February 26, 2024

VIA The Federal eRulemaking Portal at www.regulations.gov

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

RE: IRS and REG-117631-23

Cummins Inc. submits these comments in response to the Department of the Treasury's Notice of Proposed Rulemaking for the Section 45V Credit for the Production of Clean Hydrogen, 88 Fed. Reg. 89220 (Dec. 26, 2023) (the "NPRM").

Cummins Inc., a global power leader, is a corporation of complementary business segments that design, manufacture, distribute and service a broad portfolio of power solutions. The company's products range from diesel, natural gas, electric and hybrid powertrains, and powertrain-related components including filtration, aftertreatment, turbochargers, fuel systems, controls systems, air handling systems, automated transmissions and electric power generation systems. Accelera by Cummins, the company's zero-emissions business segment, manufactures and integrates batteries, electrified power systems, hydrogen generation and fuel cell products.

We appreciate the opportunity to comment on Credits for Clean Hydrogen Production, § 45V. We look forward to working more closely with the Department of the Treasury and the Internal Revenue Service (IRS) to share the expertise and knowledge of our business as you implement this provision of the Inflation Reduction Act. As you note in your request for comments it is critically important the interests of all stakeholders be considered and understood when developing regulations. As a result, I have enclosed Cummins Comments in response to specific questions within RIN 1545–BQ97.

Regards,

Amy R. Davis

Amy Davis

President, Accelera by Cummins

Vice President, Cummins Inc.

Comments of Cummins Inc.

Cummins Inc., a global power leader, is a corporation of complementary business segments that design, manufacture, distribute and service a broad portfolio of power solutions. The company's products range from diesel, natural gas, electric and hybrid powertrains, and powertrain-related components including filtration, aftertreatment, turbochargers, fuel systems, controls systems, air handling systems, automated transmissions and electric power generation systems. Accelera by Cummins, the company's zero-emissions business segment, manufactures and integrates batteries, electrified power systems, hydrogen generation and fuel cell products.

Cummins applauds the Administration for the historic Inflation Reduction Act (IRA) and supports the goal of the Hydrogen Production tax credit (45V) to advance the clean hydrogen economy in the US to decarbonize hard-to-abate sectors, increase American clean energy manufacturing, and create jobs. Cummins appreciates the opportunity to provide feedback on the Notice of Proposed Rulemaking (NPRM). These comments will provide feedback on how 45V can achieve the Administration's and Congress' objectives.

Cummins participates in the hydrogen economy by producing equipment for both the supply and demand of hydrogen. Accelera by Cummins, our zero-emissions business unit, innovates across the entire hydrogen value chain as both a components supplier and an integrator. Accelera's portfolio includes electrolyzers that produce green hydrogen and fuel cells that run on hydrogen, to decarbonize a range of applications like heavy-duty trucks, buses, trains, and stationary power. Recent project highlights from Accelera include:

- Deploying a hydrogen fuel cell-powered emergency relief vehicle with the U.S. Department of Homeland Security and other government partners
- Commissioning a 25- megawatt (MW) proton exchange membrane (PEM) electrolyzer system in Florida for Florida Power & Light
- Announcing a 20MW PEM electrolyzer project with Gevo and Zero6 Energy in North Dakota
- Announcing a 35MW PEM electrolyzer project with Linde Engineering North America in New York
- Announcing 20MW PEM electrolyzer project with Atura Power in Ontario
- Announcing a 90MW PEM electrolyzer project with Varennes Carbon Recycling in Quebec

Accelera also powers one of the largest and longest-running PEM electrolyzer systems in operation in Bécancour, Quebec, and the world's first hydrogen-powered commercial passenger train fleet in Germany.

Cummins is also developing internal combustion engines that run on hydrogen, and can serve as a bridge technology to help promote hydrogen infrastructure deployment and near-term offtake. Cummins has also invested in hydrogen tank manufacturer NPROXX.

Cummins opposes inclusion of the *three pillars* of (i) incrementality, (ii) temporal matching, and (iii) geographic deliverability because we belive they are not needed to meet the Administration

and Congress' goals of reducing emissions by creating a robust US hydrogen economy. We also believe these requirements are contrary to Congressional intent. If the Administration chooses to include the three pillars, Cummins proposes modifications (as described below) to the NPRM's guidance to successfully achieve the Administration's goals. We are especially concerned with the *all or nothing* element of the proposal to include all hydrogen produced at a production facility, including both qualified clean hydrogen and non-qualified clean hydrogen for purposes of calculating the applicable annual emissions rate under Section 45V. This provision includes the theory of induced grid emissions that is not applied to any other clean energy tax credit in the Inflation Reduction Act. Battery Electric Vehicles (BEVs) are subject to no such provisions, though they add significant demand to the grid. This is likely because the Departments of Treasury and Energy understand that a BEV is displacing a fossil-fuel powered vehicle, even if that BEV charges on a coal-powered grid. Hydrogen projects should be given that same consideration. When Cummins supplies a customer with an electrolyzer, the customer is using it to replace fossil-fuel-generated power for energy intensive industries like Sustainable Aviation Fuel (SAF) production, or natural gas stationary power generation. To truly look at the well-to-gate hydrogen emissions, the Administration should consider the molecule the hydrogen is replacing, as opposed to the electron it is using. Hydrogen has the potential to be another tremendous boon to US energy independence, economic competitiveness, American innovation, and most importantly, emissions reduction leadership. Cummins urges Treasury to adopt the recommendations included below to achieve these objectives.

I. Executive Summary.

Cummins proposes the following recommendations to support the US clean hydrogen industry and reduce emissions:

a. Time-Matching and Grandfathering Protections: The final regulation should delay any hourly matching requirement until 2032 and should allow projects to satisfy the regulatory requirements that existed upon the commence-construction date of the project starting in 2028, but preferably until 2032. *Grandfathering* these projects enables financing that (i) allows hydrogen producers to rely on the regulatory framework in place at the time of the facility's "commence construction" date for the entirety of the producer's ten-year Section 45V credit; and (ii) exempts from the incrementality, temporal matching, and regional deliverability requirements for clean hydrogen projects that began construction prior to the publication of the final regulation in the Federal Register (and after passage of the IRA). Further, projects that commenced construction prior to an hourly matching requirement should meet the annual matching requirement for the period of the tax credit. The regulatory structure must be straightforward to induce capital market comfort with project development. Difficult-to-administer rules precludes efficient capital formation, risking project viability and investment in American clean energy manufacturing.

b. Incrementality and Meaningful Access to Clean Baseload Power: The proposed Incrementality requirement should be modified to take advantage of the United States' clean energy abundance and afford multiple pathways for hydrogen generators to access hydroelectric, nuclear, and other American clean baseload power resources. Cummins proposes that (i) the incrementality framework should take advantage of our Federal system's inherent strength and exempt from this requirement facilities located in jurisdictions with renewable portfolio standards (RPS), clean power mandates, or other similar policies that support clean power deployment; (ii) an allowance of at least 10% of a generator's

nuclear and hydroelectric resources; and (iii) an option for project owners to submit data demonstrating zero or minimal induced grid emissions in any given case (or category of cases). By allowing clean hydrogen generators to access America's unique clean energy abundance, we allow the market to promote additional clean generation sources while also allowing the nascent hydrogen industry the flexibility needed to mature.

c. Reliance on All, and Only On, Qualified Clean Hydrogen. It is also critical to provide clarity to the proposed section §1.45V-4(a) to allow a qualified clean hydrogen production facility to claim the Section 45V credit for any amount of qualified clean hydrogen produced via any process that makes the hydrogen eligible for the credit within a given year. Unfortunately, as currently drafted, the proposed provision would require a taxpayer to aggregate all hydrogen produced via different processes (*e.g.*, hydrogen produced using grid energy without applying EACs and hydrogen produced using solar energy) each year. This proposed requirement is inconsistent with the statutory language of Section 45V and could create perverse incentives that run counter to Section 45V's objectives of incentivizing and rapidly scaling up hydrogen production. For example, it could lead a hydrogen generator to curtail production at night when the sun is not shining, shutting down the electrolyzer (advanced American-made equipment) and causing additional wear-and-tear on an expensive asset. This will also necessitate the manufacturer, like Cummins, to account for this in warranty provisions, thus raising the cost of the electrolyzer. The effect of the proposed regulation would be chilling to the goal of incentivizing clean hydrogen production in conjunction with the proposed hourly temporal matching requirement.

d. Regional Deliverability and Access to Energy from Adjacent Regions. The Department of Energy's Hydrogen Hub program recognizes the American clean energy abundance available in different regions of the country. The Hubs program takes advantage of this geographic diversity and will also leverage the Administration's clean corridors to connect those regions. The 45V tax credit should similarly allow regions to import power for the efficient use of American clean energy. This is especially true within Grid Interconnect regions (East, West, ERCOT), which already function in this manner. A hydrogen producer should access the full credit if they prove that power produced from a generator outside of the producer's qualified facility's proposed region is delivered into the same region as the facility.

II. Modifications to the Three Pillars

While Cummins opposes the use of the three pillars based on Congressional intent, the following modifications would allow the credit to achieve the objective to promote adoption of clean hydrogen and investment in American manufacturing and jobs.

Since the enactment of the IRA, leading companies, including Cummins, have substantially invested in clean hydrogen projects and technologies, in reliance upon the statutory language of 45V and other federal policies, such as the DOE Regional Clean Hydrogen Hub program. In 2023, Accelera by Cummins created our first domestic electrolyzer manufacturing facility in Fridley, MN. President Biden, Secretary Granholm, Minnesota Governor Walz, and other officials have visited and championed this facility. Accelera is initially dedicating 89,000 sq. ft. of the existing Cummins facility in Fridley to electrolyzer production, adding 100 new jobs this year. The facility will produce the HyLYZER® proton exchange membrane (PEM) electrolyzer product line, including the HyLYZER®-500, HyLYZER®-1000 and HyLYZER®-5000, which can accommodate power needs from 1.25MW to more than 200MW for both small- and large-scale

hydrogen generation projects. The facility will have 500MW of production capacity annually, with the potential to scale up to 1 gigawatt (GW) of capacity in the future. This potential expansion is highly dependent on the ability of our customers to access the 45V credit for their projects. The new production space in Fridley adds to Accelera's growing global electrolyzer development and manufacturing footprint. The electrolyzer production capacity we are adding in Fridley will help us scale zero-emissions technologies in the U.S. to meet customer demand and advance adoption. Investments like this, highlighted by close public-private collaboration, demonstrate our relentless dedication to accelerating the shift to net zero for the industries that keep the world running.

a. Time-Matching and Grandfathering

Cummins proposes that final guidance should not require hourly matching until 2032 and maintain annual matching until that point. There should not be a requirement for hourly tracking without hourly Energy Attribute Certificates (EAC) tracking products broadly available on the market, and a study should be commissioned no later than 2028 to ensure that there is visibility to that requirement by developers. The final guidance should allow hydrogen projects with in-service dates before 2032 to be grandfathered and exempt from this requirement.

Accelera by Cummins has publicly shared that since the passing of the U.S. Bipartisan Infrastructure Law and Inflation Reduction Act, the business has received committed orders for nearly 300 MW of electrolyzer projects in North America. In total, these projects will produce approximately 150 tons of hydrogen per day once commissioned by the end of 2026. Because these projects were ordered prior to the publication of the NPRM, they should be grandfathered from the three-pillar requirements proposed to receive the tax credit. Clean energy policy should not penalize first-movers. Projects which have begun construction should not be subject to the nascent and unprecedented three-pillars requirements.

Relatedly, the three-pillars requirements should only be imposed on a "commence construction" standard – specifically, a "qualified clean hydrogen production facility" should have the same requirements for the entirety its ten-year Section 45V credit. Projects which begin construction prior to 2028, but ideally 2032 should only be subject to annual temporal matching.

Project financing demands predictability, and capital markets are averse to investing in nascent industries with extreme regulatory requirements. Difficult to administer rules preclude efficient capital formation, risking project viability and investment in American clean energy manufacturing. Because of this, the absence of a "commence construction" standard for the three-pillars requirements will have a chilling effect on project finance. Cummins is particularly concerned about the uncertain future availability of hourly EACs. The existing EAC market is predominantly driven by annual Renewable Portfolio Standards (RPS), Clean Energy Standards (CES), and to a lesser extent, voluntary markets. These existing markets do not impose an hourly matching requirement. In fact, the EACs do not represent the electricity itself, but are contractual instruments to convey information about the produced electricity like the generation source, the location of the source, and the actual amount of electricity produced (in units of MWh of renewable electricity). The imposition of an hourly matching on one niche industry is incongruent with the EAC market and represents an additional hurdle for a nascent American industry.

Unfortunately, this hourly requirement in the NPRM created significant uncertainty that is impacting investment decisions. Concerns about the economic feasibility of clean hydrogen

projects previously understood to be eligible for the Section 45V credit (based on the language of Section 45V and the existing GREET model) has substantially delayed the deployment of clean hydrogen projects – including proposed projects for winning applicants under the DOE's Regional Clean Hydrogen Hub program. This is particularly damaging when dampening investor appetite to back "first-mover" projects that are vital to the future viability of the clean hydrogen economy, to U.S. competitiveness, and to domestic job creation. Cummins invested in US electrolyzer manufacturing based upon our (and our customers') understanding of the legislative text in federal policies aiming to scale the clean hydrogen economy (e.g. the IRA, and the Infrastructure, Investment & Jobs Act of 2021, among others).

Cummins has spoken with many customers who cite the need for regulatory certainty before making significant investments in long-term projects which will be in service for decades. To account for this need for predictability and certainty, Treasury should also allow hydrogen producers to rely on the regulatory framework in place at the time of the facility's "commence construction" date for the entirety of the producer's ten-year Section 45V credit. Cummins has long championed regulatory certainty, and its critical role for the duration of a project, for both the financier and developer.

Consistent with other enactments, grandfathering of projects enables this certainty. A lack of grandfathering will create confusion and upend decades of climate policy.

b. **All or Nothing**

NPRM Section §1.45V-4(a) included a provision, referred to as "all or nothing" that would require a taxpayer to aggregate all hydrogen produced via different processes (e.g., hydrogen produced using grid energy without applying EACs, and hydrogen produced using solar energy) each year. Cummins believes that, per statutory intent, the provision should be modified to allow a qualified clean hydrogen production facility to claim the Section 45V credit for any amount of qualified clean hydrogen produced via any eligible process within a given year. In addition to being inconsistent with the statutory text, the proposed rule would create perverse incentives that run counter to the Section 45V objectives of incentivizing and rapidly scaling up hydrogen production. The effect of the proposed regulation would be particularly chilling if combined with the proposed requirement of hourly temporal matching.

Because electrolyzers are currently capital-intensive investments, the cost of hydrogen production is also heavily impacted by utilization rates, or run hours, of the electrolyzer. Electrolytic hydrogen facilities must maintain high-capacity and utilization factors, and as a result, will need to operate at times of the day/night that would preclude the availability of EACs under any hourly-based time matching work. Electrolyzers are cost-effective when built in a single location and operated at high volume. To buy electricity coming from a single renewable resource, with nearly 100 percent of the energy coming at constant power, the renewable plant would need to be significantly oversized and use a combination of solar and wind to achieve a near 100 percent capacity factor. If a hydrogen generator chose not to invest in such a capacity factor, they might instead curtail the electrolyzer during certain times when renewable resources are not generating, like solar at night. This would impact the durability and efficiency of the electrolyzer, the costliest piece of generation equipment at a hydrogen facility, and an emerging American manufacturing output.

c. **Incrementality.**

The proposed rules should also be amended to allow a hydrogen producer to take advantage of the United States' tremendous clean energy abundance. At a minimum, any incrementality framework must afford several pathways for hydrogen producers to access hydroelectric, nuclear, and other clean baseload power resources, including (i) a carveout for facilities located in jurisdictions with renewable portfolio standards (RPS), clean power mandates, or other similar policies; (ii) an allowance of 10% of a power producer's minimal-emitting generation including nuclear and hydroelectric; (iii) risk of relicensing and curtailment exceptions; and (iv) optionality to submit grid emissions data showing zero or marginal emissions on a case-by-case basis. Cummins believes all options to meet the incrementality requirement should be included for developers to have needed flexibility, and to utilize America's competitive energy landscape.

Regarding states with an RPS, a consortium of states in the northeast, led by the New York State Energy & Research Development Authority, explained:

> *[We] do not support a strict requirement of "Additionality". As an initial point, in states with renewable portfolio standards (RPS) based on a percentage of load, by definition if an electrolyzer load is added to that grid, new renewables must be built to cover the percentage of obligation in place. An RPS enables the clean electricity sector to automatically adjust its renewables requirements for new clean load without putting this obligation onto the new electrolyzer load. Under current RPS implementation policies, no RPS requires additionality tied to individual heat pumps installed, electric vehicles connected to the grid, lithium-ion energy storage, nor any other decarbonization solution being deployed at scale to meet local, state or national climate and energy goals. It is unclear why a different approach should be applied to hydrogen.*

For states that do not have an RPS, the final rules should afford producers options to comply with incrementality when using existing clean generators by including at least 10% of pre-existing minimal-emitting generation. This is critical because it allows project developers to take advantage of available energy resources where they already exist. It will facilitate an efficient use of resources, while allowing projects to move forward without being subject to the interconnection delays inherent to new generation. It will also help utilities to rate-base their investments and count on stable, long-term demand while planning additional resources that might not be deployed on a timeline complementary to the hydrogen project. Further, this would enable owners of uncommitted clean generation (primarily deregulated clean resources that are not participating in state programs) to take advantage of the economies of scale that are present at a larger electrolyzer facility given the cost of the equipment and supporting infrastructure. This will also support recent awardees under DOE's Regional Clean Hydrogen Hub program, which statutorily mandates production of nuclear-based clean hydrogen.

Any incrementality requirements should also account for nuclear and hydroelectric assets at risk of retirement. A nuclear or hydroelectric generation facility unit extending its operating license should be deemed "incremental" (i.e., deemed to meet the incrementality requirement or otherwise a permissible alternative that allows the producer to remain eligible for the Section 45V credit using EACs). Such facilities already must make significant investments in equipment to demonstrate that they can operate safely through the renewed license period, and facility owners can only make this investment if they have a reasonable expectation of being able to earn sufficient revenues to cover the costs of operating the unit. Clean hydrogen generation

provides decades of committed demand to these upgraded facilities, once again supporting the efficient use of America's vast clean energy resources.

Finally, Cummins recognizes that given the nature of the nascent hydrogen industry, hydrogen producers should have flexibility in how they achieve any incrementality requirement. Hydrogen generators should have the option to submit data demonstrating zero or minimal induced grid emissions in any given case through modelling or other evidence. Given the tremendous uncertainty of real-world application of the proposed framework, it is imperative to provide flexibility and avoid unintended consequences of stifling project development. As is relevant for all the proposed three-pillars requirements, a lack of predictability and project certainty will create an insurmountable hurdle for hydrogen project financing and development. For all these reasons, any incrementality mandate should allow producers to submit data to refute an assumption of induced grid emissions baked into the proposed guidance.

d. **Regional Deliverability**

The Department of Energy's Hydrogen Hub program recognizes and takes advantage of the American clean energy abundance available in different regions of the country. The Hubs program takes advantage of this geographic diversity and will also leverage the Administration's clean corridors to connect those regions. The 45V tax credit should also leverage this all-of-government approach, and similarly allow regions to import power for the efficient use of American clean energy. This is especially true within Grid Interconnect regions (East, West, ERCOT), which already function in this manner. A hydrogen producer should access the full credit if they prove that power produced from a generator outside of the producer's qualified facility's proposed region is delivered into the same region as the facility.

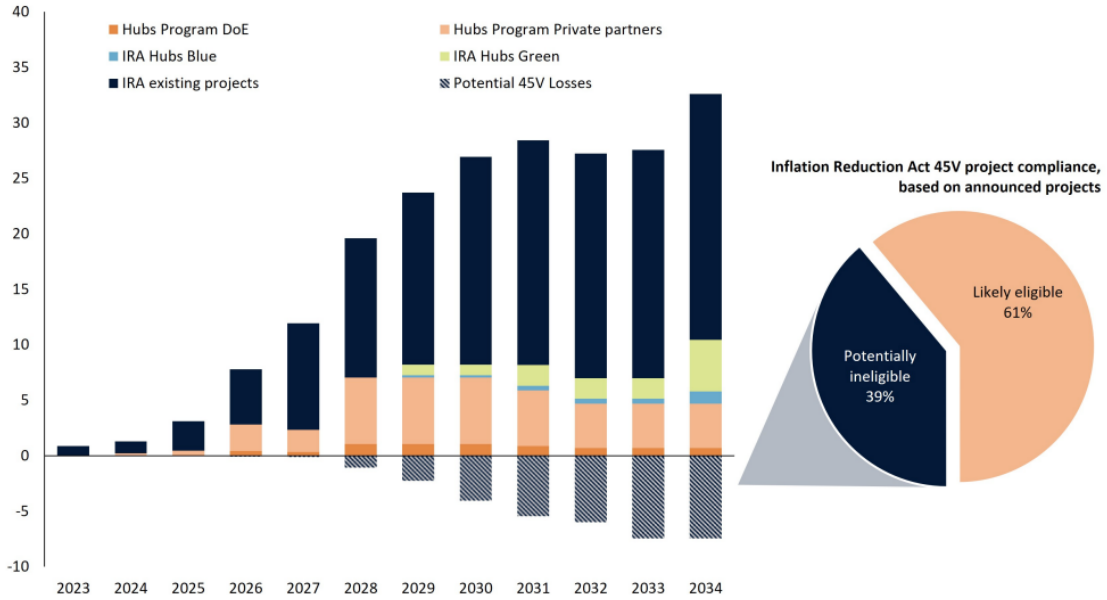
The vast clean energy resources available throughout the country, but dependent on geographic location (e.g. solar availability in the Southwest, wind availability in the Northeast) are a competitive asset of the United States and are one of the unique attributes that could enable the US to be the global leader in clean hydrogen, eventually serving as a clean electricity exporter providing energy security all around the world. For the proposed guidance to hamper America's own manifest destiny by closing regional, and even some state borders, even when their respective grids are interconnected, would significantly reduce planned hydrogen projects' scale, slowing US investment, and allowing other global players to take the lead. Guidance should also allow the Hydrogen Hubs to utilize their tax credits based upon the planned energy included in their winning applications to ensure the successful implementation of the Infrastructure Investment and Jobs Act. In some instances, this may include energy produced in adjacent countries with favorable geographies.

e. Impact for Hydrogen Projects from public and private investments

According to Rystad[1], about ~40% of announced hydrogen projects in the US are potentially ineligible for the IRA 45V credit if the current proposal goes forward. These projects that could surpass $30B worth of investments are yet to define a power source and would be ineligible if supplied with grid electricity or connected to existing renewable /clean assets – see graph below.

[1] (Rystad Energy, 2023)

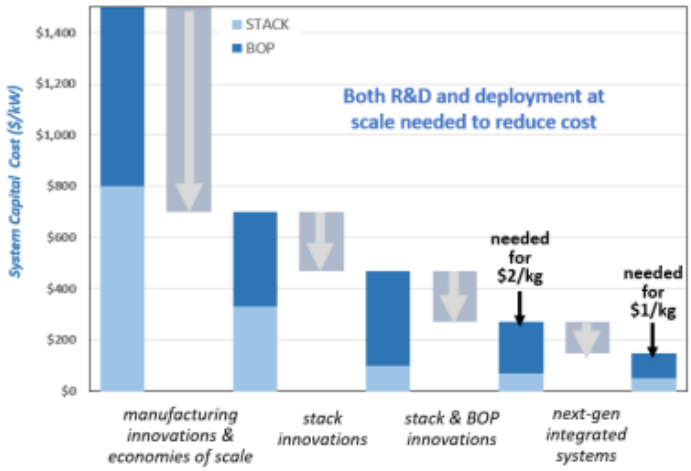
Figure 5: Public and private investments in hydrogen projects and 45V potential losses
Billion USD



Source: Source: Rystad Energy Hydrogen Solution

Further, electrolyzer cost reduction targets as laid out in the Department of Energy's US National Clean Hydrogen Strategy and Roadmap would not be achieved as economies of scale is one of the most important factors to achieve the $1/kg target.

Cummins is dependent on robust US demand for electrolyzers to achieve these economies of scale, and to continue to invest in domestic manufacturing. As we look at our global operations, demand in China continues to rise. As they have done before, Chinese manufacturers will be able to use this demand to iterate on manufacturing, materials, and supply chain, building a robust domestic electrolyzer industry which can compete on cost and performance. The US will cede this nascent industry, in which we have tremendous domestic potential, to markets that are matching their industrial policy with their regulations.



[2]

[2] (US Department of Energy, 2022)

III. Conclusion

Cummins applauds the Administration for the historic Inflation Reduction Act (IRA) and supports the goal of the Hydrogen Production tax credit (45V) to advance the clean hydrogen economy in the US to decarbonize hard-to-abate sectors, increase American clean energy manufacturing, and create jobs. Cummins appreciates the opportunity to provide feedback on the Notice of Proposed Rulemaking (NPRM). As described above, the hydrogen industry is in its infancy, and as envisioned in both the Infrastructure, Investment and Jobs Act of 2021, and the Inflation Reduction Act of 2022, has the potential to cement America's clean energy independence, all while boosting US manufacturing, and creating jobs. Affordable clean hydrogen can be the fuel of choice for several hard-to-abate sectors, displacing traditional fossil fuels, combustion processes, and other high emitting generation, thus significantly reducing emissions. By finalizing rules for the Hydrogen Production Tax Credit that are workable for project developers, financiers, and manufacturers like Cummins, the Administration can help this industry scale in a way that achieves all these goals.

As stated in the comments, Treasury should include the following recommendations:

i. Extend annual matching and transition to hourly in 2032, if an hourly-matched EAC market exists, and grandfather all projects that commenced construction prior to that date to achieve the full credit using annual matching.

ii. Clarify the "all-or-nothing" provision to allow the credit to be achieved when statutory conditions are met for a project.

iii. Allow multiple pathways to meet incrementality with American low-emitting energy resources like nuclear and hydroelectric power.

iv. Expand regionality requirements to grid interconnect regions to take advantage of US clean energy abundance.

By adopting these modifications, the 45V Clean Hydrogen Production Tax Credit can achieve Congress and the Administration's goal to reduce emissions in hard-to-abate sectors, while investing in American manufacturing, and creating jobs, including at Cummins.

Please feel free to contact Traci Kraus at Traci.Kraus@Cummins.com with any comments or questions you may have regarding this submission or any other related issue.