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CC:PA:LPD:PR (REG-117631-23)
Room 5203
Internal Revenue Service
P.O. Box 7604, Ben Franklin Station
Washington, D.C. 20044

The Honorable Lily L. Batchelder
Assistant Secretary for Tax Policy
Department of the Treasury
1500 Pennsylvania Avenue, N.W.
Washington, D.C. 20220

Mr. William M. Paul
Principal Deputy Chief Counsel and Deputy Chief
Counsel (Technical)
Internal Revenue Service
1111 Constitution Ave., NW
Washington, D.C. 20224

RE: REQUEST FOR COMMENTS ON TEMPORAL MATCHING REQUIREMENT IN NOTICE OF PROPOSED RULEMAKING FOR SECTION 45V CREDIT FOR PRODUCTION OF CLEAN HYDROGEN

Dear Ms. Batchelder and Mr. Paul,

Woodside Energy (Woodside) appreciates the opportunity to respond to the Treasury Department's and Internal Revenue Service's request for comments regarding Section 45V Credit for Production of Clean Hydrogen pursuant to the Notice of Proposed Rulemaking (REG-117631-23).

About Woodside

Woodside is a global energy company, aiming to thrive through the energy transition with a low cost, lower carbon, and diversified portfolio.[1] We intend to produce renewable hydrogen (from electrolysis)[2] and other fuels at scale in the United States and other markets.

Our most advanced hydrogen project, and our first in the United States, is H2OK, which is proposed to produce up to 60 tonnes per day of liquid hydrogen through electrolysis and liquefaction. H2OK's proposed site is strategically located close to national highways and positioned to supply customers within the heavy-duty transport sector with reliable, affordable, and lower carbon energy. We have made significant investment to date in this project and with reasonable adaptations to the proposed regulations we can progress off-take agreements and advance the project.

Woodside's Position on Section 45V Credit

Woodside applauds the Biden Administration's commitment to spur decarbonization through the development of a new hydrogen energy industry. Hydrogen has the potential to be the lower carbon energy engine of the United States. It can strengthen energy security, diversify energy options, and be produced with a small to no

[1] For Woodside, a lower carbon portfolio is one from which the net equity scope 1 and 2 greenhouse gas emissions, which includes the use of offsets, are being reduced towards targets, and into which new energy products and lower carbon services are planned to be introduced as a complement to existing and new investments in oil and gas. Our Climate Policy sets out the principles that we believe will assist us achieve this aim.
[2] "Renewable hydrogen (from electrolysis)." is included under the term "clean hydrogen" used in the proposed guidelines.

carbon footprint. The Section 45V Production Tax Credit (PTC) for clean hydrogen has the potential to play a critical role in jump starting production and incentivizing customer adoption.

However, the key to unlocking the hydrogen economy is incentives that result in easy and cost competitive fuel substitution. Unfortunately, we believe the long-term decarbonization benefits of clean hydrogen will face headwinds from several overly burdensome provisions in the 45V PTC. Instead of incentivizing hydrogen production, the guidance adds costly requirements that are virtually impossible to meet.

While there are always risks in emerging markets, we recommend changes to the provisions relating to time matching and GREET (Greenhouse Gases, Regulated Emissions, and Energy Use in Technologies) Model implementation that will provide the incentives necessary for producers to make investment decisions of this magnitude and, over time, tighten the eligibility criteria. We believe that with modest changes to the guidance, the Administration could significantly affect the trajectory of the industry and spur more rapid adoption of the clean hydrogen sector.

Specifically, Woodside's recommendations are to:

1) **Revise the temporal or time matching transition; and**
2) **Adjust the GREET model relative to hourly averaging, model certainty and energy storage.**

Further details on these recommendations are provided below.

Temporal Matching

With respect to temporal matching, we propose the following three modifications:

1. **Apply annual matching to projects that start construction before January 1, 2028, subject to the standard four-year continuity safe harbor provision.**
2. **Provide grandfathering of annual matching for the full 10-year term of the PTC for first-mover projects.**
3. **Irrespective of these grandfathering recommendations, continue to apply annual matching in any region where an hourly energy attribute certificate (EAC) cannot be issued by the required agency in that region before January 1st of the relevant tax year.**

Switching from annual matching to hourly matching involves much more than simply changing from annual EACs to hourly EACs. This change requires reconfiguring many aspects of how a hydrogen production facility operates, in turn negatively impacting the efficiency and cost of production. For example, switching to hourly matching would require the procurement of the type of electrolyzer that can ramp up and down in response to intermittent renewable electricity. These issues will increase costs, resulting in an increased levelized cost hydrogen (LCOH)[3] in an already challenging macroeconomic environment.

Higher production costs will result in higher cost of delivered hydrogen to off-takers, reducing the likelihood of users transitioning to hydrogen as a lower carbon transportation fuel. Many LCOH analyses[4] on which potential clean hydrogen consumers rely on paint an overly optimistic picture. The analyses provided inaccurate modelling assumptions based on low future costs of energy, materials, and labor which have not materialized.

Transitioning to hourly matching too quickly and not allowing grandfathering of first-mover projects will only reduce production quantities and increase the cost. This would make clean hydrogen too expensive, regardless of the environmental benefit for most off-takers in the United States.

We support a phased approach of implementing more stringent temporal matching requirements over time. As the nascent industry adapts to hourly matching and the hourly tracking capabilities of qualified EAC registries develop and become widely available, this phase-in can occur. Presently, there remains significant uncertainty over whether hourly tracking will be available nationwide by 2028. Such uncertainty only stands to impede project development, capital formation, and the launch of clean hydrogen production projects that section 45V is intended to foster.

GREET Model

With respect to the 45VH2 GREET Model, we propose the following three modifications:

[3] The Levelized Cost of Hydrogen (LCOH) is a common metric used to benchmark the cost-competitiveness of hydrogen production projects.
[4] Bloomberg New Energy Finance. (2022). LCOH from cheapest available renewable power in 28 countries (2022, 2030, 2030).

1. **The 45VH2 GREET Model and the EAC should have matching temporal requirements. As the EAC requirements and/or availability shifts to hourly matching, the model should also be adapted to reflect an hourly basis for the clean hydrogen production credit.**
2. **Allow taxpayers to make an annual election as to which 45VH2 GREET Model should apply to their hydrogen production facility – the GREET Model in existence when the project began construction or the 45VH2 GREET Model applicable in the relevant tax year.**
3. **Provide a mechanism for including energy storage (e.g., battery energy storage) from renewable energy generation as an eligible source for purposes of hourly matching.**

We believe that the 45VH2 GREET Model should reflect the availability of EACs. In early adoption, facilities will align to an annual match and the 45VH2 GREET Model should reflect this expectation. As the industry transitions to hourly matching, the 45VH2 GREET Model should transition to assessing CI scores on an hourly basis. In this way, the credit system will incentivize temporal production without penalizing total production. As an example, if renewable generation was responsible for X% of clean hydrogen production in an hour, that amount of clean hydrogen production (X%) would be eligible for PTC.

According to the Treasury guidance, the assumptions used in the 45VH2 GREET Model analysis will be periodically updated. This constantly changing set of assumptions has the potential to create significant uncertainty for project economics. This revision process will challenge hydrogen producers to qualify year-on-year for the full PTC, potentially disrupting economic assumptions and investment decisions. We recommend the rules be revised so hydrogen producers will be able to elect to use either the 45VH2 GREET Model in effect at the time of a hydrogen facility's construction or the model for the applicable tax year. By allowing hydrogen producers to lock in the 45VH2 GREET Model for the 10-year period of qualification, beginning at the time a facility begins construction, producers will have increased economic certainty for the life of the project.

The proposed regulations are silent on treatment of energy storage for temporal matching. Recent European legislation allows energy storage to be taken into account for the purpose of hourly matching if renewable electricity from a new storage asset (e.g., a BESS) is located behind the same network connection point as 1) the electrolyzer, or 2) the installation generating renewable electricity, if it has been charged during the same one-hour period in which the renewable electricity was produced. We believe similar rules would work for energy storage in the United States.

Additional Comments

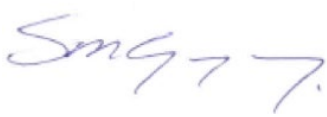
Woodside has focused on temporal matching and the 45VH2 GREET Model as core areas for comment and revision. However, we are also supportive of other modifications to the proposed regulations and offer the following for consideration:

- Woodside recommends that current or new thermal generation using Carbon Capture and Sequestration (CCS) be considered as an incremental resource and allow EACs equivalent to the capacity of the CCS to be applied under the 45VH2 GREET Model.
- Woodside encourages Treasury to consider deferred retirements for low or zero carbon electricity generation facilities. Instead, these generation facilities could be linked to a Power Purchase Agreement (PPA), or similar arrangement, with a clean hydrogen generation facility and qualify as incremental to existing power generation. This is a commonsense approach that would benefit all stakeholders.
- Woodside agrees that existing power generation resources face curtailment issues that could be avoided through the use of this power in clean hydrogen production. To recognize the contribution of these assets to the goals of the 45V credit, we are supportive of an allowance of 10 percent or greater of the power generation to be treated as EACs and incremental to existing power generation.

Woodside supports the Biden Administration's vision of a clean hydrogen future, and we look forward to working towards shared decarbonization goals and help the United States become a world leader in the production of clean hydrogen.

The Administration can unleash the clean hydrogen industry's potential by implementing incentives that foster innovation and investment in this vital technology and play a leading role in advancing the global energy transition in the fight against climate change.

Yours sincerely,



Shaun Gregory
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