

Parsing Treasury's Proposed Clean Hydrogen Tax Credit Rules

By **Casey August, Andreas Andrews and Jared Sanders** (January 25, 2024, 5:08 PM EST)

On Dec. 22, the Internal Revenue Service and the U.S. Department of the Treasury published proposed regulations setting forth rules that would apply to the tax credits for U.S.-situated clean hydrogen production facilities enacted under the Inflation Reduction Act.

Taxpayers may elect to claim either a production tax credit, or PTC, under Section 45V of the Internal Revenue Code, or an investment tax credit, or ITC, under Section 48 of the code with respect to a qualifying clean hydrogen production facility.[1]

The proposed regulations provide much-anticipated guidance regarding eligibility and requirements for claiming these two types of tax credits.

Among other things, the proposed regulations address the use of energy attribute certificates, or EACs, such as renewable energy certificates, or RECs, to support a project's clean hydrogen emissions profile — an issue for which guidance has been particularly sought after.

The approach taken in the proposed regulations would resolve many of the most pressing issues as to credit qualification, albeit in a relatively stringent manner — e.g., with respect to using EACs to support clean hydrogen production.

However, Treasury and the IRS do include broad requests for comments as to whether or how some of these aspects of the proposed regulations could be relaxed.

Taxpayers may generally rely on the proposed regulations for taxable years beginning after Dec. 31, 2022, and before the release of final regulations.

Overview of the Proposed Regulations

The proposed regulations would provide rules for:

- Determining lifecycle greenhouse gas emissions rates resulting from hydrogen production processes;
- Petitioning for provisional emissions rates in the absence of an applicable Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation, or GREET, model pathway;



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- Verifying production and sale or use of clean hydrogen;
- Modifying or retrofitting existing qualified clean hydrogen production facilities;
- Using electricity from certain renewable or zero-emissions sources to produce qualified clean hydrogen; and
- Electing to treat part of a specified clean hydrogen production facility as property eligible for the ITC.

Below, we highlight certain of these rules introduced by the proposed regulations.

Hydrogen-Specific GREET Model to Determine Lifecycle GHG Emissions Rate on a Yearly Basis

The proposed regulations would determine the lifecycle GHG emissions rate for the production of hydrogen. This is critical to the eligibility for, and the applicable credit rate tier of, the hydrogen PTC or ITC, based on a hydrogen-tax-credit-specific version of the GREET model, developed by Argonne National Laboratory for calculating applicable "well-to-gate" emissions.

These 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, inclusive of the electricity used by the hydrogen production facility and any capture and sequestration of carbon dioxide generated by the hydrogen production facility.

The proposed regulations would confirm this well-to-gate measurement encompasses emissions through the point of production.

A taxpayer must make this determination following the close of each taxable year, and must include all hydrogen production during such period. Accordingly, the proposed regulations allow only for Section 45V PTCs at a single rate tier each year, based on the average lifecycle GHG emissions rate for the aggregate hydrogen production, rather than at various tiers during the year.

The applicable GREET model, 45VH2-GREET, currently includes pathways for a variety of hydrogen production technologies, including electrolysis, steam methane reforming of natural gas or landfill gas, autothermal reforming of natural gas or landfill gas, coal gasification, and biomass gasification.

Any request submitted to the U.S. Department of Energy to establish a provisional emissions rate for a hydrogen production approach not addressed by 45VH2-GREET must generally apply 45VH2-GREET conventions and principles.

The inputs for a 45VH2-GREET model predominantly depend on the type of technology employed to generate hydrogen, the associated feedstock and potentially associated carbon capture and sequestration equipment and impact.

The 45VH2-GREET model then determines the lifecycle GHG emissions rate based on a variety of fixed assumptions that may not be altered — such as upstream methane loss rates, emissions associated with power generation from specific generator types, and emissions associated with regional electricity grids.

Although not explicit in the proposed regulations, the currently available 45VH2-GREET model effectively tests the purity of produced hydrogen, and treats any carbon-containing impurities in the gas

stream as producing carbon dioxide emissions in the well-to-gate GHG emissions of hydrogen production.

45VH2-GREET differs from other versions of GREET developed by the DOE in important ways. Principally, the well-to-gate boundary means that it does not assess some emissions included in other versions of the model.

For example, 45VH2-GREET does not assess whether any indirect land use change can be attributed to growing biomass, on the assumption that any such change is likely to be minimal. That assumption stands in contrast to modeling used for other tax credits and fuels programs, including the Renewable Fuel Standard program under Section 211 of the Clean Air Act, which Section 45V of the code cross-references.

Three-Pillar Compliance for Use of Electrical Power

One of if not the most critical — and controversial — questions for which Treasury and IRS guidance had been sought was the extent to which EACs, such as RECs, could be utilized to support the credit-eligible production of hydrogen.

The industry generally expected EACs could be used to support the credit-eligible production of hydrogen — based, among other things, on a colloquy on the floor of the U.S. Senate confirming such an approach. But the critical question has been how the so-called three pillars of the use of EACs to evidence emissions reductions — incrementality, temporal matching and deliverability — would be addressed.

The proposed regulations' approach would be to require a relatively strict form of three-pillar compliance for facilities using electricity to produce hydrogen.

This means that all facilities producing hydrogen through electrolysis, whether "in front of the meter" (pulling power from the grid) or "behind the meter" (pulling power from a directly interconnected energy production facility), would be required to procure and retire qualifying EACs to substantiate the facilities' lifecycle GHG emissions rates — or else be subject to the general electrical grid-specific emissions rate in the GREET model.

The proposed regulations would credit EACs-to-power consumption of a hydrogen production facility on a 1-to-1 basis, regardless of whether the generating facility is behind or in front of the meter. However, the IRS and Treasury solicit comments as to whether a different treatment would be more appropriate to account for transmission and distribution line losses.

Below, we discuss the proposed regulations' approach on incrementality, temporal matching and deliverability.

Incrementality

EACs can satisfy the proposed regulations' incrementality requirements in one of two ways. First, the requirements are satisfied if the hydrogen facility utilizing EACs is placed in service within 36 months after the commercial operation date for the power generation project.

Second, the regulations can be satisfied if the electricity represented by the EAC is produced by a

generating facility that had an uprate — that is, an increase in rated nameplate capacity — no more than 36 months before the hydrogen project was placed into service.

The IRS and Treasury are also seeking comments on satisfying the incrementality requirement by obtaining EACs from higher-generating facilities that may make upgrades to deliver minimal emitting electricity.

Additionally, the IRS and Treasury include a very extensive request for comments on more options to satisfy the incrementality requirement in ways that, in their view, do not result in significant induced GHG emissions, including:

- Obtaining EACs from an energy generating facility that would otherwise retire but for its relationship with a hydrogen production facility;
- A modeled approach that would cover EACs obtained (1) during periods in which minimal-emitting generation would have otherwise been curtailed or experienced negative energy pricing, and (2) in locations where grid electricity is 100% generated by minimal-emitting generators, or where increases in load do not increase grid emissions — for example, due to state policy capping total GHG emissions such that new load must be met with minimal-emitting generators; and
- A formulaic approach that would allow for a specified percentage of generation from minimal-emitting resources placed in service before Jan. 1 of this year — with the IRS and Treasury proposing 5%, but seeking feedback on alternatives.

Temporal Matching

The proposed regulations would require that, until Dec. 31, 2027, electricity represented by the EAC be generated in the same calendar year that the taxpayer's hydrogen production facility uses electricity to produce hydrogen. However, beginning on Jan. 1, 2028, hourly matching would be required — i.e., the electricity represented by the EAC would need to be generated in the same hour as the electricity utilized by the hydrogen production facility to produce hydrogen.

The transition period from annual to hourly matching was proposed in recognition of the fact that only two of the nine EAC tracking systems recognized under the regulations, PJM-GATs and M-RETs, currently provide for hourly tracking, and functionality is still somewhat limited in those systems.

In addition, while some corporate offtakers have moved toward hourly matching when securing EACs through bilateral virtual power purchase agreements, there is not currently a robust market for hourly EACs.

The IRS and Treasury are soliciting comments on the proposed transition period, the predicted timelines for the development of hour tracking mechanisms, and the predicted timeline for market development for hourly EACs.

Deliverability

The reference energy generation facility must be included in the same geographic region as the hydrogen production facility, based on the National Transmission Needs Study that was released by the

DOE on Oct. 30, 2023.

The EAC requirements may lead to further competition in an already competitive field to secure offtake agreements from renewable energy projects. Average power purchase agreement prices have steadily increased since 2020, and demand for renewable projects remains very strong among corporate offtakers and utilities.

It can be particularly challenging to find development-ready projects in certain markets, such as PJM, where projects are more likely to face permitting and interconnection challenges. However, depending on how the final rules address incrementality, the EAC requirements may also incentivize the expansion of existing projects.

Anti-Abuse Rule

No Section 45V PTC is allowed if:

the primary purpose of the production and sale or use of qualified clean hydrogen is to obtain the benefit of the Section 45V credit in a manner that is wasteful, such as the production of qualified clean hydrogen that the taxpayer knows or has reason to know will be vented, flared, or used to produce hydrogen.

This is a facts-and-circumstances determination.

Documentation and Verification

The Internal Revenue Code requires verification by an unrelated party for production and sale or use of hydrogen to constitute qualified clean hydrogen. The proposed regulations would provide extensive rules regarding verification reports, to be attached to hydrogen PTC and ITC election forms and applicable tax returns.

Each verification report must be prepared under penalty of perjury by a qualified verifier — an individual or organization with accreditation from the American National Standards Institute National Accreditation Board or the California Air Resources Board Low Carbon Fuel Standard program — and must attest to, among other things, the production of qualifying clean hydrogen during a taxable year.

Emissions-Based Recapture for Hydrogen ITC

The proposed regulations provide for a special recapture rule for the hydrogen ITC, where an emissions tier recapture event occurs during the specified recapture period — e.g., a failure to provide an annual verification report, or a failure to operate the facility at the originally reported lifecycle GHG emissions rate tier.

The emissions tier recapture period ends on the last day of the fifth taxable year after the close of the taxable year in which the facility was placed in service. Critically, this recapture period exceeds the recapture period that applies with respect to other ITC recapture events — e.g., recapture attributable to a disposition of ITC property, or the failure to meet prevailing wage requirements.

The potential emissions tier recapture amount for each year during the five-year recapture period is 20% of the total ITC amount.

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[1] See <https://www.law360.com/articles/1779844/treasury-pitches-clean-hydrogen-tax-credit-rules-asks-input>.