



**BISON FUELS LLC**

## **Bison Fuels 45V Response**

**February 26, 2024**

These comments submitted electronically via the Federal eRulemaking Portal at <https://www.regulations.gov> for IRS REG-117631-23

Paper form comment submitted to:

Douglas W. O'Donnell

Deputy Commissioner, Services and Enforcement, Internal Revenue Service

CC:PA:LPD:PR (REG-117631-23),

Room 5203, Internal Revenue Service

P.O. Box 7604

Ben Franklin Station

Washington, DC 20044

Dear Mr. O'Donnell,

These comments on the Internal Revenue Service (“IRS”) draft guidance for “Section 45V Credit for Production of Clean Hydrogen” are submitted on behalf of Bison Fuels LLC, a green hydrogen developer dedicated to accelerating the adoption and integration of green hydrogen into existing and innovative industrial manufacturing processes for sustained greenhouse gas (“GHG”) reduction.

### **Abstract:**

The U.S. National Clean Hydrogen Strategy and Roadmap (the “Roadmap”) highlights the exciting potential for hydrogen to help us reach decarbonization goals, with an ambition to reach 10 million metric tons (“MMT”) of clean hydrogen production by 2030. This represents growth from effectively zero today, in a market where the entire global demand is approximately 95 MMT. This strong commitment is regrettably at odds with the proposed 45V guidelines for the production of green hydrogen, which will not effectively incentivize broad adoption.

To satisfy the United States' decarbonization commitments under the Roadmap, as well as its commitment under the Paris Agreement, incentives like 45V have the potential to accelerate the adoption of green hydrogen and assist in buildout of much-needed supply chains. The effectiveness of such policies has been amply proven through the development of the solar and wind power infrastructure now ubiquitous throughout the United States. While specific components of the 45V guidance align with reducing emissions from individual projects in the green hydrogen economy, the stringent nature of the proposed guidelines will stunt broader growth of supply chains and customer adoption rates. The draft IRS guidance published in the Federal Register on December 26, 2023, will not enable green hydrogen to be competitively priced for many types of industrial hydrogen end-users, and therefore is not consistent with promoting green hydrogen projects or incentivizing the investment required to implement them. As written, the 45V guidelines will not enable the United States to reach 10 MMT of clean hydrogen production by 2030.

Our response to the proposed 45V guidelines is structured in four parts: 1.) Temporal Matching; 2.) Incrementality (Additionality); 3.) Customer Insights; and 4.) Economic Parity with Other Green Technologies.

In the first two sections, we describe key challenges posed by the current temporal matching and incrementality requirements. In the third section, we outline feedback from prospective customers which underscores that, absent the full amount of the generous support Congress envisioned when passing the Inflation Reduction Act of 2022 ("IRA"), they will be significantly less likely to adopt green hydrogen. And lastly, we compare the stringency of the 45V guidelines to those in other areas of the energy transition, such as battery electric vehicles ("BEVs") and carbon capture, utilization, and storage ("CCUS"). Our recommendations endeavor to better align the 45V guidance with the Roadmap goals.

### **Bison Fuels Recommendations:**

- 1) Allow any green hydrogen facility starting construction prior to January 1, 2028, to use annual matching for the lifespan of the project.
- 2) Allow power procurement from existing non-emitting power facilities.

### **About Bison Fuels:**

Bison Fuels is a green hydrogen developer comprised of experts from the financial, legal, oil and gas, aerospace, and renewable energy industries. Our team leverages its expertise to design, construct, and operate green hydrogen facilities for any bespoke application. We are currently seeking funding so that we may begin partnering with customers and bring green hydrogen projects to fruition; yet those projects' speed to commercialization, our initial funding, and our near-term

hiring are significantly impacted by the implementation of the green hydrogen incentives contemplated by the IRA.

Rapid deployment of green hydrogen will not happen unless customers can buy hydrogen at competitive pricing, and project investors can achieve required returns on capital. Accelerating adoption of green hydrogen will accelerate cost declines, leading to acceleration of supply chain buildout and economies of scale in manufacturing. As we will emphasize below, the proposed guidelines are contrary to those goals.

The Bison Fuels team takes our responsibility for the buildout of American green hydrogen projects seriously, yet key provisions in the draft 45V guidance work against our collective success in promoting green hydrogen adoption. Accordingly, Bison is submitting comments focused on the key IRA Section 45V tax provisions.

### **(1) Temporal Matching**

*Recommendation: Allow any green hydrogen facility starting construction prior to January 1, 2028, to use annual matching for the lifespan of the project.*

The 45V draft guidance states that before January 1, 2028, the electricity consumed by a green hydrogen facility must be generated in the same calendar year (hereafter “annual matching”), but that after January 1, 2028, each Energy Attributes Certificate (“EAC”) must be generated in the same clock hour that the green hydrogen facility uses electricity (hereafter “hourly matching”). This requirement greatly restricts the power structuring options for a given project and does not effectively allow green hydrogen plants to transition from annual to hourly matching.

- a.) Switching measurement from annual to hourly at an arbitrary point in time dramatically reduces power structuring options from a project’s inception.
- b.) Many industrial hydrogen end-users require a constant supply of hydrogen, while most renewable power projects do not deliver a constant supply of electrons.
- c.) Limited options exist in the market for matching renewable attribute generation to electricity consumption on any level of granularity finer than monthly.

#### **a. Switching measurement from annual to hourly at an arbitrary point in time dramatically reduces power structuring options from a project’s inception.**

Meeting any requirement for hourly matching would necessitate design changes and expenditures at project inception. Hourly matching requires expensive storage and compression facilities, effectively requiring the design to be for hourly matching from day one, even if the facility were

initially to match annually. The alternative to expensive design changes is the risk to hydrogen end-users that a large portion of their production tax credit (“PTC”) incentives might arbitrarily end in 2028 as much of the hydrogen they receive is no longer classified as “green”. This reclassification risk is a significant enough financial penalty to disincentivize the pivot to green hydrogen that the IRA seeks to drive.

**b. Many industrial hydrogen end-users require a constant supply of hydrogen, while most renewable power projects do not deliver a constant supply of electrons.**

Running an electrolyzer at a high utilization rate is not only economically desirable to create competitively priced hydrogen, but even more importantly, is also an operational imperative for many industrial users with close to 24-hour demand requirements. Some hydrogen end-users will never accept intermittent supply of green hydrogen because a continuous supply of green hydrogen is needed for subsequent manufacturing steps, and production cannot be curtailed based on renewable energy availability. Consequently, grid connection would be necessary for many projects to ensure a base load of power, and the carbon intensity of that connection would vary depending on geography.

If the green hydrogen facility were to operate only during hours when renewable energy is available, then the facility would run at a lower utilization rate, which negatively impacts project economics. To deliver renewably generated power *and* satisfy delivery requirements of many industrial users, storage options are technically possible; but building and operating facilities for the storage of green hydrogen and/or renewable power is expensive. A green hydrogen facility with 100% renewable power generation plus constant offtake demand with limited turndown capability could require several weeks of green hydrogen storage to ensure its ability to provide uninterrupted flow of green hydrogen. This has a substantial impact on the cost of green hydrogen to industry. Allowing greater flexibility of base load power supply—permitting a designated, limited proportion of electricity generation to come from the grid—could significantly mitigate the risk associated with the variability of renewable energy production and meaningfully reduce potential hydrogen storage requirements. This approach can lead to a disproportionate decrease in the costs associated with energy offtake agreements, compared to the relatively minor increase in the overall carbon footprint of the project.

**c. Limited options exist in the market for matching renewable attribute generation to electricity consumption on any level of granularity finer than monthly.**

In addition to the economic impacts of temporal matching, the mechanics of achieving the matching requirements may prove difficult in coming years. These systems across the country need to be designed and built out to achieve the hourly temporal matching rule requirement, regardless of the economics. Consequently, with no current system for hourly temporal matching

today or in the foreseeable future, it is impossible for any project to state today, with any credible degree of certainty, how it would maintain PTC eligibility after January 1, 2028. This likelihood is therefore underwritten as zero, deterring industries and investors from making the investments envisioned by the IRA and Congress for the industry.

The draft 45V guidance requirement that all projects built before January 1, 2028, convert from annual matching to hourly will create higher costs for green hydrogen, limiting adoption. **Therefore, Bison recommends that any green hydrogen facility starting construction prior to January 1, 2028, be allowed to use annual matching for the lifespan of the project.**

## **(2) Incrementality (Additionality)**

*Recommendation: Allow power procurement from existing non-emitting power facilities.*

The draft 45V guidance requires that renewable power sources for green hydrogen facilities must have started production no more than 36 months before the green hydrogen facility begins production. This requirement is expected to disqualify most existing emission-free power generation facilities. A well-known issue with renewable project development and construction is the mismatch of transmission buildout with high renewable resource areas. There are gigawatts of renewable projects online today that are at risk of retirement or experiencing severe financial hardship due to their location on electric grids. Allowing older renewable generators to qualify for 45V means that they can continue producing profitably. There is a significant demand for new clean power and a substantial queue of new projects already without arbitrarily inflating demand by attaching newbuild requirements to the IRA's support for green hydrogen. **Therefore, Bison recommends allowing power procurement from existing green generating facilities, which is essential to attract investment in green hydrogen facilities.**

## **(3) Customer Insights**

Bison has engaged potential customers from many industries including ammonia, refining, electricity generating "peaker" plants, hydrogen fuel retailers, and more. We have consistently confronted almost no willingness from prospective hydrogen buyers to pay a cost premium for green hydrogen relative to other, more carbon-intensive alternatives. This can be attributed to several factors, including the narrow profit margins common in established industrial sectors like ammonia production. The higher costs associated with green hydrogen could significantly affect these operations, making it a less attractive option despite its environmental benefits. If adopting green hydrogen increases operating expenses versus continuing to use gray hydrogen or adopting blue hydrogen, green hydrogen will not be competitive and will likely not be adopted. Potential customers for green hydrogen do not have such compelling sustainability goals that they will overlook increased operating costs and accept diminished profitability to adopt green hydrogen. They would avoid making an unprofitable investment.

The 45V provisions of the IRA were intended to overcome cost hurdles and price green hydrogen competitively with carbon-intensive hydrogen. Yet for the reasons explained above, the draft 45V language neutralizes the financial benefits that would have made green hydrogen adoption economically attractive for many current users of carbon-intensive hydrogen, as well as many new use cases for the molecule.

#### **(4) Economic Parity with Other Green Technologies**

Bison requests that the IRS consider the broader framework for climate action supported by the IRA when finalizing the 45V guidance. The current language holds green hydrogen producers to a higher standard than other industries. Please consider the following examples:

- a.) Owners of BEVs are not required to charge their vehicles exclusively when green power is available to obtain federal subsidies for the purchase and operation of their vehicle. Most use grid power with no consideration of how increased power demand may impact GHG emissions.

No one could credibly dispute that it would be completely impractical to require temporal matching for BEV charging. We assert that green hydrogen is no less vulnerable to this practicality. BEVs will become greener as the grid inevitably does with the buildout of renewable power—so will green hydrogen. **We ask the IRS to extend its view of the grid's future to all technologies reliant on it.**

- b.) Section 45Q credits for CCUS have an annual capture requirement for equipment placed in service after 12/31/2022 and beginning construction prior to 1/1/2033 and provide a 12-year incentive for such equipment.

The government's approach to CCUS makes two important distinctions. First, having an annual requirement more realistically comports to the operations of industrial facilities rather than arbitrarily trying to tether their work to when it might have the highest impact in a given period (e.g. greater incentives for carbon capture during wildfire season). Second, the annual capture requirement is in effect for 12 years from the placed-in-service date. The green hydrogen incentive under 45V only exists for 10 years after placed-in-service, and the hourly temporal requirement would be in effect in less than 4 years, most likely dominating the incentive period for a facility. For example, a green hydrogen project with a signed memorandum-of-understanding today would likely be approximately three years away from its placed-in-service date. Given that the rules are not finalized, one can credibly assume most substantial green hydrogen projects will reach placed-in-service no earlier than 2027. These projects will likely never receive more than a year of annual matching, while every CCUS project will receive an annual capture requirement. This dichotomy feels at odds with the articulated goals of Congress.

Congress intended to create markets for these green products that could achieve profitability after their incentive periods. Green hydrogen's access to incentives is being curtailed in ways that are

both inconsistent with views of the grid the government assumes for BEVs and with the government's views on how to measure and incentivize CCUS. We submit that American green hydrogen merits the same set of assumptions to build a profitable and prosperous industry.

## Summary

The draft 45V guidance, if implemented as it currently stands, will put the PTC largely out of reach for many prospective green hydrogen users. New and existing hydrogen consumers will use carbon-intensive hydrogen over green hydrogen because it will be cheaper to do so. That outcome substantially undermines the intent of the Congress expressed in the IRA and dramatically limits its benefits to the environment, the country, and the planet. Bison urges the IRS to revisit the stringency of the proposed guidelines. Congress has charted a path to a cleaner, safer, and more prosperous future for Americans. We are ready to make progress towards these goals with your support.

Respectfully,

A handwritten signature in black ink that reads "Alexandra Goldstein". The signature is written in a cursive, flowing style.

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