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Infrastructure Update

Proposed Rulemaking on Clean Hydrogen Production Tax Credits Provides Increased Clarity on Qualifying Facilities in Ongoing Regulatory Process

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The U.S. Department of Treasury and the Internal Revenue Service recently issued a significant proposed rulemaking to clarify requirements to receive tax credits for domestically produced hydrogen. The proposed rules provide much-needed insight into the Clean Hydrogen Production Tax Credit component of the clean energy incentives in the 2022 Inflation Reduction Act ("IRA").

Clean hydrogen producers and investors now have a better idea of how to qualify hydrogen development facilities for tax credits. This will likely accelerate production and deployment of hydrogen gas as a U.S. clean energy source. Steps to further develop and finalize the proposed rules are marching ahead with a March 25, 2024 public hearing, following the public comment period that ended February 26th.

Background on the IRA and Clean Hydrogen

A major focus of the IRA is to incentivize clean energy development and production across business, government, and non-profit sectors. The law sets forth types of clean energy technologies and programs that may be eligible for tax credits, including under §§ 45V and 48 of the Internal Revenue Code ("IRC") related to clean hydrogen production.

Definitions and clarity on eligible hydrogen-related processes were not spelled out however, leading to uncertainty for businesses looking to expand investment in clean hydrogen as an alternative energy. While hydrogen has for decades served as an important U.S. and international energy source, development of hydrogen as a clean energy alternative may now be on the precipice of tremendous expansion.

Tax Credit Incentives for Clean Hydrogen Projects

The Clean Hydrogen Production Tax Credit for eligible clean hydrogen production facilities with low lifecycle greenhouse gas emissions would extend over a ten-year period for projects constructed after December 31, 2022, pursuant to §§ 45V and 48. According to Treasury, the credit is available for a period of 10 years as of the date a hydrogen production facility is placed in service, and the construction of which must begin before 2033. Following are a few highlights of the proposed rulemaking and its focus on balancing incentives for clean hydrogen production with requirements to reduce generation emissions. (Note, the full text is here: Federal Register: Section 45V Credit for Production of Clean Hydrogen; Section 48(a)(15) Election To Treat Clean Hydrogen Production Facilities as Energy Property). Please note that this article and summary discussion are not intended as tax advice.

Qualifying Facilities and Production Processes

The definition of "facility" helps incentivize the new supply of hydrogen gas. The proposed rulemaking defines "facility" within the term "qualified clean hydrogen production facility" as a single production line that is used to produce qualified clean hydrogen in proposed § 1.45V-1(a)(7)(i). "Qualified clean hydrogen" is hydrogen

produced through a process that results in a lifecycle greenhouse gas emissions rate of not greater than 4 kg of CO2e per kg of hydrogen, under § 45V(c)(2)(A) and proposed § 1.45V-1(a)(9)(i). The term only includes hydrogen: i) that is produced in the U.S. or a U.S. territory, in the ordinary course of a trade or business of the taxpayer and for sale or use; and, ii) where the production and sale or use of such hydrogen is verified by an unrelated party, pursuant to § 45V(c)(2)(B).

Specific Production Processes

Hydrogen produced from the following eight methods using the most recent 45VH2-GREET model (further described below) are addressed in the proposed rules:[1]

- Steam methane reforming ("SMR") of natural gas with potential carbon capture and sequestration ("CCS");
- Autothermal reforming (ATR) of natural gas with potential CCS;
- SMR of landfill gas with potential CCS;
- ATR of landfill gas with potential CCS;
- Coal gasification with potential CCS;
- Biomass gasification with corn stover and logging residue with no significant market value with potential CCS;
- Low-temperature water electrolysis using electricity; and
- High-temperature water electrolysis using electricity and potential heat and from nuclear power plants.

GREET Model

The most recent Greenhouse Gasses, Regulated Emissions, and Energy use in Transportation model ("GREET model") is used to determine the lifecycle greenhouse gas emissions rates resulting from hydrogen production processes, and includes emissions only through the point of production, according to the proposed rules.[2] Emissions through the point of production (also referred to as well-to-gate) mean the aggregate lifecycle greenhouse gas emissions from feedstock through the point of production at a hydrogen production facility during the taxable year.[3] The term includes emissions related to feedstock growth, gathering, extraction, processing and delivery to a hydrogen production facility, as well as emissions resulting from the hydrogen production process.[4]

Different Production Processes

Producers may petition to apply through a Provisional Emissions Rate ("PER") process for a clean hydrogen production method that is not included in the eight production methods listed above[5]. PER is defined in the

[1] Pursuant to § 1.45V-4(b).
[2] Per § 45V(c)(1)(A) and defined in proposed § 1.45V-1(a)(8)(i)
[3] Per § 45V(c)(1)(B) and proposed § 1.45V-1(a)(8)(iii)
[4] The GREET model calculation of a project's lifecycle greenhouse gas emissions rate is clarified as the latest version of 45VH2-GREET in which the qualified clean hydrogen for which the taxpayer is claiming the § 45V credit was produced (*see* § 1.45V-1(a)(8)(ii)). Requirements for calculating the lifecycle greenhouse gas emissions rate of hydrogen produced are defined as proposed § 1.45V-4(b).
[5] Proposed §1.45V-4(c)(2)(i).

proposed rules as the lifecycle greenhouse gas emissions rate of the process by which qualified clean hydrogen is produced at a qualified facility[6]. Examples could be a biomass fuel feedstock process, or a hydrogen production technology not already GREET-modeled such as geologic hydrogen, trigeneration, or other technologies. The proposed guidance requires that a taxpayer obtain a PER by requesting a lifecycle emissions value from the Department of Energy (DOE) and providing it and other information to the IRS.

Hydrogen gas can be produced using electricity through an electrolyzer in an electrolysis process. The proposed rulemaking includes provisions for hydrogen production using electrolysis that aim to ensure the process is low emitting, avoids increasing grid emissions, and does not exceed the maximum emissions intensity permitted to qualify for the credit. Producers are required to use "energy attribute certificates (EACs)" defined in proposed § 1.45V-4(d)(2)(ii) as tradeable contractual instruments issued through a qualified EAC registry or accounting system to demonstrate the clean attributes of a specific unit of energy produced.

The Incrementality Pillar

Three core requirements are represented in the EACs, sometimes referred to as the "three pillars," focused on: 1) incrementality; 2) temporal matching; and 3) deliverability and are intended to increase net emission reductions.

The "incrementality" component, sometimes referred to as "new supply" or "additionality," requires qualifying EACs to represent incremental source electricity, or, new or recent renewable energy sources - rather than utilizing pre-existing renewable source energy generation – with a commercial operation date of no more than 36 months before the relevant hydrogen production facility is placed into service. The IRS requested that public comments focus on whether and under what circumstances electricity generated by an existing electricity generating facility (with a less recent commercial operations date) that is dedicated to hydrogen production may be treated as satisfying the incrementality requirement.

The Temporal Pillar

The second pillar relates to "temporal matching," also referred to as "hourly matching". This component, in general, requires that qualifying EACs match the amount of electricity produced in the same time-period in which the hydrogen production facility consumes electricity in its production. To monitor lifecycle emissions, the proposed rulemaking requires tracking or measuring the consumption of electricity of a production facility's process. The annual matching requirement would transition to an hourly matching requirement in 2028.

The Deliverability Pillar

The "deliverability" component, sometimes referred to as "regionality," requires qualifying EACs to generate in the same region as the relevant hydrogen production. Reportedly, this component will encourage regional cooperation, coordinating and leveraging local resources.

Tax Credit Determination

The amount of the Clean Hydrogen Production Tax Credit is explained in proposed § 1.45V-1(a)(2) through (13). The credit is determined (assuming compliance with additional requirements) as an amount equal to the product of: i) the kilograms of qualified clean hydrogen produced by the taxpayer during such taxable year; and, ii) the applicable amount as determined under § 45V(b) for hydrogen, which is specified in § 45V(b)(1) as the

[6] Proposed §1.45V-4(c).

"applicable percentage" of $0.60. The "applicable percentage" is determined based on the lifecycle greenhouse gas emissions rate of the process to produce qualified clean hydrogen, varying among four tiers from 20% to 100% depending on the rate. The $0.60 amount is also adjusted by multiplying by the inflation adjustment factor for the calendar year in which the qualified clean hydrogen is produced, pursuant to § 45V(b)(3). This definition results in a range of potential credits of $0.60 to $3.00 per kg of H2.

Prevailing Wage

There are additional proposed requirements for eligibility to receive clean hydrogen production tax credits including under § 45V(e)(2), establishing prevailing wage requirements for any alteration or repair of a facility under § 45V(e)(3)(A), or, the facility satisfies the prevailing wage and apprenticeship requirements under § 45V(e)(3)(A) and (4).

For facilities meeting the prevailing wage requirements of § 45V(e)(2), the credit amount determined under § 45V(a) reaches its full value and may be multiplied by five, which means the credit can amount to up to the $3.00 per kg of qualified clean hydrogen produced noted above. For facilities that do not satisfy the prevailing wage requirements under § 45V(e)(2), the credit for any taxable year is different, and described as $0.12, $0.15, $0.20, or $0.60 per kg of qualified clean hydrogen produced depending on the lifecycle GHG emissions rate.

Other Requirements

Based on the proposed rules, a taxpayer may choose either the Clean Hydrogen Production Tax Credit under § 45V, or the Investment Tax Credit under § 48.

The proposed rulemaking includes provisions related to credit recapture as part of IRC § 48. Additionally, in any taxable year of the recapture period in which an emissions tier recapture event occurs, the tax imposed on the taxpayer under ch. 1 of the IRC for the taxable year of the emissions tier recapture event is increased by the recapture amount specified in proposed § 1.48-15(f)(4). The recapture amount for a taxable year in which the emissions tier recapture event occurred is determined as equal to 20% of the excess of: i) the § 48 credit allowed to the taxpayer for the specified clean hydrogen production facility, over ii) the § 48 credit that would have been allowed for the facility if the taxpayer had used the energy percentage supported by the actual production to calculate the amount of the credit.

Comment Period

During the public comment period that just ended, according to www.Regulations.gov, nearly 30,000 comments were submitted. While some appear to question whether the proposed rulemaking requirements are too complex or onerous, others seem to seek stricter rules.

As an example, one commenter suggests that requiring the producer to obtain an independent third-party verification of the lifecycle greenhouse gas emissions rate for the production process would be costly and time-consuming. Another commenter, on behalf of an economic group, is concerned that the proposed rulemaking would constrain and limit innovative early adopter firms from qualifying for the hydrogen tax credit. Yet another commenter expressed that the three pillars (described above) should maximize flexibility and certainty for developers; and, that transition from annual to hourly temporal matching should be delayed until 2030. A significant number of the comments from individuals appear similar and urge a requirement that eligibility for tax credits could be met only if the production process is created entirely from alternative energy. Other individual commenters request that the proposed rulemaking incentivize hydrogen production from low carbon natural gas.

The upcoming March 25th hearing phase is likely to involve a variety of viewpoints, including the possibility that Treasury and the IRS may alter some provisions, or adopt most or all of the proposed rulemaking as written.

Conclusion

This significant proposed rulemaking provides much needed clarity about the Clean Hydrogen Production Tax Credit and will undoubtedly impact and likely incentivize, once finalized, a quickly growing sector of the U.S. energy supply. Important further information will be available through the hearing and continued rulemaking process.

For more information about the proposed rules and discussion about hydrogen production eligible projects, please contact Jacqueline Welch, at 617-342-6879 or jwelch@eckertseamans.com, who is a member of the Infrastructure and Environmental Practice Groups at Eckert Seamans.

Note: This article is not and is not intended as tax advice. See a qualified tax specialist, including attorneys at our firm, for specific tax questions about the proposed rulemaking and other laws discussed herein.