stringent-rules/>.

The three pillars do not—as some have claimed—lead to the cannibalization of future clean energy. Instead, they help ensure that when electrolyzers are added to the grid, that demand is balanced with additional clean energy, rather than requiring new fossil generation, keeping existing fossil generators running, or consuming existing renewables that are needed to decarbonize other aspects of our economy. If the three-pillar requirements are weakened, households will bear the negative effects of fossil-fuel-powered electrolyzers, in the form of both increased pollution as well as increased energy bills. A study of electricity markets in California and Colorado found that weak 45V rules could lead to as much as a 10-percent increase in power prices for consumers as a result of the additional demand on the electric grid.²⁵

Treasury’s proposed rules ensure that 45V will live up to its emissions-reducing potential and prevent the tax incentive from becoming yet another fossil fuel subsidy. The “three pillars” of incrementality, temporal matching, and deliverability ensure that taxpayer dollars do not go to electrolyzers that generate significant indirect greenhouse gas emissions from the grid.²⁶ The rules work together to create a market signal for the development of new zero-carbon power and the deployment of electrolyzers that can flexibly ramp down when clean power is limited.²⁷ 45V’s ability to be stacked with the 45Y Clean Electricity Production Credit or the 48E Clean Electricity Investment Credit enhances this signal.²⁸

Furthermore, modeling, analysis, and current market realities overwhelmingly show that strong guardrails will *not* prevent the clean hydrogen industry from developing.²⁹ EER and EPRI find that while the three pillars are necessary for preventing an emissions spike, they have limited consequences for total electrolytic hydrogen production or deployment of electrolyzers.^{30,31} Nor are these concerns borne out in evidence on the ground. A contingent of hydrogen suppliers and developers currently planning and developing more than 50 GW of three-pillar-compliant projects in the U.S. have come out in strong support of Treasury’s rules.³² And in the European Union, where the three pillars are already law, the clean hydrogen market has boomed.³³

²⁵ Wilson Ricks and Jesse D. Jenkins, “Consumer Electricity Price Impacts of the 45V Hydrogen Production Tax Credit,” Princeton ZERO Lab, October 25, 2023, <https://zenodo.org/records/10689836>.

²⁶ Tessa Weiss et al., “Calibrating US Tax Credits for Grid-Connected Hydrogen Production: A Recommendation, a Flexibility, and a Red Line,” Rocky Mountain Institute, 2023, <https://rmi.org/insight/calibrating-us-tax-credits-for-grid-connected-hydrogen-production/>.

²⁷ Dan Esposito, Eric Gimon, and Mike O’Boyle, “45V Exemptions Need Strong Guardrails To Protect Climate, Grow Hydrogen Industry,” Energy Innovation, February 22, 2024, <https://energyinnovation.org/wp-content/uploads/2024/02/Energy-Innovation-45V-Exemptions-Need-Strong-Guardrails.pdf>.

²⁸ Electric Power Research Institute, *op. cit.*

²⁹ Wilson Ricks and Jesse Jenkins, “The Cost of Clean Hydrogen with Robust Emissions Standards: A Comparison Across Studies,” Princeton ZERO Lab, May 18, 2023, <https://zenodo.org/records/7948769>.

³⁰ Evolved Energy Research, *op. cit.*

³¹ Electric Power Research Institute, *op. cit.*

³² Hy Stor Energy, “Hydrogen Industry Support of Strong 45V Rules,” December 20, 2023, <https://hystorenergy.com/hydrogen-industry-support-of-strong-45v-rules/>.

³³ International Energy Agency, “Hydrogen production projects interactive map,” November 17, 2023, <https://www.iea.org/data-and-statistics/data-tools/hydrogen-production-projects-interactive-map>.

The economic incentives for the development of the hydrogen industry are further bolstered by the \$7 billion DOE has allocated to the Hydrogen Hubs. While many of the Hubs also plan to produce SMR hydrogen with carbon capture, some have raised concerns that Treasury's proposed rules could threaten the economic viability of the Hubs. However, analysis from the Rocky Mountain Institute (RMI) shows that the three pillars are not necessarily a barrier for the Hubs' access to qualified clean electricity.³⁴ All the Hubs are projected to have access to enough pillar-compliant clean energy to achieve their early electrolytic hydrogen production goals with capacity factors north of 70 percent.

We acknowledge that the three pillars could affect the viability of some hydrogen project designs.³⁵ However, we must remember that the bedrock goal of the IRA was to cut greenhouse gas emissions, and the 45V credit was crafted to support a truly clean hydrogen industry. Removing these guardrails in the final 45V rules will thoroughly undercut those goals. Without strong rules, 45V will subsidize the production of more carbon-intensive hydrogen and could cost taxpayers an additional \$252 billion through 2040, while harming the same frontline communities that have acutely borne the costs of our reliance on fossil fuels.³⁶

Transmission limitations and delays in interconnection challenge the achievement of our larger climate goals. The federal government should address these problems directly rather than by watering down the rules governing the production of 45V-eligible hydrogen.

For these reasons, forward-thinking companies along the hydrogen value chain, environmental organizations, environmental justice groups, consumer advocates, and fiscal responsibility watchdogs have voiced staunch and unified support for Treasury's strong proposed rules.^{37,38,39} On the other hand, it is telling that the fossil fuel industry is well-represented among those calling for weakening the rules.⁴⁰

As Treasury works to finalize its guidance, we encourage it to maintain strong climate standards in its final rule. While certain allowances can be made to facilitate compliance with the rules, we

³⁴ Nathan Iyer, Tessa Weiss, and Mark Lozano, "Hydrogen Under 45V: Analyzing Electricity Availability Under Proposed Rules for the Hydrogen Tax Credit," Rocky Mountain Institute, April 12, 2024, <https://rmi.org/hydrogen-under-45v-analyzing-electricity-availability-under-proposed-rules-for-the-hydrogen-tax-credit/>.

³⁵ Energy Innovation, "Smart Design Of 45V," *op. cit.*

³⁶ Electric Power Research Institute, *op. cit.*

³⁷ Natural Resources Defense Council, "Fossil fuel interests are trying to weaken the clean hydrogen tax credit," advertisement, *The Washington Post*, May 9, 2024, <https://subscriber.politicopro.com/f/?id=0000018f-5a45-d2d6-ad9f-7ad7a3b50000>.

³⁸ Climate Action Campaign, "Changes to 45V Hydrogen Production Tax Credit Would Be A "Sledgehammer" to Safeguards," July 11, 2024, <https://www.actonclimate.com/post/cac-changes-to-45v-hydrogen-production-tax-credit-would-be-a-sledgehammer-to-safeguards/>.

³⁹ Natural Resources Defense Council, "45V Clean Hydrogen Production Tax Credit: Background and Compiled Support for the Three Pillars," May 2024, <https://www.nrdc.org/sites/default/files/2024-05/compiled-support-three-pillars-45V-20240509.pdf>.

⁴⁰ Clean Hydrogen Future Coalition, "About Us," <https://cleanh2.org/>.

must not compromise the emissions integrity of 45V.⁴¹ Unfortunately, many of the exemptions and modifications that have been proposed would severely weaken the tax credit:

- **5-10 Percent Curtailment or Retirement Allowance for Existing Clean Energy:** Flexible electrolyzers are an ideal use case for otherwise curtailed clean energy. Curtailments should be credited when and where they occur, but blanket allowances are a poor proxy for this. Curtailments of renewables, by their nature, are typically not consistent enough to serve as the sole power source for an electrolyzer, and allowances that fail to match the sporadic nature of these curtailments can easily push the emissions intensity of electrolyzers above statutory thresholds.⁴² Applying a blanket 5-10% allowance to more “firm” resources like existing nuclear or hydroelectric generation, under the guise of preventing retirements, could severely harm the integrity of 45V. Exempting 5% of all existing clean energy from the incrementality requirement could allow 1.5 MMT of hydrogen to qualify annually, which in the short-term could drive up to 60 MMT CO₂e of additional annual greenhouse gas emissions;⁴³ cumulatively, this could drive up to 1,479 MMT CO₂e of additional greenhouse gas emissions through 2035.⁴⁴ A 10-percent allowance could potentially double those amounts.⁴⁵
- **Incrementality Exemption for Relicensed Hydroelectric and Nuclear:** Unless assets can demonstrate a credible risk of retirement that cannot be prevented with the IRA’s 45U Zero-Emission Nuclear Power Production Credit or state incentives, there is no reason to exempt them from incrementality. If all hydroelectric and nuclear assets that were set to be relicensed between 2024 and 2035 were granted this exemption and then used exclusively to support hydrogen electrolysis, it could result in up to a 525 MMT CO₂e cumulative increase in greenhouse gas emissions through 2035.⁴⁶
- **Incrementality Exemption for State Clean Energy Mandates:** At first blush, an exemption that recognizes the progress states have made on climate seems reasonable, but such an exemption for incrementality should only be granted if the states can credibly demonstrate that their policies can constrain indirect emissions from electrolyzers without leaking emissions to neighboring states. A legally binding target is insufficient without policies to constrain emissions. Even if in-state emissions are constrained, an exemption would allow any clean power supplied to other states to be redirected to electrolyzers within their borders, which would lead to the same indirect emissions.⁴⁷ And while a clean electricity standard drives toward zero power emissions, an electrolyzer would still be able to

⁴¹ Energy Innovation, “45V Exemptions Need Strong Guardrails,” *op. cit.*

⁴² *Ibid.*

⁴³ *Ibid.*

⁴⁴ Ben King, John Larsen, Galen Bower and Nathan Pastorek, “How Clean Will US Hydrogen Get? Unpacking Treasury’s Proposed 45V Tax Credit Guidance,” Rhodium Group, January 4, 2024, <https://rhg.com/research/clean-hydrogen-45v-tax-guidance/>.

⁴⁵ Energy Innovation, “45V Exemptions Need Strong Guardrails,” *op. cit.*

⁴⁶ Rhodium Group, “How Clean Will US Hydrogen Get,” *op. cit.*

⁴⁷ Energy Innovation, “45V Exemptions Need Strong Guardrails,” *op. cit.*

induce emissions above the statutory cap until the target reaches zero.⁴⁸ There is also a risk that the value of 45V could effectively short circuit the price ceilings of state cap and trade programs, if they are set too low.⁴⁹

- **Annual or Monthly Matching:** Allowing electrolyzer projects that commence construction prior to 2028 to qualify through annual matching in perpetuity would increase cumulative emissions by nearly 700 MMT of CO₂e through the duration of the tax credit.⁵⁰ Monthly matching is similarly a poor substitute for hourly matching. Even weekly matching fails to safeguard against indirect emissions remotely, as well as hourly matching, as the key consideration is electrolyzers' ability to capture intraday variations in renewable output, like the sun setting each night and rising each morning.⁵¹ Hourly matching is critical to minimize emissions from electrolytic hydrogen and to incentivize the deployment of flexible electrolyzers. Low-tech alkaline electrolyzers are unable to ramp up or down to match the availability of clean electricity—a trait that will be essential to electrolyzers' ability to continue producing competitively-priced hydrogen after subsidies expire.⁵² While these electrolyzers are cheap, they are ill-suited to producing truly clean hydrogen and are largely imported from China.⁵³ Conversely, the U.S. leads the way in high-tech electrolyzers, such as proton exchange membrane and more flexible alkaline electrolyzers.⁵⁴ These technologies are better able to respond to the variability of renewables and produce truly clean hydrogen, but they require hourly matching to be economic over Chinese alkaline electrolyzers.
- **Allowing Compliance through External Modeling:** While there is consensus on the need for the three pillars among most experts and academics, some industry players have backed models with more favorable assumptions and parameters to erode the stringency of 45V at the expense of our climate and average American consumers. Given this, Treasury should not allow projects to comply with their own models and should instead require all producers to meet the same set of evidence-backed standards as they have proposed.
- **Not Averaging Across the Year:** Without the three pillars, grid-connected electrolyzers risk producing hydrogen with far greater emissions than conventional fossil hydrogen. Allowing producers to only qualify when it is convenient creates this same indirect emissions risk. Allowing electrolyzers to earn 45V tax credits when clean energy is widely available—while ignoring the emissions impact of other hours when clean energy is scarce and electrolyzers

⁴⁸ *Ibid.*

⁴⁹ *Ibid.*

⁵⁰ Wilson Ricks, and Jesse D. Jenkins, “Comment from the Princeton University Zero-carbon Energy systems Research and Optimization Laboratory (ZERO Lab),” Princeton ZERO Lab, February 27, 2024, <https://www.regulations.gov/comment/IRS-2023-0066-29405>.

⁵¹ Wilson Ricks, Qingyu Xu, and Jesse D. Jenkins, “Minimizing emissions from grid-based hydrogen production in the United States,” *IOPscience*, January 6, 2023, <https://iopscience.iop.org/article/10.1088/1748-9326/acacb5>.

⁵² Energy Innovation, “Smart Design Of 45V,” *op. cit.*

⁵³ Christian Robles, “Will making hydrogen ‘green’ depend on China?,” E&E News, May 6, 2024, <https://www.eenews.net/articles/will-making-hydrogen-green-depend-on-china/>.

⁵⁴ Energy Innovation, “Evidence Shows Three Pillars Remain Crucial,” *op. cit.*

choose to continue operating with dirty power—could still drive significant emissions.⁵⁵ Since the electrolyzer would not be operational without this tax credit, 45V would effectively be subsidizing both clean and dirty hydrogen production, and the emissions from the hours of dirty hydrogen production would be indirect emissions that the statute requires Treasury to consider. Therefore, projects must not be allowed to qualify for only a portion of their annual production.

- **Renewable Natural Gas and Fugitive Methane Emissions:** Since 45V is a tech-neutral tax credit, the rules for all production pathways must be equally stringent to avoid perverse incentives. Treasury recognized the importance of an equally rigorous approach in their proposed rules.⁵⁶ In particular, Treasury should not allow captured methane to be considered greenhouse-gas-negative; such a rule would enable relatively small amounts of captured methane to offset the emissions of SMR hydrogen enough to qualify for the full \$3/kg tax credit, making it effectively free to produce.⁵⁷ In this same vein, book-and-claim accounting—that is, allowing methane captured in one location to be credited as an offset in another—would allow gaming of the tax credit and thus presents risks for inclusion in 45V.⁵⁸ Treasury should also disallow co-product allocation in 45V to avoid incentivizing pollution shifting as opposed to true emissions reductions.⁵⁹
- **Accurate Upstream Methane Emissions:** Estimates of upstream methane leakage for fossil-based hydrogen must be accurate and transparent by relying on measured and verified data. While industry has proposed that hydrogen producers should be able to self-report user-specific methane figures, there is no robust verification system in place to validate these figures. Company-reported data from the Greenhouse Gas Reduction Program Subpart W already show significant under-reporting of methane emissions, when compared with observed satellite measurements. Producers should not be allowed to elect between using national methane emissions rates and their own site-specific rate, which would allow them to cherry-pick whichever of the two happens to be lower. Until site-specific rates can be sufficiently verified, Treasury should instead assign basin-specific methane emissions rates to fossil-based hydrogen to credit responsible operators without allowing them to claim emissions reductions they did not achieve.⁶⁰

⁵⁵ Energy Innovation, “Smart Design Of 45V,” *op. cit.*

⁵⁶ 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. 89220 (proposed December 26, 2023) (to be codified at 26 CFR 1), <https://www.federalregister.gov/documents/2023/12/26/2023-28359/section-45v-credit-for-production-of-clean-hydrogen-section-48a15-election-to-treat-clean-hydrogen>.

⁵⁷ Morgan Rote and Chelcie Henry-Robertson, “The safeguards 45V needs to avoid fossil hydrogen regrets,” Environmental Defense Fund, June 13, 2024, <https://blogs.edf.org/energyexchange/2024/06/13/blog-the-safeguards-45v-needs-to-avoid-fossil-hydrogen-regrets/>.

⁵⁸ Julie McNamara, “Biomethane Threatens to Upend the Clean Hydrogen Tax Credit,” Union of Concerned Scientists, May 25, 2023, <https://blog.ucsusa.org/julie-mcnamara/biomethane-threatens-to-upend-the-clean-hydrogen-tax-credit/>.

⁵⁹ Environmental Defense Fund, *op. cit.*

⁶⁰ *Ibid.*

We are at a pivotal moment in the energy transition. We have the technology to electrify the bulk of our economy and transform our hardest-to-decarbonize sectors. However, our deployment of clean electricity generation is lagging behind and we face the risk of expanding heavily polluting fossil fuel infrastructure. A three-pillar framework with strong protections against fossil fuel greenwashing ensures the hydrogen tax credit is part of a solution to this problem by stimulating demand for new sources of clean electricity generation while fulfilling its primary goal of reducing carbon pollution. These rules ensure that we do not subsidize a greenwashed industry that burdens environmental justice communities with toxic pollution.

If we want this industry to thrive into the future, we cannot afford short-sighted half-measures. The European Union has adopted rules for clean hydrogen similar to those proposed by Treasury.⁶¹ If our hydrogen is not truly clean, the low-carbon products that depend on that hydrogen—green steel, e-fuels, clean methanol, zero-carbon fertilizers—will not be duly credited in other markets. The U.S. has the chance and is well-suited to stake out a leading position on clean manufacturing; we must not squander this opportunity for short-sighted gain.

Treasury's strong proposed rules demonstrated a commitment to evidence-based policy, and we urge Treasury to maintain this rigor as it finalizes the regulations. Just as we agree that it is important to get clean hydrogen right, we agree that no tax credit is worth compromising our commitment to tackling the climate crisis by pursuing scientific emissions reduction targets.

Sincerely,



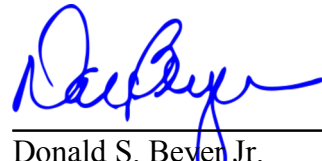
Sheldon Whitehouse
United States Senator



Jamie Raskin
Member of Congress

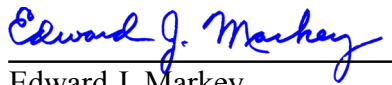


Jeffrey A. Merkley
United States Senator



Donald S. Beyer Jr.
Member of Congress

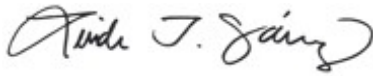
⁶¹ European Commission, “Renewable hydrogen production: new rules formally adopted,” June 20, 2023, https://energy.ec.europa.eu/news/renewable-hydrogen-production-new-rules-formally-adopted-2023-06-20_en.



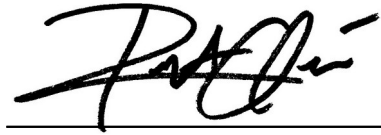
Edward J. Markey
United States Senator



Doris Matsui
Member of Congress



Linda T. Sánchez
Member of Congress



Robert Garcia
Member of Congress



Eleanor Holmes Norton
Member of Congress



Rashida Tlaib
Member of Congress



Sheila Cherfilus-McCormick
Member of Congress



Raúl M. Grijalva
Member of Congress



James P. McGovern
Member of Congress



Sydney Kamlager-Dove
Member of Congress



Adriano Espaillat
Member of Congress



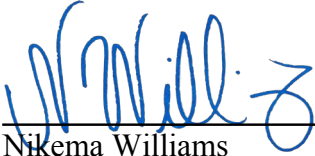
Alma S. Adams, Ph.D.
Member of Congress



Delia C. Ramirez
Member of Congress



Alexandria Ocasio-Cortez
Member of Congress



Nikema Williams
Member of Congress



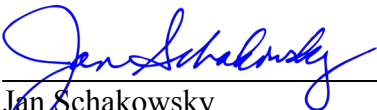
Barbara Lee
Member of Congress



Dwight Evans
Member of Congress



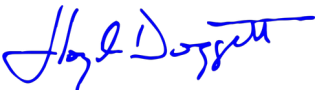
Katie Porter
Member of Congress



Jan Schakowsky
Member of Congress



David J. Trone
Member of Congress



Lloyd Doggett
Member of Congress



Sean Casten
Member of Congress



Kevin Mullin
Member of Congress



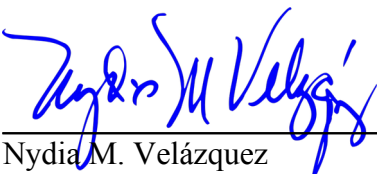
Suzanne Bonamici
Member of Congress




JH Tokuda
Member of Congress



Julia Brownley
Member of Congress



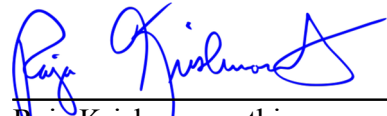
Nydia M. Velázquez
Member of Congress



Nanette Diaz Barragán
Member of Congress



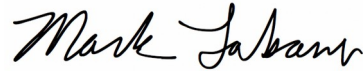
Earl Blumenauer
Member of Congress



Raja Krishnamoorthi
Member of Congress



Emanuel Cleaver, II
Member of Congress



Mark Takano
Member of Congress



Mark DeSaulnier
Member of Congress



Henry C. "Hank" Johnson, Jr.
Member of Congress



Shri Thanedar
Member of Congress



Jerrold Nadler
Member of Congress



Betty McCollum
Member of Congress



Frederica S. Wilson
Member of Congress



Maxwell Alejandro Frost
Member of Congress



Jesús G. "Chuy" García
Member of Congress



Cori Bush
Member of Congress



Chris Van Hollen
United States Senator



Bonnie Watson Coleman
Member of Congress



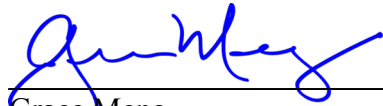
Yvette D. Clarke
Member of Congress



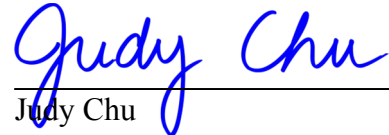
Bernard Sanders
United States Senator



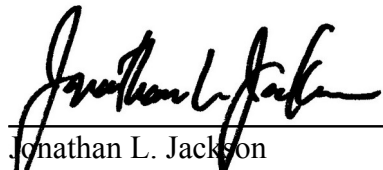
Elizabeth Warren
United States Senator



Grace Meng
Member of Congress



Judy Chu
Member of Congress



Jonathan L. Jackson
Member of Congress



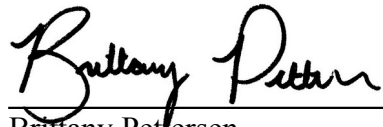
Greg Casar
Member of Congress



Steve Cohen
Member of Congress



Ted W. Lieu
Member of Congress



Brittany Pettersen
Member of Congress



Cory A. Booker
United States Senator



Valerie P. Foushee
Member of Congress



Ilhan Omar
Member of Congress

Kathy Castor

Kathy Castor
Member of Congress

Deborah K. Ross

Deborah K. Ross
Member of Congress

Becca Balint

Becca Balint
Member of Congress

Bennie G. Thompson

Bennie G. Thompson
Member of Congress

Robert C. "Bobby" Scott

Robert C. "Bobby" Scott
Member of Congress

Peter Welch

Peter Welch
United States Senator