Articles + Publications | December 29, 2023

IRS Issues Proposed Regulations on Clean Hydrogen Tax Credits

WRITTEN BY

Adam C. Kobos | Roger S. Reigner Jr. | Mitchell T. Emmert | Anne C. Loomis | McKenzie L. Bayliss | Camille M. Mennen

The IRS and the Treasury Department issued proposed regulations on December 26, 2023 (Proposed Regulations), providing guidance on the clean hydrogen production tax credit under Section 45V (Hydrogen PTC) and the investment tax credit under Section 48 (Hydrogen ITC). The Proposed Regulations follow the passage of the Inflation Reduction Act of 2022 (IRA) and the publication of Notice 2022-58, 2022-47 I.R.B. 483, which requested comments on the Hydrogen PTC and Hydrogen ITC.

The Proposed Regulations are proposed to apply to taxable years beginning after December 26, 2023. Taxpayers may rely on these proposed regulations for taxable years beginning after December 31, 2022, and before the date the final regulations are published in the *Federal Register* if they follow the proposed regulations in their entirety and in a consistent manner.

Background

The Hydrogen PTC is available for a 10-year production period at an amount equal to the product of the kilograms of qualified clean hydrogen produced by a taxpayer during a taxable year at a qualified clean hydrogen production facility and an applicable percentage of $0.60, as adjusted for inflation. The applicable percentage, which ranges from 20% to 100%, is based on the lifecycle greenhouse gas (GHG) emissions rate of the process to produce such qualified clean hydrogen, which ranges from 4 to 0.45 kilograms of CO2e per kilogram of hydrogen. The Hydrogen ITC is equal to the basis of a clean hydrogen production facility multiplied by an applicable percentage ranging from 1.2% to 6% depending on the reasonably expected lifecycle GHG emissions rate.

The Hydrogen PTC and Hydrogen ITC rates are multiplied by five if the qualified clean hydrogen production facility begins construction before January 29, 2023 or satisfies applicable prevailing wage and apprenticeship requirements. Section 45V does not provide for domestic content or energy community credit enhancements for the Hydrogen PTC, and the Preamble clarifies that those credit enhancements also do not apply to the Hydrogen ITC.

Lifecycle Greenhouse Gas Emissions

The Proposed Regulations provide that, except as otherwise provided, the term “lifecycle greenhouse gas emissions” has the meaning provided pursuant to 42 U.S.C. 7545(o)(1)(H) (as in effect on August 16, 2022) of the Clean Air Act. The Proposed Regulations further provide that the term “lifecycle greenhouse gas emissions” only includes emissions through the point of production (well-to-gate), as determined by the most recent GREET

model.

The term “emissions through the point of production (well-to-gate)” means the aggregate lifecycle GHG emissions related to hydrogen produced at a hydrogen production facility during the taxable year through the point of production. Such emissions include emissions associated with feedstock growth, gathering, extraction, processing, and delivery to a hydrogen production facility, as well as emissions associated with the hydrogen production process, including electricity used by the hydrogen production facility and any capture and sequestration of carbon dioxide generated by the hydrogen production facility.

Definition of “Most Recent GREET Model”

Under the Proposed Regulations, unless otherwise specified, the “most recent GREET model” is the most recent version of 45VH2-GREET that is available to the public and provided in the instructions to the latest version of Form 7210, Clean Hydrogen Production Credit, as of the first day of the taxpayer’s taxable year in which the qualified clean hydrogen for which the taxpayer is claiming the Section 45V credit was produced. However, the Proposed Regulations further provide that, if a version of 45VH2-GREET subsequently becomes available to the public in the same taxable year, the taxpayer may choose to treat such version of 45VH2-GREET as the most recent GREET model. The current GREET model, past versions of the GREET model, and future updates to the GREET model may be found at: http://www.energy.gov/45vresources.

Provisional Emissions Rate

If (and only if) the most recent GREET model has not determined a lifecycle GHG emissions rate for the hydrogen production pathway through which a taxpayer produces qualified clean hydrogen, the taxpayer may file a petition for a “provisional emissions rate” or “PER.” A taxpayer can file a PER petition only if the hydrogen production pathway in question either consumes a feedstock that is not represented in the most recent GREET model or uses a hydrogen production technology that is not represented in the most recent GREET model.

The Proposed Regulations provide that a taxpayer may petition for a PER by attaching a PER petition to the taxpayer’s federal income tax return or information return for the first taxable year of hydrogen production ending within the 10-year Hydrogen PTC period. A PER petition must contain an emissions value obtained from the Department of Energy (DOE) setting forth DOE’s analytical assessment of the lifecycle GHG emissions associated with the facility’s hydrogen production pathway, which must be consistent with the lifecycle GHG emissions framework provided in the Proposed Regulations, and a copy of the taxpayer’s request to the DOE for an emissions value.

- Under the Proposed Regulations, an applicant may request an emissions value from the DOE only after a front-end engineering and design (FEED) study or similar indication of project maturity, such as project specification and cost estimation sufficient to inform a final investment decision, has been completed for the hydrogen production facility. The timing requirements potentially could mean that expected tax credit production values would be unknown at the time of key financing decisions.

Energy Attribute Certificates

The Proposed Regulations provide that, for purposes of determining a lifecycle GHG emissions rate, taxpayers may treat electricity used by a hydrogen production facility as being from a specific electricity generating facility rather than the regional electricity grid only if the taxpayer acquires and retires a qualifying energy attribute certificate (EAC) for each unit of electricity the taxpayer claims from such source. The requirements apply regardless of whether the facility is grid-connected, directly connected, or co-located with the hydrogen production facility.

An EAC is a tradeable contractual instrument issued through a qualified EAC registry or accounting system that represents the energy attributes of a specific unit of energy produced. The term qualifying EAC means an eligible EAC that meets requirements for incrementality, temporal matching, and deliverability, as described below. Further, the Proposed Regulations provide that satisfaction of the requirements must be verified by a qualified verifier.

- The incrementality, temporal matching, and deliverability requirements were the subject of intensive discussions and debate leading up to the issuance of the Proposed Regulations. They reflect the tension between ensuring that the hydrogen is "clean" and encouraging the development of hydrogen production and infrastructure, which will require significant capital outlays.

The Proposed Regulations specify the information that eligible EACs must have, including (i) a description of the facility, (ii) the amount and units of electricity, (iii) the date on which the facility begins commercial operations (COD), (iv) for electricity generated before January 1, 2028, the calendar year the electricity was generated, (v) for electricity generated after December 31, 2027, the date and hour the electricity was generated, and (vi) a unique project identification number.

Incrementality

Generally, an EAC meets the incrementality requirement if the facility that produced the electricity has a COD that is no more than 36 months before the hydrogen production facility was placed in service. Under an alternative test, the incrementality requirement can be satisfied if the generating facility had an uprate (an increase in rated nameplate capacity) no more than 36 months before the hydrogen production facility is placed in service and the electricity represented by the EAC is part of the uprated production.

- The short time horizon could significantly limit the universe of power plants able to serve as sources of power for clean hydrogen production. This is a very disappointing development for nuclear facilities in particular.

The Preamble includes a request for comments on other potential methods to satisfy the incrementality requirement, including (i) an avoided retirements approach that would treat EACs from an existing facility as satisfying the requirement if the facility is likely to avoid retirement because of its relationship with a hydrogen production facility, (ii) opportunities for taxpayers to demonstrate zero or minimal induced grid emissions through modeling or other evidence under specific circumstances (*e.g.*, purchases of EACs from minimal-emitting facilities in periods of curtailment or zero or negative pricing), and (iii) formulaic approaches (*e.g.*, deeming 5% of the hourly generation from minimal-emitting generators placed in service before January 1, 2023 as satisfying the

incrementality requirement).

Temporal Matching

An EAC meets the temporal matching requirement if the electricity represented by the EAC is generated (i) in the same calendar year that the hydrogen production facility uses the electricity, with respect to electricity generated before January 1, 2028, or (ii) in the same hour that the hydrogen production facility uses the electricity, with respect to electricity generated after December 31, 2027.

- The Preamble states that the DOE "has advised that hourly matching is necessary to properly address significant indirect emissions from electricity use and that the tracking systems and related contractual structures for hourly matching will take some time to develop to an appropriate level of maturity." Treasury's strict approach to matching will be difficult to apply and is likely to hinder the growth of the clean hydrogen industry.

Deliverability

An EAC meets the deliverability requirement if the electricity represented by the EAC is generated by a source that is in the same region as the hydrogen production facility. The term "region" means a U.S. region derived from the National Transmission Needs Study (DOE Needs Study) that was released by the DOE on October 30, 2023, available at https://www.energy.gov/sites/default/files/2023-10/National_Transmission_Needs_Study_2023.pdf. The locations of an electricity generation source and a hydrogen production facility are based on the balancing authority to which they are electrically interconnected. The Preamble includes a request for comments on whether there are additional ways to establish that electricity is actually deliverable from an electricity generating facility to a hydrogen production facility, even if the two are not located in the same region or the generator is located outside the U.S.

Verification Reports

Section 45V(c)(2)(B)(ii) provides that hydrogen is not qualified clean hydrogen unless "the production and sale or use of such hydrogen is verified by an unrelated party." The Proposed Regulations provide that the verification report must be attached to the taxpayer's Form 7210 and included with the taxpayer's federal income tax return or information return for each qualified clean hydrogen production facility and for each taxable year in which the taxpayer claims the Section 45V credit. Further, the verification report must be prepared by a qualified verifier under penalties of perjury who must attest as to the production of qualified clean hydrogen, the amount sold or used, and the absence of any conflicts of interest.

The Proposed Regulations define a qualified verifier as any individual or organization with active accreditation (i) as a validation and verification body from the American National Standards Institute National Accreditation Board or (ii) as a verifier, lead verifier, or verification body under the California Air Resources Board Low Carbon Fuel Standard program.

For taxpayers who are also claiming a Section 45 or Section 45U credit, additional attestations must be included.

Definition of "Facility"

The Proposed Regulations provide that "facility" means a single production line that is used to produce qualified clean hydrogen. A "single production line" includes all components of property that work interdependently to produce qualified clean hydrogen. Components of property are functionally interdependent if each component being placed in service is dependent on each of the other components being placed in service to produce qualified clean hydrogen.

Components of property that have a purpose in addition to the production of qualified hydrogen can be part of a facility if such components function interdependently with other components to produce qualified clean hydrogen. The Proposed Regulations include an example of a hydrogen production facility equipped with carbon capture equipment. The example concludes that the carbon capture equipment is part of the facility because the facility would not be able to produce hydrogen with a GHG emissions rate within the Section 45V(b)(2)(C) range without the carbon capture equipment.

The Proposed Regulations further specify that the term "facility" does not include equipment used to condition or transport hydrogen beyond the point of production or electricity production equipment used to power the hydrogen production process, such as carbon capture equipment used in the electricity production process.

Definition of "Taxpayer"

The Proposed Regulations provide that the term "taxpayer" means the taxpayer that owns the qualified clean hydrogen production facility at the time of the facility's production of qualified clean hydrogen with respect to which the Section 45V credit is claimed. This definition applies regardless of whether such taxpayer is treated as a producer under Section 263A or under any other provision of law with respect to such qualified clean hydrogen.

- This simplifies the determination of credit-eligibility and in theory could open the door for different kinds of financing arrangements (*e.g.*, sale-leasebacks). It will be interesting to see whether the IRS issues similar guidance for the Section 45 PTC.

Anti-Abuse Rule

The Proposed Regulations provide that the Section 45V credit is not allowed in circumstances where the primary objective of the production and sale or use of the qualified clean hydrogen is to obtain the benefit of the Section 45V credit in a manner that is wasteful. The justification for the rule is that the purpose of Section 45V is to provide an incentive to produce qualified clean hydrogen for a productive use.

Obtaining the Section 45V credit in a wasteful manner includes producing qualified clean hydrogen that a taxpayer knows or has reason to know will be vented, flared, or used to produce hydrogen. A determination of whether the production and sale or use of qualified clean hydrogen is inconsistent with the purposes of Section 45V and the Proposed Regulations is based on all facts and circumstances.

Modifications and Retrofits

The Proposed Regulations address situations in which a new placed-in-service date may be established for an existing facility where the facility was modified or retrofitted to produce qualified clean hydrogen.

Modification

Section 45V(d)(4) provides that any facility that was originally placed in service before January 1, 2023, may be modified and deemed to have been originally placed in service as of the date the property required to complete the modification is placed in service if: (i) prior to the modification, the facility did not produce qualified clean hydrogen, (ii) the facility is modified to produce qualified clean hydrogen, and (iii) amounts paid or incurred with respect to the modification are properly chargeable to the taxpayer's capital account.

The Proposed Regulations clarify that an existing facility will not be deemed to have been originally placed in service as of the date the property required to complete the modification is placed in service unless the modification is made for the purpose of enabling the facility to produce qualified clean hydrogen and the taxpayer pays or incurs an amount with respect to the modification that is properly chargeable to its capital account with respect to the facility. The Proposed Regulations go on to clarify that a modification is made for the purpose of enabling the facility to produce qualified clean hydrogen if the facility could not produce hydrogen with a lifecycle GHG emissions rate that is less than or equal to 4 kilograms of CO_2e per kilogram hydrogen but for the modification. Changing fuel inputs to the hydrogen production process, such as switching from conventional natural gas to renewable natural gas, would not qualify as a facility modification.

Retrofit

Following other recent guidance, the Proposed Regulations provide that an existing facility may establish a new placed-in-service date for purposes of Section 45V, even though the facility contains some used property, provided the fair market value of the used property is not more than 20% of the facility's total value (the cost of the new property plus the value of the used property) (80/20 Rule). If a facility satisfies the requirements of the 80/20 Rule, the date on which the new property added to the property is placed in service is the new placed-in-service date for the facility.

The Proposed Regulations provide that the 80/20 Rule applies to any existing facility, regardless of whether such facility produced qualified clean hydrogen or was placed in service. Finally, the Proposed Regulations provide that for purposes of the 80/20 Rule, the cost of new property includes all properly capitalized costs of the new property included within the facility.

Hydrogen ITC

The Proposed Regulations provide that a taxpayer that owns and places in service a specified clean hydrogen production facility can make an irrevocable election to treat any qualified property that is part of the facility as energy property for purposes of Section 48.

The Proposed Regulations define the term "specified clean hydrogen production facility" to mean any qualified clean hydrogen production facility: (i) that is placed in service after December 31, 2022; (ii) with respect to which no Section 45V credit or Section 45Q credit has been allowed, and for which the taxpayer makes an irrevocable

election to have Section 48(a)(15) apply; and (iii) for which an unrelated party has verified that such facility produces hydrogen through a process that results in lifecycle GHG emissions that are consistent with the hydrogen that such facility was designed and expected to produce under Section 48(a)(15)(A)(ii) and Proposed Regulations Section 1.48–15(c). The energy percentage used to calculate the Hydrogen ITC is based on the lifecycle GHG emissions rate that a specified clean hydrogen production facility is "designed and reasonably expected to produce". A verification report is required to be filed for the taxable year in which the Hydrogen ITC is claimed, and annual verification reports attesting to the lifecycle GHG emissions rate of the hydrogen produced at the facility are required for each year of the five-year recapture period. Part or all of the Hydrogen ITC may be recaptured if the hydrogen actually produced results in a lifecycle GHG emissions rate that only supports a lower energy percentage than the energy percentage used to calculate the amount of the Hydrogen ITC.

RNG and Fugitive Sources of Methane

The Proposed Regulations provide that the Treasury Department and the IRS intend to provide rules addressing hydrogen production pathways that use renewable natural gas (RNG) or other fugitive sources of methane (for example, from coal mine operations) for purposes of the Section 45V credit. In the context of the Proposed Regulations, RNG refers to biogas that has been upgraded to be equivalent in nature to fossil natural gas. Fugitive methane refers to the release of methane through, for example, equipment leaks or venting during the extraction, processing, transformation, and delivery of fossil fuels to the point of final use, such as coal mine methane or coal bed methane.

Such rules would apply to all RNG used for the purposes of the Section 45V credits and would provide conditions that must be met before certificates for RNG or fugitive methane, and the GHG emissions benefits they are meant to represent, may be taken into account in determining lifecycle GHG emissions rates for purposes of the Section 45V credit. Such conditions would be consistent with the incrementality, temporal matching, and deliverability requirements for electricity-derived EACs, in that they would be designed to reflect the ways in which additional RNG or demand for fugitive methane can impact lifecycle GHG emissions, but they would address the differences between electricity and methane, including but not limited to the different sources of emissions, markets, available tracking and verification methods, and potential for perverse incentives.

The Proposed Regulations request comments on such rules as they relate to methane and RNG and provide a list of questions that are currently contemplated.

Summary

The incrementality, temporal matching, and deliverability requirements will be the most controversial, and the most discussed, parts of the Proposed Regulations. Lobbying with respect to these requirements is expected to continue. Given the significant limitations that these requirements impose, it is possible that the development of clean hydrogen production facilities will be significantly curtailed until the final regulations are issued.

RELATED INDUSTRIES + PRACTICES

- Energy
- Renewable Energy
- Inflation Reduction Act of 2022 – Energy Industry Implications

- Energy Tax
- Tax