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SUBMITTED ELECTRONICALLY

Internal Revenue Service
CC:PA:LPD:PR (REG-117631-23)
Room 5203
P.O. Box 7604, Ben Franklin Station
Washington, D.C. 20044

The Honorable Lily L. Batchelder
Assistant Secretary for Tax Policy
Department of the Treasury
1500 Pennsylvania Ave., N.W.
Washington, D.C. 20220

The Honorable Daniel I. Werfel
Commissioner
Internal Revenue Service
1111 Constitution Ave., N.W.
Washington, D.C. 20224

Mr. William M. Paul
Principal Deputy Chief Counsel
Internal Revenue Service
1111 Constitution Ave., N.W.
Washington, D.C. 20224

Re: Proposed Regulations Regarding the Temporal Matching Requirement for Section 45V Credit for Production of Clean Hydrogen (REG-117631-23)

Dear Ms. Batchelder, Mr. Werfel, and Mr. Paul:

The undersigned companies appreciate the opportunity to respond to the Treasury Department's and Internal Revenue Service's request for comments regarding the temporal matching requirement in § 45V Credit for Production of Clean Hydrogen ("Section 45V Production Tax Credit") pursuant to the Notice of Proposed Rulemaking (REG-117631-23). Our companies represent diverse sectors and range from industry-leading firms to innovative start-ups. **We are the companies that, with effective policy implementation, will be producing, transporting, and consuming clean fuels at scale in this country.** We wholeheartedly support the Administration's emissions reduction, decarbonization and clean energy growth goals, and we believe that nurturing the nascent clean hydrogen industry is essential to realizing these goals.

I. Background

Though the clean hydrogen industry is in its infancy, it has the potential to accelerate the decarbonization of numerous sectors, including chemicals, heavy industry, maritime shipping, long-haul road transport, aviation, and the power sector. According to the Department of Energy's June 2023 *National Clean Hydrogen Strategy and Roadmap*, clean hydrogen at-scale can reduce U.S. emissions approximately 10 percent by 2050 relative to 2005 emissions levels. The Section 45V Production Tax Credit (PTC) for clean hydrogen can play a critical role in helping the industry reach this scale. However, the production volumes necessary to unlock the long-term, deep decarbonization benefits of clean hydrogen will not be reached under the proposed temporal matching rules.

II. Temporal Matching Requirement

The proposed temporal matching rules for clean hydrogen production will severely limit the effectiveness of clean hydrogen as a tool to reach the Administration's long-term deep decarbonization goals. However, modest changes to the guidance can significantly affect the trajectory of the clean hydrogen industry.

Specifically, two revisions to the temporal matching transition can easily address this limitation:

- **Provide grandfathering of annual matching for the full 10-year 45V PTC term for projects that start construction before January 1, 2028; and**
- **Apply annual matching to projects that start construction before January 1, 2028, with the standard four-year continuity safe harbor provision.**

Switching from annual matching to hourly matching involves much more than simply switching from annual energy attribute certificates (EACs) to hourly EACs. It requires reconfiguring every aspect of how a hydrogen production facility operates and reverberates beyond the point of production to affect the demand-side value chain.

From a technical standpoint, an hourly-matched hydrogen production facility must be designed differently from an annual matched production facility. The differences are so foundational to the design of the project that it is not possible to switch from one regime to another after a project has commenced operations. Transitioning to hourly matching without allowing grandfathering of annual matching for projects that start construction before January 1, 2028, means developers will have to build projects to meet hourly matching requirements from the commercial operation date (COD). This would require additional expenses for an overbuild of the electrolyzer capacity (up to3x) to ensure constant output, the addition of onsite storage for renewable electricity, the addition of onsite storage for clean hydrogen to ensure ratable output, and the procurement of the type of electrolyzer that can ramp up and down in response to intermittent renewable electricity, among other facility design aspects. In this scenario, hydrogen project developers would not benefit from the projected downward sloping cost curves of these design and technology modifications. Instead, hydrogen projects will be nearly impossible to finance due to the uncertainty of implementing these substantial modifications.

The need to build for hourly matching from COD also impacts electricity procurement. EACs from incremental wind and solar projects will need to be sourced under contracts (VPPA/PPA) that have a longer tenor than the annual-to-hourly match transition period proposed in the current guidance. The optimal EAC sourcing approach – EAC volume and mix of renewable sources – is different under annual matching versus hourly matching. It will also prove nearly impossible to structure the renewable supply contracts to change EAC volume and resource mix midway through a hydrogen facility's operation, leading to the assumption of hourly EAC requirements from COD.

Altogether, these additional challenges add to the levelized cost of hydrogen (LCOH) in an already difficult macroeconomic environment, endangering projects that would lay the foundation for the clean hydrogen industry. Since the Inflation Reduction Act was passed, green hydrogen production costs have increased significantly due to underlying inflation and associated interest rate increases. These trends have driven up the cost of capital for renewable energy and green hydrogen projects. The higher production costs feed into the higher cost of delivered hydrogen that offtakers pay, reducing its appeal as a feedstock among early users. Furthermore, these additional costs and financing risks come in

anticipation of a proposed 2028 transition from annual matching to hourly matching, even though there is significant uncertainty over whether reliable hourly matching will be implementable by the 2028 deadline.

While we support a phase-in of more stringent temporal matching requirements over time as the hourly tracking capabilities of qualified EAC registries develop, there remains significant uncertainty over whether reliable hourly tracking will be available nationwide by 2028. The proposed guidance notes that, "[h]ourly tracking systems for EACs are not yet broadly available across the country and will take some time to develop," and that for the two (out of nine) regions with hourly tracking capability now, "software functionality … remains limited." The proposed guidance then cites a single report to support its optimistic assessment that four years will be "sufficient" for reliable hourly-matched tracking and trading markets to develop nationwide. However, ERCOT, the region with arguably the best potential for clean hydrogen production, provides no timeline for such capability. In the same report, WREGIS, the largest market for renewable energy certificates (RECs) – a type of EAC – in the United States, estimates that it could take up to five years to implement hourly matching. Instead, the proposed guidance aligns with the three years WREGIS cited "could" be possible if "(1) there is full state agency buy-in, (2) clear instructions are received from federal or state agencies, and (3) funding for stakeholder participation is made available."[i] Thus far, none of the conditions WREGIS cites as necessary to implement hourly matching under this accelerated timeline have been met, nor is it clear when they will be met.

The means to determine eligibility for the Section 45V PTC should function nationwide to ensure that green hydrogen projects across the United States can apply; however, data availability, data collection, and regulatory oversight pose challenges to a rapid nationwide implementation by 2028. The focus of single state tracking systems is state renewable portfolio standard compliance, but the report cited by the proposed guidance notes concerns that such states may not accept hourly tracking for compliance if the tracking was done in a multi-state system.[ii] In addition, WREGIS's experience with switching tracking platforms in late 2022 underscores the difficulties in implementing new tracking systems. The new platform was slated for release in the third quarter of 2022, but technological problems and errors, including with the creation and issuance of RECs, have resulted in ongoing delays in the full implementation of the new system for more than a year. In light of these concerns, absent a clear timeline on hourly matching implementation with full and reliable tracking functionality nationwide by all major registries, we believe the aggressive timeline in the proposed guidance is too short.

Nearly all early clean hydrogen customers will require a constant ratable flow of hydrogen as a feedstock for industrial processes (e.g., refineries, producers of ammonia and other chemicals). Conditions that allow for the frictionless substitution of incumbent gray hydrogen for clean hydrogen are critical to achieving long-term deep decarbonization in hard-to-abate industries. A key component of these conditions is the delivered cost of hydrogen. Many previous analyses of LCOH, which feeds into the delivered cost, painted an optimistic picture. At the time, they assumed decreasing input costs; however, macroeconomic trends over the last several months have instead led to rising input costs. Transitioning to hourly matching too quickly and not allowing grandfathering of first-mover projects will only add to these higher costs, making clean hydrogen too expensive for most offtakers in the United States. This would dull clean hydrogen's usefulness as a tool for long-term deep decarbonization,

preventing the United States from benefiting from up to 750 million metric tons of emissions reduction per year by 2050.[iii]

III. Conclusion

Providing grandfathering of annual matching for the full 10-year Section 45V PTC term for first-mover projects and applying annual matching to projects that start construction before January 1, 2028, with the standard four-year continuity safe harbor provision will address these significant concerns. It will allow more time for hourly tracking of RECs to be implemented nationwide, and it will provide first movers in clean hydrogen the certainty needed to ensure that the United States' objectives for long-term deep decarbonization of hard-to-abate industries are met.

The undersigned companies stand ready to execute the Biden administration's vision of a clean hydrogen future. As we said in our letter last April, we will hire the people, buy the materials and equipment, build the production facilities, and buy and utilize the clean hydrogen. This is a critical time to ensure that the United States becomes a world leader in the production of clean hydrogen, but these projects take years to develop, and many have been further delayed until the final rules for the Section 45V PTC are released. However, if the Administration acts prudently to implement the IRA incentives in a manner that fosters innovation and investment in this vital technology, the United States has the opportunity to play a key role in advancing the global energy transition in the fight against climate change.

Sincerely,

Accelera by Cummins
Ambient Fuels, LLC
Apex Clean Energy
Black & Veatch Corporation
BrainDrip, LLC
Carbon Sink, LLC
Clearway Energy Group, LLC
Dimensional Energy, Inc.
Ferreira Construction
GE Vernova
Great Lakes Water Authority
HIF Global LLC
Infinium, Inc.
LanzaTech, Inc.
LSB Industries, Inc.
Mainspring Energy, Inc.
Mitsubishi Power Americas, Inc.
Monolith Materials, Inc.
National Grid
New Fortress Energy Inc.
NextEra Energy, Inc.
Nutrien
POET, LLC
Quanta Services, Inc.
Siemens Energy, Inc.
Verbio North America LLC
Verde Clean Fuels, Inc.
Woodside Energy

[i] Center for Resource Solutions, *Readiness for Hourly: U.S. Renewable Energy Tracking Systems* (June 15, 2023), available at: https://resource-solutions.org/wp-content/uploads/2023/06/Readiness-for-Hourly-U.S.-Renewable-Energy-Tracking-Systems.pdf (hereinafter "CRS Report").
[ii] *Id.*
[iii] Based on Environmental Protection Agency's estimate of total gross emissions in 2005 and Department of Energy's estimate of emissions reduction from June 2023 *National Clean Hydrogen Strategy and Roadmap*