Comments for the New Guidance of Credit for Production of Clean Hydrogen, Election to Treat Clean Hydrogen Production Facilities as Energy Property

To: Department of the Treasury and Internal Revenue Service
Date: February 26, 2024
RE: Comments regarding hydrogen pathways

Terraform Industries appreciates the opportunity to comment on the proposed rule "Credit for Production of Clean Hydrogen, Election to Treat Clean Hydrogen Production Facilities as Energy Property." Terraform Industries uses alkaline electrolyzers, direct air capture, and chemical reactors to produce low-carbon methane. This renewable power-to-gas technology produces a carbon-neutral drop-in successor to conventional fossil fuel drilling. As a producer of hydrogen from electrolysis and a potential applicant/recipient of 45V tax credits, Terraform offers the following comments on the proposed rules:

Avoided retirements

An avoided retirement approach should be recognized as a method for EACs from existing electricity generating facilities to satisfy the proposed incrementality requirement §1.45V–4(d)(3)(i)(A). For solar in particular, we propose the following criteria to assess retirement risk: solar inverter inefficiencies that threaten economic viability. The primary constraint for aging solar assets is first- and second-generation inverters, which begin to fail after ten to fifteen operating years and within a range of five to twenty years.[1] Because of repowering requirements, solar assets facing retirement risk should be defined as ones in operation for ten or more years without upgrades exceeding 20% of the facility's total value.

Storage vs. Transport

The proposed §1.45V–1(a)(9)(i)(C) states that the primary purpose of eligible hydrogen must be "for sale or use." Hydrogen is a small molecule that is difficult to store and transport for sale and use. We strongly suggest that the definition of "use" not be restricted to combustion and instead be allowed to include hydrogen's conversion to easier to transport small molecules (e.g., ammonia, hydrocarbons). Otherwise, we fear that the renewable hydrogen economy will not achieve its desired launch and growth.

We suggest that the proposed definition of *facility*, as defined by §45V(c)(3), is articulated to refer only to the generation/production of qualified clean hydrogen and excludes the conditioning, transportation, or usage of hydrogen beyond the point of

[1] https://energy.sandia.gov/wp-content/gallery/uploads/PVInvPerf_IGBT.pdf

production. By articulating a limited scope for *facilities*, eligible hydrogen will have an expanded list of use cases beyond direct combustion, contributing to the development of the renewable hydrogen economy.

Behind the meter privilege/use of EACs

We agree that energy attribute certificates (EACs) are appropriate for assessing emissions from purchasing electricity for the section 45V credit. We also support measures that prevent the double-counting of EACs. However, we disagree with proposed §1.45V–4(d)(1)'s assertion that all EACs must have the same requirements regardless of off-grid or on-grid connection.

Co-location does not require grid connection. The co-location of an electricity generating facility and hydrogen production facility can obviate the need for temporal matching requirements through direct connection. The differentiation between directly connected facilities and electricity taken from the grid has precedence through the European Union's Delegated Regulation 2023/1184, which established the rules for renewable electricity used in producing liquid and gaseous transport fuels of non-biological origin.[2] The EU regulation understands that directly connected installations already demonstrate that the electricity is produced in the installation and thus do not require the same evidence as grid-connected installations.

We recommend that 45V adopt the same nuance regarding temporal matching. Delegated Regulation (EU) 2023/1184 Article 3 states the evidence required for co-located facilities: (1) direct lines between the two facilities, (2) a 36-month incrementality requirement, and (3) the electricity generation facilities are not grid-connected or a smart metering system with evidence that no electricity has been taken off the grid. In comparison, 2023/1184 Article 4 lists the renewable requirements for on-grid electricity, which includes temporal and geographical correlation. We propose that if an installation employs both off-grid and on-grid electricity, the EACs and associated requirements will be proportional to the electricity source.

Terraform Industries looks forward to working with the IRS and other federal agencies to ensure the final implementation of the 45V tax credit program. Thank you for your work and consideration of our comments.

[2] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32023R1184