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Douglas W. O'Donnell
Deputy Commissioner for Services and Enforcement
CC:PA: LPD:PR (REG-117631-23)
Room 5203
Internal Revenue Service
P.O. Box 7604
Ben Franklin Station
Washington, DC 20044

Re: Section 45V Credit for Production of Clean Hydrogen, Notice of Proposed Rulemaking, 88 Fed. Reg. 89,220

Mr. O'Donnell,

Generate Capital, PBC ("Generate") appreciates the opportunity to comment on the Treasury Department's ("Treasury") proposed rulemaking on "Section 45V Credit for Production of Clean Hydrogen" ("45V").

Generate is a San Francisco-based firm which owns, operates, and de-risks decarbonization solutions to accelerate the infrastructure transition at scale. Generate was founded on the belief that investing in sustainability is profitable and that to scale climate solutions we must prove that they offer market leading risk-adjusted returns. Over the last decade, we have built a unique team of investors, asset operators, and project developers working together to manage a diverse portfolio of over 2,000 projects around the world. We are more than just financial investors – we are operators with deep experience in what it takes to successfully run these facilities. We understand what customers need, where the market is and where it is going, and what can help communities to successfully embrace solutions across energy, waste, water, mobility, agriculture, and smart cities. We work with many of the largest pension funds and endowments in the world, with project developers and entrepreneurs, with communities across the country, and have raised over \$10 billion of capital to combat climate change.

Generate's multi-faceted position in the sustainable infrastructure market gives us a direct vantage point into the mechanisms needed to successfully fund and build projects. Given our experience in the market, we feel strongly that 45V can serve as a key catalyst to develop markets for clean hydrogen across many different production methodologies and end markets. We also believe the draft guidance on 45V published on December 22, 2023 must be further developed in order to adhere to the original intent of the Inflation Reduction Act ("IRA") and the broader effort to decarbonize the economy.

As current investors and operators in a number of relevant markets that will help build the clean hydrogen economy – from hydrogen production to its use for transportation and grid resilience, to the development of hydrogen from biogenic sources like Renewable Natural Gas ("RNG") – we are enthusiastic about projects that will help ensure the success of 45V and we are optimistic about the role clean hydrogen can play in decarbonizing the economy. We have made meaningful investments in the growth of our partners at Ambient Fuels and Amp Americas, each



of which is commenting on this proposed rulemaking; we endorse their letters and we encourage Treasury to consider their perspectives earnestly.

Electrolytic Hydrogen

While we will focus our comments on the proposed rulemaking's treatment of RNG projects, we are concerned about the treatment of electrolytic hydrogen projects under the proposed rulemaking. While we appreciate Treasury's concern regarding induced emissions as a consequence of a lack of temporal matching, the means by which this requirement is being implemented will serve as a hinderance to creating a clean hydrogen economy. When we evaluate infrastructure projects to invest in, it is our expectation that projects have their operating model contracted for the entirety of their useful life. The 3 years of annual matching to zero-carbon electricity that the guidance included is not helpful; without hourly matching contracts available today, we would not be able to finance the buildout of electrolytic hydrogen projects unless they could provide a return by 2028, an unrealistic timeline for this type of asset. **A reasonable fix for this would be to grandfather projects built before 2028 to allow them to continue the use of annual matching to zero-carbon electricity sources.** This would allow investors such as us to allocate capital to the early buildout of hydrogen production while pushing the market to create the digital infrastructure necessary to enable hourly matching thereafter.

Renewable Natural Gas

Stated simply, RNG is critical to decarbonization and to building a clean hydrogen economy. To effectively build RNG projects, we believe that they must be incentivized in accordance with the real-world emissions reductions they enable. Below, we detail three key areas where we believe revisions to the current proposed draft are needed. These areas include the GREET Model and Lifecycle Emissions Analysis; Additionality and Incrementality; and Deliverability. We also urge Treasury to strongly consider the recommendations of our partners, The Coalition for Renewable Natural Gas (RNG Coalition) and The American Biogas Council (ABC), each of which has provided thoughtful and detailed comments on these issues and other considerations for successfully leveraging 45V to encourage significant investment in the infrastructure necessary to produce clean hydrogen at scale. While we address several areas throughout this letter where we can provide perspective based on our experience investing in these technologies, we endorse the RNG Coalition's and the ABC's letters regarding the full set of questions pertaining to RNG which Treasury included in the December guidance.

GREET Model and Lifecycle Emissions Analysis. We appreciate Argonne National Laboratory's work to provide a GREET model targeted for the 45V tax credit. We do, however, strongly believe that the proposed model requires additional pathways to properly account for RNG's climate productivity. The GREET model does not properly account for and thereby incentivize the mitigation of harmful methane emissions. As a result, the model does not properly incorporate how various types of RNG differ in terms of carbon intensity. This would hamper the ability of RNG to quickly contribute to clean hydrogen production, therefore putting a constraint on the growth of the hydrogen market.

Generate is concerned that Treasury is not properly considering the materiality of methane emissions. Whether from coal beds, gas wells, food waste, or cow manure, methane is a potent greenhouse gas with a climate impact 28x as large as CO₂ over 100 years (84x over 20 years). Preventing methane emissions is critical to meeting any of our climate goals. RNG production is a salient way to avoid methane emissions and its associated acute global warming impacts. By providing a meaningful end market in the form of clean hydrogen production, 45V can be a



catalyst to support the development of projects that will meaningfully and rapidly prevent large quantities of methane from being vented into the atmosphere.

Reflecting the impact of methane emissions (and avoiding those emissions), the 45VH2-GREET model fails to consider the various types of RNG production and the important differences in associated carbon emissions across feedstock types. Generate has experience with RNG production across a wide array of feedstocks – from industrial food waste to farm waste and beyond – and the overall lifecycle emissions differ based on process and feedstock. Using the GREET model for California’s Low Carbon Fuel Standard program, the carbon intensity of landfill RNG is regularly ~40 gCO₂e/MJ, whereas dairy manure-based RNG is often meaningfully below zero (-200 to -400 gCO₂e/MJ), with food waste RNG falling in between. In order to appropriately ascribe value to each technology and accelerate real-world decarbonization, it is vital to incorporate these differing lifecycle emissions into the 45VH2-GREET model.

The outcome of this approach to RNG’s treatment would constitute Treasury missing an opportunity to rapidly expand the availability of clean hydrogen in the near-term. Our experience in nascent markets for climate technologies has taught us that one of the vital elements to market creation and expansion is the availability of supply in the early days of the market, enabling the establishment of market-standard contracts and promoting deployment-led innovation. Building the business relationships and contractual infrastructure that enable the financing and deployment of projects at scale is core to establishing industries such as clean hydrogen. We consistently hear from customers and partners who are eager to participate in a clean hydrogen economy but who are worried about the lack of availability of hydrogen to support their use cases and do not know how to go about procurement. The 45V credit is specifically designed to address that need and to boost adoption of zero-carbon hydrogen. Not properly incorporating a reliable, scalable, and currently available feedstock – like RNG – in the set of pathways for clean hydrogen production puts shackles on a developing market before it gets off the ground.

We therefore request for Treasury to revise its proposed requirements to include methane avoidance as part of the lifecycle GHG emissions and amend the 45VH2-GREET model to include additional pathways for RNG to hydrogen beyond landfill gas, including RNG from dairy manure and food waste feedstocks. Doing so is essential for providing a more accurate assessment of RNG’s lifecycle GHG emissions and its contribution to clean hydrogen production.

Additionality and Incrementality. The additionality and incrementality requirements for RNG projects in the proposed rule impose significant limitations on projects’ ability to participate in the hydrogen economy. We believe the severity of these limitations threaten to undermine the developing hydrogen market. As written, these requirements restrict eligibility based on the timing of a project’s initiation of operations, limiting the 45V incentive to **only** projects purpose-built for hydrogen production and starting up at precisely the same time as a downstream hydrogen production facility. But as our partners at ABC write in their comments, this interpretation simply does not recognize the very different construction timelines and unexpected events that can delay project launch dates. **We support ABC’s recommendation to adjust the proposed rule to allow for greater flexibility and fluidity around project delivery – for example, a look-back period of 36 months.** As ABC writes, “this approach will better ensure that both hydrogen and RNG investors and lenders support project financing, which...will allow additional methane emissions to be captured soonest, having the greatest cumulative impact towards reducing the effects of climate change from otherwise wasted methane.”

Further, we have concern about the “first productive use” provision of the guidance, which would preclude the use of RNG for 45V-eligible hydrogen had any RNG from that facility been previously




used for any other purpose. We encourage Treasury to consider the full outcome of this treatment, as we believe it does not prevent “induced emissions” but rather would result in a long-term increase in methane emissions. At present, most dairy RNG goes to the transportation sector to take advantage of state-level incentives; as electric vehicles replace other vehicle types, the RNG-as-vehicle fuel market will shrink, removing the only existing economically viable end use for this RNG. Absent a meaningful alternative end market (such as clean hydrogen), projects will be shuttered – unlike solar or wind, RNG production has meaningful operational costs which must be covered by revenues for projects to continue operations – and as a result methane emissions will increase. Further, this action would disqualify all existing RNG facilities from participating in the hydrogen economy, preventing the market from developing at the pace needed to avoid the worst consequences of climate change and meet the policy goals of the IRA. **We recommend removing the “first productive use” provision from the final guidance on 45V.**

Deliverability: The proposed rulemaking should avoid physical deliverability requirements and geographic matching on RNG as these would represent needless and costly limitations on RNG projects without any associated benefits from a GHG emissions perspective. The outcome of this would be reduced investment in RNG projects supporting the hydrogen economy, therefore inhibiting decarbonization efforts and contradicting the IRA’s original intent. As the RNG Coalition rightfully argues, there is no need to impose regional geographic restrictions on RNG due to the interconnectedness of the U.S.’s natural gas pipeline system. Further, the existing pipeline system utilizes long-established tracking systems which rely on volumetric balancing – you inject gas at one point, take out different gas elsewhere and call it even – rather than point-to-point delivery of molecules. The interconnectedness of the system and its existing use of “book-and-claim” accounting makes regional limitations and physical delivery impractical and unnecessary. As the RNG Coalition writes, “the entire natural gas pipeline system is the proper geographic scope for the 45V tax credit.” **We recommend avoiding this geographic matching requirement for RNG production, as well as requirements for physical delivery of RNG.**

In summary, for the reasons outlined above and those expounded by our partners at RNG Coalition and ABC, we urge Treasury to reconsider and revise the guidance drafted around RNG requirements and temporal matching of renewable electricity for hydrogen production under the 45V tax credit. We believe the specific policy adjustments we’ve shared can have outsized impact and better allow investors and operators to scale critical decarbonization industries. By adopting a more flexible and inclusive approach, Treasury can support the growth of the clean hydrogen economy while leveraging the full potential of RNG as a sustainable and low-carbon energy source.

We appreciate your consideration of our concerns and would welcome the opportunity to discuss further.

Kind Regards,

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