



**The Energy Institute of Louisiana  
University of Louisiana at Lafayette**

---

P.O. Box 43612  
Lafayette, LA 70504  
Office: (337) 482-2946  
Fax: (337) 482-1220  
*Université des Acadiens*

20 February 2024

Internal Revenue Service  
U.S. Department of Treasury

RE: Section 45V Credit for Production of Clean Hydrogen, Public Comment

To Whom It May Concern,

Thank you for the opportunity to provide my comments and input. I have researched carbon management systems for over 25 years and currently lead a large group performing high-level R&D in the green hydrogen and carbon management sectors. I can attest that green hydrogen and the envisioned hydrogen economy are at a juncture where slight missteps could derail the vision from being a reality. Albeit I can recognize the sincerity of your efforts with this proposed rule, it does pose significant hindrances to the holistic implementation of a green hydrogen economy – particularly for regions such as Louisiana. Thus, I sincerely offer the following comments concerning the proposed IRS 45V tax credits for green hydrogen production in the US:

1. I urge the IRS/Federal Government to better acknowledge and support developing alternative methods for green hydrogen production such as through thermal conversion of biomass and fermentation-based methods. These carbon-neutral methods offer significant atmospheric carbon dioxide reduction opportunities for hydrogen production; yet they are not well supported nor even mentioned/encouraged in the proposed language. These processes require minimal grid power (if any). Biomass conversion methods are at worst carbon-neutral and with Carbon Capture and Sequestration (CCS), highly carbon-negative. Plus, these processes can be utilized as true biorefineries offering not only carbon management, but the potential for producing green chemicals with minimal to no hard process pipe changes. Additionally, these options allow rural communities (often home to disadvantaged communities) to enter the emerging hydrogen economy at scales more realistic for them. Many business/labor components of the wood-to-hydrogen supply chain are currently firmly in place and are owned by minority businesses. Note that these bio-based hydrogen production processes offer feedstock resource storage, which greatly reduces potential temporal issues (something that neither solar nor wind energy systems currently offer). The wood industry across the US has been economically hit hard as paper product demand is down. A well-managed tree farm is also optimized for carbon dioxide removal as a growing tree has much higher carbon dioxide uptake than a mature tree. Finally, note that both bio-based technologies (thermal and fermentation) are capable of utilizing waste inputs

(MSW, debris, agricultural wastes, etc.) which are causing huge disposal issues while also wasting valuable green BTUs. Please enhance and encourage the use of these promising processes for green hydrogen production. The current 45V language does not as is proposed.

2. I also urge the IRS/Federal Government to provide incentives toward investments in energy storage technologies (industrial batteries and thermal storage) as a means of reducing temporal issues. Energy storage is a critically needing investments if solar and wind energy are to see wider adoption in general – not only a hydrogen production issue. Energy storage must be accomplished and matured if green hydrogen is to be broadly adopted. Use this opportunity to build incentives within the proposed tax credit policy.
3. I suggest offering much greater geographic flexibility with power transmission. The current model does not support or incentivize regions like Louisiana to invest in green hydrogen production, which is a huge user of hydrogen with high potential for green hydrogen production adoption. This could have a strong negative impact on states similar to Louisiana. The proposed regional approach is too restrictive and not optimized toward the current power grid management model that works well. The policy should be oriented toward green hydrogen generation following as much of the existing user and/or production infrastructure as possible. Minimizing cross-regional green power sharing will not advance the goal of a widespread hydrogen economy. In many ways, the potential exists to set up pockets of green hydrogen generation, and not widespread capitalizing of existing manufacturing centroids that would be hydrogen off-takers across the entire US. In particular, the current policy will be highly restrictive and not conducive to implementing green hydrogen usage in states such as Louisiana. Direct the incentives for the benefit of the entire US. Also, note that the formal programmatic Hydrogen Hubs are not, and will not be the only regions for realizing the hydrogen economy. Louisiana is primed for this.
4. I also suggest softening the temporal requirements of the policy by phasing in the current plan, while also better assessing more real-time power usage trends across regions with differing power usage patterns. Louisiana is one of the biggest industrial power users, and as such, regions such as ours should have a policy more reflective of its industrial power usage time trends. Frankly, the current as-is plan shows likely unintended bias against some US regions with high levels of industrial loads where great reductions in carbon dioxide emissions can be realized through the implementation of green hydrogen fueling and usage.
5. I also suggest that blue hydrogen be granted a small 45V-based tax credit (on top of the CCS 45Q credit) to stimulate this transitional production option since the realization of a true hydrogen economy will take long-term capital investments, including massive re-equipping of current processes which will in itself add to CAPEX costs passed on to the consumer thus increasing the living costs to all Americans. Allowing hydrogen transition (blue into green) will first stimulate off-taker user technology exchange investments followed by incentivized green hydrogen production investments – thus softening the inflationary impacts of the currently proposed all-in approach.
6. At this time, Louisiana and many other US states are actively making huge investments toward the realization of the hydrogen economy. However, it would be highly unfortunate if the regional bias proposed in the current tax credit structure reduces additional investments that a better-structured tax credit could provide. Unfortunately, the current 45V code will likely curtail the level of investment we all would like to see. Greenhouse gases do not know regional nor state boundaries, thus we need policies implemented that collectively and inclusively incentivize ALL

states and regions toward a united front across the entire country to reduce emissions. Leaving out any region or state due to a poorly structured tax credit policy simply goes against our goal of comprehensive inclusion. Poor states like Louisiana have many groups (rural and minority-owned businesses) who have experienced energy injustices, the current policy as proposed will only further exacerbate their plight.

Louisiana's industries and other stakeholders have greatly risen to the challenge of less emissions and a more sustainable industrial base. In many ways, Louisiana is leading the US in technology development, new technology adoption, and the implementation of modern green technology manufacturing. Over \$65B of investments are underway in Louisiana toward a cleaner energy, transportation, and manufacturing future. It is hoped that a revised policy will be considered that better aligns and rewards Louisiana for its leadership.

Many thanks for the opportunity to provide my comments!

Very Sincerely Yours,

*Mark E. Zappi*

Mark E. Zappi, PhD, PE  
Executive Director of the Energy Institute of Louisiana  
Director of the Louisiana C1 Extension Service  
BORSF Endowed Chair in Bioprocessing  
Professor of Chemical Engineering  
Professor of Civil Engineering  
Dean Emeritus for the UL College of Engineering  
University of Louisiana  
[mark.zappi@louisiana.edu](mailto:mark.zappi@louisiana.edu)