May 13, 2024

Submitted via Federal eRulemaking Portal (REG-117631-23)

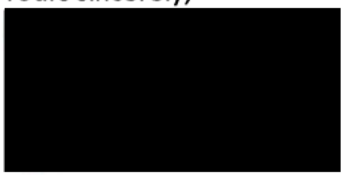
Re: Comments on Proposed Regulations for §45V Clean Hydrogen Production Credit

Dear Sir/Madam:

Shell USA, Inc. respectfully submits comments in response to REG-117631-23 issued by the Department of the Treasury and the Internal Revenue Service regarding the Section 45V Credit for Production of Clean Hydrogen and Section 48(a)(15) Election to Treat Clean Hydrogen Production Facilities as Energy Property (the Proposed Rule), established in the Inflation Reduction Act (IRA).

Shell appreciates this opportunity to share considerations specific to hydrogen and to help inform the implementation of the IRA clean energy credits.

Yours sincerely,



John Misso
Vice President & General Tax Counsel
Shell USA, Inc.
150 N. Dairy Ashford Rd, Houston, TX 77079

Shell[1] is committed to the advancement of a net-zero emissions economy including the production and use of clean hydrogen, as defined by the US Department of Energy's (DOE) Clean Hydrogen Production Standard (CHPS). Shell supports policy designs that stimulate the production and use of clean hydrogen with a fully transparent lifecycle greenhouse gas (GHG) accounting system applied consistently across the value chain. The comments contained herein are informed by Shell's experience and expertise in developing hydrogen projects in the U.S. and around the world.

Getting §45V[2] implementation guidance right is foundational to the clean hydrogen economy that the DOE described in its National Clean Hydrogen Strategy and Roadmap. Shell agrees with the Administration that hydrogen can play a critical role in helping the U.S. reach net zero emissions, particularly in hard to abate sectors. Globally, large-scale production of hydrogen from renewables is Shell's ultimate goal, but to achieve scale in the timeframe required for hydrogen to make a difference as a net-zero lever, all forms of clean hydrogen are needed, including hydrogen production paired with carbon capture and sequestration (CCS). Abundant and affordable supplies of clean hydrogen are essential for the success of the U.S. hydrogen hubs, which will serve as foundation of a hydrogen economy.

Shell has shared in previous written comments and government engagements the challenges faced in the EU both in creating demand for clean hydrogen in hard-to-abate sectors and spurring investments in hydrogen production projects. The complexity of the regulations and uncertainties around their implementation in EU Member States risk slowing down or deterring final investment decisions (FID) on first mover projects.

The provisional emissions rate (PER) petition process is an important path for requesting an emissions rate when that value is not available in GREET. It is critical to make the process as clear and efficient as possible to ensure a manageable workload for DOE and a transparent and timely response to projects. These comments offer recommendations intended to improve the PER process on behalf of both government and the projects that are needed to achieve the swift scale-up of clean hydrogen production at the volumes and price envisioned in the strategy and roadmap. A PER process that is efficient, credible, science-based, and occurs early enough in project development, followed by timely government response, may help incentivize capital investment across multiple sectors, moving the U.S. closer to the Administration's aspirations of $1/kg of clean hydrogen by 2031, 10 MMT of production, and the creation of 100,000 direct and indirect jobs. Shell hopes the following input is constructive.

[1] The companies in which Shell plc directly and indirectly owns investments are separate legal entities. In this document, "Shell", "Shell USA", "Shell Group" and "Group" are sometimes used for convenience where references are made to Shell plc and its subsidiaries in general.

[2] Unless otherwise indicated, all statutory references are to the Internal Revenue Code (Code) of 1986, Title 26 U.S.C., as amended; all regulation references are to the Code of Federal Regulations, Title 26 (Treas. Reg.), as amended.

Indicia of Project Maturity

As currently drafted, the notice of proposed rulemaking requires completion of front-end engineering and design (FEED) level engineering to be eligible for a PER application. A PER application at this stage is too late to accommodate typical project delivery frameworks. Taxpayers advance into FEED only after project scope is frozen and a single solution chosen. This is also when taxpayers order long lead items (which can cost upwards of $100M+ for a world scale hydrogen plant) to avoid delays. In addition, FEED efforts can cost up to $50M and take one to two years. ***As proposed, a taxpayer will have to complete FEED efforts with uncertainty on the PER outcome and §45V qualification.*** An unsuccessful PER application could result in substantial rework costs and delays or could render the FEED efforts and costs a total loss. Alternatively, a taxpayer may be unwilling to accept this risk and an otherwise viable project may fail to proceed.

Treasury has also described the necessary project maturity for a PER application as including information "sufficient to inform a final investment decision," while elsewhere stating that "an Association for Advanced Cost Engineering Class 3 Cost Estimate" is sufficient to inform a robust lifecycle emissions analysis (LCA) and thus a PER application. These project milestones are inconsistent. Additionally, a cost estimate is irrelevant for an LCA and would create an unnecessary burden on both taxpayers and the DOE. Different companies will also have different approaches to FID readiness, making investment decision criteria an inappropriate consideration. ***The PER application should focus on the deliverables necessary to inform a robust LCA and ensure sufficient project maturity and engineering rigor has been completed.*** To perform a robust LCA assessment, a heat and material balance, including utility and power consumption, is sufficient. This effort is best validated and supported by the completion of pre-FEED, also known as FEL-2 as defined by Independent Project Analysis. Therefore, ***completion of pre-FEED (FEL-2) serves as an ideal application window to sufficiently inform an LCA backed by sufficient engineering maturity.*** This timing aligns with the end of an optionality period for facility design concept and technology selection, which strikes the appropriate balance between informing on lifecycle intensity and optimizing investment uncertainty. If a taxpayer received an unsuccessful PER outcome, it could manage or revise without lengthy delays or extensive rework. A successful PER would allow FEED to proceed with less risk and enable ordering of long lead equipment.

A timely PER process is critical to project execution. The DOE should target 30 to 90 days to process the taxpayers' emissions value request application. Shell acknowledges the intensive task of reviewing applications and the potential for backlog, especially in the early phase. In the event approvals take longer than expected, projects will likely experience delays. Notably, having the DOE provide certain timely information to taxpayers can help them mitigate negative impacts from such project delays. ***The DOE should regularly (e.g., bi-weekly) provide information on the taxpayers' place in the processing queue, application status, and expected timelines.***

Expansions of 45V GREET

The DOE and Treasury can mitigate its PER administrative burden by expanding the 45V GREET model. For example, as additional hydrogen production pathways are validated and included in the R&D GREET, there should be a process for the expeditious inclusion of these pathways in 45V GREET as well. Each new production pathway included in 45V GREET will help to avoid redundant and time-consuming PER

applications for similar technologies and will avoid PER outcome risks and uncertainties for taxpayers. Shell also supports custom pathways within 45V GREET to maximize flexibility and incentivize GHG mitigation.

Additional Customization through PER

Treasury should allow taxpayers to account for site-specific design choices (beyond feedstock type and technology) in the PER application process. This will help the DOE and Treasury identify the GREET updates needed by taxpayers. This customization, which should be limited to options within a qualified facility boundary, will further incentivize taxpayers to make innovative design and investment decisions that result in a lower GHG emissions intensity. For example, the actual quantity and nature of valuable co-products from hydrogen production, such as steam, should be considered explicitly in a PER application. Currently, steam co-products are excluded from a hydrogen pathway using CCS. However, Shell is evaluating numerous technology configurations that use CCS and produce steam as a valuable co-product, which would reduce GHG emissions by displacing steam generation by other means, including natural gas combustion. Excluding this possibility will likely lead to inaccurate hydrogen carbon intensity calculations and undermine the incentives to use commercially available hydrogen production technologies, such as high efficiency steam methane reformers (SMRs) and carbon capture combinations and Partial Oxidization (POx), that are net steam exporters.

GREET and PER Grandfathering

Shell emphasizes its previously provided comments about the importance of tax credits on project economics and the need for flexibility in using certain versions of GREET or the PER. Specifically, ***taxpayers should have discretion to use (a) the version of GREET available at FID (i.e., GREET grandfathering), or (b) an updated version of GREET available at any time after FID and during the credit period (i.e., future optionality). Likewise, taxpayers should have the option to use the PER (i.e., PER grandfathering)***, even if a future GREET model is updated to include the PER pathways. For ease of administration, Treasury could allow taxpayers a one-time switch during the credit period. This policy will help provide consistency among taxpayers, particularly those that begin construction at different times. Moreover, this flexibility will help provide taxpayers with the certainty needed for investment decisions and for project viability. Addressing this uncertainty is a critical element for project developers to sanction projects and kickstart the hydrogen economy.