February 26, 2024

The Honorable Janet Yellen
Secretary
U.S. Department of the Treasury
1500 Pennsylvania Avenue NW
Washington, D.C. 20220

Ethan Zindler
Climate Counselor
U.S. Department of the Treasury
1500 Pennsylvania Avenue NW
Washington, D.C. 20220

Re: Comments on Proposed Regulations on Clean Hydrogen Production Credit (Section 45V Tax Credit)

Dear Secretary Yellen and Counselor Zindler:

The Bioenergy Association of California (BAC) appreciates the opportunity to provide these comments on the Notice of Proposed Rulemaking issued December 26, 2023 to provide draft guidance on the 45V tax credit for clean hydrogen. BAC members strongly support the creation of the 45V tax credit to spur the development of clean hydrogen, which is essential to achieve our climate change, clean energy, and air quality goals. At the same time, however, we are concerned that several of the provisions are overly burdensome, not needed in all parts of the country, and likely to slow the development of clean hydrogen. BAC's comments on the draft guidance and responses to specific questions are below.

BAC represents more than 100 public agencies, private companies, and non-profit organizations working to convert organic waste to energy. BAC's public sector members include Tribes, cities and counties, local air districts, environmental and solid waste agencies, wastewater treatment facilities, public research institutions, community and environmental groups, and a publicly owned utility. BAC's private sector members include bioenergy project developers, technology providers, investors, an investor-owned utility, waste haulers, food processing and agricultural companies, and more.

BAC submits the comments below on the proposed regulations on the 45V tax credit for clean hydrogen.

1. The Proposed Regulation Correctly Includes Biogenic Hydrogen from Organic Waste Sources.

BAC supports the proposed regulation's inclusion of organic waste feedstocks, including biogas, biomethane, and waste biomass. Hydrogen generated from organic waste is the only form of hydrogen that can provide carbon negative emissions, reduces methane and other Short-Lived Climate Pollutants, and can help reduce wildfires, landfill waste, and open burning of forest or agricultural waste.

Climate scientists agree that the most urgent measure to address climate change is the reduction of methane, black carbon, and other Short-Lived Climate Pollutants. The United States and the European Union issued a Joint Statement on the Global Methane Pledge stating that the reduction of methane "is regarded as the single most effective strategy to reduce global warming in the near term and . . . Methane abatement delivers additional important benefits, including improved public health and agricultural productivity."[1]

In California, 86 percent of methane emissions come from organic waste and more than 90 percent of black carbon emissions come from wildfires and open burning of forest or agricultural waste.[2] All of these emissions can be reduced or eliminated by converting organic waste to hydrogen, which also provides enormous benefits to air quality and public health as well.

In addition to reducing the most damaging climate pollutants, hydrogen generated from organic waste is also the only form of hydrogen that can be carbon negative. Producing carbon negative emissions is critical to achieving net carbon neutrality by mid-century. According to a recent study by Lawrence Livermore National Lab, converting organic waste to hydrogen is the single biggest opportunity to provide carbon negative emissions in California and is also a very cost-effective strategy for reducing carbon emissions.[3]

In addition to its unique climate benefits, biogenic hydrogen also helps to reduce landfill waste, pile and burn of agricultural and forest waste, and pile and decay of organic waste. Doing so reduces air and water pollution and provides other benefits and valuable co-products.

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[1] *Joint US-EU Press Release on the Global Methane Pledge*, issued by the White House on September 18, 2021.

[2] *Short-Lived Climate Pollutant Reduction Strategy* and *2022 Climate Change Scoping Plan*, adopted by the California Air Resources Board in 2017 and 2022, respectively.

[3] Lawrence Livermore National Lab, *Getting to Neutral – Options for Negative Carbon Emissions in California*, January 2020, at pages 1-2 and 8.

2. **The 45VH2-GREET Model Should be Updated to Include All Organic Waste and Biogas Feedstocks.**

BAC urges the Federal Government to add additional hydrogen production pathways under the 45VH2-GREET model. As noted above, biogenic hydrogen is the only form of hydrogen that can be carbon negative and whose production reduces methane and other Short-Lived Climate Pollutant emissions. Yet the current 45VH2-GREET model pathways only include Steam Methane Reformation (SMR) of landfill gas and biomass gasification of forest waste and corn stover.

The 45VH2-GREET model should be expanded to include pathways for all forms of biogas, biomethane and waste biomass, not just forest waste and corn stover. These additional pathways should include at least the following feedstocks for clean hydrogen production:

- Biomethane generated from organic waste that is diverted from landfills;
- Biomethane generated at wastewater treatment facilities, including co-digestion of other organic waste feedstocks at wastewater treatment facilities;
- Biomethane generated from livestock, food processing, and other organic waste;
- Cellulosic waste such as urban wood waste, wildfire debris, all forms of agricultural wastes and residues (not just corn stover), forest waste, and other vegetation removed for wildfire mitigation.

In states like California, the largest sources of agricultural waste are orchard and vineyard prunings, nut shells, rice straw, and other agricultural residues. Corn stover is only a very small fraction of California's agricultural waste that can be converted to clean hydrogen. To help meet the California Air Resources Board's decision to phase out open burning of agricultural wastes, the 45V guidance should include all forms of agricultural waste, not just corn stover.

BAC urges the Federal Government to explicitly include all organic waste and biogas feedstocks in Clean Hydrogen Production Credit and to develop pathways under the 45VH2-GREET model as quickly as possible.

3. **The Proposed Requirements for Incrementality and Temporal Matching are Unnecessarily Burdensome for States and Regions with High Renewables Requirements.**

BAC supports Treasury's goal of promoting clean hydrogen, but some of the proposed requirements, known as the "3 pillars" of additionality, would be so burdensome as to stifle the nascent hydrogen market. In addition, the requirements for incrementality and temporal matching are not necessary in states like California that have very strict RPS (Renewables Portfolio Standard or renewable electricity) requirements. California law already requires that 60 percent of the state's power be renewable by 2030 and another 10 to 15 percent is from carbon free electricity (from large hydropower and nuclear). California's electricity will be 100 percent renewable or carbon free by 2045, so the

concern about resource shuffling is not really relevant here. In addition, the incrementality and temporal matching requirements will make hydrogen production much more expensive when the same objectives can be met much more easily by setting a lifecycle carbon intensity standard.

BAC agrees with the comments of the California Alliance for Renewable Clean Hydrogen Energy Systems (ARCHES), whose leadership includes representatives of the Governor of California's Office, Labor, the University of California, and others. ARCHES cautioned against policies or incentives that single out and overburden one technology or resource with onerous geographic, time matching, and 'additionality' requirements."[4] As ARCHES pointed out, these same additionality requirements will not be applied to battery storage, electric vehicle charging, or other clean energy and decarbonization technologies, so the draft guidance on 45V is singling out one resource and applying much stricter – and potentially impossible – standards for clean hydrogen production than other resources must meet to receive tax credits and other incentives.

The draft guidance on 45V is also not clear whether the additionality requirements will be applied to biogenic hydrogen as well as electrolytic hydrogen. In general, temporal matching and incrementality are not appropriate for projects that use organic waste, biogas or biomethane as feedstocks, rather than using electricity to split water. In the case of biogenic hydrogen, the process power will be included in the lifecycle carbon intensity, which should suffice to address the objectives of additionality.

4. Responses to Specific Questions in the Draft Guidance about Biomethane (RNG).

BAC's responses to select RNG questions in Section IX of the draft guidance are below.

Question (1) - Data sources on RNG and biomass

- California Air Resources Board's lifecycle analysis of RNG for the Low Carbon Fuel Standard program (using GREET model).
- Lawrence Livermore National Lab's report *Getting to Neutral – Options for Carbon Negative Emissions in California*, issued January 2020.
- Argonne National Lab's analysis of the lifecycle carbon intensity of biomass converted to RNG for the Gas Technology Institute report *Low-Carbon Renewable Natural Gas (RNG) from Wood Wastes,* February 2019.

Question (2) - Emissions verification

- The best way to avoid indirect emissions is to require hydrogen projects to conduct a verified, lifecycle-based carbon intensity analysis.

[4] Id. at page 2.

Questions (4) and (6) - Defining RNG and fugitive methane, industry best practices

- RNG and fugitive methane are not the same. RNG may be generated intentionally through anaerobic digestion or it may be produced as a byproduct of landfill waste disposal or the wastewater treatment process. Fugitive methane is not methane that is generated intentionally or as a byproduct – fugitive methane is methane that is leaked to the atmosphere. These two terms are not synonymous and should not be treated the same.
- Industry best practices should focus on reducing or eliminating fugitive methane (methane leaks) and any emissions from methane leaks should be included in a lifecycle carbon analysis.
- Including methane leakage in the carbon intensity analysis will encourage the use of industry best practices because leakage (fugitive methane) will increase the carbon intensity and decrease the value (and quantity) of the biomethane or RNG that can be productively used or sold.

Question (7) – Waste practices and emissions

- The 45V tax credit should not be used as a tool to regulate waste practices, which are the result of numerous complex regulations that vary by state and local jurisdiction.
- RNG or biomass conversion to hydrogen is not going to encourage the production of more organic waste. Humans produce enormous volumes of organic waste already, most of which goes to landfills, is piled and burned, or piled and left to decay. The challenge is not that hydrogen production tax incentives could lead to more waste production. The challenge is that the U.S. generates billions of tons of waste annually that should be repurposed as part of the circular economy. Disposing of waste in landfills or by open burning is an enormous source of methane or black carbon emissions that can be reduced or eliminated when that waste is converted to hydrogen or other fuels instead. Doing so will not cause an increase in emissions as long as incentives and procurement programs are based on lifecycle carbon emissions.

Question (8) – Should RNG be limited to existing sources

- RNG should **not** be limited to existing production sources since most organic waste is still disposed of in landfills, piled and left to decay, or piled and burned. California, for example, currently uses only 15 percent of its total organic waste supply. If 45V was limited to existing sources, it would only be applicable to a very small fraction of California's – and the country's - potential for biogenic hydrogen production.
- A limitation to existing sources of RNG or waste biomass would prevent the beneficial use of most of the country's organic waste and biogas potential, which makes no sense when the conversion of organic waste or biogas to hydrogen is

one of the most beneficial – if not the single most beneficial – alternative to landfilling or burning organic waste.[5]

Question (9) – Geographic or temporal delivery requirements for RNG

- Geographic and temporal delivery requirements for RNG or biomass as a feedstock for hydrogen do not make sense for several reasons: first, we do not have the same tracking mechanisms in place for gas as we do for electricity (ie, WREGIS to track renewable power in the western states), so a whole new tracking system for gas would have to be developed, which could take many years. Second, organic waste is seasonal and variable in nature, especially agricultural, forest, food processing, construction and wildfire debris, and other types of organic waste that are only generated seasonally. Requiring temporal matching does not make sense for organic waste (RNG or biomass) feedstocks.

Question (11) – How to determine lifecycle emissions of H2 from RNG

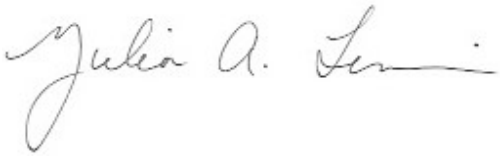
- Determining the lifecycle carbon emissions of RNG or biomass depends on what the source of the RNG or biomass is. Knowing whether to include avoided emissions in the lifecycle analysis depends on a number of factors including: whether the capture and use of the biomethane is required by law; whether the organic waste would otherwise have been disposed of in a landfill with some methane capture or piled and left to decay with no methane capture; whether other alternative uses are allowed (such as compost production) and their relative carbon emissions; whether the organic waste would have been open burned (and therefore emit black carbon and CO2); whether the waste had to be transported and the emissions from transport; and other factors.

As noted above, BAC urges the IRS not to adopt unduly burdensome requirements for 45V or it will end up chilling the nascent clean hydrogen sector. This is the opposite of what Congress intended in enacting this section of the Inflation Reduction Act, which was to accelerate the production and use of clean, low carbon hydrogen to help decarbonize the energy, industrial, and other sectors. As ARCHES noted in its letter to the IRS, the 45V guidance should not apply stricter and more expensive requirements on clean hydrogen than on other technologies. BAC urges the IRS, therefore, to adopt simple criteria for clean hydrogen production that define eligible feedstocks, base the incentives on lifecycle carbon intensity, and apply only those requirements that are consistent with tax incentives for other energy technologies and fuels.

[5] See Lawrence Livermore National Lab report, footnote 3, above.

Thank you for your consideration of these comments.

Sincerely,



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