SCHOLARS
STRATEGY NETWORK

Re: Proposed Rulemaking Section 45V Credit for Production of Clean Hydrogen; Section 48(a)(15) Election To Treat Clean Hydrogen Production Facilities as Energy Property

Paulina Jaramillo, Carnegie Mellon University

The Inflation Reduction Act (IRA) of 2022 is the first law to support comprehensive climate mitigation efforts for the U.S. energy system. The law includes generous subsidies for a broad set of low-carbon energy technologies, including renewable power sources, end-use electrification technologies, carbon capture and sequestration, and hydrogen. Since burning hydrogen does not emit greenhouse gases, hydrogen may be able to replace fossil-based products and eliminate respective emissions at the point of combustion. However, different hydrogen production pathways can lead to different upstream emissions. The IRA thus subsidizes only "clean" hydrogen (called "45V") by providing a tax credit of up to $3 per kilogram of hydrogen, subject to meeting certain emissions requirements.

The most common hydrogen production method – steam methane reforming using natural gas – releases considerable amounts of CO2 during production. Other methods for producing hydrogen could have substantially lower greenhouse gas (GHG) emissions than natural-gas-based hydrogen, including electrolytic hydrogen. Electrolytic hydrogen production relies on electricity to split water into hydrogen and oxygen. This production process is very energy-intensive, and associated emissions depend on the source of electricity used. If produced with coal-based electricity, the emissions benefits of electrolytic hydrogen would not materialize. As a result, the Treasury Department has proposed a rule to determine the conditions under which hydrogen producers will be eligible for the 45V tax credit.