

GUEST ESSAY

Before We Invest Billions in This Clean Fuel, Let's Make Sure It's Actually Clean

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Down on Page 118 of the ambitious climate law Congress passed last summer is a detail that has the potential to transform America's energy system: a tax credit for what's known as "clean hydrogen," a powerful fuel produced with low or even zero carbon emissions. It's a provision that could replace a lot of the dirty fossil fuels in the sectors of the economy that are hardest to clean up, like heavy industry and aviation.

But depending on how it's executed, it also has the potential to make things worse. In the balance hangs President Biden's climate legacy — and the possibility of going in the wrong direction on climate change.

The provision has to do with how hydrogen is produced: through a process called electrolysis, which uses electricity to split water molecules. How that electricity is generated determines how clean the process is, with a rainbow of categories from gray, which the industry uses to designate hydrogen produced using natural gas, to green, for hydrogen made with clean electricity. Right now, almost all hydrogen produced in this country is gray.

The tax credit is huge, and could pay out upward of \$100 billion in investment, enough to transform the industry. But one estimate suggests that lax rules could double the

greenhouse gas pollution already created by today's dirty gray hydrogen to more than 220 million tons of carbon emissions per year. That's like 26 new coal plants belching out pollution every year. And fossil fuel companies like BP and utilities like Constellation are already lobbying the government for the loose rules that could create a dirty hydrogen monster.

If the Treasury Department sticks to the letter of the law as it writes the rules in the coming months, green hydrogen could flourish, helping to cut America's — and the world's — carbon pollution considerably. It comes down to three key principles.

First, hydrogen projects must draw on *new* clean power. If a hydrogen plant just pulls clean power from the grid, then it's not creating additional power; it's simply diverting power that could otherwise be used for running an electric vehicle or heating a home. In fact, it would actually make the grid dirtier, since most utilities would respond to the increased demand by burning fossil fuels. That hydrogen cannot in any honest way be called "clean."

The second principle is that a hydrogen project needs to be drawing on new clean energy *nearby*. A company in Wyoming that uses coal to make hydrogen should not be able to dress itself up as green by buying a renewable energy credit from California, whose grid already has many clean energy sources. To avoid this, the government must require that the new clean power be delivered to the same grid where the hydrogen plant draws its electricity.

And finally, hydrogen needs to be produced at the same time of day that the new clean energy is flowing into the grid, to ensure that it doesn't end up using electricity from dirtier sources that are available at other times of day. If a hydrogen plant operates at night, when the sun has gone to bed and the only electricity available is from dirty sources, it shouldn't be able to say it's using solar power — not unless it's drawing from a battery that stored the clean power.

This is called "hourly matching," and although some companies claim it isn't cost-effective, Google is already using the approach, and so is the country's largest electricity market, which covers 13 states and 65 million people in the Mid-Atlantic and Midwest.

A hydrogen plant built next to a new wind project would clearly pass the three-part test. When the wind was blowing, the plant would produce hydrogen. It could also ramp down hydrogen production to supply power to the grid when it was most needed. This is exactly the sort of flexible operations that we need as more wind and solar come online.

And if the Treasury Department finds it all too complicated to regulate, then it should just make a simple rule: It will subsidize only new clean energy projects that create hydrogen on site.

The alternative is dirty hydrogen projects that increase pollution. Already, Constellation wants to use the generous federal subsidies to divert clean power from the grid to hydrogen plants. But we know that would make the grid dirtier.

Thankfully, a broad coalition of corporate leaders, renewable energy developers, environmental groups, academics, and *even hydrogen companies* have asked the Biden administration to follow the clear intent of the law by setting rules that don't increase pollution. Lax standards will reward bad behavior and undermine the potential of clean hydrogen. To take on climate change, we need all the legitimately clean technologies we can get.

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