Internal Revenue Service
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**RE: U.S. Department of the Treasury, Internal Revenue Service Notice of Proposed Regulations on Section 45V Credit for Production of Clean Hydrogen; Section 48(a)(15) Election to Treat Clean Hydrogen Production Facilities as Energy Property**

*Submitted via www.regulations.gov,* Docket ID No. REG–117631–23

Siemens Energy, Inc. appreciates the opportunity to comment on the Internal Revenue Service's (IRS) and the Department of Treasury's (Treasury) notice of proposed rulemaking (NPRM) proposing regulations under Section 45V of the Internal Revenue Code. We share the Biden administration's objective to responsibly decarbonize energy systems through the deployment of advanced technologies and look forward to further engagement and collaboration towards our collective goal.

## Siemens Energy Background

Siemens Energy is a global energy technology leader that operates across the entire energy landscape – from conventional to renewable power, grid technology to storage, to electrifying complex industrial processes. Our mission is to support companies and countries in their mission to reduce greenhouse gas emissions and make energy reliable, affordable, and more sustainable.

Siemens Energy, Inc., the U.S. regional entity of Siemens Energy, has roots in the United States dating back over 100 years and, today, Siemens Energy technologies contribute to approximately 24% of total U.S. electric generation capacity. The company employs approximately 12,000 people in the United States and our presence consists of offices in 84 locations, including 26 manufacturing and service facilities.

Siemens Energy manufactures products that will make an impact at nearly every stage of the hydrogen economy of the future. This includes not only hydrogen production itself but also the generation and transmission of clean electricity to power hydrogen production, compressors to help move and store hydrogen and carbon dioxide and, ultimately, the production of electricity *from* clean hydrogen. It is with this breadth of expertise in the technologies that will underpin the hydrogen economy that it approaches the opportunity to comment on Treasury's proposed regulations under Section 45V.

In general, Siemens Energy believes that Treasury's approach to focus exclusively on the near-term impacts of supposed "induced emissions" that may result from hydrogen production unnecessarily stifles the growth of a nascent industry and jeopardizes the far more significant emissions reductions that will result from more robust hydrogen production over the medium and long term. To that end, Siemens Energy provides herein several observations on the potential impact of the NPRM, if it is finalized in its current form, on the growth of a domestic hydrogen industry. It also provides several recommended changes to the NPRM that are in line with Treasury's objectives and the Inflation Reduction Act's (IRA) broader intention to facilitate the deployment of cleaner forms of energy across the U.S. economy while spurring domestic manufacturing and job creation.

## A. GREET Model

### 1. Treasury should allow taxpayers to determine lifecycle GHG emissions rate on an annual basis under "most recent GREET model" at the time a project commences construction.

The NPRM requires a Section 45V taxpayer to determine the lifecycle greenhouse gas (GHG) emissions rate of hydrogen produced at a hydrogen production facility under the "most recent GREET model"[1] for each taxable year during the period in which it elects the tax credit. **Siemens Energy requests that Treasury modify this requirement so that taxpayers are allowed to determine the lifecycle GHG emissions rate of hydrogen produced each year it claims a Section 45V tax credit at its hydrogen production facility using a single "most recent GREET model" *available at the time that project commences construction.***

To obtain financing for clean hydrogen projects, project developers must present a business case that provides certainty on the level of incentive it will receive under Section 45V. This will require a thorough understanding of the parameters of the 45VH2-GREET model over the 10-year period in which a project produces eligible clean hydrogen.

The Department of Energy (DOE) will update 45VH2-GREET on an "approximately annual basis" and these updates may include representations of additional hydrogen production technologies and background data including "new or updated methodologies for characterizing well-to-gate emissions."[2] Changes to the model of this manner are entirely outside the control of the taxpayer but could trigger major and unpredictable fluctuations in available incentives each year. For example, a project that produces hydrogen eligible for a $3.00 per kilogram incentive in one year may only be eligible for a $1.00 per kilogram incentive the next year, despite no changes in production methods. Projects will not be able to obtain reasonable financing if financiers and surrounding stakeholders do not have certainty in the level of incentive the project expects to generate each year, particularly when the delta between the two highest credit tiers under Section

[1] The NPRM defines the "most recent GREET model" as "the latest version of 45VH2-GREET developed by Argonne National Laboratory that is publicly available, as provided in the instructions to the latest version of Form 7210, *Clean Hydrogen Production Credit*, or any successor form(s), on the first day of the taxable year during which the qualified clean hydrogen for which the taxpayer is claiming the section 45V credit was produced."

[2] United States Department of Energy. (2023). Guidelines to Determine Well-to-Gate Greenhouse Gas (GHG) Emissions of Hydrogen Production Pathways Using 45VH2-GREET 2023. https://www.energy.gov/sites/default/files/2023-12/greet-manual_2023-12-20.pdf

45V is so substantial. Moreover, this evolving requirement is unnecessary given Treasury plans to implement requirements that limit lifecycle emissions from hydrogen projects. There is very little risk of emissions increases over time due to changes in the GREET model.

Modifying the "most recent GREET model" requirement to apply to when a project commences construction rather than when it is placed in service will also eliminate potential financing challenges. Final investment decisions (FID) are taken by project developers prior to commencing construction on projects. Introducing the possibility that the parameters of the 45VH2-GREET model upon which FID is taken on a project may change before that project is even placed into service only introduces additional risk that will be priced into financing arrangements. This risk is unnecessary and can be mitigated by modifying the time at which a taxpayer must determine its lifecycle emissions according to the "most recent GREET model."

**2. The GREET model should use atmospheric pressure as the standard to evaluate well-to-gate emissions associated with hydrogen production.**

The current version of the 45VH2-GREET model evaluates well-to-gate GHG emissions of hydrogen production using a functional unit of one kilogram of 100% hydrogen at a pressure of 300 pounds per square inch absolute (psia).

A sustainable hydrogen economy will require several electrolyzer manufacturers to participate and scale up the market. There are multiple applications and processes that require hydrogen at different pressures and the use of atmospheric pressure will prevent any single electrolysis technology from being advantaged. As such, Siemens Energy recommends that atmospheric pressure be used as the standard to accurately measure the well-to-gate emissions.

**3. Treasury Should Treat Any Verifiable Data as Modifiable Foreground Data in 45VH2-GREET**

The NPRM provides that background data within 45VH2-GREET, including upstream methane loss rates, are fixed values that cannot be changed by an applicant. Treasury notes that background data are "unlikely to be independently verifiable with high fidelity." With respect to upstream methane emissions, this assertion ignores existing federal tools to track and verify emissions data reported by natural gas producers, specifically the Environmental Protection Agency's (EPA) Greenhouse Gas Reporting Program. A hydrogen producer can take the emissions data reported under these programs and use internationally agreed upon guidelines for the quantification and reporting of the carbon intensity of a product to convert the data into an appropriate measurement to be used as foreground data for the GREET model.

Moreover, the use of fixed parameters based on national averages ignores significant investments and technical strides that many companies have made and will continue to make to reduce the carbon intensity of natural gas production and transportation. If projects are not rewarded for investments in cleaner technologies, this may even create a perverse incentive to utilize cheaper, less efficient upstream technologies. Accordingly, **Siemens Energy recommends that Treasury unlock the parameters used as 45VH2-GREET background data and allow taxpayers to enter any verifiable inputs as modifiable foreground data.**

**B. Eligible Energy Attribute Certificate Requirements**

**1. Incrementality**

To be considered an Energy Attribute Certificate (EAC) that meets the incrementality requirement, the NPRM states that the electricity generating facility that produces the unit of electricity to which

the EAC relates must have a Commercial Operations Date (COD) that is no more than 36 months before the hydrogen production facility for which the EAC is retired was placed in service. Siemens Energy recommends that Treasury modify the incrementality requirement to provide flexibility to project developers that recognizes the inherent challenges to permit, construct, and connect new clean energy infrastructure to the electric grid.

As a general matter, incrementality necessitates a major streamlining of the federal permitting and interconnection process for clean energy infrastructure. On average, it currently takes 5-7 years for a renewable energy project to progress through the permitting process and interconnection queue wait times continue to increase.[3] The permitting timeline is far longer for new transmission infrastructure that may be required to bring incremental generation to the site of hydrogen production.

The uncertainty surrounding these timelines creates considerable risk for hydrogen project developers, who may find that the economic conditions under which their project reached financial close have changed by the time its energy inputs are permitted, constructed, or interconnected. These circumstances could lead to projects being delayed significantly or cancelled entirely.

Several other factors warrant consideration when considering the workability of an incremental generation requirement. Lead times to obtain materials and equipment have increased, especially for electric transmission equipment. High-voltage direct current (HVDC) cable and converter delivery dates for new orders are in the early 2030s[4] and lead times for large power transformers are currently up to five years[5], for example.

It is also notable that inflation, high interest rates, interconnection and system costs, and stricter permitting conditions have increased the cost of renewable power purchase agreements (PPAs) since the time that the IRA was signed into law. In many markets, PPA costs have even increased above the market price of electricity. Other policy drivers included in the IRA may drive these costs down over time, but they still represent a short-term barrier to making clean hydrogen production cost competitive with incumbent hydrogen production.

a. Provide Flexibility for Early Hydrogen Projects

To address these concerns, Treasury should **adopt a transition date after which the incrementality requirement applies to clean hydrogen projects or extend the 36-month COD look back window under which generation is considered incremental**. Either action would help to alleviate permitting and interconnection uncertainty and allow the industry to grow in the near term while simultaneously allowing more renewable generation to come online specifically for hydrogen production over the longer-term.

b. Fossil Fuel Electric Generating Facilities with Carbon Capture and Storage

Siemens Energy recommends that Treasury deem incremental any electricity provided for hydrogen production by an existing higher-emitting electricity generating facility *after* it adds carbon capture and storage (CCS) capability, so long as that facility meets the same requirements to be considered incremental with which other sources of electric generation must comply under the NPRM.

[3] Penrod, E. (2023, April 11). *US grid interconnection backlog jumps 40%, with wait times expected to grow as IRA spurs more renewables*. Utility Dive. https://www.utilitydive.com/news/grid-interconnection-queue-berkeley-lab-lbnl-watt-coalition-wind-solar-renewables/647287/

[4] *"Tremendous opportunity" | HVDC technology key to modern US transmission grid: report*. (2023, September 19). Recharge | Latest Renewable Energy News. https://www.rechargenews.com/wind/tremendous-opportunity-hvdc-technology-key-to-modern-us-transmission-grid-report/2-1-1521099

[5] *Bridging the power transformer gap*. (n.d.). https://www.siemens-energy.com/global/en/home/stories/transformer-manufacturing-and-service-expansion-in-us.html

c. Alternative Approaches to Satisfy Incrementality Requirement

Siemens Energy applauds Treasury for considering alternative circumstances under which an EAC may satisfy the incrementality requirement. Existing non-emitting electricity generation sources should be allowed to play a role in the hydrogen economy of the future, especially if there are efficiencies to be gained if that generation might otherwise be curtailed or retired. The challenges associated with permitting new clean electricity generation and transmission infrastructure make these alternative approaches even more critical.

*Formulaic Approach to Addressing Incrementality from Existing Clean Generators*

Siemens Energy supports a formulaic approach to allowing existing clean electricity generation capacity to satisfy the incrementality requirement. However, **Treasury should increase its proposed 5 percent default allowance to at least 10 percent**. The Energy Information Administration (EIA) itself projects that nuclear retirements, for example, will exceed 10% in 2033 and will reach 22 percent by 2040,[6] so a 10 percent allowance represents a far more reasonable proxy for expected retirements from the existing nuclear fleet.

Allowing existing clean generating facilities to sell EACs to hydrogen producers has two key benefits. First, the sale of those EACs will provide a critical revenue stream that may allow carbon-free generating facilities to continue operating after the Section 45U nuclear production credit expires. Second, it will allow hydrogen project developers more consistent access to a larger volume of eligible EACs, which will in turn allow them to operate their electrolyzers at the highest possible capacity factor. This will help offset capital expenditures (CAPEX) and therefore lower levelized cost of hydrogen (LCOH) to enable projects and make offtake of clean hydrogen financially viable. Section 2 below will describe in further detail how the utilization of electrolyzers at high and low capacity factors impacts the cost of hydrogen production.

*Nuclear License Renewals*

**Treasury should consider existing nuclear generating facilities to be "incremental" if they seek and are granted licenses to operate beyond their initial 40-year operating licenses**. This capacity should be treated as incremental five years prior to the anticipated start date of the license.

Relicensing an existing nuclear facility is a time and capital-intensive endeavor, and continued operations require access to additional revenue streams. The sale of EACs for hydrogen production may ultimately make or break a business case for a particular facility to pursue relicensing. Moreover, it is clear that an EAC generated by a relicensed nuclear facility and sold for hydrogen production does not represent an EAC that would otherwise serve the grid if the facility did not seek a license renewal, and therefore should be considered "incremental".

Treasury should also ensure that the entire output of a relicensed nuclear facility is considered "incremental", independent of the 10% allowance recommended from existing clean generating resources.

## 2. Temporal Matching

The NPRM requires an EAC to be generated in the same hour that a taxpayer's hydrogen production facility uses electricity to produce hydrogen beginning on January 1, 2028. These

[6] Energy Information Administration, Annual Energy Outlook 2023, Table 9 (Electric Generating Capacity, Reference Case), https://www.eia.gov/outlooks/aeo/data/browser/#/?id=9-AEO2023&cases=ref2023&sourcekey=0.

temporal matching requirements will significantly increase the cost to produce clean hydrogen and will curb the production volumes necessary to unlock its long-term deep decarbonization potential.

Under an annual matching requirement, a hydrogen project developer can size its electrical inputs appropriately to operate its electrolyzers at or close to their maximum capacity factors. Strict hourly matching will instead require an electrolytic hydrogen project to dramatically oversize those electrical inputs to achieve an equivalent capacity factor. Unfortunately, procuring a combination of wind and solar electrical inputs and the associated battery storage capacity to achieve high electrolyzer capacity factors will require a significantly larger CAPEX (assuming a developer can even bring such incremental generation online), resulting in a far higher LCOH that will render most projects of this nature financially unviable in the near-term.

Instead, hourly matching will force projects to utilize their electrolyzers less frequently, which will still lead to significant LCOH increases borne from spreading CAPEX over more limited hydrogen production. Wood Mackenzie estimates that electrolyzers operating at a 46-72% capacity factor to match with renewable generation on an hourly basis will lead to LCOH increases of 68-175% relative to an annual matching scenario.[7]

Such a drastic increase in the cost to produce hydrogen will only serve to diminish interest from consumers in hydrogen and its derivatives as products, which will in turn make it more difficult for project developers to secure long-term offtake agreements necessary to obtain financing. To date, only 10% of announced clean hydrogen capacity planned by 2030 has secured such an agreement.[8] Planned and future projects will find securing long-term offtake agreements more difficult due to the clean hydrogen supply and price transparency risks that will be created by the temporal matching requirements in the NPRM.

a. Electrolyzer Manufacturing

As an electrolyzer manufacturer[9], Siemens Energy communicates frequently with hydrogen project developers interested in procuring our products for projects that would generate tax credits under Section 45V. This gives us unique insight into how industry is perceiving the impact of the NPRM.

Project developers were hopeful that regulations under Section 45V that would allow them to move forward with their projects immediately. Instead, our assessment since the publication of the NPRM is that many developers are now being forced to reevaluate the economic viability of their projects. **We expect a significant number of planned projects to be delayed at least 12-24 months, should they be able to move forward at all, if the regulations are finalized as currently written in the NPRM.**

For those early projects that *can* move forward under an hourly matching regime, developers are most likely to procure electrolyzers that have the lowest possible installed cost to mitigate the relative CAPEX impact driven by lower electrolyzer utilization. This near-term demand may be met by cheaper electrolyzer technologies manufactured outside the United States, even if those electrolyzers may be less efficient and less reliable. Taxpayers will be willing to take on higher OPEX costs to maintain those electrolyzers when compared to the relative CAPEX required to

[7] Seiple, C., Vargas, M., & McNutt, K. (2023, March 9). Annual matching requirements for new IRA tax credits could Kick-Start economically competitive green hydrogen production. *Forbes*. https://www.forbes.com/sites/woodmackenzie/2023/03/09/annual-matching-requirements-for-new-ira-tax-credits-could-kick-start-economically-competitive-green-hydrogen-production/?sh=64cf58c64702

[8] BloombergNEF. (2023, November 15). *Hydrogen offtake is tiny but growing | BloombergNEF*. BloombergNEF. https://about.bnef.com/blog/hydrogen-offtake-is-tiny-but-growing/

[9] *Green hydrogen production*. https://www.siemens-energy.com/global/en/home/products-services/product-offerings/hydrogen-solutions.html

procure a more efficient and reliable domestic electrolyzer built subject to U.S. labor standards and wages.

An original equipment manufacturer (OEM) will only make an investment to develop manufacturing capacity in a given market if there is a stable, long-term project pipeline for which such a facility can supply its products and create a return on that investment. The likely impacts of the NPRM call into question the timing, size, and stability of the electrolytic hydrogen project pipeline in the United States and the electrolyzers those projects will procure. In the short-term, this will make investments in domestic manufacturing difficult to justify for OEMs. If the electrolyzers for early clean hydrogen projects are procured from outside the United States, the U.S. will also relinquish the opportunity to achieve the cost reductions and economies of scale that would be driven by those initial installations.

These effects will combine to further discourage investment by OEMs in the domestic supply chain over the long term and cede electrolyzer manufacturing advantages outside the United States, counter to the intent of the IRA and the stated objectives of the Biden administration.

b. Apply Annual Matching Requirements to Initial Hydrogen Projects

Hourly matching may be appropriate once the clean hydrogen industry has had the time to scale appropriately. However, the high production costs demonstrated above for early mover hydrogen projects under an hourly matching regime threaten the industry's ability to ever reach that milestone.

**Treasury should apply annual matching requirements to all projects that *commence construction* before January 1, 2028 (with the standard four year continuity safe harbor) over their 10-year tax credit eligibility and exempt any projects placed in service prior to January 1, 2032 from transitioning to hourly matching.**

Adopting a legacy approach to initial projects would have two major impacts. First, it would create consistent, ratable, and lower cost volumes of hydrogen production that hydrogen consumers require to agree to the long-term offtake agreements that are critical to enable projects and unlock long-term deep decarbonization benefits across sectors. Second, it would allow the industry to scale and drive down the cost of electrolysis such that future projects will be more likely to be reach financial close under an hourly matching regime, creating a more sustainable industry that is also more likely to attract investment in domestic manufacturing capacity.

Requiring all projects to transition from annual matching to hourly matching on a date certain also ignores the technical and financial realities of project design and technology selection under those two regimes, which differs significantly. A project cannot adapt to new time matching requirements midstream without significant cost and capacity factor impacts. Investors are more likely to finance every project as if it were an hourly matching project. This eliminates a major benefit of starting with annual time matching in the first place, which is to deploy lower cost, higher volume projects that will allow the industry to build economies of scale.

c. Midterm Review to Assess Availability of Hourly Tracking Systems

Treasury itself acknowledges in the NPRM that the tracking systems and related contractual structures for hourly matching will take time to develop. There is no guarantee that those systems will be widely available nationwide to allow all regions of the country to participate in the Section 45V program. **Siemens Energy recommends that Treasury conduct a midterm review prior to the transition date to determine whether the appropriate tracking systems are or will become widely available when those systems are required to comply with temporal matching**

**requirements**. If the feasibility of hourly matching cannot be guaranteed, the transition date should be delayed.

### 3. Deliverability

The NPRM provides that an EAC meets the deliverability requirements if the electricity represented by the EAC is generated by a source that is in the same region as the relevant hydrogen production facility. **Siemens Energy recommends that hydrogen projects that demonstrate physical connectivity between the hydrogen production facility and the associated electric generating facility should meet the deliverability requirement** irrespective of region.

## C. Renewable Natural Gas and Fugitive Sources of Methane

### 1. Requirements to Reduce Risk of Deliberate RNG Generation for the Purposes of Section 45V Credit

Siemens Energy supports Treasury's intention to establish limitations on the production of renewable natural gas (RNG) above and beyond historic and expected future levels for the purposes of the Section 45V credit.

## D. NPRM Impact on Compliance with EPA New Source Performance Standards for Greenhouse Gas Emissions from New, Modified, and Reconstructed Fossil Fuel-Fired Electric Generating Units; Emission Guidelines for Greenhouse Gas Emissions from Existing Fossil Fuel-Fired Electric Generating Units

In May 2023, EPA proposed two new technology pathways as the Best System of Emissions Reduction (BSER) for new and reconstructed natural gas combustion turbines. The first pathway is (the "CCS pathway") a 90% carbon dioxide capture rate using CCS technologies and the second pathway (the "hydrogen pathway") is co-firing 30% low-GHG hydrogen with natural gas by 2032 and 96% low-GHG hydrogen with natural gas by 2038.

EPA defined "low-GHG hydrogen" as that which is produced with less than 0.45 kilograms of carbon dioxide equivalent per kilogram of hydrogen – consistent with the carbon intensity that hydrogen production must achieve to claim the most lucrative incentive under Section 45V – and the proposed action specifically cites Section 45V as a policy lever that will enable significant volumes of clean hydrogen production that may be available for use in affected combustion turbines:

> "*The magnitude of this incentive— combined with those in the [Infrastructure Investment and Jobs Act] such as the $8 billion for regional hydrogen hubs and $1.5 billion for electrolyzer advancement—should accelerate the production of low-GHG hydrogen for use in a broad range of applications across many sectors, including the utility power sector.*"[10]

As an industry leading gas turbine manufacturer with a portfolio capable of co-firing clean hydrogen at a range of blends, Siemens Energy agrees that hydrogen co-firing can be an effective tool to reduce GHG emissions from the power sector. Significant progress has already been made towards demonstrating this technology. Just last year, Constellation set an industry record by operating a Siemens Energy SGT6-6000G gas turbine at a 38% hydrogen blend at its Hillabee

[10] New Source Performance Standards for Greenhouse Gas Emissions From New, Modified, and Reconstructed Fossil Fuel-Fired Electric Generating Units; Emission Guidelines for Greenhouse Gas Emissions From Existing Fossil Fuel-Fired Electric Generating Units; and Repeal of the Affordable Clean Energy Rule, 88 Fed. Reg. 33240 (proposed 2023, May 23) (to be codified at 40 CFR Part 60).

Generating Station in Central Alabama[11] and HYFLEXPOWER, an integrated energy storage demonstration project in France, operated a Siemens Energy SGT-400 turbine using 100% hydrogen produced by a 1 MW electrolyzer powered by renewable energy.[12]

While technical progress is encouraging, it is not clear that there will be sufficient quantities of clean hydrogen available to stimulate commercial deployment of co-firing technologies in the United States. Treasury's restrictive approach to temporal matching in the NPRM further exacerbates this concern, which electric power sector stakeholders had already expressed in response to EPA's proposed actions.[13]

It is clear that there is a fundamental misalignment between EPA's proposed performance standards and Treasury's NPRM. EPA's restrictive definition of "low-GHG hydrogen" already limited future clean hydrogen volumes that can be used to comply with its proposed co-firing requirements. Therefore, the proposed actions rely on hydrogen production that will in turn rely on Section 45V, and EPA assumes that broad availability of Section 45V tax credits will drive a rapid decline in the price of clean hydrogen to $1.00 per kilogram in 2032 and 50 cents per kilogram thereafter.[14] A cohesive federal policy approach would leverage Section 45V to achieve this cost reduction objective.

Instead, Treasury's NPRM does not consider clean hydrogen demand and would indeed restrict the availability of the very same low-GHG hydrogen required for EPA's proposed hydrogen pathway to be realistic and cost effective. Concerns expressed by electric power stakeholders regarding the feasibility of the hydrogen pathway are compounded by the significant competition that the sector will face from other sectors attempting to procure clean hydrogen for decarbonization from the same limited pool.

To that end, we urge Treasury to **align the NPRM with the intent of EPA's proposed performance standards and the broader hydrogen deployment objectives put forward by the Biden administration.**

As noted previously, manufacturers have already made significant investments to demonstrate hydrogen co-firing technologies and prepare them for commercial deployment when they are required. The NPRM will shrink the market for these technologies if it is finalized in its current form and the same manufacturers will be reticent to invest further funding in their development.

### E. Conclusion

The NPRM creates barriers to clean hydrogen production with the stated goal of preventing short-term induced emissions. Treasury's intentions are commendable. Unfortunately, these barriers

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[11] *Constellation Sets Industry Record for Blending Hydrogen with Natural Gas to Further Reduce Emissions*. https://www.constellationenergy.com/newsroom/2023/Constellation-sets-industry-record-for-blending-hydrogen-with-natural-gas-to-further-reduce-emissions.html

[12] *Siemens Energy burns 100% hydrogen in industrial gas turbine in energy-storage pilot*. (2023, October 16). Hydrogen News and Intelligence | Hydrogen Insight. https://www.hydrogeninsight.com/power/correction-siemens-energy-burns-100-hydrogen-in-industrial-gas-turbine-in-energy-storage-pilot/2-1-1535850

[13] *US EPA power plant proposal sparks debate over feasibility*. S&P Global Market Intelligence. https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/us-epa-power-plant-proposal-sparks-debate-over-feasibility-76961702#:~:text=Power%20sector%20concerns&text=Under%20the%20EPA's%20proposal%2C%20existing,90%25%20carbon%20capture%20by%202035.

[14] U.S. Environmental Protection Agency, Regulatory Impact Analysis for the Proposed New Source Performance Standards for Greenhouse Gas Emissions from New, Modified, and Reconstructed Fossil Fuel-Fired Electric Generating Units; Emissions Guidelines for Greenhouse Gas Emissions from Existing Fossil Fuel-Fired Electric Generating Units; and Repeal of the Affordable Clean Energy Rule, May 2023. https://www.regulations.gov/document/EPA-HQ-OAR-2023-0072-0007.

may undermine the potential for far more significant and impactful long-term emissions reductions that would result from maximizing clean hydrogen production in a responsible manner.

Electrolytic hydrogen production is at nearly zero today, but DOE projects that production must reach 10 million metric tons (MMT) per year by 2030, 20 MMT per year by 2040, and 50 MMT per year by 2050 if the U.S. is to achieve its emission goals.[15] To reach this volume of hydrogen production – using all clean hydrogen production pathways – Siemens Energy recommends that Treasury instead take a longer view of a hydrogen economy that is currently in its infancy.

It is critical that Treasury allow more initial clean hydrogen projects to reach commercial viability. Adopting the narrow recommendations included herein will strike a balance between providing the flexibility for the clean hydrogen industry to scale up and ensuring that it does so in a way that leads to meaningful emissions reductions for decades to come. This approach is wholly consistent with the objective of the IRA and aligns its implementation with the U.S. National Clean Hydrogen Strategy and Roadmap.

Thank you for the opportunity to share our views on these critical issues. Please do not hesitate to contact Michael Weiner (Michael.weiner@siemens-energy.com), Director of Government Affairs, for more information on the topics addressed in this submission.

[15] U.S. DOE, *U.S. National Clean Hydrogen Strategy and Roadmap,* https://www.hydrogen.energy.gov/docs/hydrogenprogramlibraries/pdfs/us-national-clean-hydrogen-strategy-roadmap.pdf.