

IRS and Treasury Publish Final Regulations for Section 45V Clean Hydrogen Production Tax Credit

On January 10, 2025, the United States Department of the Treasury (“Treasury”) and the Internal Revenue Service (“IRS”) published final regulations (the “Final Regulations”) for the Clean Hydrogen Production Tax Credit under Section 45V of the Internal Revenue Code of 1986, as amended (respectively, the “45V Credit” and the “Code”). The 45V Credit was created under the Inflation Reduction Act of 2022 (“IRA”) to incentivize the domestic production of clean hydrogen and provide a 10-year production tax credit for qualified clean hydrogen that is produced at a qualified clean hydrogen production facility. The proposed regulations for the 45V Credit were issued on December 22, 2023 (the “Proposed Regulations”) and were much debated, receiving roughly 30,000 public comments. The Final Regulations retain the same complex framework as the Proposed Regulations but have introduced changes allowing taxpayers greater flexibility and certainty when claiming the hydrogen production credit. However, despite providing the long-awaited clarifications to the 45V Credit, the Final Regulations still face an uncertain future as they remain at risk of further modification, or even invalidation, under the Trump administration.

The credit amount available to a taxpayer under Section 45V for a taxable year depends on both the volume of qualified clean hydrogen (“QCH”) produced during that taxable year and the value of the credit based on a sliding scale corresponding to the lifecycle greenhouse gas (“GHG”) emissions rate for production of the QCH, resulting in a minimum of \$0.12 and maximum of \$3.00 credit for each kilogram (kg) of QCH produced. To qualify for the full value of the 45V Credit, projects must also meet prevailing wage and apprenticeship requirements.

Taxpayers may take advantage of the 45V Credit for qualifying facilities placed in service after January 1, 2023 and before January 1, 2033. The 45V Credit is available for 10 years from the date such a facility is placed in service and is transferable to third parties, subject to the IRA transferability rules. The 45V Credit is also eligible for direct payments (at the taxpayer’s election) for the first five years of its 10 year credit period and may be claimed by for-profit entities.

EXECUTIVE SUMMARY

The Final Regulations retain the same complex framework as the Proposed Regulations but introduce changes to provide taxpayers with greater flexibility and certainty. Of note, the Final Regulations:

- clarify GHG emissions measurement standards to allow taxpayers a fixed method for calculating tax credit amounts;
- liberalize the “three pillars” framework for hydrogen produced using electricity by:
 - (i) expanding the universe of qualifying energy sources that satisfy the incrementality requirement to include certain nuclear and carbon capture and storage (“CCS”) facilities;
 - (ii) extending the transition period for moving from annual temporal matching to hourly matching by two years and implementing a partial credit system; and
 - (iii) providing flexibility to satisfy the deliverability requirement by approving inter-region electricity transfer in some instances;
- expand pathways for hydrogen produced using methane and other natural gas alternatives by adopting a gas energy attribute certificates (“EAC”) framework that requires the feedstock gas to meet temporal matching and deliverability requirements;
- preclude taxpayers from stacking the 45V Credit with other IRA credits, unless the equipment generating additional credit is separate from the QCH production process; and
- face an uncertain future under a new administration against the backdrop of ongoing challenges faced by the hydrogen industry generally.

We have summarized some of the key changes between the Proposed Regulations and Final Regulations below.

CLARIFICATION OF GHG EMISSIONS MEASUREMENT STANDARDS

To qualify for the 45V Credit, QCH producers must keep the annual well-to-gate lifecycle GHG emissions rate from hydrogen production below 4 kg of carbon dioxide equivalents (CO₂E) per 1 kg of

hydrogen produced (the “Lifecycle GHG Threshold”).

Under the Proposed Regulations, lifecycle GHG emissions were determined using the most recent “Greenhouse Gases, Regulated Emissions and Energy use in Transportation” model (commonly referred to as the “GREET” model) developed by the Department of Energy’s Argonne National Laboratory, which sets out a lifecycle emissions calculation methodology for hydrogen production using a variety of pathways, feedstocks and electricity inputs (the “45VH2-GREET Model”). QCH producers were required to use the 45VH2-GREET Model version that was available on the first day of their taxable year (or, if they wished, a subsequent version made available during that taxable year).

The Final Regulations still require use of the 45VH2-GREET Model, but they provide a safe harbor allowing QCH producers to use the version of model in effect at the time that the QCH facility began construction and rely on that version for the full 10-year tax credit period. The Final Regulations clarify that taxpayers using such an applicable version of the GREET model will not be disqualified for credits retroactively in the event an alternative model is adopted in the future. This change provides developers with a fixed way to calculate lifecycle GHG emissions over the life of a project. As included in the Proposed Regulations, any producers who use feedstocks or production processes that differ from the pathways set forth in the 45VH2-GREET Model to determine their lifecycle GHG emissions must apply to Treasury for a “provisional emission rate” (PER).

The Final Regulations provide hydrogen producers with greater certainty and stability in claiming the credit by allowing them to rely on the 45VH2-GREET Model version in effect at the time of facility construction, thereby encouraging long-term investments in clean hydrogen production.

LIBERALIZATION OF THE “THREE PILLARS” FRAMEWORK FOR ELECTROLYTIC HYDROGEN

For producers relying on electricity to produce clean hydrogen (e.g., electrolysis), the Proposed Regulations allowed taxpayers to use EACs to determine lifecycle GHG emissions, as long as that electricity (“Source Energy”) met the qualification

requirements of the so-called “three pillars” framework: incrementality, temporal matching and deliverability. The three pillars framework has been retained under the Final Regulations, but the requirements have been relaxed to make it easier for producers to claim the 45V Credit.

- *Incrementality (or additionality)*: Incrementality requires Source Energy to come from certain types of newly built or upgraded clean energy power facilities (“uprate facilities”) that began operation no more than 36 months prior to when the QCH facility is placed into service (each, a “Qualified Facility”). The Final Regulations retain this 36-month lookback period but expand the universe of Qualified Facilities to include:
 - generating facilities that utilize CCS technology, provided that the facility’s carbon capture operations began no more than 36 months before the QCH facility is placed in service and meet the standards for capture and storage as prescribed by the Section 45Q carbon capture tax credit;
 - certain qualifying nuclear reactors that were previously at risk of being retired or shut down, capped at 200 megawatt hours (MWh) of electricity per operating hour per qualifying nuclear reactor, so long as the nuclear facility has a physical connection to the QCH facility or is subject to a power purchase agreement with a minimum 10-year term; and
 - upgrades (or “uprates”) of existing power facilities that occur within the 36-month lookback period or the restart of power facilities that have been decommissioned for at least one year.

The Final Regulations also allow automatic satisfaction of the incrementality requirement if both the Source Energy facility and QCH facility are located in a “qualifying state”. Qualifying states must satisfy certain decarbonization standards, including a 100% target for in-state retail sales of electricity to be supplied by clean energy by 2050, and have in place a qualifying GHG cap program. At present, only California and Washington meet these standards.

- *Temporal matching*: Temporal matching requires that any Source Energy used for QCH production is generated within the same period as the hydrogen produced. The Proposed Regulations provided that, beginning on January 1, 2028, this requirement could be met only if QCH was produced within the hour that the qualifying Source Energy was generated. Until that date, the Proposed Regulations allowed the requirement to be met by annual, rather than hourly, matching. The Final Regulations extend this transition period by two additional years, allowing annual matching through December 31, 2029 and aligning the U.S. transition timeline with the hourly tracking requirements set out in the EU’s Renewable Energy Directive.

To assuage concerns that a failed audit of a small number of QCH hours in a given year would preclude eligibility for the entire year, the Final Regulations also allow for a partial credit system. Beginning on January 1, 2030, taxpayers may determine credit eligibility on an hour-by-hour basis provided that the annual GHG emissions rate from all hydrogen production still remains below the Lifecycle GHG Threshold. The Final Regulations also allow taxpayers to use EACs from energy storage systems to meet the temporal matching requirements if those storage systems are located in the same region as the Source Energy facility and as long as the QCH facility and the Source Energy facility meet the incrementality requirements.

- *Deliverability (or geographic matching)*: Deliverability requires that Source Energy be produced in the same geographic area as the QCH. The Proposed Regulations provided that deliverability would be satisfied if both the Source Energy and QCH facilities were located in the same “grid region”, as described in the Department of Energy’s October 2023 National Transmission Needs Study.

The Final Regulations clarify that the Source Energy facility and the QCH facility must be interconnected to balancing authorities within the same region and provide a table of balancing authorities and corresponding regions. The Final Regulations also permit cross-region delivery of electricity to satisfy the deliverability requirement in certain instances where the Source Energy provider has transmission rights from its location to the region where the QCH producer operates,

so long as such delivery can be tracked and verified.

The Final Regulations ease some of the electrolytic hydrogen qualification requirements for the 45V Credit, thereby providing a more accessible and commercially viable pathway for producers to leverage tax incentives. However, the burdensome temporal matching and deliverability constraints are still likely to be challenging for hydrogen producers.

EXPANSION OF PATHWAYS FOR NATURAL GAS ALTERNATIVES-BASED HYDROGEN

The Proposed Regulations required that producers of QCH using biogas, renewable natural gas (“RNG”) or fugitive sources of methane such as coal mine methane (collectively, “Natural Gas Alternatives”) use attribute certificates through a book-and-claim system, but they did not provide comprehensive rules for determining the emissions rate of QCH production from Natural Gas Alternatives (other than landfill gas with a direct physical connection to a hydrogen production facility).

The Final Regulations create pathways to produce QCH from Natural Gas Alternatives and adopt a new gas EAC framework that is similar to the EAC framework for electrolytic hydrogen, but they only require producers to satisfy two pillars: temporal matching and deliverability.

- *Temporal matching*: Temporal matching requires the Natural Gas Alternative to be injected (i) into a natural gas pipeline that satisfies the deliverability requirements outlined below in the same calendar month that the hydrogen production facility uses the Natural Gas Alternative to produce QCH or (ii) through a direct pipeline connection or other physical method of exclusive delivery; and
- *Deliverability*: Deliverability requires that the Natural Gas Alternative is injected into a natural gas pipeline and that the QCH facility is located and connected to a natural gas pipeline in the same region or (ii) delivered to the QCH facility from the Natural Gas Alternative producer through a direct pipeline connection or other physical method of exclusive delivery. For the purposes of deliverability, the Final Regulations treat the contiguous United States as a single region, with Hawaii, Alaska and each U.S. territory as separate regions.

The Final Regulations note that the electronic book-and-claim accounting system to be implemented for compliance with the gas EAC requirements will not be implemented until at least 2027. In the meantime, delivery of Natural Gas Alternatives through direct pipeline connections with appropriate documentation will be permitted.

In addition, the Final Regulations abandon the “first productive use” requirement put forward in the Proposed Regulations, which could have required that any RNG used in the QCH production process originate from the first productive use of the relevant methane in order to avoid receiving an emissions value equivalent to fossil natural gas.

The changes under the Final Regulations are more favorable to producers relying on Natural Gas Alternatives than to producers relying on electrolytic hydrogen. The temporal matching and deliverability requirements for QCH produced from Natural Gas Alternatives should be substantially easier for producers to comply with than those for electrolytic hydrogen, as they are consistent with current industry practice. In addition, by allowing direct and significant indirect emissions to be taken into account in determining GHG emissions, the Final Regulations reduce the burden on producers using Natural Gas Alternatives to comply with what would otherwise essentially be a third incrementality pillar.

CLARIFICATION OF THE DEFINITION OF “FACILITY” AND ANTI-STACKING RULES

The Proposed Regulations’ definition of an eligible facility included all components of a property that function interdependently to produce QCH. The Final Regulations clarify that an eligible facility must include components such as electrolyzers and carbon capture equipment but exclude unrelated auxiliary systems such as upstream feedstock equipment, electricity production equipment used to power the hydrogen production process and downstream hydrogen transportation or storage systems.

The effect of these clarifications is a “one facility one credit rule”. If equipment used in any process directly contributing to QCH production, excluding Source Energy, would have independently produced another tax credit, the second tax credit will be disallowed. As a result, taxpayers cannot stack the 45V Credit with other credits in the IRA that use the same components of the hydrogen producing

property. Nor can taxpayers claim different hydrogen production lines as different credits, unless each line operates independently.

As a result, hydrogen producers will need to consider whether to de-couple certain components of the hydrogen production process. Doing so might create opportunities to take advantage of other credits under the IRA, notably the Section 45Q Carbon Sequestration Credits.

THE FINAL REGULATIONS FACE LEGISLATIVE UNCERTAINTY

With the change of administration, the extent to which the Final Regulations are at risk remains uncertain. However, the 45V Credit has broadly received bipartisan support and many of the announced hydrogen projects are in Republican-led states or are being developed by oil and gas companies. In addition, a number of Hydrogen Hubs selected by the Department of Energy are located in Republican-led states. These factors could influence how the Trump administration views and addresses the 45V Credit.

The Trump administration could try to overturn or modify the Final Regulations; however, this would likely require a notice-and-comment rulemaking process. Leading Republicans have also signaled their intent to review the extent to which the Congressional Review Act (“CRA”) could be used to unwind several Biden-era rules, including regulations under the IRA. The CRA permits

Congress to negate rules within 60 legislative days of a rule becoming final. With the adjournment of the 118th on Congress on January 3, 2025, that CRA’s lookback period is estimated to extend to August 16, 2024, which would include the Final Regulations. Such invalidation, however, would require majority votes in the House and Senate, where Republicans only hold thin majorities.

There is also legal uncertainty as to the effect of invalidation through the CRA. Because the CRA can only invalidate final rules, there may be some period where the proposed rules—which in this case are much less taxpayer friendly—come back into effect. Moreover, because the CRA proscribes “substantially similar” rules from taking the place of invalidated rules, there is additional legal uncertainty as to what any new rules could cover.

CONCLUSION

Although the Final Regulations do not remove the three pillar framework as many industry members had hoped, they do relax the requirements under the Proposed Regulations and provide taxpayers with greater flexibility to claim the 45V Credit. The Final Regulations provide much-needed certainty and clarity around the operation of the 45V Credit. Still, the hydrogen industry faces numerous ongoing challenges, including a lack of domestic demand for clean hydrogen and an uncertain future under the Trump administration.

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