The Engine Comments on Proposed Rule: 45V Hydrogen Production Tax Credit
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The Engine was launched by MIT in 2017 with the mission of facilitating the translation of breakthrough science and engineering from the research setting into commercial impact through the provision of capital for companies bringing new technology to the world, infrastructure and services to accelerate the growth of these companies. Over the last 7 years, we have supported technologies scaling into market across industrial verticals, including energy and climate. Accordingly, we have supported early-stage technologies building new markets in energy storage, electric power, carbon capture, industrial decarbonization broadly, and, relevant for this, hydrogen production, transportation and storage.

It is through this lens, as an advocate for innovation, with awareness of the critical need for innovation in the broader hydrogen economy if we are going to meet net-zero goals in a reasonable time horizon, that we submit this comment on the proposed rules for 45V.

U.S. Treasury's guidance on the 45V Hydrogen Production Tax Credit is an ambitious approach to ensuring that the burgeoning hydrogen economy will serve as a productive lever for achieving net-zero goals in the fullness of time, while managing potential near term emissions associated with potential significant increases in electric power demand.

At the highest level, the three pillars approach embodied in the proposed rules encouragingly and appropriately position both the electric power industry and the hydrogen industry towards long term positive impact on the energy economy and our environment.

Alongside the three pillars approach, it is also critical to recognize that innovation has a significant role to play in ensuring that in the fullness of time, we have the most efficient and least expensive technologies to support hydrogen production and decarbonize the economy. There remain significant gains to be had in new materials and new manufacturing processes for electrified hydrogen production – technologies that are still in the early stages of being tested and scaled today.

As currently written, elements of the rules risk stifling innovation and competition in hydrogen production in the near term. These elements will place new technologies and the startups commercializing them at a disadvantage. If not remedied, this will lead to wasteful spending and suboptimal social outcomes from the perspective of hydrogen production and demand creation and limit our ability to hit our climate goals. The challenges that innovators face are as follows:

1. Access to new clean power procurement opportunities is not equally distributed. New clean power is most commonly (if not always) procured on a bilateral basis between a consumer and a producer over a long-term power purchase agreement (PPA). This will remain the case for the foreseeable time period as the value of that clean power only will rise alongside growing demand for clean power from 45V and broader electrification. Moreover, even in a post-IRA world, clean power deployment continues to lag behind projections, creating additional supply constraints.
2. In a world with an unequal distribution of clean power procurement opportunities and growing supply constraints, access to those resources will go to large incumbent players that can provide credit-worthy offtake agreements (PPAs).
3. Simultaneously, only those that are able to procure enough power from additional resources to get 98% hourly matching will be eligible for the full value of the H2 production tax credit. As a result, competition in the hydrogen industry will strictly be focused on the ability to access clean power, which correspondingly will be a function of balance sheet size and credit-worthiness.
4. Finally, those developers that are able to access clean power for hydrogen production will not leverage it to explore potentially new hydrogen production pathways that haven't been demonstrated at scale, simply because there is no incentive to do so, creating a significant barrier to market access for new hydrogen production technologies.

This paradigm risks locking in technologies that can be deployed risk-free today at the expense of new technologies that promise better efficiencies, performance, and ultimately lower emissions and lower costs to consumers over the long term. Rules that favor incumbents are precisely the reason why innovation in our energy system is arcane and slow.

As a result, we propose a narrow and targeted solution to support small projects that are unlikely to generate significant indirect emissions in the near term while having the potential to significantly drive down emissions in the long term through more flexibility for the deployment and testing of novel hydrogen production technologies, along the following lines:

- Treasury could create a time-limited grace period (e.g., 3 years) for projects of pilot size utilizing novel hydrogen production pathways to procure additional clean power that would support 24/7 matching. During this grace period, eligible projects that procured clean power, even if not "additional," would earn the full value of the tax credit to support competition of new technologies.
- The pilot size should be sufficiently small as to ensure that projects do not generate significant indirect emissions, as is consistent with the Clean Air Act requirement that both direct and significant indirect emissions be considered for the purpose of receiving the tax credit. For instance, project sizes of multiple MWs rather than 10s of MWs are unlikely to induce significant emissions.

- To qualify for the exception, a pilot facility would need to qualify as deploying a novel technology ("novel technical classification"). The assessment process for the novel technical classification could be appended to the provisional emissions rate application process as outlined in the existing guidance. A facility could be granted a novel technical classification if its technology is not currently included in GREET.

Treasury should be applauded for the ambitious approach to the 45V production tax credit in the current proposed rules. They productively set our energy system on a path toward net-zero and efficient market creation for hydrogen. Slight modifications to the existing rules can appropriately prioritize innovation and build the competitive market that we need to ensure the most efficient and least-expensive solutions are deployed in the fullness of time.