

Issues & Questions Re: HB 228 – Revised Hydrogen Hub Act

The only possible hydrogen for a zero-emission future requires a transition away from production with polluting technologies, meaning no fracked gas. Period.

Current hydrogen production – more than 99.8 % of which is not green – is responsible for an enormous amount of greenhouse gas pollution. **Blue hydrogen emissions are 20% greater than burning natural gas or coal for heat and 60% greater than burning diesel oil for heat.**

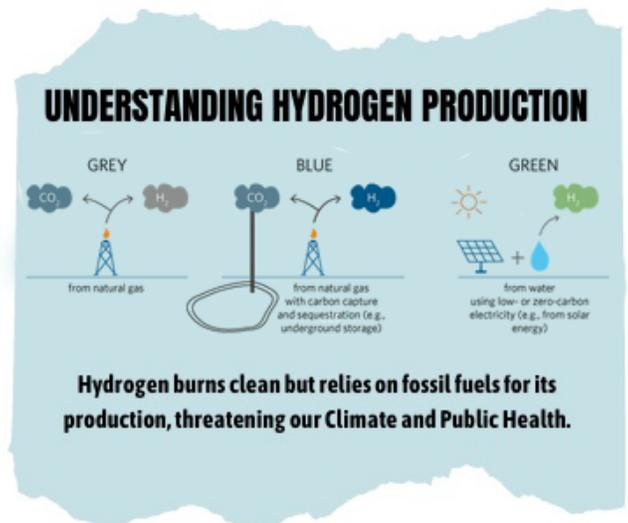
Oil and gas (O&G) companies produce almost all of the United States' hydrogen supply from gas. Globally, less than 1 percent of hydrogen is produced through electrolysis and less than 0.02% is green hydrogen (i.e., powered by renewable electricity) and the electrolysis process is enormously water intensive, and therefore impossible in New Mexico.

Using hydrogen will not break our dependence on fossil fuels unless we quit relying on fossil fuels to produce hydrogen. While the bill promises only to subsidize “clean” hydrogen, it does not account for pollution from gas production or provide for actual enforcement, something the agencies have failed to do.

1. Yikes: Fugitive Emissions; What is that?

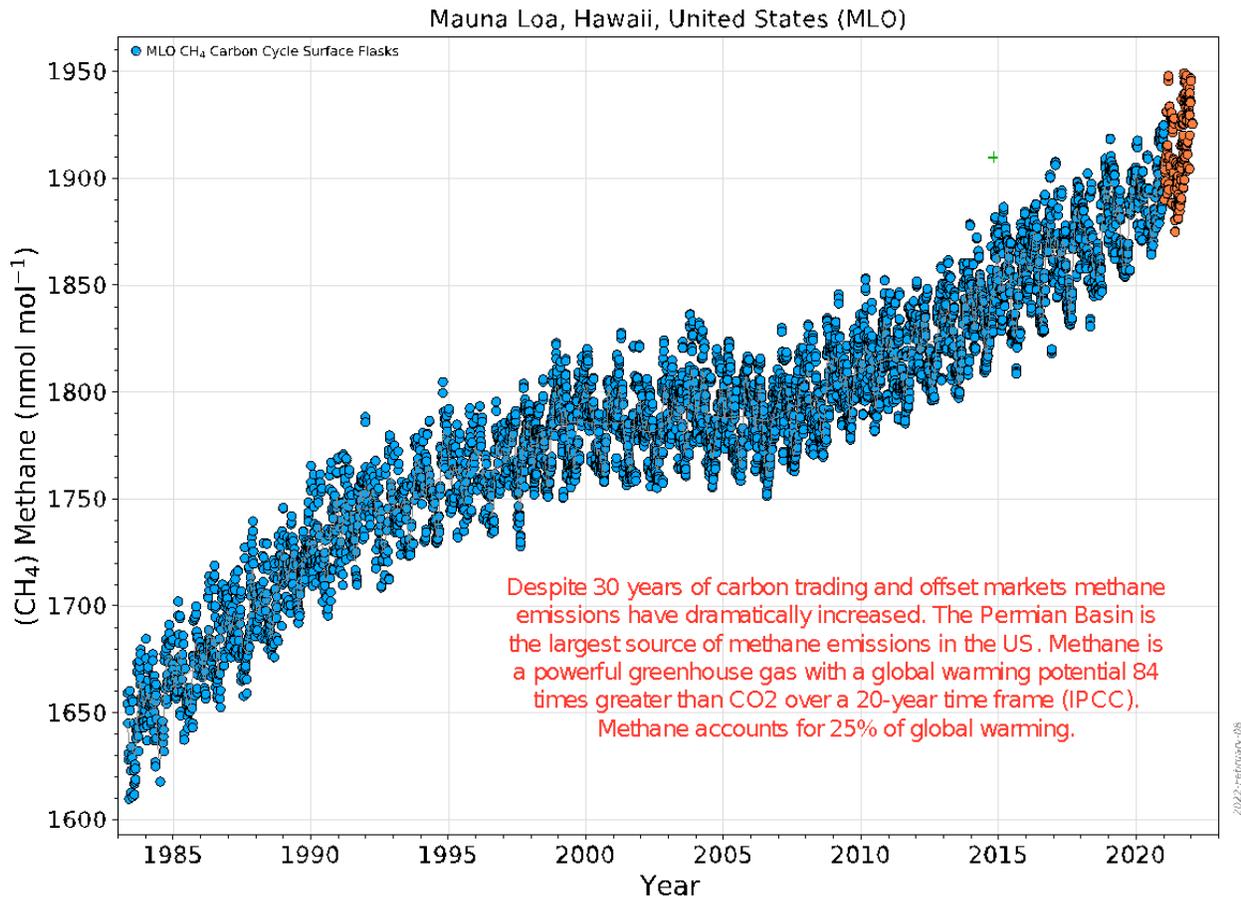
“Fugitive emissions” are climate warming emissions, primarily methane, that escape into the air during the process of natural gas production. Fugitive emissions from the natural gas used in the hydrogen production process makes hydrogen production extremely damaging. Methane has 84 times worse climate warming impacts than CO₂; methane seeps into our lungs and rains down onto our agricultural fields for us to eat. Poison. Immense amounts of methane are currently escaping from oil and gas sites, helping to warm the planet at an alarming rate!¹ There are additional toxins that are produced during the O&G process: methane and ethane, both greenhouse gases, as well as pollutants called volatile organic compounds. We can't afford another re-branded O&G pollution bonanza.

Oil and Gas workers are particularly vulnerable as the leaking emissions are damaging to health, and workers often have NO protection. The O&G industry argues that frequent monitoring would not be cost-effective and stricter regulation would be “costly and burdensome.” Currently, as long as the O&G industry reports fugitive emissions there are no penalties or permits pulled.



¹ <https://www.nytimes.com/interactive/2019/12/12/climate/texas-methane-super-emitters.html> North American shale gas production may be responsible for about a third of the global increase in methane emissions over the past decade.

The Permian Basin is the largest source of methane emissions in the US.² Methane is a powerful greenhouse gas with a global warming potential 84 times greater than CO₂ over a 20-year time frame (IPCC). Methane accounts for 25% of global warming.



2. Government inability to supervise, control & monitor

How many inspectors are there currently employed by the NMED to oversee current O&G wells? There are 8 inspectors – 2 in the North, 3 in Artesia and 3 in Hobbs.³ the San Juan Basin has over 40,000 O&G wells & 3 field inspectors. This means each inspector would have to inspect 267 wells a week, and need to inspect 54 wells a day. The Permian Basin has 7 inspectors for 45,000 + wells in the Delaware field. These numbers do not include abandoned and orphaned wells emitting methane, or coal bed methane in the 4 corners.

It is impossible to properly regulate and to enforce existing regulations with inadequate resources and personnel. NM needs an army to inspect, but the budget provided is woefully inadequate and industry is allowed to self-report.

²<https://www.edf.org/media/dozens-super-emitting-oil-and-gas-facilities-leaked-methane-pollution-permian-basin-years-end>;
<https://jpt.spe.org/three-year-study-identifies-methane-super-emitters-in-the-permian-basin>;
<https://www.reuters.com/world/us/aerial-surveys-detect-dozens-methane-super-emitters-permian-2022-01-24/>;
<https://www.yourbasin.com/news/methane-super-emitters-tracked-in-the-permian-basin-research-suggests-2/>;
<https://www.ecowatch.com/permian-basin-methane-leaks.html>;
<https://www.ft.com/content/82addbf5-4897-4f4b-909c-1cc6c616dff4>;
<https://www.currentargus.com/story/news/local/2022/01/29/study-permian-basin-super-emitters-identified-aerial-study/6636837001/>
³ <https://www.emnrd.nm.gov/ocd/wp-content/uploads/sites/6/OCD-Contact-List-of-01-20-2022-1.pdf> & [OCD Inspectors IN the Field 2 managers .png \(320K\)](#)

Oversight and regulation questions unanswered in this bill:

How will these inadequately funded and understaffed agencies oversee a new polluting industry that involves technically complex and dangerous production and transport of hydrogen and CO₂ from carbon sequestration?

What agency will be directly responsible for overseeing that greenhouse gas emissions don't exceed the emissions limits contained in this bill?

If projects do not meet carbon intensity, cost effective, or other standards, how likely will it be that the state will be able to recoup grant and loan funds through clawback provisions?

The bill uses the Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation (GREET) model to evaluate energy and emission impacts. (P 37). The model is a tool that examines the life-cycle impacts of vehicle technologies, fuels, products, and energy systems. It requires measurement of the emissions of six criteria pollutants: [volatile organic compounds](#) (VOCs), [carbon monoxide](#) (CO), [nitrogen oxide](#) (NO_x), [airborne particulate matter](#) with sizes smaller than 10 [micrometre](#) (PM₁₀), particulate matter with sizes smaller than 2.5 micrometre (PM_{2.5}), and [sulfur oxides](#) (SO_x).

Who is trained in GREET?

Will third party vendors operate? Will they be located outside New Mexico? How will "independent" third party vendors be determined

3. Carbon Sequestration is ineffective and uneconomic

Section 3 of HB 228: Hydrogen Hub - (3) Carbon Sequestration: "sequestration of carbon dioxide produced at the proposed hydrogen hub"

There is NO proven "permanent sequestration of carbon dioxide" - Carbon Capture is uneconomic; risks contamination of aquifers, fails to capture targeted sequestration goals, and results in stranded assets.

International failure:

The latest ruse is that carbon capture will enable this new savior for our climate, but the reality is not as hydrogen proponents claim. The idea behind the permanent sequestration of carbon dioxide is a process whereby the CO₂ produced when generating hydrogen is captured and buried. Except there are huge debates if it works at all, including failures of some of the biggest projects such as Chevron's Gorgon project in Western Australia, the largest one in the world. This was supposed to bury 80% of the CO₂ from gas wells in Western Australia over 5 years, but hasn't even achieved half that, and doesn't do anything for gasses burned to liquify output for export.⁴ This is just the largest and most recent of many international projects that resulted in significant losses.

US Failures:

The only Carbon Capture & Sequestration plant in the US, Petra Nova, a retrofitted coal plant in Thompsons, Texas, began operating on January 10, 2017 but was mothballed on May 1, 2020. During

⁴ <https://www.forbes.com/sites/jamesmorris/2021/09/25/is-carbon-capture-another-fossil-fuel-industry-con/?sh=75dc51335ef3>

its 3-year life-span it had a 16% shortfall in the total CO2 captured over this period. Department of Energy documents show that the Petra Nova project experienced 367 days of outages over those three years, or one out of every three days.⁵ The CCS technology at Petra Nova required so much energy that NRG made an entirely separate natural gas power plant – the emissions of which were not offset by the Petra Nova technology – just to power the scrubber.⁶ NRG, the plant’s major investor said the CCS couldn’t compete because of its reliance on volatile O&G markets.⁷ The government lost all its investment as did other investors.

Another high-profile failure, Mississippi Power’s Kemper Project, was supposed to cost \$2.4 billion, but the cost ballooned by 212.5 percent to \$7.5 billion without the plant ever actually coming online. Mississippi Power’s ratepayers and taxpayers were stuck with the bill.⁸

These risky business ventures depend entirely on the developers’ ability to claim the federal 45Q tax credits. If the CO₂ capture rate falls below 90%, the project will be in the red.

4. Taxpayer & Ratepayer Subsidization

Section 6 of HB 228: public-private partnership agreements for a hydrogen hub project pp. 14-16
§ 6H: approve or disapprove applications for grants or loans from the hydrogen hub project fund for hydrogen hub projects

Why should New Mexico taxpayers subsidize this project? Over the past six years, there have been **266 oil and gas producer bankruptcies**. In the same period, **306 oilfield services and midstream companies have filed for bankruptcy**, bringing the combined North American industry total to 572.⁹

Will New Mexico’s gas and electric customers be paying for hydrogen hubs at the front end through grants and loans and at the back end through higher rates? NM Gas Co. is already seeking cost recovery for its hydrogen blending demonstration with Bayotech.¹⁰

Section 7: Hydrogen Board the board *shall* approve a proposed public-private partnership agreement only if it finds the proposed project if it meets certain criteria:

How will cost effectiveness be determined? Will that determination be made with or without federal and state subsidies?

⁵ <https://www.energyandpolicy.org/petra-nova/>

⁶ <https://www.energyandpolicy.org/petra-nova/>

⁷ <https://gizmodo.com/the-only-carbon-capture-plant-in-the-u-s-just-closed-1846177778>

⁸ <https://mispolicy.org/two-years-since-kemper-clean-coal-project-ended/>

⁹ https://www.haynesboone.com/-/media/project/haynesboone/haynesboone/pdfs/energy_bankruptcy_reports/oil_patch_bankruptcy_monitor.pdf?rev=61c2606a5be547598c8d716d1a795c39&hash=97ECA4B149560404B19497FA37CB2B50#:~:text=Over%20the%20past%20six%20years,American%20industry%20total%20to%20572.

¹⁰ NM PRC Case No. 21-00267-UT, Direct Testimony of Gerald C. Weseen, 12/13/2021 (“As part of this examination, NMGC provided funds from the Company’s \$5 million GHG Reduction Research & Development Fund (“R&D Fund”), as approved in the Company’s request for a variance in NM PRC Case No. 15-00327-UT (Emera Acquisition Case), to BayoTech, an Albuquerque-based company, to further the development and deployment of modular hydrogen generation technology that can be used in utility hydrogen blending. P. 11. ... **The Company is proposing to include \$2.9 million in rate base in 2023.**” P. 18)

And what if they are not seeking state funds? What regulations will apply? There are already attempts by the NM Gas Co to approve hydrogen projects (with Bayo Tech and a Colorado Company, Project Canary?)

Section 8: NM Finance Authority “grant and loan applications for hydrogen hub projects” \$150 million is being allocated according to SB 154 (p. 215) (“For New Mexico finance authority public private partnership hydrogen energy hubs contingent on enactment of legislation in the second session of the fifty-fifth legislature.”)

The state Economic Development Department’s diversification plan identified nine other sectors that the state should be investing in. What analysis has been done to show that creating hydrogen hubs is the best use of our economic development dollars or will yield the greatest number of jobs?

5. Corruption of Renewable Energy Act definitions enshrined in statute

Section 17 - Redefines “clean” hydrogen as renewable: Section 17, A – C, p. 39-41, and F, p. 42 and O. (3) amends the Renewable Energy Act. and Section 16, A – C, p. 34-37, and E, p. 37 and J. (3) amends the Rural Electric Cooperative Act

It is dangerous that the bill seeks to label a fossil fuel emitting product as “renewable”. The language in this bill is political language meant to distort the truth, not scientific, legal or factual information consistent with the public interest.

The US EIA defines renewable energy as: energy from sources that are naturally replenishing but flow-limited; renewable resources are virtually inexhaustible in duration but limited in the amount of energy that is available per unit of time.

Hydrogen from fracked gas, which emits carbon dioxide and other harmful climate warming gasses, is not naturally replenishing; Gas is finite, and the capacity of our atmosphere to absorb increasing amounts of CO2 and methane without catastrophic impacts is also finite.

6. Health Impacts:

People, especially frontline and Indigenous Communities are already suffering from methane and other toxic pollutants from O&G development.¹¹ In HB 4, Section 18 C, the government was to

¹¹ Environmental Defense Fund, New Mexico Oil and Gas Data Map, <https://www.edf.org/nm-oil-gas/map/> (last visited September 22, 2021). Oil and gas development, production, and processing – which produces the natural gas required for fossil hydrogen – can be a significant source of health-damaging air pollutant emissions, including volatile organic compounds (VOCs), many of which are hazardous air pollutants (HAPs) known to cause cancer and other serious health effects and contribute to ground-level ozone. 11 *See, e.g.,* Roy, A. A., Adams, P. J., & Robinson, A. L. (2014). Air pollutant emissions from the development, production, and processing of Marcellus Shale natural gas. *Journal of the Air & Waste Management Association*, 64(1), 19–37. <https://doi.org/10.1080/10962247.2013.826151>; Garcia-Gonzales, D. A., Shonkoff, S. B. C., Hays, J., & Jerrett, M. (2019). Hazardous Air Pollutants Associated with Upstream Oil and Natural Gas Development: A Critical Synthesis of Current Peer-Reviewed Literature. *Annual Review of Public Health*, 40(1), 283–304. <https://doi.org/10.1146/annurev-publhealth-040218-043715> [Hereinafter Garcia-Gonzales et al, 2019].

¹² US EPA (United States Environmental Protection Agency). (2016). *Benzene: Hazard Summary*. <https://www.epa.gov/sites/default/files/2016-09/documents/benzene.pdf>; IARC (International Agency for Research on Cancer). (2018). *Benzene: IARC Monographs on the Evaluation of Carcinogenic Risks to Humans* (Vol. 120).

“petition the environmental improvement board to promulgate rules that consider and address the implications for greenhouse gas emissions resulting from the generation and use of hydrogen in New Mexico.” In HB 228 there is NO consideration whatsoever of the health impacts of this industry. Toxic air and water pollution created by the industry has disproportionately harmed generations of Brown, Indigenous and low-wealth communities living throughout the O&G regions of our state.

A recent [victory](#) in which a federal court threw out the U.S. Department of the Interior’s decision to offer up more than 80 million acres of the Gulf to the oil industry – the largest oil and gas lease sale in U.S. history. The court held the agency failed to adequately disclose and consider the greenhouse gas emissions that would result from the sale, in violation of a bedrock environmental law. It also held that the agency’s failure to consider the impact of emissions was classic arbitrary decision-making.

Failure to consider and weigh the environmental and climate consequences of greenhouse gas emissions, including importantly methane, [volatile organic compounds](#), (NO_x), [airborne particulate matter](#), and [sulfur oxides](#) (SO_x), and the health impacts is grossly irresponsible, negligent and “classically arbitrary action.”