November 10, 2022

Hydrogen Program
U.S. Department of Energy
1000 Independence Ave. SW
Washington, DC 20585

RE: U.S. Department of Energy Clean Hydrogen Production Standard (CHPS) Draft Guidance

Submitted via email to Cleanh2standard@ee.doe.gov

Biomass Power Association appreciates the opportunity to submit comments to the U.S. Department of Energy (DOE) Hydrogen Program in response to its request for stakeholder feedback on the DOE proposed guidance on clean hydrogen production.

The members of the Biomass Power Association are domestic power producers who use organic waste, residues and byproducts as fuel to generate heat and electricity. The vast majority of the materials used as fuel by biomass power facilities have the least value in the supply chain and, if not used for biomass power production, would often otherwise be open burned or left in the forest to decompose or potentially contribute to wildfire. Biomass power facilities are predominantly located in rural areas. Biomass is recognized as a low-carbon source of power, meaning that the carbon released from a facility is already part of the carbon cycle rather than being newly introduced into the atmosphere from within the Earth as happens when fossil fuels are burned. The influx of cheap natural gas and other sources of low-cost power over the past decade have made it increasingly difficult for biomass power facilities to remain on the grid. The adoption of hydrogen production technology represents the opportunity for biomass power to leverage additional revenue streams to continue producing power in the face of stiff competition.

Feedback on the DOE Clean Hydrogen Production Standard Draft Guidance

The GREET model is an excellent choice for a life cycle model to evaluate hydrogen fuel pathways under these programs because GREET is peer-reviewed, updated annually and configured with the latest U.S. average data; comparing the data in GREET to real-world data, we find that the inputs associated with many hydrogen pathways are accurate, including the following pathways:

- Hydrogen produced from steam methane reformation (SMR) of natural gas and renewable natural gas (RNG)
- Hydrogen produced via water electrolysis
- Hydrogen produced via gasification of biomass

We believe that the initial CI target of 4 kg CO_2e/kg hydrogen under the CHPS program is appropriate and achievable. This threshold represents a significant emission reduction relative to comparable fossil fuels (especially when the energy economy ratio (EER) of hydrogen use technologies is factored in) and this CI threshold can be achieved via several low-CI hydrogen pathways in production today, including:

- Hydrogen produced via water electrolysis using renewable electricity
- Hydrogen produced from biomass residue via gasification and pyrolysis
- Hydrogen produced from low-CI RNG via SMR
- Hydrogen produced from natural gas SMR using carbon capture and sequestration (CCS)
- Hydrogen produced from the biogenic fraction of municipal solid waste (MSW)

To properly account for clean hydrogen production from biomass facilities, we encourage the programs to include the following life cycle approaches using the GREET model:

- **Require hydrogen life cycle assessments to adhere to the latest ISO 14064 life cycle standard for fuels.** This ISO standard is robust and specific to fuels, and the standard is peer-reviewed and updated when necessary. ISO 14064 is the basis for many regulatory and voluntary sustainability schemes for fuels. The standard includes a protocol for third party verification of the life cycle assessments and requirements for auditing bodies (ISO 14065).

- **Include counterfactual emission credit for waste feedstocks including MSW, wastewater sludge, animal manure and organic wastes** (e.g., food waste and urban landscaping waste). The GREET model already models the avoided emission benefits associated with diverting these wastes from their baseline management practices to hydrogen production and including these emission credits will incentivize low-CI hydrogen pathways and recognize the real-world emission benefits of converting waste to fuel. Taking into account the emissions tied to the alternate fate of the fuel used to produce hydrogen, such as open-burning or contributing to wildfire, will encourage responsible use of these materials.

- **Allow for separate CI calculations for hydrogen produced from comingled feedstocks containing biogenic and fossil fuel waste streams.** We recommend allowing producers to calculate the CI and claim credit for low-CI hydrogen from biogenic waste sources co-processed with fossil sources either through energy allocation of the production process(es) or by demonstrating the biogenic portion using radiocarbon testing. This flexibility will allow for large quantities of comingled waste resources to be responsibly converted to hydrogen rather than landfilled.

- **Require third-party verification of hydrogen CI calculations according to ISO 14065.** We recommend requiring third-party verification of process data, meter accuracy and calibration schedule, data management systems and compliance monitoring plan, along with third-party verification of life cycle assessment methodology and calculations. Third-party verification reports and verification statements can be provided to DOE and made publicly available.

- **Allow indirect accounting for low-CI process inputs used to produce hydrogen.** Many hydrogen producers do not have direct access to renewable electricity or RNG and the economics of developing their own renewable electricity or RNG sources are prohibitive. Use of renewable electricity and RNG via "book and claim" accounting can be readily verified by third parties based on contracts, attestation letters and data management systems. "Book and claim" accounting has been successfully used to promote low-CI hydrogen production under many fuel programs, including the California Low Carbon Fuel Standard (LCFS) and other state LCFS programs, the International Sustainability and Carbon (ISCC) certification scheme and many others

- **The co-product methodology should depend on the product mix.** The energy allocation method should be used for all hydrogen pathways that produce only energy products. Pathways that produce non-energy co-products (e.g., elemental carbon) should use economic (price-based) allocation based on a 3-year average of price data. This hierarchical approach is designed to allocate emissions based on what society values most. The primary interest is to produce energy and pathways that produce only energy should allocate emissions based on the relative share of energy flows in the products. For processes producing non-energy products, emissions should be allocated based on economic value because this reflects the relative value of each product in the global marketplace.

Biomass Power Association looks forward to working with the U.S. Department of Energy to harness clean hydrogen production from biomass power facilities. Thank you for the opportunity to submit these comments. Please do not hesitate to reach out to me with any questions by email (carrie@usabiomass.org) or by phone (202-494-2493).

Sincerely,

Carrie Annand

Carrie Annand
Executive Director