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Democracy Dies in Darkness

Opinion | Get tax right or clean hydrogen will be bigger boondoggle than biofuels

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Now that the only thing as certain as death and taxes is climate change, it is perhaps no surprise that the Internal Revenue Service is critical to emissions policy.

Under the Inflation Reduction Act, the IRS will direct the flow of hundreds of billions of dollars and shape the evolution of the energy industry in the United States. Any day now, eligibility rules are expected to be announced for one of the most important provisions — tax credits for clean hydrogen. This is a golden opportunity for green industrial policy to jump-start innovation. It is also a big risk.

Done right, clean hydrogen tax credits could be a boon for the domestic hydrogen industry and for clean electricity. Done wrong, the tax credits could be a boondoggle larger than biofuels in America. Weak standards could drive emissions up, not down.

First, some basics. Hydrogen is a means of energy storage, often called the Swiss Army knife of climate solutions. In theory, it could help decarbonize a wide range of tricky sectors, from aviation and shipping to steel. It can be used as a chemical feedstock, including for fertilizer, and it burns as hot as coal or gas. For heavy industry, clean hydrogen could be a game changer.

For homes and personal transport, electrification is far better. Heat pumps are about five times more efficient, and vehicles can go five times farther on the same amount of electricity, than co-opting it to produce hydrogen.

The climate impact of hydrogen depends on the manufacturing process. Clean hydrogen requires new technologies, principally electrolyzers, to produce it from water using electricity generated from wind, solar and other zero-carbon sources.

Right now, clean hydrogen is scarce and expensive. The technology has already been deployed at the billion-dollar scale and is ready to grow more. A handful of companies are jockeying for position. But just 1 percent of the world's total hydrogen is clean. It can't compete against hydrogen produced from methane gas or from electricity generated by

fossil fuels, both of which pollute for free.

Enter Section 45V of the tax code. Under this, clean hydrogen producers that meet low-emissions standards will be eligible for federal incentives that cover up to about 60 percent of the average total cost of production. This aims to level the playing field today to cut costs tomorrow.

The idea is that backing development and deployment will make clean hydrogen technology competitive without subsidies within a decade. This is what happened with solar: costs fell by a factor of 10 in 10 years, by a factor of 100 in the past 40 years.

Here's the crux. For hydrogen production to earn the label "clean," its electricity supplies should be new, nearby and matched to demand in more or less real time. These three requirements have been set out by a broad coalition of environmental nonprofits, think tanks and producers. Why?

First, for a hydrogen project to be eligible for a slice of the 45V pie, it should be powered by installing additional solar, wind and so on. If recipients of the tax credits instead divert electricity from existing clean power plants, that will increase greenhouse gas emissions.

Second, hydrogen projects must be located close to their suppliers of clean energy, again to lower costs and emissions.

Third, projects should align their electricity procurement and hydrogen production hour by hour. This would ensure that the emissions producers report to the IRS correspond to actual emissions. Clean hydrogen is the perfect use case for renewables that are weather-dependent. Several electrolyzer technologies are good at ramping production up and down to follow the sun and wind.

Europe has already committed to phasing in hourly matching for its clean hydrogen standards. U.S. grid operators just need an incentive to follow suit, building on the success of regional systems for reporting emissions to create a national one.

Critics argue that more lax standards are the only way to roll out hydrogen fast enough. But going that route will result in stranded assets and indefinite subsidies. Happily, quick does not have to mean dirty: 45V is so generous that hydrogen projects that meet the three stringent tests will be economically competitive with their fossil-fuel rivals.

Anything less — and hydrogen could become the next corn ethanol. That would be disastrous.

Under the federal Renewable Fuels Standard, one-third of the nation's corn is turned into biofuels. That cuts gasoline consumption by only 6 percent while increasing greenhouse gas emissions by nearly a quarter for every gallon displaced. A similar approach in California primarily supports biofuel production, despite the state's commitment to electrifying cars and trucks.

Policymakers from Sacramento to Washington have found it very hard to reform biofuel subsidies after the fact. The IRS must get clean hydrogen right from the start.