

From: Industrial Innovation Initiative, I³

Contact: David Soll and Zachary Byrum

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RE: Proposed rules entitled Section 45V Credit for Production of Clean Hydrogen; Section 48(a)(15) Election to Treat Clean Hydrogen Production Facilities as Energy Property; IRS-2024-0016-0001 and REG-117631-23

[Background](#)

Clean hydrogen will be critical to decarbonize important industrial processes and achieve our midcentury climate goals. The 45V Hydrogen Production Tax Credit passed in the Inflation Reduction Act is the federal government's most effective tool for stimulating increased production of clean hydrogen required to decarbonize the industrial and manufacturing sectors effectively and efficiently. In response to the Request for Comments regarding the criteria to petition for a Provisional Emission Rate under Section 45V Credit for Production of Clean Hydrogen and Section 48 (a) (15) Election to Treat Clean Hydrogen Production Facilities as Energy Property, the Industrial Innovation Initiative (I³) has prepared the following document.

[About I³](#)

The Industrial Innovation Initiative (I³) is an ambitious coalition which aims to advance solutions key to decarbonizing the industrial sector through policy development and implementation, technology demonstration and adoption, and demand-side market development. The Initiative builds on years of stakeholder engagement and extensive work by its co-conveners, Great Plains Institute (GPI) and World Resources Institute (WRI), to collaborate with government officials and advance decarbonization solutions important to the industrial sector. I³ values a stable climate, a safe and healthy environment, thriving livelihoods for American workers, and a strong US economy. Therefore, I³ supports policies that will put American industry on a path to net-zero emissions, retain and create high-wage jobs, and advance technology leadership and economic competitiveness.

The Initiative convenes key industry, environmental, labor, and other stakeholders, to advance cross-cutting strategies, policies, and programs for achieving industrial decarbonization by midcentury.

- The information contained within this document represents a small fraction of the collective knowledge and expertise of our participants. Additionally, this document was prepared with the input and feedback of I³

- participants but does not reflect the express opinion of each participating organization. Given I³'s broad representation and the active debate around 45V's implementation, our comments convey where consensus could be found. Individual organizations may submit their own comments containing more detailed information as well. Members of I³ are ready and willing to connect with the Treasury and IRS to provide key industry, labor, environmental, and business perspectives from our stakeholder group. The Initiative meets bi-monthly and is happy to schedule ad hoc meetings to facilitate vital discussions such as these. If you would like to connect with us directly, please reach out to I³ Project Manager, David Soll, at dsoll@gpisd.net, and we will gladly arrange a meeting.

Specific Comments Regarding the FEED Study Requirement

The Industrial Innovation Initiative has worked to promote clean hydrogen since its inception in 2020. Our 2021 federal and state policy blueprint, *Decarbonizing Industry by 2050*, highlighted the central role of hydrogen in reducing industrial emissions. In May of 2023, I³ explored hydrogen in more depth in *The Landscape of Clean Hydrogen*, a report that detailed the potential of the industrial hubs, such as those due to receive funding under the Bipartisan Infrastructure Law's Hydrogen Hubs program. DOE's selection of seven hydrogen hubs in October 2023 aligned with much of our analysis. Our recently released [federal policy blueprint](#) emphasizes the need to reduce barriers to constructing hydrogen pipelines and other supportive infrastructure. I³ believes a robust hydrogen production and delivery network will provide industrial firms an affordable and reliable resource they can deploy to reduce emissions and co-pollutants in an economically competitive marketplace.

Creating the market for clean hydrogen to reduce industrial emissions will require, among other things, a diverse ecosystem of clean hydrogen producers. Hydrogen producers using the eight currently listed technologies with default emission rates in the 45VH2-GREET model are not burdened by the need to prove market readiness to be eligible for the criteria. However, production methods are rapidly evolving. If Treasury maintains its requirement that producers applying for a Provisional Emission Rate (PER) can only do so after completing a front-end engineering design (FEED) study, new and innovative clean hydrogen producers may find themselves unable to access the 45V credit and receive financing to build needed commercial scale facilities.

I³'s [previous comments](#) recognized that properly awarding 45V credits would require certain formulas and requirements to ensure clean hydrogen supply is both clean and plentiful enough to meet our industrial decarbonization goals. However, requiring a FEED study to petition for a PER is an unduly high procedural barrier for three key reasons.

- 1) *High Resource Costs*: As the largest and often most important step before a final investment decision (FID) is made for a large project, FEED projects are expensive, multimillion dollar expenditures. For many new, large-scale clean hydrogen projects, FEED studies can very easily cost over \$10 million. For example, one electrolytic hydrogen project in Australia is undergoing a FEED study approved at A\$117 million (US\$78 million). Additionally, these studies can take approximately a year to conduct. Making a PER contingent on a FEED study would deter investors from backing potentially transformative technologies.
- 2) *Financing Contradictions*: For new entrants and innovators that must prove economic feasibility for first-of-a-kind (FOAK) clean hydrogen facilities, securing assurance of 45V eligibility earlier in their project's development will make it easier to attract further financing and an affirmative final investment decision. Indeed, for many, access to 45V will ultimately

determine economic feasibility before nth-of-a-kind deployment reduces costs to more market-competitive levels. It would be detrimental and counterintuitive, particularly for new entrants, to require cost-prohibitive FEED studies to potentially be eligible for 45V when being eligible for 45V could affect funding decisions for that FEED study.

- 3) *Unnecessary measure of readiness and eligibility*: The current list of 45VH2-GREET technologies have default emission values because they have high technological readiness levels (TRL) and provided reference data for the model, not necessarily because they have proven risk-free market readiness or competitive parity with incumbent hydrogen production. The listed technologies would likely be considered at least TRL 6, but likely TRL 7+ for most. In achieving a higher TRL and being prepared to or having already developed a FOAK production facility, these listed technologies demonstrate sufficient market readiness with federal assistance. It would be a double standard, then, to require non-listed technologies to explicitly prove market readiness, or at least worthiness for investment, via a FEED study when they could be at the same TRL minimum as listed technologies. There should be an apples-to-apples measure of readiness for listed and non-listed technologies, which the current proposed PER rule does not provide.

Alternatives to FEED Study Requirement

I³ appreciates Treasury's openness to alternative indicators of project readiness. Prior to a FEED study, project developers must still undergo several important planning stages that map potential project outcomes, risks, system boundaries, and technical specifications. Because these are less granular than a FEED study, while still elucidating, they are not as burdensome to provide as eligibility criteria for a PER petition.

These alternatives could include data derived from front-end loading-2 (FEL-2) outputs such as feasibility studies and conceptual engineering. FEL-2 still requires significant investments but is a more reasonable indicator of project readiness. I³ also recognizes that the long-term reputation of the new clean hydrogen economy will require proven success early on, likely measured by climate benefit and costs. Thus, would we suggest that, in addition to or in place of FEL-2 documentation, PER petitions include a detailed financial model and a lifecycle analysis prepared by a qualified third party. Such lifecycle assessments by qualified entities are already expected in the 45Q tax credit and would thus be a consistent and reasonable norm for qualifying for tax credits that can decarbonize industry.

Additionally, Treasury should take advantage of the Department of Energy's Adoption Readiness (ARL) framework, as developed by the Office of Technology Transitions. In conjunction with the TRL, the ARL system accounts for adoption risks for technologies on a project basis, incorporating market considerations that may be absent from a standard TRL assessment. This should help address the market readiness question that FEED studies aim to satisfy.

Finally, some production pathways that have been included and validated in R&D GREET could be approved for 45VH2 GREET. This would reduce the number of PER applications and administrative burden while still requiring an application process for more novel or custom approaches.

PER Transparency and Consistency

I³ would like to reiterate its earlier comments regarding PERS by requesting that Treasury develop a more transparent petition process, starting first and foremost with timelines. Regardless of the criteria that Treasury ultimately selects, it will be important to communicate clear timing expectations for

petitioners so that they may be able to incorporate Treasury's decision making in their project timeline. Ideally, the timeline would be relatively short, such as within six months, to avoid delaying financing opportunities.

Finally, Treasury can benefit PER petitioners by further elaborating on the definition of a hydrogen producing facility to clarify if a new and separate PER would be required for different plants and process trains within a single fenceline or property.

Final Comments

Supporting the ability of unlisted hydrogen technologies to contribute to a healthy, diverse clean hydrogen ecosystem is consistent with the goals outlined by Congress in the Inflation Reduction Act. Continued and even accelerated innovation will be necessary for the U.S. to achieve its industrial decarbonization goals, remain competitive with other markets, and achieve job growth, and 45V rules should help innovation flourish.