THE HYDROGEN HUSTLE

How the Biden Administration can prevent another fossil fuel subsidy

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Led by Big Oil and other polluters, a massive lobbying campaign is underway to ensure that "clean hydrogen" is defined as laxly as possible. The largest single target of this lobbying blitz is the 45V hydrogen tax credit, passed as part of the Inflation Reduction Act and expected to cost taxpayers hundreds of billions over the next decade.

The core of this campaign centers around greenwashing hydrogen produced from methane and minimizing scrutiny on the grid impact of hydrogen produced through electrolysis. In December 2023, the Biden Administration took important, albeit modest, steps to prevent the abuse of grid-connected hydrogen. But the same draft guidance also leaves open many dangerous loopholes, including for fossil hydrogen produced from methane gas both with and without carbon capture and sequestration. As the Biden Administration aims to finalize the guidance by August, industry is sparing no expense to lock-in a hydrogen future dominated by fossil fuels and nuclear.

Friends of the Earth reviewed over 100 industry comments submitted in response to the draft rule.

Some key polluter demands include:

- Big Oil companies like BP, major utilities like NextEra, and nuclear giants like Constellation are working hard to undermine the Biden Administration's modest steps towards a "three pillars" approach to hydrogen.
- Fossil fuel companies are joining forces with factory farms and landfills to demand that dirty fossil hydrogen be allowed to claim the highest tier of the credit.
- Prominent Blue State governors, including Jay Inslee, JB Pritzker, Tina Kotek, and Gavin Newsom are using their credentials as climate leaders to propose drastically undercutting the integrity of the hydrogen tax credit.
- Big Oil is attempting to "lock-in" the Department of Energy's low-ball estimate for methane leakage. This would allow dirty energy projects to claim a full decade of subsidies even if the agency later updates its modeling to reflect the latest science.
- Opaque methane gas "certifiers" like Project Canary are siding with Big Oil companies like Exxon to further weaken the Biden Administration's already flawed approach to emissions modeling.

If these recommendations are followed, the 45V tax credit would become yet another fossil fuel subsidy. Here is a cliff-notes guide to polluters' hydrogen hustle:

Greenwash Hydrogen Produced on Dirty Power Grids

> *"A rush to hourly time-matching without grandfathering will reduce viability of projects and lead to significantly increased cost of production"* - BP
>
> *"NextEra recommends that the Temporal Matching Transition Rule be revised to provide that annual matching applies to hydrogen production facilities that start construction before 2028"* - NextEra

The Inflation Reduction Act is clear that 45V emissions requirements include significant indirect emissions up to the point of production. This has big implications for hydrogen from electricity. Although often touted as 'zero emission', electrolysis can be extraordinarily polluting if the project is connected to the grid rather than directly powered by new renewables. Hydrogen production is extremely energy intensive and if this new energy demand is not met by corresponding new renewable capacity, then it will likely be met by dirtier grid sources like fossil peaker plants. These grid emissions can make so-called 'green hydrogen' nearly four times more carbon intensive than hydrogen produced from fossil fuels. To combat this, scientists have outlined 'three pillars' that can, together, mitigate hydrogen production's grid impact.

The Biden Administration attempted to integrate these three crucial guardrails into 45V by proposing that hydrogen production be powered by renewable capacity built within three years of the hydrogen facility **(additionality/incrementality)**; be connected to the same regional grid as the hydrogen production **(regionality/deliverability)**; and be able to match renewable energy usage on an hourly basis with hydrogen production, albeit starting in 2028 **(time-matching)**. Unsurprisingly, these requirements are being met with fierce resistance by Big Oil and other polluters intent on obscuring the emissions impact of hydrogen produced from grid electricity.

Fossil interests are calling for the three pillars to be removed, weakened to the point of irrelevance, or failing that, waived for 'first mover' projects. Shell is calling for the time-matching requirement to be delayed indefinitely and BP and NextEra are demanding that it be waived completely for 'first mover' hydrogen projects that start construction by 2028. Either of these proposals would be disastrous. Without hourly time-matching, the grid emissions from electrolysis push production up to nearly 40 kg CO_2/kg H_2, ten times the maximum carbon intensity required to qualify for the credit.

Additionality requirements have also riled polluters. BP attempts to water down the guardrail by expanding the window to five years. The HyVelocity Hub, led by oil majors including Chevron, and ExxonMobil, argues that additionality should be postponed to 2032. These delay tactics would allow existing renewables to be diverted into hydrogen rather than displacing fossil power, and would allow for hydrogen production up to five times the 45V statutory emissions requirements.

Something for Nothing: The 1.5+ billion ton GHG Consolation Prize

> *"...should be set initially at a minimum of 10 percent…Treasury should leave open the possibility of increasing this percentage in later years"* - Xcel Energy
>
> *"...the final rule should allow any resource that demonstrates that its actual level of resolved curtailment exceeds the marketwide average to be entitled to sell a greater number of environmental attributes"* - NRG Energy

The Biden administration started negotiating against itself by proposing a major loophole in the additionality requirement. In some regions, wind and solar may restrict–or curtail–their energy output when an excess of power leads to low or negative pricing for electricity. The draft guidance requests comment on a blanket exemption for 5-10% of existing 'minimally emitting' power generation as a loose proxy for the national annual curtailment rates for renewables and avoided nuclear retirements. This would have a huge impact, as a 5% blanket exception could increase our emissions by nearly 1.5 billion metric tons over the next ten years.

Unsurprisingly, utilities with large nuclear and fossil portfolios are eager to lock-in the upper bound 10% exception and are already asking for higher rates. However, a blanket exception to additionality is a dangerous loophole that would allow hydrogen producers to claim they are using renewable energy while actually producing hydrogen that far exceeds the statutory requirements. The same DOE report underlying the proposed curtailment exception warns that a blanket approach "masks variations across regions and projects." These variations are crucially important when determining the actual emissions intensity of hydrogen production.

Renewable resources and curtailment vary widely over regions, time of day, seasons, and years. There is no scientific justification for using a blanket or formulaic approach. The end result would be hydrogen producers gaming the system, claiming these blanket hypothetical curtailment allowances when production is actually being powered by dirtier sources and emitting up to five times the maximum carbon intensity required to qualify for the credit. The Biden Administration must not insert this attempted consolation prize into the final rule.

Ignore Advances in Emissions Modeling

> *"...a project should be able to "lock" the version of 45VH2-GREET…at the point of the formal "begin construction" date for the project"* - BP
>
> *"If an updated version of GREET can negatively impact or eliminate §45V eligibility, it will make investment decisions high risk and will jeopardize the ability to secure project financing"* - Shell

The Inflation Reduction Act specifies t hat 45V emissions would be measured using "GREET or a successor model." This was a quiet victory for the fossil industry as GREET is out of step with the scientific literature, underestimating methane leakage by at least 50 percent. An accurate accounting of the emissions of fossil hydrogen, with or without CCS, should exclude it from qualifying from even the lowest tier of 45V. But the misattributed low methane leakage rate in GREET, combined with the exclusion of downstream emissions from the captured carbon after hydrogen production, grants fossil hydrogen with CCS access to 45V.

Treasury and IRS worked with DOE to develop a variation of GREET that can better capture the distinct direct and indirect emissions impacts of hydrogen production. However, the proposed model–45VH2 GREET–still carries many of the inherent flaws in GREET, including the low methane leakage rate. This model can be updated, and Treasury and IRS established that hydrogen producers will be held to whatever the most up-to-date version of 45VH2 GREET is each taxable year. This means that hydrogen producers could lose access to the hydrogen credit due to GREET updates that more accurately capture the true emissions impact of hydrogen production.

Big Oil wants to lock-in their victory with GREETs low methane leakage assumption and ensure that today's inadequate version of 45VH2 GREET remains the high-water mark. Oil majors like BP and Shell are aggressively advocating to be grandfathered into older versions of 45VH2 GREET that were current during the project investment and construction phases. In addition, they demand the option to opt into a newer 45VH2 GREET model if emissions standards are subsequently weakened.

Allowing hydrogen producers to choose their own lowest common denominator for modeling would imperil the future of US hydrogen policy. If hydrogen producers are found to not actually be achieving statutory emissions requirements, then they should simply cease to qualify. Continuing to subsidize producers after they have been proven to fail emissions requirements would be a ridiculous policy from both a climate and fiscal responsibility perspective.

Rampant Carbon Accounting Shell Games

> *"Batching would give hydrogen producers the ability to pursue a wider range of operating modes"* - Shell
>
> *"While the independent verification or audit process and providers are in the early stages of development….[t]he Department should incentivize and enable the growth of independent verification services"* - Project Canary PBC
>
> *"...allow producers to use the data submitted to determine the CI of bespoke natural gas for input into the 45VH2-GREET model"* - ExxonMobil
>
> *"...a system which is publicly accessible at the participant level...is not necessary, provided that an established third party administers the process."* - BP

An accurate accounting of the emissions of fossil hydrogen, with or without CCS, should exclude it from qualifying from even the lowest tier of 45V. However, the draft rule adopts GREET's shortfall of dramatically underestimating upstream methane leakage. This misrepresentation allows fossil hydrogen with CCS to qualify. But rather than accept the win, Big Oil is pushing for two new concessions that would allow them to gain access to more valuable tiers of the credit by manipulating how they report their emissions.

Oil majors like Shell are calling for the final rule to loosen the definition of a qualified hydrogen facility. The 45V draft rule requires hydrogen producers to demonstrate that they can produce eligible hydrogen on average, over a year's term. Shell would prefer "batching" hydrogen production, which could incentivize a wave of grid-connected or fossil hydrogen projects that pollute heavily into the surrounding communities, but can subsidize their operations with short periods of production that can qualify for the credit.

Polluters are also demanding that Treasury and IRS make it easier for them to claim bogus low emissions 'certifications' for fossil gas. Despite the 45V GREET model already dramatically undercounting upstream methane emissions, Big Oil is advocating for the ability to claim even lower emissions based on a rubberstamp from an industry that has emerged to capitalize on greenwashing claims. Canary Project, a leader in the emerging certifier market, is eager to pitch its services. However, the claims of 'certified gas' crumble under even minor scrutiny — Canary Project's monitors failed to capture every significant pollution event over a seven-month survey.

The Biden Administration is aware that this 'certified fossil gas' is a greenwashing scam, stating in the draft rule that it is "unlikely to be independently verifiable with high fidelity". Oil majors apparently also realize the inability of these certifiers to credibly back-up their claims. BP and other would-be hydrogen producers took great pains to clarify that Treasury and IRS should accept certified fossil gas without requiring any transparency to the public about the underlying data.

Fossil Hydrogen Bait and Switch

> *"Importantly, it is not the role of Treasury to establish or enforce any such rules on or relating to the generation of waste as a component of the 45V tax credit…The actual physical flow of the natural gas system may not directly place that unit with the hydrogen producer, but it will demonstrably offset the use of a physical natural gas molecule somewhere within the country"* - BP
>
> *"Requiring RNG-to-hydrogen developers to bear the responsibility of market externalities is burdensome, unnecessary, and inconsistent with precedent shown through existing programs"* - Shell

One of the biggest remaining loopholes in the hydrogen tax credit is the treatment of methane biogas. Although the draft rule includes a pathway for producing hydrogen from landfill gas, it inaccurately assumes the counterfactual that all methane would otherwise be vented. This is a bad precedent that dramatically undercounts the actual emissions of intentionally producing landfill methane rather than adopting more

sustainable waste practices. However, the proposal only applies narrowly to fossil hydrogen projects directly connected to sources of biogas. In practice, these facilities are rarely in geographical proximity. That's why polluters are attempting to widen Treasury's proposal into a national offsets system that would allow landfills and factory farms to sell offset credits to fossil hydrogen producers across the country.

Polluters have been explicitly advocating for a system similar to the California Low Carbon Fuel Standard (LCFS), which has allowed fossil hydrogen to generate valuable compliance credits through an offsets scheme known as 'book-and-claim accounting'. Under the LCFS, landfill and factory farm methane are granted mind-bogglingly low GHG values, dipping into the negative. This allows factory farms and landfills across the US to sell lucrative "environmental attributes' to CA LCFS participants. The assumption is that all of this methane would have been otherwise vented. However, their 'avoided emissions' claims are paper thin, as operators can have installed digesters years before the credits were available and are allowed to double (or more) dip into multiple state and federal incentives. Additionally, government subsidies like the LCFS create a market distortion that penalizes sustainable practices which don't concentrate and maximize methane emissions for commodification.

Paying a polluter to keep polluting is a problematic model from both a climate and justice perspective. The skewed LCFS book-and-claim method encourages both dirty hydrogen production and the expansion of harmful methane biogas production. Fossil hydrogen production can qualify for subsidies despite its extremely high emissions. Meanwhile, the demand that the LCFS creates for offsets from factory farms and landfills perpetuates these massive sources of soil, air, and water pollution in environmental justice communities. Operators are incentivized to expand and concentrate methane production rather than adopt practices that would actually minimize pollution at the source.

Based on the draft guidance, Treasury and IRS do seem inclined to include some guardrails. The guidance proposes that methane biogas would be treated similarly to fossil methane unless hydrogen production is its "first productive use". This mechanism and the forced retirement of 'environmental attributes' could prevent the "double-counting" of credits across multiple systems (such as 45V and the CA LCFS). But even if the Biden Administration resists industry pressure to cut those guardrails, being marginally better than the LCFS does not negate the broader issues with a bait and switch, where the emissions of methane biogas production are undercounted to the point where fossil hydrogen is able to qualify for taxpayer subsidies. Repackaging methane as hydrogen does not make the high pollution of this gas disappear.

Ransom Hydrogen Hubs

> *"It is imperative to incentivize the build-out to prepare ourselves for the hydrogen future and not limit our ability based upon preferred fuel choices that may not be applicable to achieving lift-off in select regions of the country"* - Appalachian Regional Clean Hydrogen Hub (ARCH2)

> *"Treasury's guidance will severely impact the viability of our hub projects and result in the cancellation of our nuclear hydrogen production project"* - Midwest Alliance for Clean Hydrogen (MachH2)
>
> *"...allow all first movers, as well as the Administration supported Hydrogen Hubs, to qualify for the section 45V production credit providing critical support for liftoff of this nascent market"* - HyVelocity Hub

Big Oil has not limited their hydrogen lobbying to the federal level. Many state governors are eager to be included in the hydrogen cash frenzy and have thrown their full support behind projects selected under the DOE Hydrogen Hub program. However, these Hub projects were selected under a much weaker and non-binding standard set by DOE. More than half of the winning Hubs involve fossil hydrogen, and all of the Hubs include fossil fuel partners. It bears mentioning that the original hub program was developed by none other than Senator Joe Manchin, the top recipient of fossil fuel industry political contributions in the 2022 campaign cycle.

Now polluters involved in the seven winning hydrogen hub proposals are attempting to use these projects as hostages to get the Biden Administration to weaken the hydrogen tax credit. Even blue state governors have been willing to set aside their climate credibility in favor of reckless hydrogen expansion in their states. Governors Jay Inslee (WA), Tina Kotek (OR), Gavin Newsom (CA), and JB Pritzker (IL), submitted comments that proposed dramatically weakening key emissions requirements in the hydrogen tax credit. These states are expecting a large expansion of new hydrogen infrastructure under the Pacific Northwest, ARCHES H2, and MACH H2 Hub proposals.

Western Governors Inslee, Kotek, and Newsom assert that hydrogen production in their states should be exempt from the additionality requirement given state commitments to transition to a 100% clean grid over the next 20-30 years. These governors would have taxpayers subsidize an explosion of heavily polluting hydrogen production in their own constituents' communities, on the promise that it may become less dirty in a few decades. It's worth noting that the hydrogen tax credit will expire, unless extended by Congress, before these states achieve their goals.

Illinois Governor Pritzker is more explicit in his motivations for 45V, specifically asking Treasury to weaken its additionality proposal in order to make the MACH H2 Hub "economically viable" and able to move forward with plans to produce nuclear hydrogen. Nuclear power is not exempt from the same grid considerations that affect all electrolysis. As reiterated in a recent study on a hydrogen demonstration project powered by Nine Mile Point nuclear power plant in New York — if nuclear power is diverted into hydrogen production and not met by new renewable capacity under the standards of the three pillars, then the carbon intensity will far exceed the statutory requirements of 45V. Constellation, the largest nuclear generator in the country and key partner in the MACH H2 Hub, is perhaps aware of the inevitable grid impact of nuclear hydrogen, as it argues that the inclusion of grid emissions in Treasury's lifecycle analysis are a legal overstep.

All of these governors' proposals would have Treasury and IRS ignore massive grid emissions from hydrogen production. The Clean Hydrogen Hubs are not worth doing if they cannot actually produce clean hydrogen, and they are certainly not worth violating the statutory emissions requirements established in IRA for the 45V tax credit.

Conclusion

It is telling that the loudest voices in opposition to the 45V draft rule continually point to their financial stake in weak hydrogen standards. Their comments highlight policies that should be irrelevant to the scientific principles informing the Treasury and IRS's implementation of 45V, such as DOE's hydrogen strategy or economic hurdles that individual projects purportedly face. Ultimately, these hydrogen producers are not entitled to qualify for the credit based on the political atmosphere of their state or policies set by other federal agencies. The criteria is very clear cut emissions requirements.

The Biden Administration's 45V draft rule was an important first step for clean hydrogen. While the guidance has been met with fierce resistance from polluters, that should be a sign to stand firm rather than backslide. Weak implementation of the hydrogen tax credit is not a misstep that we can afford. Without a strong science-driven standard, hydrogen will rapidly become a taxpayer-subsidized greenwashing activity. If clean hydrogen is to play any helpful role in climate policy, the Biden Administration must not sacrifice the 'clean' in the name of hydrogen.